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NORMAN GERALD HORNER, M.A., M.D.

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FOOD VALUES AND THEIR PRACTICAL APPLICATION IN DIETETICS*

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necessary protein can most profitably and economically be provided. Some races have little or no choice in the matter. The Eskimos, for example, live entirely on animal food; they derive their protein and their fats from seal meat and blubber, or such other meat and fat as they may be able to obtain. Yet they live healthily, and are not liable to any special disease as the result of an entirely flesh diet; it is especially noteworthy that they do not develop arterial degeneration, kidney disease, or gout. They derive their calories partly from the fat and partly from the protein, of which 58 per cent. is convertible into glucose if needs be.

At the other end of the scale there are the West African tribes, who live on a diet of flour made from ripe bananas and on the bananas themselves. This one fruit can furnish every requisite, and, provided the bananas are ripe, they contain sufficient amino-acids to give the protein a good biological value. Infants in both these instances are suckled by their mothers; artificial feeding is not practicable. With the exception of this banana diet, no other vegetarian diet provides proteins of good enough biological value. It will be found that milk and eggs must be added. Casein of milk has the highest biological value; it supplies in full measure all the amino-acids essential to life. Growth and full vigour can be maintained on milk—the warriors of the Masai live on milk and blood. Meat comes next in order after milk, kidney ranking first, then liver, then muscle.

Although all the necessary amino-acids may be found in certain cereals, the amounts, in some instances, are inadequate. From the point of view of protein content, therefore, cereals must be supplemented, and it has been found that two cereals do not supplement each other. Milk is a cheaper source of protein than meat, and cheese is especially so. Those who can afford it (and many who cannot) prefer to take the larger part of their protein in meat and eggs, which cost more but are considerably tastier. Perhaps it is not, after all, an extravagance for the adult to prefer the costlier forms of protein. Meat and fish are more gratifying to the palate, and are definitely more satisfying. They may not be so filling at the time, but a meat meal seems to stay longer.

Satiety Value

This feature has been scientifically studied, and foods may actually be classified according to their satiety values, as well as their protein and calorie values. When the stomach and upper intestines contain food, and when normal muscular and secretory activities are at work, a feeling of satisfaction or satiety is experienced. Mere distension of the stomach is not enough to excite this feeling, and it is not experienced when the stomach is artificially distended. Slow passage through the intestine is as important as slow passage through the stomach, and the two go together, because foods that remain longest in the stomach call for the greatest secretion of hydrochloric acid. Two factors are taken as the measure of satiety value: (a) the length of time the food remains in the stomach, and (b) the amount of gastric juice stimulated by the food. The accompanying tables are based on observations made in dogs by means of duodenal fistula.

Food	Hours	Amount of Secretion, c.cm.
Meat, 200 grams	31-41	244
1 lb. of beef	29	256
1 lb. of mutton	33	91
1 lb. of pork	33	215
1 lb. of chicken	21	74
1 lb. of eggs	21	151
1 lb. of bread	24	174
1 lb. of butter	24	147
1 lb. of oil	24	124
1 lb. of sugar	24	153
1 lb. of starch	24	153
1 lb. of gelatin	24	153
1 lb. of casein	24	153
1 lb. of lactose	24	153
1 lb. of glucose	24	153
1 lb. of fructose	24	153
1 lb. of sucrose	24	153
1 lb. of maltose	24	153
1 lb. of dextrose	24	153
1 lb. of inulin	24	153
1 lb. of pectin	24	153
1 lb. of gum arabic	24	153
1 lb. of tragacanth	24	153
1 lb. of carrageen	24	153
1 lb. of alginate	24	153
1 lb. of chondrin	24	153
1 lb. of hyaluronic acid	24	153
1 lb. of chondroitin	24	153
1 lb. of keratin	24	153
1 lb. of elastin	24	153
1 lb. of fibrin	24	153
1 lb. of caseinogen	24	153
1 lb. of albumin	24	153
1 lb. of globulin	24	153
1 lb. of serum	24	153
1 lb. of plasma	24	153
1 lb. of whole blood	24	153
1 lb. of red blood cells	24	153
1 lb. of white blood cells	24	153
1 lb. of platelets	24	153
1 lb. of bone marrow	24	153
1 lb. of spleen	24	153
1 lb. of liver	24	153
1 lb. of kidney	24	153
1 lb. of heart	24	153
1 lb. of stomach	24	153
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intake, but a more generous intake ensures against decay and disease, and carries with it a liberal factor of safety.

ENERGY VALUE OF FOODS

Be it for growth and repair, food is required for the liberation of energy; the energy thus set free appears in the form of heat, mechanical work, and the activity of all the organs and structure of the body. Even the building up of the protein molecule so that it may be used for growth or repair demands the expenditure of energy. The energy contained in any foodstuff can be determined by the measurement of the heat which it yields on combustion in a calorimeter. It is expressed in calories or units of heat, one calorie being the amount of heat necessary to raise one kilogram of pure water from 15° C. to 16° C. For chemical purposes the following values are accepted: 1 gram of protein yields four calories, 1 gram of carbohydrate four calories, 1 gram of fat nine calories. The average working adult requires a diet containing some 3,400 calories, a female about 2,840. For children the requirements are naturally less, but relatively to their weight and body surface their needs are higher than those of adults. A rough rule is that a boy of 14 requires the same calories as his father, and a girl of 14 the same as her mother. But the athletic schoolboy requires as much as 5,000 calories.

Proteins, carbohydrates, and fats can all supply the necessary heat and energy. But to utilize proteins for this purpose is, as a rule, economically wasteful: some part of the nitrogen of the protein is excreted by the kidney, proteins have greater specific dynamic action than carbohydrates and fats—that is, they speed up the metabolic processes of the body—and, finally, in this country, protein foods are the most expensive.

Carbohydrates—These are the most rapidly utilized of all food materials. They are the cheapest, and they reduce protein metabolism; they are "protein spacers." If carbohydrate is added to the diet the amount of meat required will be reduced. The most effective "protein-sparing" diet is a mixture of carbohydrates and fats in which at least half the energy is provided by the former. Wheat is the most economical food-stuff, because of its richness in carbohydrate and protein, the facility with which it can be stored and transported, and the ease with which it is prepared for table. But wheat reaches us in the form of flour—that is, when it is lacking in mineral and vitamin content, and its proteins are of low biological value. We eat it, therefore, chiefly for its carbohydrate content, which is at its highest in bread made of the finest white flour; economically the English are justified in their determination to eat white bread. Other grains are extensive, e.g. barley, maize, and oatmeal; their carbohydrate content is practically the same, but their palatability is considerably less. Breakfast cereals are very popular, but thoroughly wasteful and unnecessary. Many of them require cooking, and all of them are more vehicles for the milk, cream, and sugar with which they are covered. Their own nutritive value is simply that of the grain from which they are prepared, and very often the extra price paid is merely to cover the cost of diminishing their food value by extracting some nutrient, which is sold in another market. Oatmeal or porridge is a food from which a relatively small proportion of its carbohydrate content can be assimilated. Sugar and sugary foods are valuable in so far as they are converted into glucose. Sugar offers a concentrated form the most readily available carbohydrate, and it possesses a high satiety value. Unfortunately it has also undesirable effects; it is easily eaten to excess, which promotes obesity; it is a concentrated form of energy, and it may set up fermentation; and it may be the

cause of a reduction in the consumption of other food-stuffs and lead to dietary deficiency.

Fats—These have an important place in the diet. They yield twice as many calories as the average quantity of carbohydrate or protein; without fats it is not easy to frame diets of the necessary caloric value. Fatty foods are believed to be indigestible, but much of this is on their nature. Fats which melt at the temperature of the body are most easily assimilated, while those with a higher melting point are poorly utilized. In some people an excessive amount of fat will cause intestinal disturbances, and fat unbalanced by a sufficiency of glucose will give rise to ketosis and acidosis. Fatty food in suitable amount will, as we have seen, lead to retardation of the emptying time of the stomach, and this adds to the sense of comfort and satisfaction. Butter and cream present the most palatable and assimilable form of fat. Fats are expensive, but indispensable; not only do they provide a high caloric yield in compact form, but they are the chief source of certain of the vitamins—namely, vitamins A and D.

Vitamins—An adequate diet must contain all the vitamins, although only minute quantities may be necessary. The average daily diet of adults in this country will contain all the sources of vitamins. For practical purposes a sufficiency of vitamin A and D is obtained from fats. For vitamin B we need not look to the grain of wheat as indispensable; it is found abundantly in yolk of egg, in milk, in the leafy part of green vegetables, and in liver and kidney. It is not destroyed by the heat of ordinary cooking processes. P.P., or B₁₂, is found in similar food-stuffs, and is even more resistant to heat. Vitamin C—the anti-scurvy vitamin—is obtained from fresh fruit and vegetables, and from milk, provided the cow is not fed on oil-cake, but on fresh pasture or ensilage. Vitamin E is found in nearly all our ordinary food-stuffs. For children it may sometimes be necessary to supplement the diet with artificially prepared vitamins, but for adults it will be far better for the housewife to take the advice of the British Medical Association Committee on Nutrition, and "spend money on food which contains some vitamin-containing food-stuffs, than to buy costly preparations of the concentrated vitamin-containing products."

Practical consideration of how to lay out a house-keeping allowance may be interesting. I have prepared a table showing the number of calories which can be bought with a shilling spent on different articles of food. It must be remembered that the purchases must include 100 grams of protein—fifty grams being "first class"—a sufficiency of fat, and the fresh fruit and vegetables necessary to furnish vitamins and cellulose to give bulk to the faeces; some red meat is required for the sake of its iron. The fat must be balanced by the glucose in the protein and carbohydrate in the proportion of F = 2C + 1P at least, otherwise acidosis and ketosis may result. One shilling will buy:

	In Grams			Calories
	Protein	Fat	Carbohydrate	
1 lb. beef	70	0	0	112
1 lb. mutton	18	17	10	170
1 lb. chicken	12	10	2	120
1 lb. trout	—	7	—	100
1 lb. pork	24	—	100	170
1 lb. potatoes	17	—	100	100

I conclude with an analysis of a day's meals, not perhaps such meals as we should take every day, but most of us can probably recall days when we have indulged to an equal extent.

BREAKFAST.	Protein (grams)	Fat (grams)	Carbo- hydrate (grams)
Tea or coffee	—	—	—
Milk, 5 oz.	5	5	7.5
Bread, 4 oz.	21	—	61
Butter, 1 oz.	—	25	—
Egg, one	6	6	—
Bacon, 2 oz.	10	20	—
Sugar, 1 oz.	—	—	30
Marmalade, 1 oz.	—	—	25

Total calories, 1,532.5.

LUNCH:	Protein (grams)	Fat (grams)	Carbo- hydrate (grams)
Beef-steak, 3 oz.	21	15	—
Potato, 2 oz.	2	—	12
Onion, 3 oz.	1	1	5
Bread, 2 oz.	12	—	61
Butter, 1 oz.	—	25	—
Cheese, 1 oz.	8	10	1

Total calories, 1,055.

Half-pint of beer—Extra calories, 170

TEA:	Protein (grams)	Fat (grams)	Carbo- hydrate (grams)
Tea	—	—	—
Milk, 2 oz.	2	2	3
Toast, 2 oz.	12	—	61
Butter, 2 oz.	—	22.5	—
Cake, 1 oz.	6	22	70
Sugar, 1 oz.	—	—	30

Total calories, 1,077.5

DINNER:	Protein (grams)	Fat (grams)	Carbo- hydrate (grams)
Oysters, half-dozen	21	13	12
Soup (clear), 4 oz.	12	—	2
Turbot, 3 oz.	18	3	7
Hollandaise sauce, 1 oz.	14	13	0.25
Roast beef, 4 oz.	32	23	—
Potato, 3 oz.	3	—	18
Cauliflower, 3 oz.	1	—	5
Apple tart, 4 oz.	3.5	12	50
Custard, 1 oz.	1	6	1
Orange, one	15	0.25	25

Total calories, 1,339.55.

BEVERAGES:	Calories
Martini cocktail	170
One glass sherry	81
Two glasses champagne	210
Two glasses port	140
	604

Note.—Calories do not represent the extra energy required by a stone-weight carrying a ton before for two hours.

If you think I have been too generous in catering for you, let me recall Brillat Savarin's wise reflection: "It is one of the privileges of the human race to eat without being hungry and to drink without being thirsty; beasts have not this privilege, for it arises from reflecting on the pleasures of the table and the desire to prolong their duration."

FOOD VALUES

THE BRITISH MEDICAL JOURNAL, LONDON, JAN. 6, 1934

THE "ACUTE EAR" IN GENERAL PRACTICE*

BY

DOUGLAS GUTHRIE, M.D., F.R.C.S.

SURGEON TO THE EAR AND THROAT DEPARTMENT, ROYAL HOSPITAL FOR SICK CHILDREN, EDINBURGH

For years we have been accustomed to speak of the "acute abdomen," an expression which must recall to the mind of every practitioner recollections of the anxiety and heavy responsibility entailed in the conduct of any case of this nature. Certain emergencies connected with the ear are often as serious as those of the abdomen, and it would appear as though the more serious varieties of "acute ear" had been much in evidence during the past few months. Whether this is the result of a warm summer and consequent popularity of swimming pools it is difficult to say. Certainly the percentage of severe ear infections has recently been greater, and in consequence the mortality of the "acute ear" higher. Any little contribution to our knowledge of the subject must therefore be of value, and must assist us to mitigate the fear which the word "mastoid" at present produces in the mind of the average layman.

CAUSES AND CLINICAL COURSE OF ACUTE MIDDLE-EAR SUPPURATION

Acute suppurative otitis is a disease of extreme frequency, especially in childhood. In the majority of cases the ear trouble is preceded by an ordinary head cold or tonsillitis, the infection passing from the nasopharynx to the tympanum by way of the Eustachian tube. It is a common complication of measles, and is also a common accompaniment of scarlet fever. The most frequent cause is a cold, the result of chill, and the organism most often found is the streptococcus. Infection by way of the external auditory meatus is relatively rare, and is usually the result of an accident, such as the penetration of a foreign body or a rupture of the membrane from an explosion or blow on the ear.

The following brief account of a typical case of acute otitis will illustrate the symptomatology.

A boy, aged 9, who had had a cold for a week, complained of sudden pain in one ear. This passed off in about ten minutes but returned a few hours later, and continued to return at brief intervals. When I saw him the tympanic membrane was of deep red colour and slightly bulging near the centre. On incising the membrane there was a gush of thin sero-pus, and pain was at once relieved. The discharge was profuse for four days, and then gradually diminished. As usually happens, the deafness was the last symptom to disappear.

Pain in the ear is the leading symptom in most cases of acute otitis, and may, indeed, be the only symptom. In such circumstances it is well to remember the common causes of earache. A boil or furuncle in the meatus may cause earache, deafness, purulent discharge, and rise of temperature and pulse rate, and, if the meatal wall is swollen, diagnosis may only be possible after repeated observation. Other causes of earache are an unerupted wisdom tooth, a carious molar, arthritis of the temporomaxillary joint, tonsillitis, nasal sinus infection, and herpes auris. The mere recital of such causes illustrates the importance of complete examination in every case.

ATYPICAL VARIETIES OF ACUTE OTITIS MEDIA

A. Latent Otitis in Infants—In small children there may be no symptoms pointing to an affection of the ear

* A B.M.A. Lecture delivered at Kirkcaldy to the Fife Branch of the British Medical Association on October 19th, 1933.

the so-called "latent otitis." The child is obviously ill, the temperature may rise to 100° or more, there may be vomiting or diarrhoea, and in some cases photophobia and head retraction may cause a suspicion of meningitis.

An infant, aged 9 months, was admitted to a medical ward of the Royal Hospital for Sick Children with indefinite symptoms of this nature. The tympanic membrane was not inflamed, but on both sides the light reflex was absent—an important sign. On morning a little mucus escaped. The temperature at once fell to normal and the general condition speedily improved.

Cases of this nature, not at all uncommon, demonstrate the need for otoscopic examination of every sick child.

B. Septicemic Otitis.—Sometimes, both in child and in adult, although the otitis is apparent, the general toxic symptoms are so severe as to appear out of all proportion to the local ear condition. The infecting organism is the hemolytic streptococcus, and the patient presents all the symptoms of acute septicaemia.

An officer, aged 45, returning home tired after a day's shooting, was suddenly seized with severe headache, shivering, and nausea. His temperature rose to 104° and he appeared profoundly ill. When seen a few hours after the onset of the symptoms the tympanic membrane was convex, devoid of the usual landmarks, and of deep purple hue. On incision there was a gush of seropurulent fluid. Next day he was still very ill and complained of pain in the knee and hip-joints. There was no sign of mastoid involvement or of any intracranial infection. After incision of the tympanic membrane the ear continued to discharge freely for ten days, during which period the temperature gradually fell and the general condition improved.

Early paracentesis is of supreme importance in cases of this nature and will often avert mastoiditis and other serious complications.

OTOSCOPIC APPEARANCES IN ACUTE SUPPURATIVE OTITIS

From what has already been said it will be obvious that the diagnosis of otitis is based upon careful scrutiny of the tympanic membrane. Every practitioner ought to carry an electric otoscope in his bag and use it very frequently. It is a simple and inexpensive instrument, gives a magnified image of the drumhead, and has a single pneumatic attachment, which is often most useful. The early stages of acute otitis cause redness of the upper and posterior part of the tympanic membrane and of the handle of the malleus, and dilated capillaries are often seen, radiating from the centre. Gradually this red and bulging area extends until the entire membrane is involved. In severe and septicemic cases this may only take a few hours. Unless relieved by paracentesis the drum will rupture, and just before this occurs a minute yellow-purulent spot may be visible. While this is the usual course of events, there are cases of milder severity in which the membrane may appear wrinkled, devoid of normal lines, and covered with minute shining specks as though dusted with powdered glass. Sometimes, instead of the normal redness, the membrane shows a creamy-yellow colour. In my experience this is commoner in young children. In inflamed cases one or two purple lobes or bullae are visible, not only on the surface at the middle ear, but also on the adjacent mastoid wall.

APPEARANCE OF THE CONCHA

It is well to remember that the normal tympanic membrane in the infant differs from that of the adult. It is fully horizontal in position, and the plane therefore appears to be almost continuous with that of the superior wall of the meatus. It is oval rather than circular, and the handle of the malleus is not clearly visible. Anterior

and posterior lobes extend across the meatus close to the short process of the malleus, appearing like the wings of a bird in flight, while the cone of light, or light reflex, extends downwards to the lower margin. The appearance of the cone of light is one of the earliest and most reliable signs of otitis media in the child. As acute otitis develops the membrane becomes red, and a bulging area appears in the upper and posterior part, diminishing gradually in front, an appearance rather suggestive of an apertroph or inverted comma. The inflammation continues, the field of the apertroph extends around the drum rim until it meets the handle, and the entire drum membrane then appears to bulge, a slight dimple remaining in the centre where it is anchored to the malleus.

HOW AND WHEN TO INCISE THE TYMPANIC MEMBRANE

An abscess of the tympanum must naturally be treated like any other abscess—by incision and drainage. In mild cases, and even in the very early stage of more acute cases, pain may be relieved by the use of glycerine containing 5 per cent. pure phenol. The addition of cocaine is of no advantage, as the phenol is itself a good local anaesthetic. The drops must be carefully compounded, otherwise they may burn the meatus. Local application of dry heat is comforting to the patient, and may be continued even after incision of the membrane. A small electric heating apparatus has been devised for this purpose.

As soon as the presence of pus is suspected the drum should be incised. The small operation of paracentesis tympani can scarcely be too frequently performed. It is the simple, safe, and successful method of dealing with acute suppurative otitis. The best form of paracentesis knife is not the spear-pointed type, which makes a mere puncture, but is shaped like a dinner knife and sharpened on both edges. With this instrument a definite incision is made in the posterior part of the membrane, extending into the adjacent upper wall of the meatus. As the inflamed drum is acutely sensitive, a short general anaesthesia with ethyl chloride is essential. A gauze wick soaked in rectified spirit is introduced as a dressing for twenty-four hours. After that time only a pledget of wool is placed loosely in the ear, and renewed at frequent intervals.

ACUTE MASTOIDITIS: SYMPTOMS AND DIAGNOSIS

While the great majority of cases of acute suppurative otitis run an uncomplicated course a careful watch must always be kept for the appearance of mastoiditis. The following is a very useful history of mastoiditis in a child.

A girl, aged 3 years, entered from parents the night nurse. Next day the ear discharged profusely and the pain abated. A week later the mother noticed a swelling behind the ear, and brought the child to hospital.

A case like this presents little difficulty of diagnosis. The antrum in the young child is so near the surface that pus readily escapes and forms a superficial abscess. This has been found in one-third of our cases at the Royal Hospital for Sick Children. In older children, and in adults, mastoiditis causes pus behind the ear, with marked tenderness and sometimes redness. The temperature is a very uncertain guide, and may not rise above the normal level. As mastoiditis develops the ear drum bulges, most of the discharge is in the concha, the ear may continue, and may be very painful. The two conditions must frequently be mistaken for one another, as a bulge on the mastoid skin, and discharge of the tympanic fluid, which has upon the drum, may suggest a tympanic abscess. A tympanic abscess may cause mastoiditis, and mastoiditis

with forward development of the auricle. The hearing is good and the tympanic membrane normal in appearance, but when the meatus is so swollen that the membrane is not visible, correct diagnosis may be very difficult. Suppuration of a lymphatic gland behind the ear may accompany impetigo of the scalp and may simulate a mastoid abscess, but otoscopic examination will reveal a normal ear.

An Uncertain Sign

The sign upon which a diagnosis of mastoiditis is usually based is the presence of tenderness over the mastoid area. Tenderness on pressure or on percussion is strong evidence of mastoiditis, but its absence does not signify that mastoiditis may be excluded. Indeed, in many cases of widespread mastoid infection tenderness is *completely absent*: This is noteworthy in cases of septic thrombosis of the lateral sinus. Of 150 cases of mastoiditis treated at the Royal Hospital for Sick Children, four cases were complicated by lateral sinus thrombosis, and in each of those four cases mastoid tenderness was absent. Diagnosis was based upon other signs, such as the characteristic remittent temperature. Moreover, mastoid tenderness is found in the early stage of many cases of simple otitis, and passes off within a day or two.

For example, a nurse, aged 24, suffered from sore throat for a week, then earache for two days, then aural discharge. When seen at this stage she had a temperature of 101°, profuse discharge of thin pus, and tenderness of the entire mastoid process. Two days later the tenderness was gone and the discharge was less. Within ten days the ear had returned to a normal condition.

Early mastoid tenderness, therefore, is of less diagnostic importance than tenderness which appears a week or more after the onset of the otitis.

Unusual Types

The pus from a mastoid abscess may track in various directions. For example, when the cells in the root of the zygoma are infected pus may collect beneath the temporal muscle and give rise to swelling and tenderness above and in front of the ear—the so-called zygomatic mastoiditis. Again, the pus may escape through the inner aspect of the mastoid process and find its way below the sterno-mastoid muscle into the tissues of the neck, causing a tender swelling behind the angle of the jaw and below the mastoid tip; this is known by the un-descriptive title of "Bezold's mastoiditis."

EARLY SIGNS OF INTRACRANIAL INFECTION

The intracranial complications of suppurative otitis media are fortunately rare. The symptoms are often so indefinite that the real cause is apt to be overlooked.

A little girl of 9 years was suddenly seized with headache, vomiting, and fever. The case was treated as influenza for a week and the vomiting abated, but the headache continued, and just before admission to hospital there was a rigor and the temperature rose to 103°. There was no discharge from the ear and no mastoid tenderness. On inquiry, however, it was ascertained that there had been a slight discharge from the right ear just before the illness, and on inspection a small perforation of the membrane was found. Thrombosis of the lateral sinus was suspected, and this was verified by operation. A thick mass of pus in the antrum and cells and a gangrenous and collapsed sinus wall bathed in thin blood-stained fluid.

This illustrates the difficulty of diagnosis in septic cases thrombosis. It may readily be mistaken for influenza, endocarditis, typhoid fever, and other febrile diseases.

To quote another recent case:

A youth of 17, who walked to hospital, complained of double vision, swelling behind the left ear, and profuse discharge from the ear, which had lasted for a week. There had been practically no pain, but a paralysis of the external rectus muscle (sixth cranial nerve), the so-called Gradenigo sign, pointed to an infection of the apex of the petrous part of a temporal bone containing numerous air cells.

This type of mastoiditis, known as apicitis or petrositis, has recently attracted the attention of otologists. It is a serious condition, and may end in meningitis.

As a final instance of an "acute ear" with complications I will quote the following case:

I had operated on a boy, aged 14 years, for tuberculous otitis during the first year of his life. A radical mastoid operation had been performed, and as sometimes happens the cavity had filled in course of time with that flaky, shining material known as cholesteatoma. This had produced a fistula of the external semicircular canal, and when the boy came to hospital for the second time he was suffering from giddiness, vomiting, and nystagmus directed to the opposite side. There was no fever and no rise of pulse rate. The mastoid region was tender, and pressure behind the ear immediately increased the vertigo. At operation the wound was reopened, the cholesteatoma removed, and the fistula demonstrated. All the symptoms disappeared and the boy rapidly recovered.

WHEN TO OPERATE

The treatment of mastoiditis is essentially surgical, but this does not mean that every suspected case should undergo operation forthwith. As already mentioned, mastoid tenderness is present in many cases of acute otitis, and although this may indicate a mild degree of mastoiditis, it may pass off within a few days under conservative treatment. Cases of this nature one must watch very carefully, noting any increase of tenderness or appearance of oedema, or swelling of the upper and posterior wall of meatus, and observing the general condition of the patient—also his temperature and pulse rate—so that operation may not be unduly delayed. Mastoiditis is not in itself a fatal disease. By operating too early, before allowing time for the patient's resistance to take a part in combating the infection, we may actually precipitate a spread of infection to the blood stream (septicæmia) or to the meninges (meningitis). Too long delay is of course equally unwise. The decision to operate must necessarily vary according to the experience of the operator, and the essential fact which the practitioner should grasp is that every doubtful case should at once be brought under the skilled supervision of an otologist. As that course is not always possible, it is sound practice to operate when in doubt.

Having decided that operation is necessary, we must see to it that a thorough operation is performed. Although some cases of mastoiditis with a superficial abscess recover after simple incision, this is not good surgery, and one need only glance at a section through a pneumatic type of temporal bone to realize that all the suppurating air cells should be systematically opened and drained. When Neumann said that "the simple mastoid operation should be as radical as possible, and the radical operation as simple as possible," he meant that in acute mastoiditis a wide and free drainage was essential (having, of course, an intact tympanum) and that in chronic suppurative otitis the structures concerned in hearing should be preserved as far as possible.

[Mr. Guthrie then showed lantern slides illustrating the surgical anatomy of the temporal bone in the adult and in the child, the technique of otoscopy, the clinical features of mastoiditis, and the steps of the Schwartz operation.]

OVULATION AND MENSTRUATION

BY

WILFRED SHAW, M.D., F.R.C.S., F.R.C.O.G.

ASSISTANT PHYSICIAN, ST. MARK'S HOSPITAL, LONDON, E.C.1.

Relatively few contributions have been made in recent years to the study of the time relations between ovulation and menstruation in the human female. The work of Johann Meyer,¹ Robert Meyer and Ruge,² Schröder,³ and Kovak⁴ indicated that ovulation was restricted to the intermenstrual phase. In 1925 I⁵ published some observations of my own which furnished additional evidence in support of this view. Since then publications have attacked the problem indirectly; some have supported the view expressed above, others have opposed it. As a result much confusion exists at the present time, and I have thought that an examination of the material collected since 1925 might help to clear up some of the difficulties which have arisen. There has perhaps been a tendency in recent years to attach too much importance to formulating a parallel between the sex cycles of man and the lower animals. When the results of gynaecologists have not agreed with the interpretations of animal workers, experimentalists have sometimes been apt to dismiss the gynaecological point of view with scant respect. An attempt will be made below to restrict the observations and interpretations to the human material, and not to be unduly influenced by the results of animal work. Homologies and such like excursions can conveniently be left to the biologists.

The normal menstrual cycle is regarded as one of twenty-eight days, the first day of the period of bleeding is taken as the first day of the cycle. The phases of the menstrual cycle are referred to in terms of the particular day after the first day of the last period.

Schröder has pointed out that the following methods are available to investigate the time relations:

1. The inspection of ovaries during abdominal operation. Papanicolaou originally employed this method and gave a wide variation between the ninth and fourteenth day of the cycle. The method is not capable of great precision, and having examined ovaries carefully for ten years I am still unable to distinguish between ruptured follicles and recent ruptured follicles by naked-eye examination alone.

2. The determination of the onset of *Mittelschmerz*. This method is unreliable, and personally I do not believe that *Mittelschmerz* is caused in all cases by the rupture of a follicle.

3. One of the most trustworthy methods is the determination by histological means of a recently ruptured follicle in a accurately dated material. Post-mortem material is of little if any value, partly because it is rarely accurately dated, and partly because its histology is often doubtful.

4. This method is indirect and is based upon the assumption that the secretory phase of the endometrium develops progressively after ovulation. The histological appearances of the endometrium during the secretory phase are specific. If they can be demonstrated in the endometrium it is assumed that ovulation has taken place previously.

5. Secondary follicles can be obtained from the decapsulated ovaries of the cat during oestrus, and as the first of the oestrous stages of the menstrual cycle.

6. The most accurate of all methods is the determination of the exact date of ovulation by the use of the basal body temperature. After a period of several days of low temperature, which is followed by a rise, it is assumed that ovulation has taken place at the time of the rise.

Schröder, who has a long list of accurately dated material, then assumes that ovulation takes place at the time of ovulation, and that during the menstrual cycle of twenty-eight days ovulation occurs at the end of the cycle. At the other extreme is the view of Kovak, who has pointed out that ovulation is a constant phenomenon, and that it is

IMPORTANCE OF ACCURATELY DATED MATERIAL

Schröder has pointed out that many of the discrepancies in the published work on the determination of the time of ovulation depend upon the use of material which is not accurately dated. It should be remembered that Kovak and Papanicolaou have shown that a menstrual cycle of twenty-eight days is present only in 60 per cent. of women. Similar figures are given by Hagedorn⁶ (55 per cent.) and Weinstein⁷ (58 per cent.). It is clear, therefore, that a result obtained in comparing the time of ovulation in a twenty-eight-day cycle with the results found in a cycle of twenty-one days. In a paper on artificial induction of abortion, published in 1929,⁸ I showed that when the cycle is a reduced ovulation occurs much earlier than the accepted fourteenth day. Similar observations have been made by Quinn, who demonstrated that the constant factor in all menstrual cycles is the time between ovulation and the succeeding period. In the present contribution I have restricted the material to cases with twenty-eight day cycles.

MATERIAL IN PRESENT INVESTIGATION

The specimens have been obtained by operation for various gynaecological conditions as tabulated in my hyperplasia. In all cases data have been available as to (a) the first day of the last menstrual period, (b) the date of the operation, and (c) the normal cycle for the patient concerned. I have taken great pains to collect accurate data, and have rejected all cases in which the details were not precise. It is frequently found that patients are unable to remember exactly when their last period began. It is also remarkable how many women have cycles departing by a day or two from a strict twenty-eight day cycle, when it is stated that their cycle is regular for twenty-eight days, until they are closely questioned. I have checked thirty-six cases in which the ovaries have been examined from patients with accurate menstrual histories. In addition I have checked forty-nine cases in which the uterus alone was removed. In twenty-one of the patients in whom the ovaries were examined the uterus was also removed, but for other reasons. The material therefore consists of thirty-six cases in which the cyclical changes in the ovaries could be examined, and seventy in which the cyclical variations of the endometrium could be studied.

OVARIAN GROUP

Thirty-six cases belong to this group. The specimens are dated as follows:

Date (or Date of Ovarian Operation)	No. of Cases	Remarks
1	1	Intercourse on 1st day.
2	1	"
3	1	"
4	1	"
5	1	"
6	1	"
7	1	"
8	1	"
9	1	"
10	1	"
11	1	"
12	1	"
13	1	"
14	1	"
15	1	"
16	1	"
17	1	"
18	1	"
19	1	"
20	1	"
21	1	"
22	1	"
23	1	"
24	1	"
25	1	"
26	1	"
27	1	"
28	1	"
29	1	"
30	1	"
31	1	"
32	1	"
33	1	"
34	1	"
35	1	"
36	1	"

TIME OF OVULATION

I will describe first the ovarian material. There were thirty-six cases in all. Six specimens of a recently ruptured follicle were secured; the classical signs of a recent rupture were found in all; there was extreme haemorrhage in the theca interna layer, and the granulosa cells were both proliferating and undergoing hypertrophy. The corpus luteum convolutions had not as yet formed. Four specimens were obtained on the thirteenth day and two on the fifteenth day of the cycle. These six specimens of recently ruptured follicle support the view that ovulation had taken place some time about the fourteenth day of the menstrual cycle. It is impossible to state how rapidly the ruptured follicle proliferates, and consequently one could not deduce exactly when ovulation had taken place. There are some grounds for believing that growth is extremely rapid, for the proliferation of a young corpus luteum about the seventeenth day of the cycle can be traced more accurately when it is found that after the twentieth day of the cycle the corpus luteum is fully developed. If, therefore, it takes only a few days for the corpus luteum to attain full maturity, it is reasonable to assume that the growth of a recently ruptured follicle is very rapid. For these reasons I believe that the six specimens of recently ruptured follicle were obtained soon after ovulation, and the demonstration of these offers direct evidence that ovulation is restricted to about the fourteenth day of the cycle.

The series examined does much more than this. The other cases, though not affording direct proof, indirectly favour this view. For example, in all specimens after the thirteenth day, thirty cases in all, there was none in which the ovaries did not contain either a recently ruptured follicle, a proliferating corpus luteum, or a mature corpus luteum. The later in the cycle that the specimen was removed the more mature was the corpus luteum. Proliferating corpora lutea were found, particularly about the seventeenth day. Lastly, in specimens observed in the early part of the cycle no recently ruptured follicles were found, and the corpora lutea detected in the ovaries were retrogressing. I wish to emphasize that the series is important, not merely because of the six specimens of recently ruptured follicle, but because the others circumstantially endorse the opinion that ovulation is restricted to about the fourteenth day.

IS TIME OF OVULATION CONSTANT?

The series of specimens show that ovulation is restricted to about the fourteenth day of the menstrual cycle. On the other hand the samples of recently ruptured follicle indicate quite clearly that there is a little variation in the ovulation time. For example, one of the two recently ruptured follicles removed on the fifteenth day was younger than any of those of the thirteenth day. Similarly, in the specimens of the thirteenth day there were different degrees of development. This implies that ovulation cannot be regarded as occurring always at a fixed time with all regularly menstruating women, and that there is a variation of at least two days in the ovulation time. Personally, I have no objection to postulating a parallel to the variations which Hartmann¹ has found in the ovulation times of his colony of macaque monkeys. It is probable, however, that a departure of more than two days from the fourteenth day of the cycle is hardly ever, if ever, seen in the human subject. A further point should be borne in mind. However accurate the history, there is always a possibility of a little margin of error in the determination of the ovulation time. For example, a patient may start menstruating late one evening and the operation, which leads to the demonstration of a recently ruptured follicle, be performed early one morning. In such a case there is a margin of error of twelve hours in timing the specimen, and with two extreme cases of this kind a variation of twenty-four hours can be expected.

EVIDENCE AGAINST THE ACCEPTED TEACHING

Well-authenticated cases are on record in which no corpus luteum has been found post mortem in the ovaries of women who have been menstruating regularly. Examples are given by Teacher² and by Corner.³ It is not uncommon for patients who are desperately ill to cease menstruating shortly before death, and amenorrhoea of this kind is not infrequent. It is probably very exceptional to find no corpora lutea in the ovaries of women who have menstruated regularly, and such cases should be looked upon as pathological. The series which I have just described illustrates that regular ovulation can be demonstrated in the ovaries of women with normal menstrual cycles.

Embryologists maintain that ovulation can be "provoked" by coitus, for it is sometimes difficult to admit that an early human ovum can attain its size in the short time available if ovulation is limited to about the fourteenth day of the cycle. Similarly, cases are recorded in the German literature in which pregnancy has followed a single coitus in the post-menstrual phase. My own view of these cases is that they can be explained in ways other than by assuming an alteration in the time of ovulation. If ovulation can be "provoked" by coitus one would have expected to find evidence of aberrant ovulation in such a series of specimens as I have described above. It is clearly impossible to deny that ovulation can be "provoked" by coitus: all that can be said is that, if it does occur, it is very exceptional.

Animal workers have sometimes been inclined to discredit the observations of gynaecologists on the time relations between ovulation and menstruation, in view of Corner's work on macaque monkeys. Corner has observed that macaque monkeys may develop cyclical uterine haemorrhage without ovulating, and it has even been suggested that menstruation in women may be comparable to this form of uterine bleeding. I shall show later, when dealing with specimens of the endometrium, that menstruation consists essentially of the degeneration and disintegration of a premenstrual endometrium. I have always admitted the possibility of uterine bleeding occurring independently of ovulation, but such cases should be looked upon as pathological. Cases of metropathia haemorrhagica afford the best example of this type of uterine bleeding. As I have already pointed out, I have always found evidence in my material that cyclical uterine bleeding in healthy women is accompanied by ovulation, and in consequence believe that ovulation should be regarded as forming an essential part of the sex cycle of women.

THE CYCLICAL CHANGES IN THE ENDOMETRIUM

Seventy specimens of the endometrium were examined. The material consisted of sections through the thickness of the uterus, and included both endometrium and myometrium. The seventy specimens were accurately dated as follows:

Day	No. of Specimens	Day	No. of Specimens
1	4	15	1
2	7	16	1
3	7	17	7
4	1	18	2
5	2	19	4
6	1	20	2
7	2	21	3
10	4	22	1
11	1	23	1
12	1	24	3
13	2	25	3

SUMMARY

1. I have attempted to picture the relation between ovulation and menstruation in women who menstruate regularly with a normal rhythm. I have shown in other publications that irregular bleeding is characterized by departures from the normal relations.

2. The time relations of ovulation and menstruation have been reinvestigated with the use of the method of identifying recently ruptured follicles in the ovaries of women who give reliable histories.

3. It has been shown that ovulation is restricted to about the fourteenth day of the cycle.

4. There is some variation in the time of ovulation, but the variation is probably not more than two days from the fourteenth day.

5. A study of the condition of corpora lutea at other stages of the cycle confirms this view.

6. Indirect proof as to the time of ovulation can also be obtained by an examination of specimens of the endometrium of the uterus. It has been shown that the secretory phase of the endometrium develops after the fourteenth day of the cycle. The specific features of the secretory phase are never seen before the fourteenth day.

7. Seventeen specimens of the menstruating endometrium have been examined. In all cases there was evidence of previous premenstrual hypertrophy. In the material examined no parallel was found to the anovular cyclical bleeding of the macaque monkey.

REFERENCES

- ¹ Meyer, Robert. *Arch. f. Gynäk.*, 1911, xciii, 382.
- ² Meyer, Robert, and Ruge. *Zentralbl. f. Gynäk.*, 1913, xxxvii, 50.
- ³ Schröder. *Arch. f. Gynäk.*, 1914, ci, 17.
- ⁴ Novak. *Journ. Amer. Med. Assoc.*, 1916, lxvii, 1285.
- ⁵ Allen, Pratt, Newell, and Bland. *Ibid.*, 1930, xcii, 1080.
- ⁶ Krieger and Fosten. Quoted by Bernstein, *Med. Klinik*, 1933, xxvii, 889.
- ⁷ Hartmann: Carnegie Publications, Washington, 1932, No. 433, p. 41.
- ⁸ Teicher, J. H. *British Medical Journal*, 1930, ii, 896.
- ⁹ Corser. *Journ. Amer. Med. Assoc.*, 1927, lxxix, 1838.
- ¹⁰ Major, C., and Zurenbann, A. J.: *Amer. Journ. Surg.*, 1932, xlvii, 332.
- ¹¹ Novak. *British Medical Journal*, 1933, ii, 553.
- ¹² Shaw, Wilfred. *Journ. Physiol.*, 1925, lx, No. 3.
- ¹³ Idem. *Journ. Obstet. and Gynaecol. British Empire*, 1929, xxxvi, No. 1.

A CONTRIBUTION TO THE GENETIC STUDY
OF MENTAL DEFICIENCY

BY

L. S. PENROSE, M.D.

RESEARCH MEDICAL OFFICER, ROYAL EASTERN COUNTIES'
INSTITUTION, COLCHESTER

The following family history is unusual from several points of view. It records the results of the union of a brother and sister. The brother is insane and of low mentality, and the sister is certified feeble-minded. Three children were born to the sister, and the brother was almost certainly their father. The mental condition of these children is a matter of great interest, both from the genetic and from the sociological points of view. Details of the members of this incestuous family group are now given.

GENERAL FAMILY HISTORY

The brother and sister were fifth born and eighth born, respectively, in a family of eight children. Their parents were ordinary, working-class people, and both lived to be over 80. One of the mother's sisters is said to have been subject to epilepsy, and a great-great-nephew, who is also epileptic, is certified feeble-minded. Apart from these instances we have little evidence in the family of what could be termed neuropathic traits, although a sister of the incestuous couple the seventh born in the family, is reported as mental dull. This sister married a first cousin on her father and on the mother's side, and has eleven children, all of whom are said to be capable and intelligent.

THE BROTHER

He is now aged 54, and in a mental hospital suffering from general paralysis. He has been given a course of malaria treatment, and, while the physical condition remains fairly good, he shows a severe dementia. No definite measure of his mental capacity has been obtained, but his general intelligence is reported to have appeared subnormal before the onset of dementia. In view of the average level of intelligence among his sisters, it is improbable that his mentality was high. Unfortunately it has been impossible to trace his record at the Roman Catholic school where he was educated.

After leaving school he was employed as a stable boy, and he later drove a cab. Then he joined the Army, from which he deserted in South Africa. He worked his passage to England, and shortly afterwards began to live with the sister who was eight years his junior. The man earned his living as a general labourer at the gasworks, and the woman did some occasional charring. The couple remained together as man and wife for fifteen years, and, according to contemporary accounts, they were on very affectionate terms. They seemed to be happy and were fond of their three children, who were born during this period. The first, a male child, died at the age of 2½ years; there is no evidence that this child was abnormal. A year or two after the death of this child another boy was born, who is still alive. Some ten years after this, relatives of the couple discovered that the woman was again pregnant. An anonymous letter was sent to the police suggesting that the state of affairs required investigation. Two officers in plain clothes called at the flat where the couple and their son were living, only to find that they had absconded, leaving their belongings behind. Two years later they were located, living under an assumed name, in a neighbouring town; another boy had, in the meantime, been born. The man and woman were arrested and, at the Petty Sessions, were committed for trial to the Assizes. They were not legally represented. During the intervening period the woman was examined by the medical authorities, and it was decided that she was mentally defective. The man was apparently not examined from this point of view. He was convicted under the Punishment of Incest Act, and sentenced to sixteen months' imprisonment. A year after his release from prison he was certified insane.

THE SISTER

She is aged 46 and certified mentally defective. She is thin, and appears to have been poorly nourished; she is quiet and reserved in her behaviour, and speaks clearly and connectedly. The Wassermann reaction is negative. She is occasionally liable to fits of temper, but is a diligent worker in the laundry of the institution where she is now cared for.

Although she had been educated, like her brother, at a Roman Catholic school, on admission to this institution (by an order made in court) she could not tell the number of feet in a yard, and stated that Scotland was the capital of England. She has been tested since, by standardized tests, with the following results: Binet tests (Stanford revision), 8 years 10 months; Porteus maze test (Vineland revision), 8 years; Healy pictorial completion test, No. 1, 7 years. Her mental ratio, or intelligence quotient, is therefore roughly from 50 to 60 per cent. (according to whether we take 16 years or 14 years to be the maximum divi-or).

SURVIVING CHILDREN

There are two surviving children, both male, aged 17 and 7 respectively. The elder is physically rather small, but healthy and active. He is quick-witted, and appears very sensible in conversation; his appearance is not very

The continuous introduction of saline, or saline and glucose, by the intravenous route is now possible. The disappointing report that the saline has been returned when it is most required—a report only too frequent when proctoclysis is employed—does not enter the picture here. A slow and continuous intravenous flow approaches the ideal; for we know exactly how much fluid the patient is receiving. The fluid can be given continuously over a period of three to five days, or even longer, and the rate of flow and the amount of fluid to be given can be regulated with mathematical precision. There can be no doubt that the continuous introduction of fluids intravenously promises to become a form of therapeutics capable of tremendous application.

Like those other life-saving procedures—Fowler's position and proctoclysis—the continuous administration of saline intravenously hails from America. In 1924 R. Matas¹ advocated a continuous intravenous drip giving 5 per cent. glucose in distilled water into a vein over a period of several days. In 1930 G. A. Hendon² published an excellent communication setting forth the advantages of the method. Later, the writings of J. S. Horsley,³ W. E. Gallie and R. I. Harris,⁴ and F. B. Ramsey⁵ added to our knowledge of the subject.

THE TECHNIQUE DESCRIBED

We will assume that the reader is familiar with the process of tying a cannula into the vein. Emphasis will be placed upon those points which ensure success in continuous administration of intravenous fluid.

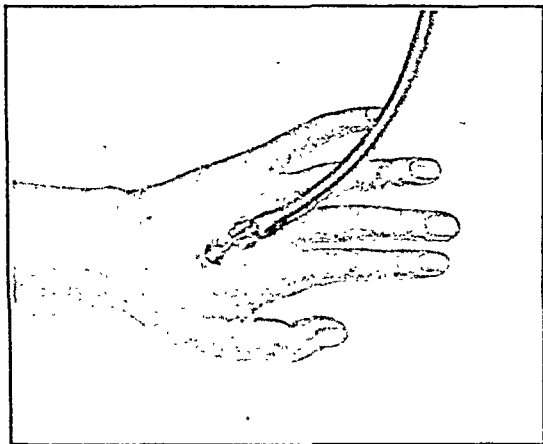


FIG. 1.—A vein on the back of the hand, preferably the left, can be used. The cannula may be fixed in position by adhesive in this situation. A Carr's splint is useful to keep the hand at rest.

Choice of the Vein.—In general it is best not to use a large vein; one just a little larger than the cannula is ideal. The veins about the elbow are too large, and the impracticability of keeping the elbow extended and at rest for days rules out this favourable site for intravenous injection. Gallie and Harris prefer to use a vein on the back of the hand (Fig. 1). For obvious reasons it is less irksome for the patient if the cannula is tied into a vein of the lower extremity. A possible disadvantage of employing veins of the lower extremity is that after fluids have been injected into them they are prone to thrombose. However, experience shows that when eucemic solutions are employed—and particularly when the concentration is not more than 5 per cent.—the fear of producing thrombosis is largely theoretical. For extremely ill patients who are restless, or who may become so, we prefer to tie the cannula into the saphena or one of its branches, a handbreadth below the knee, or, better still, when it is accessible, the vein just in front

of the internal malleolus. After infiltration with local anaesthesia the vein is conveniently exposed by a transverse incision.

The Cannula.—It is advisable, but not absolutely essential, to have a special gold-plated cannula, of which there are several types available (Fig. 2). The cannula and the wound should be moist with citrate solution at the time of the introduction.

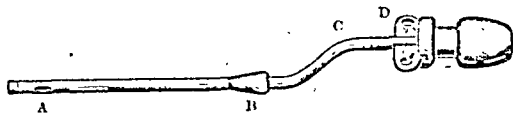


FIG. 2.—A cannula for venoclysis. It is gold-plated to prevent corrosion. There are two lateral holes (A) in addition to the terminal opening. The collar (B) allows the straight portion of the cannula to be tied into the vein snugly. The sloping neck (C) can be bent to any angle suitable for varying depths of subcutaneous fat in individual cases. The perforations in the wings (D) permit anchoring the apparatus to the skin by means of sutures.

Keeping the Limb at Rest.—If a vein on the dorsum of the hand is used a light anterior splint is employed to immobilize the hand and forearm. When the lower extremity is selected a back splint with a foot-piece usually answers the purpose. In a restless patient a Thomas knee splint (Fig. 3) is a very good method of ensuring that the cannula does not become displaced.

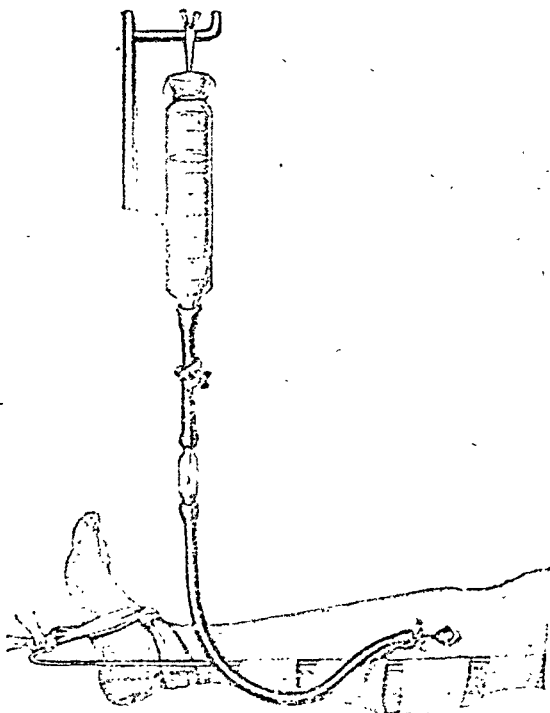


FIG. 3.—The apparatus in use. In very ill patients who are restless, or may become so, this method of fixing the limb minimizes displacement of the cannula.

Bandages.—It is obvious that even a moderately tight bandage proximal to the cannula may obstruct the vein. The nurse should be warned of this possibility when adjusting the splint. If a Thomas splint is used bandages around the limb are unnecessary, which is an advantage.

Avoiding "Reactions."—The whole apparatus can be sterilized by boiling. Especially when it is new, the

* The apparatus is made by the Gampo-Urinary Manufacturing Company.

have been overlooked if the attention of the radiologist had not been focused for some time on this disease. In the absence of the skull radiopacities, the age of the patient might have led one to omit the x-ray examination of the limbs. It would seem that the investigation for the cause of epilepsy or allied mental and psychical conditions cannot be regarded as complete until a thorough search has been made in the soft tissues for the presence of the calcified cysticercus. It is imperative for the radiologist to be acquainted with the possible appearances of the calcified or early calcifying cysticercus. The figure [reduced to 2/5 linear] shows the various shapes seen in the radiographs of twelve cases in this hospital. Their actual size can be calculated from the millimetre scale reproduced at the right-hand lower corner.

CALCIFICATION OF THE CYSTICERCUS

Calcification of the cysticercus in the brain is rare in our series of cases, and was found in only one other out of twelve. At present radiology can play a part in the diagnosis only when calcium is deposited in the dead parasite—that is, relatively late in the disease. It is to be noted that the presence of calcified cysticerci by no means excludes the presence of living parasites in the same patient. The amount of calcium deposit and the time taken for this depend on various factors not yet fully understood. The radiopacities in the tissues in a case of cysticercosis represent: the calcifying or calcified scolex, the true bladder in which it developed, the remains of the fluid contents of the true bladder, the outer cyst wall provided by the tissues of the host, and the remains of the fluid contents of this outer cyst. The shape depends on the pressure by neighbouring structures.

The scolex, as the solid portion of the bladder-worm, may be expected to receive the heaviest deposit, and this fact is well illustrated in Shape 4 ("oval with spot"), which in the radiograph exactly resembles the excised cysticercus with its glistening "milk-spot" on the bladder wall. Calcification before calcification will explain the appearance of the lines indicated in the various diagrams. Many of the calcified cysticerci show a very definite halo, which is accepted as indicating calcification in the outer cyst wall or in its outside layers.

The skull radiograph is often asked for in a case of epilepsy, but if there is the least reason to suspect cysticercosis it would be much better to devote the radiographic examination to the soft tissues. The routine in such a case at present is: lateral view of the skull, roof of skull, upper arms, forearms, thighs, and legs.

DIAGNOSIS

The figure showing the various shapes indicates what the radiologist has to search for in the tissues. The names

are given for easy reference in the viewing of radiographs. There may be countless numbers present, making diagnosis simple, or the search may have to be a minute one for the identification of a single cysticercus in a very early stage of calcification. When this is found, and corresponds to any of the very definite shapes indicated, the diagnosis can be made. Solitary doubtful calcifications can be localized, excised, and, after solution of the calcium salts with weak hydrochloric acid, a search can be made for the

hooklets of the scolex. Radiological examination at six-monthly intervals may be indicated in certain cases.

The advantages of diagnosing the presence of the condition are:

1. For the diagnosis of the actual complaint.
2. For assessing the responsibility of service or employment for the presence of the disease—for example, epilepsy.
3. For assistance in the diagnosis of generalized or localized brain lesions.
4. To prevent operative treatment where the end-result is unlikely to be successful—for example, very heavy infestation.
5. To remove the hereditary stigma of "epilepsy."

I wish to acknowledge the help of Colonel W. P. MacArthur, who is responsible for this investigation; the co-operation of Major H. B. F. Dixon, and the assistance of Captain F. P. M. Anderson in obtaining the clinical notes of the particular case described.

ARTIFICIAL PNEUMOTHORAX IN THREE CASES OF PULMONARY TUBERCULOSIS IN CHILDREN

BY

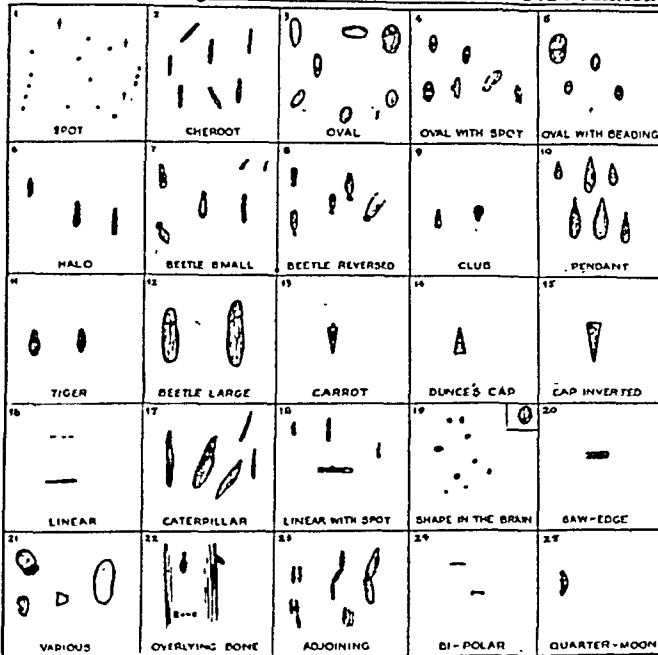
WILLIAM STOBIE, M.D.Ed., M.R.C.P.

HONORARY PHYSICIAN, OSTER PAVILION FOR TUBERCULOSIS,
RADCLIFFE INFIRMARY, OXFORD

Pulmonary tuberculosis of the adult type with a positive sputum in children is generally recognized to be uncommon; indeed, before the age of 10 it has been classed as "a medical curiosity."¹ While in the strictest sense this is hardly correct, the disease is unquestionably rare in the first decade of life. The outlook for these patients is grave. One authority² on diseases of children says he has "never seen a case recover in which a definite diagnosis of pulmonary tuberculosis could be made." This experience is particularly unfortunate and not universal. A certain number of the afflicted children do recover, and remain well.

In an endeavour favourably to influence the prognosis, collapse therapy was instituted in the following three patients, who were sent to the Oster Pavilion, Radcliffe Infirmary, by Dr G. C. William, medical officer of health for the city of Oxford, to whom I am indebted for their early history.

VARIOUS SHAPES of the CALCIFYING or CALCIFIED CYSTICERCUS



ACTUAL SIZES—COMPARE SCALE SIZES VARY—WIDTH (1-7 mm) LENGTH (1-25 mm).
FROM RADIOGRAPHS OF 12 CASES OF CYSTICERCOSIS. Q.A. MILITARY HOSPITAL, LONDON.

(1943)

[illegible]

In those regions where the population is small, night herons, red herons, and other species of herons which take to the water first in the morning, appear to be the commonest and most numerous. They are not, of being taken by hand in this country, with any regularity, and are not much used for food, except in the lower portion of the range of the mountains, with a Shikar system in the upper part. There was also one egret taken in the right and lower portion of the latter range, apparently unutilized.

Applied pressure therapy was initiated on February 24, 1963, and a leucine diet started with levels of 400 or 600 mg. of leucine at fortnightly intervals. The child has been kept in hospital much less than at home, because of unfavourable home conditions. She is now well, has no cough or sputum, and has gained a great deal of weight.

64-1 11

A 65-year-old male was admitted on April 20, 1962. There was a history of cough of 6 months' duration, some sputum, loss of weight, febrile, and dyspnea. Tubercle bacilli were found in the sputum.

The patient's mother had tubercle bacilli in the sputum for a year, and 17, had been in the Colorado State Prison for a year with a positive sputum, and had been treated by various physicians. In her case the collapse was not complete in the upper lobe, and there subsequently develops in the pleural cavity. This occurred in time and the patient is now at work, able to do general activities in the household, and is free of all of the central tenderness, which was present on admission to hospital for the last time.

On examination of the box scans of initiation and looking down were found in the right hemisphere and in the right midline of the skull. The left hemisphere was only slightly involved, as evidenced by a few points of initiation in the skull.

In the early 1970s, I presume they were taken on May 2nd 1972. I had a pump out under the eaves of a shed that had a series of slats for the water to go into a hole in the ground. Apart from the water, there was a little greyish sediment. There was no sand, and the water was green, and a little cloudy with the sediment coming up the sides of the hole. As far as I can see, the structure is made of wood, and is a little over 100 years old. It is a little bit of a puzzle, but I think it is a little bit of a puzzle.

() 313

[illegible][illegible]

The first of these is the *Journal of the American Medical Association* (JAMA), which has been the most influential of the medical journals in the United States. It was founded in 1883 and has since then published a wide range of medical research, including clinical trials, laboratory studies, and reviews of the literature. The JAMA has been a leading voice in the medical community, and its publications have been widely cited in the medical literature.

As the number of nodes in the network increases, the number of nodes that are not in the network increases. This is because the number of nodes that are not in the network is proportional to the number of nodes that are in the network. As the number of nodes in the network increases, the number of nodes that are not in the network increases. This is because the number of nodes that are not in the network is proportional to the number of nodes that are in the network.

Memoranda

MEDICAL. SURGICAL. OBSTETRICAL.

X-RAY STRESS TREATED COIL 40141
WITH LIVER EXTRACT[illegible]

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the work.

3. The third step is to develop a plan or strategy to address the problem. This involves breaking down the problem into smaller, manageable tasks and determining the resources needed to complete them.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress to ensure that the objectives are being met.

5. Finally, the fifth step is to evaluate the results of the project. This involves assessing the outcomes against the objectives and identifying any areas for improvement or further action.

as to the high efficacy of liver injections in most patients. Several brands of liver extract have been tested; 1 c.cm. has sufficed for several cases—for example, four injections of 1 c.cm. kept a patient in comfort through a ten-day course (daily treatments, breast case). The effect of each injection lasted two days; on the following morning there was nausea or sickness before breakfast. For such slighter cases oral administration might prove satisfactory.

J. H. DOUGLAS WEBSTER, M.D., F.R.C.P.Ed.
(From the Rheological Department, Middlesex
Hospital)

TREATMENT OF SCABIES

Scabies occasionally appears in a form highly resistant to treatment, and, in spite of vigorous and careful hygienic measures, it may be very difficult to obtain for the patient relief for any reasonable length of time before recurrence of the symptoms.

Mr. M. W., aged 48, an intelligent merchant, consulted me towards the end of January, 1933. He complained of irritation of the skin all over his body for nine months. Latterly the irritation was affecting his face and neck, but not his scalp. It was much worse at night, when he was warmed up in bed. On examination many of the characteristic burrows of scabies were distinctly visible, with a few vesicles and many linear excoriations in parts of his anatomy accessible to his finger-nails. The diagnosis had been confirmed by a consulting dermatologist, and he had undergone repeated treatments with sulphur. He had never been free of irritation for more than a few hours after the treatment, and he was now suffering severely also during the day. I gave him several courses of treatment, using sulphur ointment in varying strengths up to the strength of the B.P. ung. sulphuris, and β -naphthol ointment in strengths of from 2½ to 7½ per cent. There was no improvement which lasted longer than one day. Five months ago I prescribed "mitigal" (dimethyl diphenylene-disulphide), and asked him to rub this into his skin all over the body (scalp excepted) on three consecutive occasions, with the usual precautions with regard to bedclothing and underwear. The total amount of mitigal used was 150 grams. The skin lesions completely disappeared, he became entirely free from irritation, and has remained so since.

I have never before this case failed to record a cure with the proper and intelligent application of sulphur. The chronicity of this complaint over a long period of one and a half years, its failure to react successfully to the usual therapeutic measures, and the complete cure with mitigal justifies my recording of this case.

A. D. MATTHEWS, M.R.C.S.,
L.R.C.P.

London, E.2

SEVERE PENETRATING CHEST WOUND

On August 9th, 1933, a boy of 10, riding his bicycle down a side road, ran into a motor car passing along the main road. His front wheel was so twisted round that the handles of his machine pointed upwards; he was literally impaled on one of these, and had to be lifted off it. The handle made a wound three inches long, just to the inner side of the angle and vertebral border of the scapula on the right side. The sixth rib was fractured and the pleural cavity opened, the opening being large enough to admit four fingers.

Under a general anæsthetic the skin edges were excised, four fragments of muscle removed, and the wound well swabbed out with carbolic lotion. The collapsed lung could just be felt with the finger-tips, but did not appear to be torn or bruised; the intercostal membrane and muscles above and below the fractured rib had disappeared, and one had to be satisfied with suturing the remaining parts as firmly as possible over the opening into the pleural cavity, and then closing the skin wound. Rather extensive surgical emphysema developed, but the wound remained clean and dry, and the patient's

temperature after twenty-four hours was always normal morning and evening.

After operation the apex beat was two inches outside the nipple line, but by the fifth day it was in the nipple line, and on this day pleural friction was audible in the right axilla, proving that the lung was expanding well. The patient had no cough and no expectoration, which suggests, I think, that the lung was not injured, but must have collapsed very rapidly out of the way of the bicycle handle when it entered the chest cavity. He was given antitetanic and anti-gas-gangrene serum at the time of the operation; he had been thoroughly tanned by a fortnight's exposure to the sun before the accident, so that his power of resistance to infection was at a high level. At the time of the accident the boy's shirt was torn, but none of it was apparently missing, and nothing was left inside the pleural cavity. As far as one could make out there was no hæmothorax, but the surgical emphysema made it impossible to percuss out any dullness at the right base during the first week after the accident. At the end of a fortnight the wound was healed and the lung was fully expanded, the breath sounds at the base of the right lung being as good as those on the left side.

During two years' experience of chest wounds at casualty clearing stations in the war, I never saw a case with such a large wound do better or cause less anxiety, and I would put this down to the patient's fitness at the time of the accident. I should like to emphasize the great importance of immediate closure of an open chest wound; in this case the wound was closed one and a half hours after the accident.

Swanage.

W. A. REES, M.D., F.R.C.S.

Reports of Societies

CYSTICERCOSIS AS A CAUSE OF EPILEPSY

At a meeting of the Royal Society of Tropical Medicine and Hygiene at Manson House on December 14th, 1933, with the President, Sir LEONARD ROGERS, in the chair, Colonel W. P. MACARTHUR read a paper on cysticercosis as seen in the British Army, with special reference to the production of epilepsy.

Colonel MacArthur said that, on an average, about one hundred soldiers were discharged from the Service every year on account of epilepsy. After excluding those with an inherent epileptic taint, traumatic lesions, syphilis, and neoplasm, there remained a considerable number of men, coming from sound nervous stock and previously healthy, who developed fits after service abroad. In the past occasional cases of cysticercosis complicated by epilepsy had been diagnosed in the Army, but these had been looked upon rather as isolated curiosities of medicine, and their significance as outcrops of a more generally distributed occult infestation had not been appreciated. More recently his own observations, and the independent work of Colonel R. Priest, R.A.M.C., had revealed the close association of the two maladies, and eighteen months ago the War Office had issued orders that all men who developed fits were to be sent to Millbank, where over twenty cases of cysticercosis had been diagnosed this year. Man was the sole host of *Taenia solium*, and, though normally this parasite passed its cysticercous stage in the pig, given the opportunity cysticerci readily developed in man. The incubation period of the disease was difficult to assess, and prodromal symptoms were generally absent, though occasionally a history of headache, unidentified fever, myalgia, rheumatic pains, and localized oedematous swellings in the muscles was obtained. In the established disease palpable cysts in the subcutaneous or muscular tissues were an outstanding feature, but often they were not demonstrable. A peculiar feature was the manner in which cysts might continue to appear singly or in crops for many years, whilst others, already evident, might suddenly increase in size. Such cysts, generally regarded as of recent origin, contained fluid under tension, and as the lecturer said, he had invariably found the larvae were dead and undergoing degeneration,

Rest in the treatment of heart disease implied mental as well as physical rest; mental strain must always be relieved if in any way possible.

Miss D. W. HALL pointed out that the portal of entry of the haemolytic streptococcus might be through the nasal mucous membrane as well as through the tonsils. Dr. DONIS OBLUM maintained that the treatment of the psychogenic factor which was so prominent in some cases of thyrotoxicosis was extremely important and beneficial to the patient; she believed that there were two types of cases, in one of which the psychic trauma was predominant. Dr. D. C. HARE referred to the danger of delayed operation in certain cases in which the nervous manifestations were alleviated by medical treatment but in which the cardiac damage was progressive. She wondered whether too large doses of iodine were not often given; she had had good results from giving one minim of Lugol's iodine three times a day. Dr. MOORE described a case in which iodine treatment had been most successful.

Dr. AITKEN, in reply, agreed with Miss Hall that an unhealthy nasal condition was often neglected, and that this neglect possibly accounted for the disappointing results obtained from tonsillectomy. She agreed that psychic trauma was an important aetiological factor in thyrotoxicosis, but held that, once the thyroid secretion had been altered, psychotherapy was not likely to effect a cure. She believed that too large doses of iodine were often given.

TREATMENT OF OBSTRUCTED LABOUR

At the meeting of the North of England Obstetrical and Gynaecological Society, held in Liverpool on December 15th, 1933, Professor A. LEYLAND ROBINSON delivered his presidential address entitled "Ancient and Modern."

He described the ancient and modern methods of treating obstructed labour, and said there were four distinct epochs or phases through which the present treatment had evolved. During the first epoch, which extended from the dawn of civilization to the time of Ambroise Paré, cephalic version and embryotomy were the methods of choice for dealing with mechanical obstacles. The second epoch, which began with the teaching of Paré and terminated with the "publication of the forceps," was dominated by the teachers of the French school, who introduced and practised *poûche version* and *accouchement forcé*. The third epoch coincided with the use of the forceps which had been invented by Peter Chamberlen at the end of the sixteenth century, but had remained a family secret for nearly a hundred years, only coming into common use in England when Chapman published his book in 1773. The fourth epoch, the present age, dating from about 1880, was initiated by the discoveries of Pasteur and Lister, whose work had rendered the operation of Caesarean section comparatively free from risk, and had thus paved the way for the safe employment of surgical methods of delivery.

The president then discussed the different methods now in use, including forceps, induction, version, craniotomy, and Caesarean section, and drew attention to the great importance of delivering the patient at the first attempt. He showed from an analysis of a large number of cases abstracted from the reports of the British maternity hospitals that repeated attempts at delivery had a marked effect upon the maternal mortality, and emphasized that the "failed forceps" type of case was also found among patients submitted to induction, version, and Caesarean section, and that such failures might be grouped together as "the failed first attempts," and they contributed largely to the avoidable fraction of the maternal mortality. He thought these failures were due to two main causes: (1) lack of knowledge concerning the best method of overcoming a mechanical difficulty; (2) want of judgement in choosing the right time for surgical intervention. The present methods and results were undoubtedly greatly superior to those of the eighteenth and nineteenth centuries, but much could be learnt from the great obstetricians of the past, and especially from their knowledge of the resources of natural delivery.

Reviews

GREIG'S DYSOSTOSIS

Among the features which distinguish the extinct type of humanity, known as Neanderthal Man, from modern humanity, is the possession of a torus supraorbitalis. Dr. DAVID M. GREIG, conservator of the Museum of the Royal College of Surgeons of Edinburgh, has published an exact and illustrated account¹ of a modern skull, in which the supraorbital ridges form a perfect torus supraorbitalis. This modern skull also reproduces another Neanderthal feature—namely, the nuchal ridge of bone known as the torus occipitalis. Under a bizarre exterior this modern skull—the precise history of which is unknown—exhibits all the essential features of the disorder of growth known as cleidocranial dysostosis. There can be little doubt that the skull so ably described by Dr. Greig represents a rare and unnamed disorder of growth to which we may attach, for provisional purposes, the name of Greig's dysostosis. In his Struthers Lecture² Dr. Greig brought another disorder of cranial growth to the notice of medical men, to which he gave the name "hypertelorism"—the outstanding feature being the wide separation of the orbits. This condition, which some regarded as an individual abnormality, proved to be a specific disorder, five cases having been recorded in America since the publication of the Struthers Lecture. We have no doubt the condition which Dr. Greig has now described will prove to be a distinct pathological entity. The excellent and exact drawings which illustrate Dr. Greig's monograph should leave his readers in no doubt as to the nature of this unnamed disorder.

A. K.

"STARLING'S PRINCIPLES OF HUMAN PHYSIOLOGY"

The publication of the sixth edition of this well-known work on human physiology³ will be greeted by students and teachers alike as fulfilling in high degree the necessities imposed by the examining bodies all over the country. The high standard as regards both treatment of the various aspects of the subject and the general format of the book leaves little to be desired, and Professors Lovatt Evans and Hartridge have added lustre to it by careful revision and by bringing those chapters up to date where increasing knowledge has left former editions somewhat behind the times.

The production of a work of value on physiology is a matter of extreme difficulty for many reasons, but chief among them, we think, is the fact that final knowledge has been attained in so very few fields that one has to choose between a dangerous dogmatism or a vacillating scepticism. The facts of physiology are based on experiments, and the methods of measurement are often so imperfect that interpretation is liable to all sorts of errors. On the other hand, in certain fields the methods are of such a precision that one wonders what relation the final results bear to the kind of information which is really of value to the investigator of the human body. From the point of view of the purely academic worker it is, for example, of great interest to know the exact time relations measured in thousandths of a second of

¹ *A Neanderthaloid Skull Presenting Features of Cleidocranial Dysostosis*. By D. M. Greig, F.R.C.S. Edinburgh: Oliver and Boyd, 1933. Reprinted from the *Edinburgh Medical Journal*, 1933, xl, 107, for private circulation.

² *Lancet Med. Jour.*, 1932.

³ *Starling's Principles of Human Physiology*. Edited and revised by Professor C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S. Sixth Edition. London: J. and A. Churchill, 1933 (pp. 1122; 52 plates, 24 col.).

The first part of the paper is devoted to a description of the experimental apparatus and the method of observation. The second part is devoted to a description of the results of the experiment. The third part is devoted to a discussion of the results of the experiment. The fourth part is devoted to a conclusion.

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REFERENCES

1. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

2. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

3. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

4. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

5. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

6. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

7. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

8. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

9. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

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9. H. A. Lorentz, *The Theory of Electrons*, 2nd ed., North-Holland, Amsterdam, 1907.

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but it is rather surprising that he makes no mention of the recent work in this country, which tends to show that seborrhoeic dermatitis is a monilial infection. We must conclude with a word of approval of the excellent photographs both of clinical manifestations and of microscopic features with which this volume is amply illustrated. The book is fortified with complimentary introductions by two distinguished American dermatologists, Dr. Schamberg and Dr. Howard Morrow. We are able to endorse their commendation.

THE SPLEEN AND ITS DISORDERS

The intense clinical concern shown by French workers in the subject of splenomegaly and the splenic anaemias is well known, and leads us to examine with much interest any new ideas they may put forward on the matter. A recent book,* written by a French physician in Algiers, deals not only with the splenomegalies which occur in northern Europe, but also with enlargements of the spleen associated with malaria and kala-azar. Interesting sidelights are thrown on the indications for splenectomy, and a wise commentary on the ligation of the splenic artery indicates the grave effects of necrosis which may follow this operation.

The principal new idea in the book, however, is an attempt to test the blood reservoir function of the human spleen in normal and pathological cases. Radiological evidence with the help of thorotrast shows quite convincingly that the human spleen does contract to effort and adrenaline. This contraction coincides with a slight but definite increase in the red cell count taken in capillary blood from the fingers. In Banti's disease and in haemolytic jaundice this increase in erythrocytes does not occur after the injection of adrenaline. In malaria and in thrombophlebitic splenomegaly a definite splenic contraction occurs after adrenaline, with coincident erythrocytosis. It may be said at once that the clinical value of this test appears to be limited in its present form, but to those engaged in a special study of splenic physiology in man the idea is worthy of closer investigation. The technique of simple radiography of the human spleen, as recommended by Benhamon, does not give sufficiently well-defined shadows to judge of small degrees of contraction of the organ except when the spleen is grossly enlarged. The risks of liver damage attendant on the use of thorotrast are duly emphasized.

The book contains a bibliography mainly devoted to French contributions to the literature, and there is also a useful short index.

INFECTIONS OF THE HAND

For twenty years or more KANAVEL'S *Infections of the Hand* has been a classic, and no work on this department of surgery has ever approached it in completeness or efficiency. The methods advocated by the author as the result of a series of brilliant experiments have stood the test of time and are now universally recognized as sound both in principle and in practice.

In the sixth edition no alteration has been made in the general principles, but the arrangement of the subject-matter has been modified with a view to greater clearness, while the illustrations have been brought up to the high standard of modern reproduction. It is true that the somewhat crude sketches of the earlier editions, coming as they did directly from the hand of Professor Kanavel, possessed a certain personal touch; in the new

edition, however, the illustrations have the advantage of artistic perfection, while this has not been allowed to interfere with their diagrammatic clearness. It would be a truism to say that every surgeon who has to deal with infections of the hand might study this volume with advantage, but we would venture to suggest that he takes a grave responsibility if he deals with such infections without its assistance.

Notes on Books

A series of *New Introductory Lectures on Psycho-Analysis*,* by Professor SIGMUND FREUD, has been translated into English. This recently written volume is intended to be a continuation of Freud's well-known *Introductory Lectures* delivered first at the Vienna Psychiatric Clinic in 1915-16 and 1916-17. The new lectures are not intended to take the place of the earlier ones. They do not compose an independent whole; they are continuations and supplements which fall into three groups concerned with new manipulations of themes which demand further treatment on account of the deepening of knowledge. The two other groups contain actual enlargements of the psycho-analytic field, in that they deal with matters which either did not exist in psycho-analysis at the time of the first lectures, or about which too little was known at the time to justify a special chapter heading.

Dr. ESTHER HARDING has written a monograph entitled *The Way of All Women: A Psychological Interpretation*,† in which she endeavours to show how the psychological problems of women have unfolded themselves as they occur in the various phases of her fate from childhood to "autumn and winter." The author prepared herself to be an analyst by an intensive course of training work with Dr. C. J. Jung. Subsequently she has practised psychotherapy in London, and for the last ten years has been working in New York. The book is written with originality and insight. In an introduction Dr. Jung expresses the view that this book is an important contribution to psychology, as it clarifies the confusion existing in the relationship between the sexes.

The Physician, as Man of Letters, Science and Action,‡ is the title of a book by Professor T. K. MOSKOW, in which he has brought together notes on the careers of men belonging to the profession of medicine who have distinguished themselves in other activities. He has been able to form a collection of a most varied sort, from philosophy to aeronautics, and from science to the Rosicrucian cult. It makes entertaining reading, and the author deserves gratitude for his enterprise and industry; the miniature biographies contain many curious bits of history which will surprise and interest the medical reader.

In Tower Hill as a Pleasaunce|| the Vicar of All Hallows, Barking, and Mr. Leftwich have depicted the past and foretold the future of Tower Hill and its neighbourhood. The vicar is better known as "Tubby Clayton," and with characteristic enthusiasm he here records what has already been done in connexion with Toc H to improve the conditions of the parish and its demesne, and urges large clearances on Tower Hill, which, it is contended, would be of great and lasting value in improving the amenities of the neighbourhood. Lord Wakefield, who is the president of the advisory body, contributes a commendation. Need we add that money is required as well as good will? We wish these philanthropists and archaeological enthusiasts a speedy attainment of their desires.

* *New Introductory Lectures on Psycho-Analysis*. By Sigmund Freud, M.D., LL.D. Authorized translation by W. J. H. Spott. The International Psycho-Analytical Library, No. 24. London: The Hogarth Press, 1933. (Pp. 249. 10s. 6d. net.)

† *The Way of All Women*. By M. E. Harding, M.D. London: Longmans, Green and Co. 1933. (Pp. xx+275. 15s. net.)

‡ *The Physician, as Man of Letters, Science, and Action*. By Thomas Kirkpatrick Morton, M.A., M.D. Glasgow: Jackson, Whyte and Co. 1933. (Pp. 212. 10s. 6d.)

|| *The Pleasaunce of Tower Hill*. By the Rev. P. B. Clayton, C.H., M.C., F.S.A., and B. R. Leftwich, M.B.E., F.R.Hist.S. London: Longmans, Green and Co. 1933. (Pp. xix+325. Illustrated. 12s. 6d. net.)

Applied Eugenics, by PAUL POPENOE, director of the Institute of Family Relations, Los Angeles, and Professor ROSWELL HILL JOHNSON of Pittsburgh, was reviewed in these columns in our issue of April 2nd, 1921. The authors have now prepared a revised edition,¹² in which many changes have been made in order to include references to the great body of new evidence accumulated since the war. "On the whole," they write in the preface, "the progress of eugenics in the United States since 1918 has been greater than the authors at that time would have dared to hope. If the next decade or two can show as much progress, and at the same time avoid another world war, the eugenic welfare of the human race will be measurably advanced."

¹² *Applied Eugenics*. By Paul Popenoe and Roswell Hill Johnson. London: Macmillan and Co., Ltd. 1933. (Pp. 429; 39 figures. 12s. 6d.)

Preparations and Appliances

WIRE TRACTION APPARATUS

Mr. ROBERT I. STIRLING, F.R.C.S. (Edinburgh), writes:

The wire traction apparatus described below was devised to supply an easy means of applying skeletal traction. The spreader has two arms hinged at the top, and these are separated by turning a blunt-ended transverse screw which passes through the upper part of one arm and thrusts against a groove in the other (Fig. 1). The wire is attached

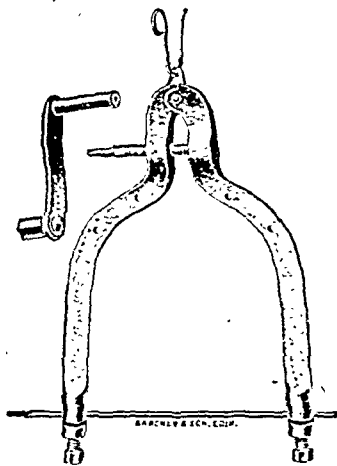


FIG. 1.

to the ends of the arms by round-ended screws fitting into slight depressions. The transverse and terminal screws are tightened by a double-ended box-key. A range of from three to eight and a quarter inches can be obtained between the ends of the arms. The wires, of specially drawn steel with flattened drill points, are chromium-plated, and are two millimetres in diameter. It was found that wires of lesser gauges cut through cancellous bone with prolonged moderate traction, and on two occasions, in my experience, wires of one millimetre gauge have broken with forty pounds' traction. The thicker wires I employ have maintained traction of three hundred and eighty pounds for several days without undue bending. The strength is such that one and a half inches of the wire will sustain a weight of, tight pounds without bending. This has proved to be of great value in instituting traction on the arm in such conditions as fracture-dislocation of the head of the humerus, fractured shaft of the humerus, etc., the wire being passed through the upper part of the ulna between the incisura semilunaris and the posterior border in the direct line of the humeral shaft, the elbow being flexed at right angles. If an initial strong pull is desired the spreader is used. Thereafter the spreader is detached and the wire is cut so that only two inches protrude at each side of the olecranon. It is then bent into a U with right-angled corners. The ends are bent back to form hooks over which a traction chain or cords can be placed. By this means a

skeletal pull of five to eight pounds can be easily obtained with a minimum amount of impedimenta when using a Thomas, Jones, or "aeroplane" splint. For the introduction of the wires an ordinary hand drill with a chuck is used. To prevent the bending—and therefore maldirection—of the wire during introduction a modified Schoemaker's guide (Fig. 2) is employed. The inner end of the perforated

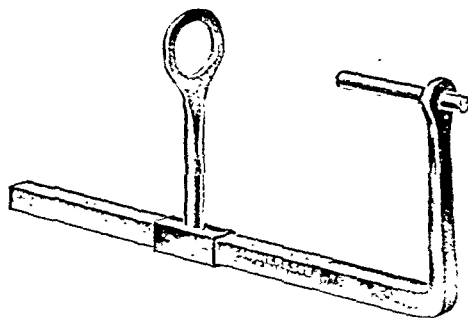


FIG. 2.

horizontal bar, which transmits the wire, can be accurately placed against any bony area which can be palpated, and the point of exit can be reasonably accurately marked by the centre of the metal ring on the movable pillar.

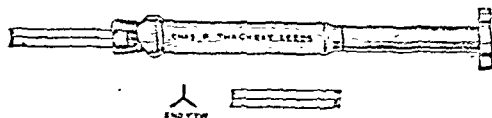
The whole apparatus has been made for me by Messrs. J. Gardner and Son, surgical instrument makers, Forrest Road, Edinburgh.

AN EXTRACTOR AND MODIFICATION OF THE SMITH-PETERSEN PIN

Mr. R. BROOMHEAD, F.R.C.S. (Leeds), writes:

When I showed some patients who had been treated by the insertion of a Smith-Petersen pin for a high fracture of the neck of the femur at the Royal Society of Medicine on April 4th, 1933, I described a modification of the original pin and also an extractor for removing it, either at the time of the operation if the aim is not correct, or later if it is thought desirable to remove the pin when bony union has occurred. The original pin had a round head that was difficult to grasp. I therefore had a V-shaped groove cut so that the head could be much more easily held by a clamp. The accompanying diagram shows how the shape of the head has been altered and improved.

The extractor is made with a clamp to grasp the head of the pin. The clamp has two limbs, with a spring between to separate them when they are released from the body of the extractor. The limbs are fixed to a threaded shaft, which can be screwed up and down inside a cylinder so that the pin may be withdrawn into its cavity. Counter-traction is obtained by pressure of the distal end of the instrument against the lateral surface of the great trochanter of the femur, and it is necessary to make the instrument fit closely to the bone. The distal end of the extractor is thickened to make a broad area for counter-traction; it is curved to accommodate



the circumference of the femur; and, as the neck of the femur is at an angle of 125 degrees with the shaft, the lower margin of the butt of the instrument is cut away, while the upper margin is prolonged to enable the instrument to fit snugly against the shaft of the bone. The handle is made broad so that it can be grasped easily, and does not catch the operator's rubber glove.

The difficulties of an operation are much diminished by the use of these instruments, as it is necessary to remove the pin if the first aim has been incorrect—a manoeuvre which cannot be done satisfactorily without the extractor and the modified pin. I showed the instruments to Dr. Smith-Petersen when I was recently in Boston, and he is now using them himself to the exclusion of those of his own design. The instruments were made for me by Chas. F. Thackray, Park Street, Leeds.

ONE HUNDRED AND SECOND ANNUAL MEETING
of the
British Medical Association
BOURNEMOUTH, 1934



THE one hundred and second Annual Meeting of the British Medical Association will be held in Bournemouth next summer under the presidency of Mr. F. W. Ramsay, M.D., F.R.C.S.Ed., consulting surgeon to the Royal Victoria Hospital. The Sectional Meetings for scientific and clinical work will be held on Wednesday, Thursday, and Friday, July 25th, 26th, and 27th, the morning sessions being given up to discussions and the reading of papers, and the afternoon to demonstrations. The Annual Representative Meeting for the transaction of medico-political business will begin on the previous Friday, July 20th. The full list of presidents, vice-presidents, and honorary secretaries of the sixteen Scientific Sections will be published in an early issue of the *Supplement*. Other details of the arrangements for the Annual Meeting will appear in subsequent issues. The Association last met in Bournemouth in 1891. We publish below the first of a series of descriptive and historical articles on the town and its medical institutions.

BOURNEMOUTH AND ITS ATTRACTIONS

Bournemouth, the fair and salubrious, has risen out of the ashes of a prehistoric population whose relics are found even to the present day. At the Boscombe Library there is exhibited "a stone celt found at Boscombe, some eight feet below the surface, and supposed by Geikie to be at least 500,000 years old." Within the widening boundary of the town, and over a wide stretch of Dorset and Hampshire, the earth is a sepulchre, and the antiquary will discover a soil rich in objects of archaeological value waiting to be unearthed and mused upon. In recent times, both within and without the county borough, fragments of pottery, urns, flint celts, arrow heads, pins, bracelets, and other antiquities have been found. Even in Talbot Woods, in the very heart of the town, barrows exist as a monument to the ancient Britons, one-time inhabitants of the place, who lie buried there. In the words of Thomas Hardy: "Within the space of a mile from its outskirts every irregularity of the soil is prehistoric, every channel an undisturbed British trackway; not a soil having been turned there since the days of the Caesars." History relates that the first Roman defeat in Dorset happened near the Bourne stream, where 500 men under Caius Marius were ambushed and ruthlessly put to the sword. From prehistoric times great natural forces have compelled the formation of the terrace upon which the town is set—the gravel soil, the chines, the cliffs, and the wide sweep of sand and bay; and during the past century the growth of vast numbers of pine and other trees has secured for the town many of its climatic advantages and much of its natural beauty. Now we have grown up "a new world within an old one."

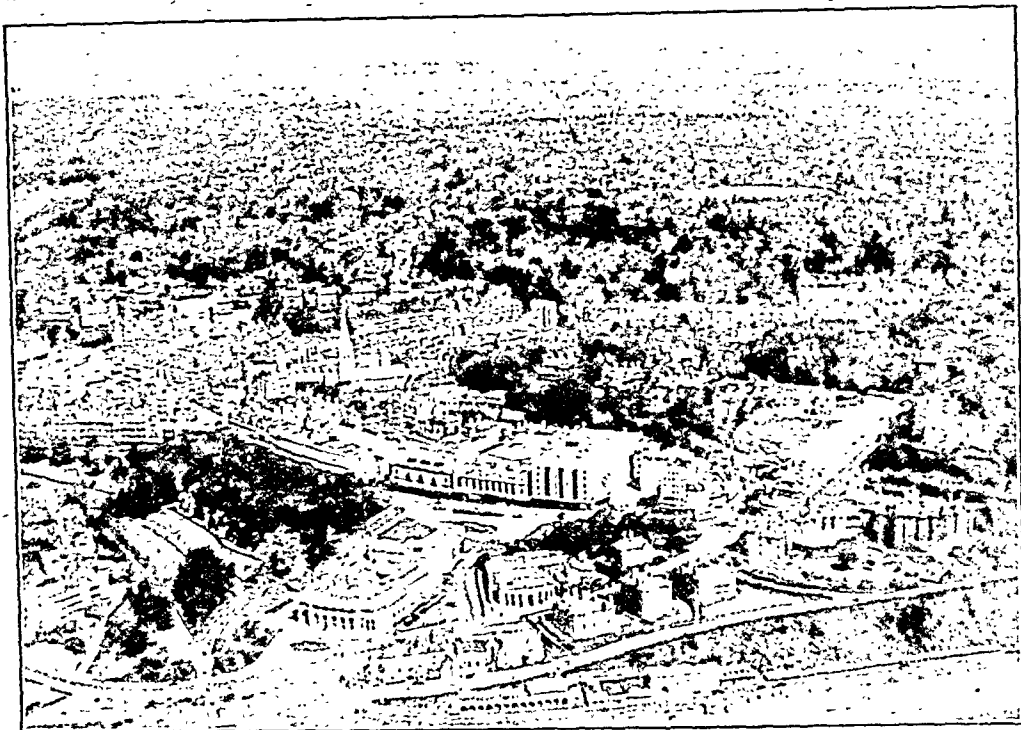
Bournemouth is set like a jewel on the cliffs at the extreme south-west corner of Hampshire, almost midway between the ancient towns of Poole in Dorset and Christchurch at the mouth of the Hampshire Avon. These two coastal towns lie apart about nine miles. The town lies upon a tableland, which runs up to the edge of the cliffs eighty to one hundred feet above sea-level, and along the several sheltered chines which here and there break the cliffs and run down to the sea; it occupies a commanding position, open to the sea breeze, facing full south, and overlooking a fine sweep of bay and sands extending twelve miles from end to end. On the east the town is sheltered by the Isle of Wight, on the west by the "Isle of Purbeck," and on the north by pine-covered and an unobstructed horizon!

The town owes its name to its situation in and about the mouth of a wide, evergreen valley, through which

runs a stream, the Bourne, on its way from Kinson, some five or six miles distant, to the bay. Early in the nineteenth century the first house was built in the shelter of this valley, which had until then numbered as its inhabitants a few fishermen only and several smugglers. Soon afterwards, on the eastern side of the valley, building was begun on an extensive scale, the foundation of the town being thereby laid, and the first garden city brought into being. The picturesque planning of the town with the ample provision of open spaces—which can best be viewed from the air—had been so admirably conceived and executed, and continued with such vision, that the natural features of the place have been preserved and made to harmonize with the needs of a rapidly growing population. Truly, in the words of Sir Thomas Browne: "Art is the perfection of Nature"; and the elegant detached houses, the sheltered gardens, the profusion of flowers and foliage, and the quiet atmosphere lend beauty and dignity to the place, and bring pleasure to the eye and peace to the heart.

In its very newness and cleanness the town has much charm, and if there is the lack of a known historical past, there are compensations in the naturally beautiful character and position of the town, in the wide bay backed by cliffs broken at intervals by green and lovely chines, and in the outlook of a wide horizon and broad expanse of sky. There are four miles of undercliff drive, five miles of overcliff, and many miles of walks by sea, cliff, and in gardens where one may wander amid green lawns and by the quiet waters of Bourne and Stour. Because of the elevated position of the town and the gravel soil natural drainage is good, and speeds up the absorption of rain and flood water, which percolates to a great depth, whence it is hurried by many subterranean channels to the sea. In consequence the soil possesses a high state of dryness and of sanitary cleanliness, and the broad avenues and roadways are kept clean. Such quick drainage gives freedom from ground mists and fogs.

Any day can be observed in the bay the phenomenon of the double tides, which give rise to a peculiar natural ebb and flow. The chief feature is the "second high water." The tidal rhythm along this coast is subject to a curious constant variation: high water occurs at the normal time, but after the ebb has begun its fall is arrested and the tide again rises, usually to a greater height than before, the whole of the ebb being therefore carried out in a resulting shorter space of time. At Bournemouth the double tide may merge into a simple prolongation of the high tide for as long as four hours, the succeeding ebb being completed in the remaining two hours of its



AERIAL VIEW OF CENTRAL BOURNEMOUTH.

(Ac-of-lms, Ltd., London)

allotted time. As a consequence, during full and new moon, and for a day or two after, a brimming tide may be maintained along the Bournemouth front during the whole of the morning and midday hours. There is a surprising freedom from storms of all kinds, particularly thunderstorms, these being attracted away from the town by the wide expanse of bay, and by the high ground east and west.

Meteorological observations taken at one place in the borough cannot, of course, represent the temperature, rainfall, and indeed the climate of the town as a whole; but the thermometer registers a mean temperature which remains much the same in all parts of the area, although the range will show some variation whereby certain localities will be cooler or drier or more bracing than others. This is actually found to be the case. Southbourne and Westbourne districts of the town and, on the Poole side, Canford Cliffs are found



THE SEA FRONT AT BOURNEMOUTH. VIEWED FROM THE WEST CLIFF.

to be the bracing and stimulating areas of the borough, while central Bournemouth possesses the more soothing sedative climate. In fact, Bournemouth can boast a variety of climates. The long hours of sunshine—there is an average of 1,840 hours each year—the softness, freshness, and purity of the sea air, constitute a combination peculiar to Bournemouth. The absence of smoke pollution and the resulting clear atmosphere in the daytime allow of a maximal penetration of the beneficent light and heat rays of the sun.

Because of the well-known mild winters which the town enjoys, with the rarity of snow, and the evergreens, flowering shrubs, and subtropical plants which grow in the open at that season, it may be thought that the summers must therefore exhibit a relaxing climate. But this is not so. Comparing Greenwich and Bournemouth mean temperatures: in winter, although Bournemouth

shows a temperature considerably higher than that of Greenwich, there is during the hotter months of summer just as consistently a lower temperature. During heat waves there have been occasions when Bournemouth has recorded a temperature lower than that in any other health resort, probably because the gentle breezes from the sea temper the air. In summer Bournemouth often records a night temperature lower than that in many other towns of similar size. This lower night temperature conduces to a more restful sleep;

indeed, for those who suffer from insomnia the sedative climate is well known to prove curative.

Bournemouth is a residential centre of some 117,000 inhabitants, a city of leisure, and of rest and quietness. A large proportion of the residents have been attracted by the quiet amenities of the place. It has always been recognized as a health resort of great value, especially in respiratory disorders, and patients and convalescents with the widest variety of ailments have come in search of health from all parts of the world. The medical

profession and the municipal health authorities constantly strive to prevent disease and to improve the health of the community. On health services alone no less a sum than £43,000 was expended in 1932. It is a striking fact that the death rate is far below the average for towns of like size. For invalids and others who need a warm, mild winter and congenial summer resort there can be no more attractive home retreat than Bournemouth. Many come for rest and change away from the rush and hurry of city life. Others come suffering from a nervous breakdown; a high blood pressure; kidney, heart, blood vessel, or respiratory disease; rheumatism; digestive or metabolic disorder; and it is sufferers from such conditions who are known to benefit most by a stay in Bournemouth.

Few health resorts offer such excellent educational facilities. The Municipal Technical College comprises an art school, recognized by the Board of Education as a centre for training teachers, schools of science, technology, literature, commerce, and domestic crafts, and up-to-date chemistry, physics, electrical engineering, mechanics, and biology laboratories, and workshops. The Bournemouth School for Boys and that for Girls are both municipal: they offer a high standard of education, as also does the High School for Girls, for which new and larger premises are being built in Talbot Woods. Already each of these schools has a very fine record of successes. In and around the town are numerous high-class private homes and boarding schools for boys and girls of all ages. The town is provided with public libraries, which are well equipped and give easy access to books in all departments; there is also an extensive music library containing one of the finest existing collections of modern orchestral scores. This music library attracts visitors from all over the world. The Russell Cotes Art Gallery and Museum has a valuable collection of modern pictures, sculpture, pottery, porcelain, glass, and many native objects from countries in the East. There is a well-staffed general hospital, the Royal Victoria and West Hants Hospital, of 236 beds, with an extension comprising fifty-six beds for private patients of moderate means. Among the places of worship all denominations are represented, and the large number of churches is exceptional; there are in the town several religious and benevolent institutions. The shopping facilities are good, and the shops among the finest in the country.

At all seasons of the year Bournemouth is equally attractive as a health and holiday resort. In summer the normal population is doubled by the influx of visitors, for whom municipal and private enterprise provides everything possible. The many hotels and boarding houses cater for their every wish, and no matter in what numbers they come the town never appears overcrowded. At Easter, in the summer, and again at Christmas, holiday-makers arrive in large numbers. They repair to the piers and beauty spots of the district, and they revel in the warmth of the sun, in the profusion of flowers and evergreens, and in the feast of good music. The town possesses, under the directorship of Sir Dan Godfrey, the finest municipal orchestra in the kingdom. Since the year 1894, when the orchestra was assembled, there has hardly been a British composer of note who has not appeared as conductor of his own works; in fact, many compositions have obtained their first actual production and hearing at the orchestral concerts. The Sunday concerts attract music lovers from all quarters, as also do the Wednesday afternoon symphony concerts held throughout the year, and from time to time broadcast. There is also out-of-door music by the municipal military band, which plays on either of the two piers, or in the central pleasure gardens, or, in inclement weather, in the Pavilion. In 1911 the municipal choir was formed; it consists of 200 selected voices, and has an extensive repertoire. Bournemouth's record in its enterprise for music is unparalleled anywhere.

The municipal Pavilion, an imposing building recently completed, is situated on the east side of the central gardens, and is flanked on its west by a superb rock garden, through which runs the Bourne stream. It has a large, airy concert hall, which houses the municipal

orchestra, and in which operas, plays, and variety entertainments are from time to time provided. Here can be heard some of the world's most famous musicians and singers. The Pavilion also possesses a large ballroom, rest rooms, refreshment rooms, and restaurant. In the town facilities are given for sheltered sun-bathing, and for natural sea-bathing. There is a solarium on the pier and other solaria are to be found in private establishments. There are indoor sea-water baths and bathing pool, and before long a large outdoor bathing pool will probably be built. At the present time plans have been drawn, and a scheme is being considered for the provision of a new larger municipal swimming bath and medical baths on an extensive scale in the centre of the town. There are, of course, medical baths at the three private hydropathic establishments in the borough.

In the last twenty years there has been a rapid development of open spaces as parks, gardens, and playing fields. There are 1,200 acres of parks and pleasure grounds, including 170 acres of Hengistbury Head (scheduled as an ancient monument), and about 200 acres in the recently added area of Kinson, which embraces 100 acres of Turbury Common. Perhaps the most sheltered and delightful of the parks are the upper and central pleasure gardens, through which passes the Pine Walk by the banks of the Bourne. There are two eighteen-hole golf courses: one at Meyrick Park (194 acres), where also are hard and grass tennis courts, bowling greens, and various playing pitches; and the other at Queen's Park (173 acres), where also are a horse-riding track and a rifle range. These two golf courses are regarded as the best municipal courses in the country. On the outskirts of the town are six other golf courses all set in charming surroundings.

The public tennis courts number seventy-three, and there are several others at Melville Park and in other parts of the town. Dean Park is given over to cricket and croquet, and King's Park (86½ acres) to tennis, bowls, cricket, hockey, and football. There are also a cycle track and a ladies' bowling club. Altogether there are fourteen bowling greens and several putting greens. Bournemouth possesses four theatres, thirteen cinemas, and a large ice-skating rink. Boating is to be had on Stour and Avon, and from the pier are steamship sailings to the Isle of Wight and along the coasts of Hampshire and Dorset. Motor-coach excursions proceed along smooth tree-lined avenues and roads into the New Forest, the Hardy country, and to the various places of historic interest and natural beauty in the neighbourhood. For those interested in hunting, there are several packs of hounds within easy reach, including the New Forest Hounds and Beagles, and the Portman Hunt. Whether as pleasure or health resort Bournemouth has been well named the "Queen of the South."

S. W. S.

Y. Jimura (*Bull. Off. Internat. d'Hyg. Publ.*, October, 1933, p. 1728) states that the introduction of cerebrospinal fever into Japan is a comparatively recent event. The first records dating back only to 1871. The next outbreak was not until 1887, when several cases occurred in the Army. During the Sino-Japanese war (1875-96) there was a considerable increase in the number of cases. In August, 1903, numerous cases occurred among the prostitutes of Yoshiwara and twenty-seven other places in Tokyo. Subsequently some sporadic cases developed among soldiers who had returned from Manchuria. During the last three years there has been a total of 1,021 cases, or 0.59 per 100,000 inhabitants. Most of the cases were notified in the west of the country, where the temperature was warmer. Rates of 1.66 per 100,000 inhabitants occurred in the urban districts, 0.58 per cent. in the small towns, and 0.29 per cent. in the villages. Most of the cases were in children and young persons; 33.4 per cent. of the deaths took place in the first week and 58.8 per cent. in the second. In most cases recovery occurred in the fourth week. The fatality rate was 79.9 per cent. in cases treated at home, and from 48.8 to 67.3 in cases treated in hospital.

British Medical Journal

SATURDAY, JANUARY 6th, 1934

INFANTS AT SCHOOL

It has been almost axiomatic with this *Journal* that health and education are to be looked upon as two parts or aspects of the same subject. Indeed, it may be said that school instruction consists of three interwoven strands—health training, social training, intelligence training. If this be true of older children, it is emphatically so of little children up to the age of 5 or even 7 years, in whose upbringing the three aims are happily pursued together in this country. One of the most valuable features of the recently issued report of the Consultative Committee of the Board of Education on Infant and Nursery Schools¹ is that it stresses and illustrates this point. It will be remembered that the same committee has already issued two other reports—one on the education of the adolescent (noticed in these columns on January 15th, 1927) and one on the primary school (February 21st, 1931). We indicated at the time the importance of the earlier reports, not only to teachers and those engaged in educational administration, but also to members of the medical profession, whether engaged in the school medical service or otherwise. This is even more evidently true of the latest report.

Discussing the second report two years ago we drew special attention to the medical importance of the chapters and appendices on the physical and mental development of the school child. These are followed up in the present volume by chapters on the development of children up to the age of 7 years and by most valuable memorandums on the anatomical and physiological characteristics of children between the ages of 2 and 7 by Professor H. A. Harris, and on the emotional development of children up to the age of 7 by Dr. Cyril Burt and by Dr. Susan Isaacs. These should be read, especially that by Professor Harris, in close association with the corresponding appendix contained in the report on the primary school. They are not only full of essential and instructive facts, but they illustrate the serious extent to which the subject of growth has been neglected in the education of the medical student during the years devoted to the study of human anatomy and physiology. Two or three sentences may be quoted in this connexion: "The physician or surgeon is often at a loss since he is asked to treat abnormalities or disorders of growth before he is thoroughly versed in its normal features. . . . The results of aberrations of growth in young children are at least as manifest as the results of errors in social adjustment. . . . Growth implies far more than mere change in form and size. . . . Our real interest in

young children is not determined by their anatomical structure, but by their changing activity and behaviour as they pass from one stage of development to another."

The report gives a very interesting account of the history and development of infant schools and nursery schools in this country and the influence upon them of persons and movements in other countries, and there is a chapter on the medical supervision of children below the age of 5 years; this includes some account of the activities of health visitors and of infant welfare centres. The nature and scope of the instruction to be given in nursery and infant schools is fully considered, as is their staffing and equipment. It is strongly urged that the premises should, as far as possible, be on the "open-air" plan. Though the importance of the association of children with one another from an early age is recognized, it is gratifying to be told that, even in this period of small families, "where the home conditions are good, the best place for a child below the age of 5 is at home, particularly if the mother takes advantage of the facilities for regular medical supervision of such children which are available or may be made available in the future," and to have it laid down that "the fundamental purpose of the nursery school or class is to reproduce the healthy conditions of a good nursery in a well-managed home, and thus provide an environment in which the health of the young child—physical, mental, and moral—can be safeguarded."

THALLIUM ACETATE POISONING

The literature of thallium acetate poisoning has been too often reviewed to need recapitulation. It will suffice to recall here a note, with bibliography, on the action of thallium, published in our issue of May 25th, 1929 (p. 962); an excellent account of three fatal cases investigated by Roche Lynch and Scovell² in 1930; the fact that the English Board of Education interdicted, in 1931, the use of the drug in treatment of tinea capitis in school children; and the very good review (also quoting three personal cases of retrobulbar neuritis) published by Mahoney³ early in 1932. On this subject Ingram⁴ states: "In all, there appear to have been twenty-four deaths from administration of thallium acetate in cases of ringworm of the scalp."

Nearly four years have passed since the occurrence of the most disastrous of all recorded instances of fatal poisoning from this drug—namely, the death of fourteen school children under treatment for ringworm in an orphanage in Granada. Reference was made to this by Lynch and Scovell (in the paper already referred to), who hinted at an excessive dose resulting from an inexact weighing machine, but it was not until August of last year that Professor Alvarez de Toledo y Valero gave, in *Crónica Médica*,⁵ the first full account of this incident in medical literature. It is particularly unfortunate that this author, at the conclusion of an

¹ Report of the Consultative Committee on Infant and Nursery Schools. London: H.M. Stationery Office, 1933 (2s. 6d. net.)

² *Lancet*, 1930, ii, 1345.

³ *Journal of the Medical Association*, February 26th, 1932.

⁴ *British Medical Journal*, 1932, i, 9.

⁵ *Crónica Médica*, August 15th, p. 557, and September 15th, p. 146.

otherwise very informative review of the cases, should have left completely open the question as to whether the disaster was due to overdosage, and if so how it occurred. Those interested in this vital question must be content with the information that post-mortem chemical analysis, undertaken by the State authority, was "successful only from the qualitative point of view," and that the possibility of the drug having changed during storage from the thallous to the thallic salt was eliminated. In the face of such meagre information one cannot but suspect as possible causes for this silence either unterminated legal proceedings or ignorance of the facts. But whether or not the prescription was wrong, the drug impure, or the scales and weighing machine inaccurate, de Toledo gives a sufficiently good account of the symptomatology and course of the illness to merit brief record here.

On February 7th, 1930, at 5 a.m., thallium acetate, obtained from a well-known drug manufacturer, was administered in the approved dose of 8 mg. per kilo of body weight to sixteen children suffering from ringworm. All but two of them subsequently died. The first death occurred two days after administration; there were four deaths on the fifth day, three on the sixth, one on the seventh, two on the eighth, one on the tenth, one on the eleventh, and one on the sixteenth. Symptoms of poisoning are described as follows. Digestive system: acute abdominal pain, glossitis, no constipation or true diarrhoea, vomiting of cerebral type after the fifth day. Cardiovascular and respiratory systems: acceleration of pulse rate only after a few days, respiratory difficulty in some cases, one death in forty-eight hours from bronchopneumonia. Urinary system: decreasing albuminuria in five cases dating from onset of illness, progressive oliguria, and in three cases anuria. Nervous system: profound, early, and persistent somnolence, with occasional evidence of excitement, supraorbital and frontal headache, joint pains from twelve hours after ingestion onwards, muscular clonus in half the cases, persistent tic de salem in all; loss of corneal reflex (and, in one case, of light reflex), ptosis in six cases, and conjunctival congestion in the majority. Other cranial nerve symptoms included mydriasis, miosis, anisocoria, dim vision, rotatory nystagmus. Other symptoms were pain in the limbs, slight rise of temperature, and cyanosis of extremities and of face. One of the oddest features of the outbreak of poisoning was the delay in depilation—usually expected to be marked between the fifteenth and twenty-second days after administration. In this series none of the fatal cases showed any sign of depilation at all, and in the two survivors the process began as late as the twenty-ninth day. Post mortem, Leche-Marzocchi's sign was positive in thirteen cases. There was engorgement of cerebral sinuses and meningeal vessels, subpleural haemorrhage and congestion of trachea and bronchi, punctate effusions and ecchymoses in the pyloric antrum. Histological examination revealed nothing abnormal in the pons or medulla beyond an increase in the number of nuclei.

SYPHILITIC NEPHRITIS

The occurrence of acute nephritis in the acute stage of syphilis while the secondary rash is developing is well recognized by clinicians but is not common: G. C. Sawyer¹ has recently described a typical case, and states that not a great many examples have been recorded. A goodly number of similar cases must, however, go unrecorded. Thus we happen to know of two typical cases treated during the secondary stage of syphilis within the past ten years. Both of them, as in Sawyer's case, reacted entirely favourably to arsenobenzol drugs, and thereby were clinically cured and quickly albumin-free, thus giving clinical proof of their aetiology. So there is never any need to hesitate in giving the appropriate arsenical drugs when acute nephritis occurs in the course of secondary syphilis. Rich² draws attention to pathological evidence of the relation of syphilis to nephritis, in a paper entitled, "The Pathology of Nineteen Cases of a Peculiar and Specific Form of Nephritis associated with Acquired Syphilis." It is interesting for physicians to be made to realize, as Rich brings out at the commencement of his paper, how pathology has hitherto failed to confirm the clinical view that the kidneys may be directly affected in acquired syphilis. He quotes from various standard textbooks of pathology, two references from which may be given. Aschoff states: "Multiple scars in the kidneys of syphilitic individuals have been regarded as the results of syphilitic inflammation by the process of exclusion." MacCallum writes: "Changes leading to diffuse scarring and contraction of the kidneys due to syphilis have been said to occur." Rich's paper is therefore of great interest and importance to pathologists as giving perhaps the most definite proof so far offered of a specific renal lesion due to acquired syphilis, thus confirming the clinical view. It is true, as will be seen, that Rich's cases were all in the tertiary stage of their syphilitic disease, but post-mortem evidence in the secondary eruptive stage must be almost impossible to obtain. An important point in considering any renal lesion in late syphilis is obviously to exclude the effects of the potent metallic drugs used in treatment—both mercury and arsenic—and this Rich, from the carefully kept records of Johns Hopkins Hospital, was fortunately able to do. Only nine out of the nineteen cases referred to in his paper had received antisyphilitic treatment at all. Most of the cases recorded were in negroes, but this is accounted for simply by the great preponderance of negroes among the syphilitic patients who are admitted to that hospital. It is not to be inferred that the lesion which Rich describes represents any racial peculiarity, and it occurs in the white race in identical form. The characteristic lesion which Rich describes shows itself macroscopically by the appearance of minute greyish-yellow flecks beneath the capsule and in the cortex. In the early stages no scarring or contraction of the kidney surface is evident, but in later stages scars of varying size in relation to the flecks roughen the kidney surface and distort the cortical striations. Microscopically the lesion is found to consist of dense accumulations of round cells in the interstitial tissue, projecting into and often, therefore, obliterating neighbouring tubules. Many tubules, with their corre-

¹ *British Medical Journal*, 1933, ii, 527.

² *Bull. Johns Hopkins Hospital*, 1932, 1, 357.

sponding glomeruli, may be in this way wholly destroyed. Later, considerable scarring and fibrosis ensue, and crystals of cholesterol, shown as clefts in the paraffin sections, are often abundant. The extent of the lesion, and consequently the extent of the contraction from scar tissue, is very variable. Rich discusses very fully and fairly the contrast between the clinical view of a true syphilitic nephritis and the previous absence of pathological support, and hopes he has now provided, in part at least, the proof which was lacking. The article is accompanied by clear microphotographs of the lesion at its different stages.

VITAMIN D AND FRACTURES

The main facts connected with the curative action of vitamin D in the treatment of rickets are, almost universally recognized, and have been applied to the biological standardization of the various preparations by international agreement. But, as in many other fields of successful therapy, the explanation of the effects is often a matter of great complexity and difficulty. A vast amount of experimental and clinical data is available to show clearly that vitamin D is an essential factor in the mineral metabolism of the body, particularly that of calcium and phosphorus, and it is therefore reasonable to expect demonstrable influences of this vitamin on the rate and efficiency of the healing of fractures. Observations on this subject go back to 1927, and a review of the literature shows somewhat discordant results. While many observers found that various preparations of vitamin D accelerated the rate of consolidation and callus formation in experimental fractures, others reported no effect on the healing of fractures, or even atrophy of the callus and in some cases re-fracture. These variable results could, on analysis, be referred to the great variations in dosage of the vitamin, in the age and species of the animals used, and in the mineral content of the diets employed. It was put forward by Grauer in America that small doses of vitamin D promoted osteogenesis, whereas large doses might produce decalcification and even osteitis fibrosa. Clinically it was reported by several workers that, while fractures in infants and aged subjects were benefited by the vitamin, fractures in ordinary adults were not influenced at all.

The most recent contribution to the problem of vitamin D and the healing of fractures is that of J. Morelle,¹ who set out to investigate by radiological and histological methods the influence of dosage and age of animal on the healing of experimental fractures. Rats and rabbits were used by this worker, and experimental fractures were made either in both tibia and fibula without exposure of the bones, or in the fibula only by exposure and sawing across the bone. Although it was found that therapeutic doses accelerated the formation of a callus, this effect was of limited duration, and seemed to be restricted to the period of cartilage formation. Daily doses of 10 rat units were without effect; 50 to 100 units accelerated the union; but doses of 1,000 units were less favourable in their action. When the dosage was increased to 7,000 and 10,000 units or more a day the formation of the callus was definitely retarded, and this was found to be due to a proliferation of fibroblastic tissue. No effect was

produced by vitamin D given up to the time of fracture and then discontinued, but large doses given three weeks after the fracture definitely retarded the union. These results were obtained with fractures of the fibula. The peculiar fact was established that, if very large doses were given after both tibia and fibula were fractured, the callus formation was accelerated, in contradistinction to the retarding effect if only the fibula was fractured. This is explained by the author as due to the poor apposition in the case of the double fracture, which leads to the formation of connective tissue between the ends, in which cartilage tends to be laid down (Roux), vitamin D being especially active in the deposition of calcium in such tissues. From the clinical point of view we can conclude that moderate doses of vitamin D may help in the treatment of fractures, but more data from the clinician and radiologist must be awaited before it can be thought advisable to recommend a routine treatment.

GROWTH AND DEVELOPMENT

The study of bodily types has been a popular method of investigation throughout the whole period of medical history. In anatomical studies the method has mostly been that of cross section, in which growth in stature, for example, has been measured by comparing the average statures of different, contemporaneously observed age groups. Comparatively few observers have made continuous records of the growth of the same children over several years, and a recent study on these lines by Miss R. M. Fleming attempts to carry out an ambitious programme. The results, as set out in a report² issued by the Medical Research Council, entitled "A Study of Growth and Development," provide a most valuable series of data. For the material upon which the observations are based Miss Fleming visited repeatedly over thirty schools in England and Wales, carrying out her measurements on 2,219 boys and 2,073 girls. Of these over a third were only examined once—an illustration of the great practical difficulty of following a large number of children year by year. Nevertheless, the total number of observations was well over twelve thousand, so that the basis for the detailed statistical analysis carried out by Mr. W. J. Martin, B.Sc., was reasonably comprehensive. The observations taken included in all cases stature, eye colour, hair colour, forehead shape, head length, and head breadth. Children in secondary schools were asked to say what occupation (a) in school and (b) in their leisure time seemed most enjoyable to them. In many cases details were also obtained of the child's school achievements, while in a few schools facial measurements and fuller cranial observations were carried out. In a small number of instances full anthropological measurements of a whole family were obtained, and these are included in an appendix. The general statistical analysis contains a vast amount of important information for the anthropological student. Composite graphs of the principal measurements show at a glance the curious and well-known rhythms of growth, with slower and faster periods. In the present series the fast-growing period for girls starts sooner, finishes earlier, and is less intensive than for boys. The sexes are equal up to 11 years of age; between 11 and 14 girls are taller than boys, but from 14 onwards

¹ Rev. *Bdige des Sci. Méd.*, 1933, 1, 481

² Special Report Series, No. 189. H.M. Stationery Office, 1933, 6s.

the boys become steadily taller than the girls. Stature graphs were found to fall into two main groups—one showing prolonged growth through the "teens," one showing an early stop. This second group could be further divided into a subgroup with steady growth followed by a slowing down and a stop, and another showing a definite burst and a stop, sometimes final, sometimes followed by a slight further growth. Nutrition is obviously an important factor in determining a normal rate of growth, and in one school a somewhat irregular growth curve was traced to the provision of a hot midday meal during the period of investigation. Of the total children examined, over 50 per cent. were of Welsh parentage on both sides, 12 per cent. were of mixed Welsh and English stock, while 21 per cent. were of English stock. This has made possible a discussion of the results under various racial and physical types, and a classification has been adopted with five main divisions according to the value of the cephalic index, each division being further subdivided according to pigmentation into three groups: dark eyes and dark hair, light eyes and fair hair, or light eyes and dark hair. The general survey of the "child population" examined by Miss Fleming on this basis brings out many interesting points. A curious phenomenon was the finding of "pockets" of special physical types in rural areas isolated before the advent of the railway and motor car. A general survey of the psychological features is also included for the whole group under consideration, and Miss Fleming makes a very stimulating attempt to discuss various educational problems in connexion with each of the physical types described. It is impossible to summarize these briefly, for the very reason that the whole object of the work here described has been to study "with even painful attention," in the words of the author, the *individual* features of many hundred records. Although the conclusions drawn must of necessity be largely tentative it is certain that they will be of much value to workers in this important field.

SOME FACTORS WHICH REGULATE THE UTERUS

The demonstration of prolactin in the urine of pregnant women and the success of the Aschheim-Zondek test for pregnancy have stimulated a widespread interest in the study of the effects of the internal secretions on the reproductive organs and reproduction. It is believed that the following substances play an active part during pregnancy: folliculin or oestrin, secreted in the Graafian follicles, progesterin, elaborated by the corpus luteum, the posterior pituitary oxytocic principle, and prolactin. The commercial preparations of prolactin are extracted from the placentas and urine of pregnant women, and there is reason to believe that this substance differs in certain respects from that secreted by the anterior pituitary gland. If the view be accepted that the placenta does not secrete, but merely stores, the active substance, then it must be assumed that prolactin is in some way altered in the body before it is stored in the placenta. Most authorities recognize the existence of prolactins A and B, while some claim that at least four separate and distinct substances concerned with reproduction may be extracted from the anterior pituitary gland. In a paper reviewing the literature and reporting experimental work, read before the ninth British

Congress of Obstetrics and Gynaecology, Blair-Bell, Datnow, and Jeffcoate¹ expressed the view that progesterin inhibited uterine motility during the early months of pregnancy, and that its duties were taken over, in whole or in part, by prolactin during the second half. On the other hand, they believe that oestrin, which increases in amount in the urine during the latter months of pregnancy, causes hypertrophy of the uterine muscle fibres, and sensitizes the muscle or nerve elements to, and stimulates the secretion of, the posterior pituitary oxytocic principle. On these assumptions they sought to offer an explanation of the onset of labour and of certain uterine irregularities. It is evident that these complicated problems can only be elucidated by the experimental method. False results are frequently due to the impurity of the extracts used. It is now known, for instance, that effects attributed to oestrin were caused by traces of protein in the preparations employed. It is, moreover, surely dangerous to make the assumption that the synthesis of results obtained *in vitro* presents a true picture of the manner in which the different activities behave in the body—for example, the uterus of the rabbit, the cat, and the dog respond in different ways to adrenaline. If oestrin behaves in the manner these authors suggest, how is it that Carlton Oldfield² was able to report the case of a pregnant woman proceeding to delivery at term six months after he had removed both ovaries? Then, too, why does the posterior pituitary gland of a male animal contain as much of the oxytocic principle as the female of the same species? The reason why a woman goes into labour ten lunar months after she has conceived has intrigued clinicians for 2,500 years, and it is probable that no authoritative statement could be made to-day which more nearly approaches the truth than the simple view advanced by Hippocrates.

CONTROL OF FURUNCULOSIS IN FISH

Investigations into this widespread disease, occurring among the family *Salmonidae*, have made steady progress since the publication, in 1930, of the first report of the Departmental Committee. The chairman, Professor T. J. Machie of Edinburgh, and his colleagues have done excellent work on fish furunculosis—it exists in various parts of Europe and North America, as well as in Britain—and they are to be congratulated not only on an interesting piece of comparative bacteriology, but on having materially advanced our knowledge on an important economic problem. It is by no means completely solved yet, and in the second interim report³ the committee itself emphasizes the need for further research on many aspects of the general problem; we are confident that this will produce results of value, not only to the science of bacteriology, but to the maintenance of the health of the chief, and perhaps the most palatable, of our game fish. It is now fully established that *B. salmonicida* is the primary and specific causal agent of the disease, and a serological test (complement-fixation) with a specific antiserum has been used to differentiate this organism from related

¹ *Joint Obstet. and Gynaec. British Empire*, 1933, vi, 541.

² *Allen and Lockyer: New System of Gynaecology*, vol. i, p. 66; and vol. ii, p. 43.

³ *Second Interim Report* (June, 1933) of the Furunculosis Committee appointed July, 1929, by the Right Hon. William Adamson and the Right Hon. Sir John Baxter, Edinburgh: H.M. Stationery Office, 1933 (2s. 6d. net).

forms, and to show that variations within the species are comparatively slight. A bacteriophage has also been isolated which has a pronounced lytic effect on cultures and has been found in the water of certain rivers. It is acquired exclusively in fresh water, salmon becoming infected in rivers, after they have left the sea, from diseased or healthy trout carrying the bacillus. It is now definitely known that trout may act as infection carriers, maintaining the organism for long periods in a water; these carriers are of the incubating type, and ultimately succumb to the actual disease on an increase of temperature. This last factor has been shown to play a most important part in promoting epizootics, and if fish are in good health a temperature within the range of 55° to 66° F. appears to be necessary for the spread and development of furunculosis. If the health of the fish is poor, however, it may develop at a lower temperature. Under favourable conditions infection is rapid in an infected water—possibly occurring within a few hours—and death may result in three or four days. Fish dying rapidly show practically no external lesions, which tend to develop in the slower infections. Salmon and sea-trout entering fresh water from the sea are highly susceptible. In trout kept in tanks it has been shown that certain factors have a definite influence on the spread and incidence of the disease. Susceptibility depends on species. For example, *S. fario* is more, and *S. irideus* less, susceptible than *S. fontinalis*. Yearling and younger fish are more resistant than older fish; fry are highly resistant, and should be used in preference to older fish for stocking purposes. (The safest plan, however, is to use sterilized ova for this purpose.) Temperatures higher and lower than 60° F. tend to inhibit the development and spread of the disease. When the disease spreads in a colony of brown trout some die rapidly, others resist it entirely, while others contract a latent infection and become carriers, but probably eventually succumb to the active disease. The committee recommend immediate legislative action on the lines suggested in their first report. In rivers, they point out the need for the prevention of overcrowding and the maintenance of general good health of fish, for the removal of both healthy and diseased fish from a water at the commencement of an outbreak, and for early notification of the presence of the disease.

TEAM WORK IN MEDICAL PRACTICE

Mr. W. E. Tanner, president of the Hunterian Society, addressed the members on October 16th last on the subject of the influence of medicine on surgery. He was able to illustrate his text by examples of the need for the association of the physician with the surgeon in many of the problems which are presented to the latter. He also touched upon the subject of "specialism" in general, and expressed his agreement with the view that to be sound this must be founded upon experience in general medicine. Another matter to which he made reference, and one of first importance, was the means that are available for placing the skill of the "specialist" at the service of the public, and he questioned whether the organization of this and of medical services in general was not left too much to the politician and the bureaucrat. Within an institu-

tion it is not difficult to make arrangements so that the skill of a staff may be generally available; success depends simply upon the extent to which advantage is taken of opportunities that are ready to hand. But all must agree with Mr. Tanner that outside an institution organization of this kind is difficult. Under either set of conditions what each patient primarily needs is a "doctor" who will identify himself with his personal interest; in this respect he is better off, as matters stand, outside the hospital, and here at any rate the general practitioner must remain the centre of any service that is to be efficient. Even in these days of elaboration, the general practitioner, as trained in Great Britain, is able to deal satisfactorily with nine-tenths of the ailments of his patients, but in the case of the tenth he needs associates, and the emergency is sometimes difficult to meet both for patient and for doctor. Economically such emergencies should be met by the insurance policy; medically they need team work. No single scheme of team work could be devised which would suit all centres of population; but association between medical men is so much more usual, and professional rivalry is much less stupid, to-day than a few generations ago, that some organization of team work could be devised in most localities. Few would deny that it is in the interest of the patient that he should not, under any conditions, be separated from the services which can be given to him by the general practitioner who has his confidence, or that the duty of organization should be assumed by the medical profession rather than left in other hands.

NEW YEAR HONOURS

The list of medical New Year Honours will be found on page 30. It is not long, and clinical medicine receives scant recognition. Everyone, however, will acclaim the knighthood conferred on Professor Robert Muir, who for nearly thirty-five years has held the chair of pathology at Glasgow University and is known throughout the world as a great teacher and a brilliant investigator in the fields of pathology, bacteriology, and immunology. Sir William Lister, the distinguished ophthalmologist, who is surgeon-oculist to the King's Household, receives the further honour of K.C.V.O. Knighthoods are also conferred on Dr. Frederic Mallett, consulting surgeon to the Bolton Infirmary, for political and public services in Lancashire, and on Dr. Behari Lal Dhingra, chief minister and lately chief medical officer of the Jind State, Punjab. Among the appointments to Companionships in various Orders we may note particularly the C.B.E. conferred on Miss Maud Chadburn, surgeon to the South London Hospital for Women and the Marie Curie Hospital, and on Dr. Helen MacMurchy, lately chief of the Division of Child Welfare in the Canadian Department of Pensions and National Health. Service awards, and special promotions for medical officers in the armed forces, are fewer than usual.

We regret to announce the death of Eminent Professor James Cosser Ewart, M.D., F.R.S., who held the regius chair of natural history in the University of Edinburgh for forty-five years, and of Dr. Swab Vincent, for sixteen years professor of physiology in the University of Manitoba, and for ten years professor of physiology in the University of London.

NEW YEAR HONOURS

The list of New Year Honours was issued as a special supplement to the *London Gazette* on Monday, January 1st. The names of the following members of the medical profession are included.

K.C.V.O.

Sir WILLIAM TINDALL LISTER, K.C.M.G., M.D., F.R.C.S., Surgeon Oculist to His Majesty's Household.

Knighthood

FREDERIC ROWLAND MALLETT, M.D., C.M., Consulting Surgeon, Bolton Infirmary, Lancashire. For political and public services in Bolton.

ROBERT MUIR, F.R.S., M.A., M.D., Sc.D., LL.D., D.C.L., F.R.C.P.Ed., Professor of Pathology, University of Glasgow.

BEHARI LAL DHINGRA, C.I.E., M.B., Chief Minister, Jind State, Punjab States.

C.B. (Military)

Major-General HENRY CHARLES RUPERT HIME, D.S.O., M.B. (late Royal Army Medical Corps), Honorary Physician to the King, Deputy-Director of Medical Services, Southern Command.

C.M.G.

ARTHUR ROBERTS WELLINGTON, M.R.C.S., L.R.C.P., Director of Medical and Sanitary Services, Hong-Kong.

C.I.E.

Lieut.-Colonel ALEXANDER DRON STEWART, I.M.S., Director, All-India Institute of Hygiene and Public Health, Calcutta, Bengal.

Lieut.-Colonel RAM NATH CHOPRA, M.D., I.M.S., Professor of Pharmacology, School of Tropical Medicine and Hygiene, Calcutta, Bengal.

C.B.E. (Civil)

MISS MAUD MARY CHADBURN, M.D., B.S., Senior Surgeon, South London Hospital for Women; Surgeon to the Marie Curie Hospital.

MISS HELEN MACMURCHY, M.D., lately Chief, Division of Child Welfare, Department of Pensions and National Health of Canada.

FRANK EDRED WHITEHEAD, O.B.E., M.R.C.S., L.R.C.P., lately of the East African Medical Service, and Director of Medical and Sanitary Services, Nyasaland Protectorate.

O.B.E. (Military)

Surgeon Commander KENSLEIGH HILL HOLE, M.B., B.S., R.N.

O.B.E. (Civil)

ROBERT OWEN MORRIS, M.D., D.P.H., F.R.S.Ed., J.P., lately Director of Education, Welsh National Memorial Association.

PETER DONALD STRACHAN, M.D., Superintendent, Leprosy Settlement, Botsabelo, Basutoland.

THOMAS HENRIE MASSEY, M.C., L.R.C.P. and S., East African Medical Service, Senior Medical Officer, Kenya.

BARLEIGH SHERMAN, M.B., East African Medical Service, Deputy Director of Sanitary Service, Zanzibar.

M.B.E. (Civil)

Captain ASHLEY EDWIN DUNBAR HARVEY, Indian Medical Department, Superintendent, Central Jail, Peshawar, North-West Frontier Province.

Kaiser-i-Hind Medal

SARAH ESTONER SHROFF, F.R.C.S.Ed., Eye Specialist, India.

The following promotions are also announced:

First and Second Classes

SARAH ESTONER SHROFF, F.R.C.S.Ed., Eye Specialist, India.

SARAH ESTONER SHROFF, F.R.C.S.Ed., Eye Specialist, India.

SARAH ESTONER SHROFF, F.R.C.S.Ed., Eye Specialist, India.

SARAH ESTONER SHROFF, F.R.C.S.Ed., Eye Specialist, India.

Australia

[FROM OUR CORRESPONDENT IN SYDNEY]

Jubilee of the Sydney Medical School

The year 1933 is the jubilee year of the Sydney Medical School, and the occasion was celebrated by a gathering of graduates in the Great Hall of the University of Sydney on September 29th. The Chancellor, Sir William Cullen, presided, and among those present were: the Vice-Chancellor, Professor R. S. Wallace, the Dean of the Faculty of Medicine, Dr. C. B. Blackburn, members of the teaching staff of the Medical School, and representatives of all the faculties of the University. Sir William Cullen, Dr. C. B. Blackburn, and Dr. A. E. Mills (formerly dean of the Faculty of Medicine) addressed the gathering. An organ recital was given by Mr. W. McKie, organist of the City of Melbourne, and during the proceedings the members of the Sydney University Musical Society, conducted by Mr. G. Faunce Allman, sang the anthem: "Let Us Now Praise Famous Men." When the University of Sydney was founded in 1850 it was provided that it should be used for the training of students in medicine, but it was not until 1883 that the Medical School was opened. The first dean was Professor T. P. (later Sir Thomas) Anderson Stuart, to whose strength, zeal, learning, organizing and teaching abilities, and remarkable personality the school owed much of its growth, progress, and efficiency. Degrees were conferred on the first six graduates in 1888; since then 2,293 graduates have been admitted. Many distinguished men have been associated with the Sydney Medical School, and have played a part in its development. Among them may be mentioned Sir Almoth Wright, Sir Charles Martin, Sir Alexander MacCormick, the late Professor J. I. Hunter, Professor J. T. Wilson, and Professor D. A. Welsh.

The Rockefeller Building

It is fitting that the jubilee year of the Sydney Medical School should be celebrated by the opening of a new building to house the departments of medicine, surgery, pathology, bacteriology, and obstetrics. The erection of the building was made possible by the munificence of the Rockefeller Foundation, which presented £100,000 to the University for the purpose. But it is doubtful if this splendid gift would have been made if the attention of the Rockefeller Foundation had not been attracted to the Sydney Medical School by the magnificent gift of Mr. G. H. Bosch, which permitted the founding of chairs in medicine, surgery, and bacteriology. The building is adjacent to, and in communication with, the Royal Prince Alfred Hospital. It is approximately 200 feet long by 160 feet in depth, and has five floors. On the western front are two wings containing theatres and teaching laboratories. There is a central octagonal block, on either side of which is a spacious light court. In this central block are the library, pathological museum, and animal house, the latter on the topmost floor. The remainder of the building, constituting its main bulk, consists of research laboratories. The Rockefeller Building was opened on September 28th, 1933, by Air Vice-Marshal Sir Philip Woolcott Game, Governor of New South Wales, and Visitor to the University of Sydney.

A plaque to the memory of Robert Gordon Craig, to whom the University of Sydney is indebted for his gift of £20,000 for the foundation of the Fellowship of Urology, has been placed in the Rockefeller Building. On the occasion of the opening of the new building the widow, Mrs. Craig, unveiled the memorial.

Scotland

Scottish Housing Corporation

A Scottish Departmental Committee on Housing, under the chairmanship of Sir Thomas Whitton, has been sitting since May, 1933, with the reference "to consider what further steps are necessary or desirable to secure the maintenance of a proper standard of fitness for human habitation in working-class houses, other than those suitable for slum clearance, and to promote the supply of houses for the working classes without public charge, through the agency of public utility societies." The committee has now made its recommendations, the chief of which is that a Scottish housing corporation should be established. It is recommended that grants to be paid equally by the State and by local authorities should be given to owners of property requiring to be reconditioned, the grants being up to 50 per cent. of the cost of reconditioning, with a maximum of £75 per house. The houses which would qualify for such a grant would require to have an estimated life of at least twenty years, and the house would have a value not exceeding £300. The subsequent rents of such reconditioned houses would not be left to the proprietors, but would be fixed by the local authorities. The housing corporation, if established, would be given powers, after two years, for compulsory acquisition of house property upon payment of compensation to the owners fixed by the market value of the properties. At the same time private owners would be encouraged to recondition houses by assistance made available to local authorities, public utility societies, and similar organizations. The committee points out that some 200,000 houses, or about one-fifth of the houses in Scotland, would come within reconditioning schemes. It is not suggested that the proposed housing corporation should become responsible for the ownership of this number of houses; the grants would probably encourage owners to recondition about three-quarters of these houses, leaving some 50,000 houses to the corporation to acquire and recondition. On the assumption that an average of £150 would be required for the purchase and reconditioning of each house, a capital expenditure of about £7,500,000 would be involved. One-half of this sum would be met by the grant, and it is proposed that advances should be made to the housing corporation by the Treasury through the Department of Health, the scheme ultimately being self-supporting through the returns from rents. It is proposed that any loss incurred by the corporation might be met by the State, while profits would be put to reserve to meet possible deficits in future years. The rent for such houses, the committee states, should never exceed 12s. 6d. a week, or £32 10s. per annum, and should be fixed in each case by the local authority before reconditioning is carried out. The committee believes that the scheme might be achieved in ten years, and proposes that the grant should be available for five years in the first place, with an inquiry thereafter into the results achieved.

New Edinburgh Maternity Hospital

The ground adjoining the Royal Infirmary of Edinburgh has now been prepared for the site of the new Simpson Memorial Maternity Hospital—which is to be managed as a department of the Royal Infirmary—and it is expected that building operations will begin in the next few months. The new buildings will occupy the site which was previously the playground of George Watson's School for Boys, and accommodation will be afforded for 120 maternity patients. This is a considerable increase on that of the present Simpson Memorial Hospital in

Lauriston Place, which provides some seventy beds. The new hospital will be a quadrangular building five stories in height on its south façade, with a broad balcony facing south on each floor. In the centre of the building there will be a quadrangle, and the north side, of two stories, will house the administrative, service, and out-patient departments. Ample space will be provided for ante-natal clinics, lecture rooms, operating theatres, etc. The nurses' home for the Royal Infirmary, which is to be built later, will stand on a site to the north of the maternity block.

Stirling Royal Infirmary

At the annual meeting of subscribers to Stirling Royal Infirmary Colonel J. C. Dundas, president of the institution, who presided, made special reference to the new contributory scheme which had been introduced by the directors, and of which there were now 10,783 members. When the scheme was started, he said, it was calculated that there might be a loss in contributions from patients of about £600, but actually there had been an increase of £1,900 in income for the year. Expenditure had increased by £542, and the deficit on the year's working had been £64, as compared with £1,444 in the preceding year. There had been ninety-three cases of motor accident during the year, which had absorbed 1,977 "patient days" at a cost of £675. Of this sum only £252 had been recovered, which, however, was larger than in previous years. An extension to the infirmary would be necessary in view of the large surgical waiting list, but as this would involve a capital cost of £6,000 and an annual maintenance expenditure of £2,000, it could not be considered immediately.

Examination of Blood-stains

"Serological Methods in the Detection of Crime" was the title of a recent lecture by Professor John Glaister of Glasgow University before the Edinburgh Section of the Society of Chemical Industry. The examination of a stain, he said, to determine whether it consisted of human blood was a matter on which a definite opinion should only be given by a worker of considerable experience. The method now generally employed was the precipitin test, which was specific for human blood under certain conditions. It was carried out on clear blood serum, and should not be confused with tests depending on the characteristics of red corpuscles. Describing the principle of the test the lecturer said that when defibrinated blood of an animal was injected into a rabbit, the rabbit produced in its body an anti-serum which would precipitate the serum of the animal whose blood was injected or of one closely related to it. Anti-horse serum provided the only exception to the specific character of the test. If human blood was injected, then the anti-serum would precipitate any human blood, but not that of any other animal. In conducting the test the anti-serum was added to a prepared solution, and the appearance within twenty minutes of a precipitate or definite turbidity, spreading from the bottom through two-thirds of the fluid in the tube, was taken to indicate a positive reaction. It was possible, Professor Glaister said, to identify by this test human blood in a stain, even if the stain was many years old or had been treated by heat. The stain was soaked in normal saline for several days if necessary, and the resulting solution had to be rendered clear and neutral. To discover whether blood serum was present in the solution use was made of the foam test. On blowing air into the solution through a fine pipette a persistent foam was produced if serum was present in appreciable quantity. With proper methods a solution suitable for use in the precipitin test could be made from an extremely small blood-stain. Stains of human blood,

which after drying had been exposed to a temperature up to 200°C., would yield a serum solution giving the precipitin test. If drying took place at tropical temperature, however, it might not be possible to obtain such a solution. If a blood-stained cloth was soaked in cold water, either shortly after drying or several weeks later, and afterwards steeped in saline, the presence of serum could be shown both in the water and in the saline. If an old stain was kept in boiling water for an hour, enough serum remained to give a reaction when extracted with saline, but the serum from a twenty-four-hour-old stain could be completely removed by five minutes' boiling. The use of soap in soaking the stain might not affect the removal of the serum, but by producing foam and turbidity it made the precipitin test unreliable. In conclusion, Professor Glaister said that the test could safely be applied to stains on most kinds of wood and leather as well as fabrics and paper, with the limitations he had mentioned.

Royal Edinburgh Blind Asylum

At a meeting of the Board of Directors of the Royal Blind Asylum and School, Edinburgh, on December 26th, 1933, the Rev. Thomas Burns presiding, a scheme was adopted for the reorganization of the industrial department of the institution. The scheme provides that during 1934 no person shall be admitted for industrial training, and that the question of further admissions shall be reviewed annually in December; that the normal age of retirement shall be 55 instead of 60 as at present; and that the establishment staff of blind workers shall be fixed at a total of ninety-nine—eighty-two men and seventeen women—any further blind workers employed by the institution being admitted as temporary workers only. The object of the scheme is to prevent increased expenditure in the future. The wages paid to workers on the establishment staff will be the standard wage as before, with all the benefits and privileges as at present.

England and Wales

Mental Diseases Research Centre in the Midlands

Under the auspices of the City and University of Birmingham Joint Board of Research for Mental Disease a conference of the medical staffs of the mental hospitals in the Midlands was held recently at Hollymoor. Dr. F. A. Pickworth, director of the Joint Board, delivered an address in which he emphasized the need for promoting research more actively. He stated that each year about 140,000 persons received treatment for mental disorders in England and Wales at a cost of £10,000,000, of which no more than 3s. in each £100 were devoted to investigating the primary causes of these diseases with a view to their more effective treatment and prevention. This contrasted sadly with the amount of money raised for cancer research, especially in view of the widespread distress caused by mental disorders. There had been in the past an unjustifiable stressing of the hereditary factor, which had given rise to a feeling of hopelessness and a reluctance to raise funds for this purpose. Moreover, the existing research workers were seriously handicapped by the imperfect coordination of their activities with those of general medicine. In order to win financial support it would be necessary to demonstrate the economic value of any line of work which was proposed. This required a study of the basic principles of mental research and a survey of the material and opportunities available. One of the most urgent lines of exploration was the determination of predisposing factors and exciting causes, and a part of this should fall within that relating to the pituitary

body. An immense amount of routine work would be needed in order to achieve valuable results by indirect methods of research, and the information so obtained would be of inestimable benefit to the hospitals where the patients were under treatment. Viewed from this standpoint the Joint Board of Research had justified itself already as regards the spending of money which it had deemed necessary. It was to be hoped that the importance of the Board's work would be more clearly recognized in the future, and would attract more practical interest and co-operation. Sir Gilbert Barling affirmed his belief that the only way in which an effective research body could be created was the uniting of the mental hospitals in the Midlands in a single scheme, the activities of which would be housed in the University of Birmingham, and would co-ordinate the researches in progress in the various mental hospitals in the area. At the University those engaged in particular investigations in connexion with mental diseases would be brought into close contact with general pathology, physics, and biology, and not be so isolated as heretofore. Sir Gilbert voiced the hope that the various mental hospital committees would in the near future realize the advantages to be gained from such a scheme of co-ordinated research as an important step in promoting the restoration to health of the mentally sick. After some discussion it was decided to appoint a small committee to inquire into the possibility of forming a pathological society of the medical staffs of the Midland mental hospitals as a step towards the establishment of a central research centre.

Reconstituted Public Health Committee for London

The London County Council has been engaged on the very large task of reforming its procedure and the functions of its committees. One result of the proposals will be that the Central Public Health Committee will be known as the Hospitals and Medical Services Committee. Its duties will include the supervision of hospitals and local medical services, the ambulance service, the arrangements for the treatment of tuberculosis and for the diagnosis and treatment of venereal diseases, the control of infectious diseases, examinations with reference to food contamination, the registration of nursing homes, rescue and preventive work, and the direction of medical and nursing staffs generally. It will also discharge the functions hitherto belonging to the Midwives Acts Committee. The work hitherto done by the Central Public Health Committee in respect of dwellings will be discharged by a new committee, to be called the Public Health and Housing Committee, which will have under its control all matters affecting public health not within the reference of any other committee. It will deal with house sanitation, improvement areas, drainage, water supply, and housing matters generally.

Nutrition of London School Children

Inquiries have been made by the school medical staff of the London County Council with the object of ascertaining whether the nutrition of children in the poorer districts has suffered as a result of recent financial stringency. Certain schools in districts where special anxiety was felt have been selected and the ten-year-old age group examined, this group being taken because it is sufficiently removed from any medical inspection age group to ensure that the children would not be subject to action arising out of recent medical recommendations. Altogether, 1,281 children have been examined, of whom 93.5 per cent. were considered well and 6.5 per cent. poorly nourished. Only two children were grossly ill nourished. Among the children whose parents were in full employment the percentage of the poorly nourished was 7.6 which is above the general average for the whole group.

The percentage of poorly nourished children among those whose parents were receiving unemployment benefit was 5.3, transitional benefit, 7.9, and public assistance, 7.5. In view of the fact that the selection of schools and the age group was made with the direct purpose of discovering the worst, it is considered that the percentage of ill-nourished children is surprisingly small and the result of the inquiry reassuring.

New Deep X-Ray Unit for Lambeth Hospital

An enlarged x-ray unit is being installed at the Lambeth Hospital, one of the London County Council's institutions. It has been felt that the important advance made during the last two years in radiotherapy in the treatment of cancer makes it desirable that the new apparatus should be such that full use can be made of recent discoveries. Until a short time ago it was impossible to obtain x-ray apparatus of higher than 200 kV which would stand the wear and tear of everyday work. There are now several plants working satisfactorily at 400 kV. An offer has been made by a British firm to supply such an apparatus to the Lambeth Hospital for three months' trial, and to remove it if it is found not to be suitable. The estimated cost of the apparatus is £4,564, which is said to be considerably less than the cost of German apparatus, including import duty. The estimated cost of upkeep of the apparatus is £1,200 a year.

CORRESPONDENCE

Control of Metastases in Breast Cancer

SIR,—At the recent annual congress of the British Institute of Radiology the subject of the treatment of cancer by x rays and radium was freely discussed by a number of speakers. Some advocated that the cure of cancer was in sight if x rays generated at one million volts were available. Others clamoured for large quantities of radium for treatment of the primary growth. It was remarkable that the word "metastases" was mentioned by but one speaker, and yet it is the want of control of metastases that is the cause of the failure to cure cancer.

There is in existence an Egyptian papyrus dated 2000 B.C. which describes the removal of a tumour from the breast of an Egyptian princess by the cautery, and how the tumour returned and she died from what we now know were metastases. The operator was duly executed, after torture, to make it more interesting. Have we advanced in our treatment of carcinoma mammae since those times? True, we use other agents: true, the operator does not have his head off if he fails. It is only too true, however, that failure in carcinoma mammae must still be attributed to secondary deposits. But few workers can recall fatal results directly from the breast tumour, or even from secondary glands in the axillae or neck. Deposits in the liver, spine, and mediastinum still take their toll, and are the real cause of our failures to cure. This fact and the crude methods of diagnosis at our disposal make it imperative that treatment should be planned on the assumption that the disease is generalized or widespread by the time that it can be diagnosed.

It must be accepted that, even if a means were found to destroy the whole primary growth with absolute certainty, our results in carcinoma mammae would probably be but little better than those obtained in 2000 B.C. Our first surgical lecture teaches us that local removal of the breast tumour is bad surgery—it is puzzling why this teaching is ignored by some radiologists and surgeons when this local removal is accomplished by

short-wave x rays or by surgical implantation of radium needles. It is obvious, therefore, that to secure the destruction of the primary growth must go hand in hand with the destruction and prevention of metastases and recurrences. This is the ideal to be aimed at in all cases of cancer; but can it be accomplished? Briefly, at present, no. This, however, is no excuse for not facing the problem. It would seem almost as if the word metastases is discreetly avoided by many. I wish to advocate that the research worker should tackle the problem seriously.

It was stated many years ago that cancer grafts in rats (Jensen's rat sarcoma) were less likely to "take" if the animals had been previously subjected to generalized x-irradiations; this is an observation of considerable importance, and further work on these lines is urgently wanted. In fact, it was on this statement that "generalized radiation" for the prevention and destruction of metastases was introduced at the London Hospital some twelve years ago. The introduction of short-wave therapy unfortunately did not help towards solving this problem of the prevention of metastases. It was soon realized that this method was impossible of application in the prophylactic treatment of carcinoma mammae. In the first place, microscopical metastases may be anywhere and everywhere in the body; this makes necessary the use of large radiation fields; consequently the patient is unable to stand the large doses advocated, without damage. Again, short-wave therapy requires delivery of the dose at a definite depth by cross fire—but there is no means of determining what particular area should be attacked.

As a compromise I suggest the following combination of the two methods to be used in all cases of carcinoma mammae; personally I use it in all cases of cancer. The primary growth is removed by surgical diathermy, implantation of radium needles, or by heavy doses of short-wave x rays applied locally, whichever is considered suitable in the individual case. "Generalized" radiation of the whole trunk—that is, to include back, front, and sides—using medium-wave x rays, follows. In all cases dosage should be pushed as far as possible, but so regulated that no serious ill effects are noted. Slight nausea indicates the limit of tolerance or the "saturation" point. This method of generalized radiation, although crude, is at least logical, and worthy, I think, of further development.—I am, etc.,

London, W.1, Dec. 27th, 1933.

S. GILBERT SCOTT.

Erythema Nodosum

SIR,—Dr. W. R. F. Collis's article on erythema nodosum, in the *Journal* of December 23rd, 1933, is the most important contribution regarding the aetiology of this disease which has appeared in English literature for many years. It establishes, beyond any shadow of doubt, the relationship of this disease to tuberculosis. This is a matter of the utmost importance, for erythema nodosum is an early symptom of tuberculosis, occurring generally when other physical signs are as yet non-existent.

It is only by the early recognition of the disease that we can hope to combat the grave and very fatal complication. Dr. Collis estimates that only about 15 per cent. of all cases of erythema nodosum are of streptococcal origin, the remaining 85 per cent. being tuberculous, and he dictum that "we should regard every case as tuberculous till proved otherwise" is one that should be remembered by all engaged in the practice of medicine. Some years ago I wrote: "Erythema nodosum must always be regarded as a danger signal, as a timely warning that

third case developed sepsis after a Caesarean section. The condition was critical on the sixth day, and the patient was given 400 c.cm. of citrated blood while in a delirious and semi-conscious condition. Temperature fell next day to normal, and she was sitting up in bed reading after forty-eight hours. Convalescence was, however, complicated by the development of an extra-peritoneal abscess round the site of the abdominal scar, which nevertheless settled down after drainage.

It is not suggested that blood transfusion should be regarded as a specific or only employed as a *demer* resort in critical cases, but it is thought that its employment would appear to have some physiological justification, and at any rate should do no harm.—I am, etc.,

W. LIONEL FRETZ, V.H.S.,

Rawalpindi, N. India, Dec. 9th, 1933. M.B., B.S., Major R.A.M.C.

Use of Quinine in Normal Labour

SIR,—On reading Dr. Douglas Mitchell's letter in your issue of July 15th, 1933 (p. 126), I determined to try his method of giving small doses of quinine during the last few weeks of pregnancy.

In November I was consulted by a primigravida, aged 21 years; last menstrual period was one week late, and occurred at the end of March; general build slight; teeth all perfect; pelvic measurements normal. She did not come, as directed, to see me again four weeks later, but on December 7th sent for me. At 2 p.m. she had experienced some discomfort "in the back passage" and had a bowel motion. At 4 p.m. she had slight recurrent pains; at 5.40 she delivered herself of a female child weighing 6½ lb. The child was delivered by one long continuous pain, which expelled all the uterine contents, including placenta. The nurse, who was present, stated that she hardly seemed to be in labour before this pain occurred. The birth was followed by a fairly brisk haemorrhage for five to six minutes, controlled by pituitrin, and her subsequent history was entirely uneventful.

Had I administered the doses of quinine I should have been much impressed by the easy labour that followed such treatment. I may add there was no doubt that the patient was a primigravida.—I am, etc.,

A. G. HAWTHORSE ENGLISH.

Bakerfield, Dec. 21st, 1933

Vision of Colour and Brightness

SIR,—I have read with the greatest pleasure the report of Professor Haldane's lecture in the *British Medical Journal* of December 23rd, 1933. I have for many years given similar demonstrations to the Physiological Society and elsewhere without anyone disputing the facts, and with the same conclusions. These facts were predicted by my theory of colour vision (see "Simultaneous Colour Contrast," *Journal of Physiology*, 1911; "Simultaneous Colour Contrast," *Proceedings of the Royal Society*, 1912; "Colour Adaptation," *Proceedings of the Royal Society*, 1913; *Physiology of Vision*, G. Bell and Sons, London, 1920).—I am, etc.,

Reed of Teale, S.W.I.

F. W. EBERHARD GREEN.

SIR,—Professor J. S. Haldane, in his interesting address (*Journal*, December 23rd, 1933, p. 1153), admirably refutes mechanical materialism, but in doing so he unfortunately falls into the camp of idealism. Materialism today has progressed considerably since the days of the French mechanical materialism, with its ponderable matter like

billiard balls and its knowledge of all that truth. Materialism today simply states that objects exist independently of our sensations, and then give us a correct reflection of this objective reality, proceeding to with relative truths.

Professor Haldane states that we cannot find consistency, which is the mark of truth, in the supposed correspondence of our perceptions with an objective world existing apart from our sensations. He also states that our physical and mathematical interpretation of phenomena is only partial and abstract. Naturally we agree that these interpretations are only partial—that is, that biological phenomena can never be fully explained by physical, chemical, and mathematical means only. We must also use, as Professor Haldane states, "the biological conception of life" in our interpretations, but we deny that these interpretations are abstract and have no mark of truth. These physical, chemical, and mathematical interpretations are true reflections of objective biological reality. The mere fact that we can use these interpretations for our own purpose in practice points to their correspondence to objective truth and reality, for if our interpretations of them were at all divergent from their objective existence then we would fall in our use of them, and only then would "Nature mock at us."

To take the example of brightness and colour: although Professor Haldane states "we cannot have any objective measure or standard of brightness and colour; we can only have a 'human' measure thereof," we must realize that our human measure and standard gives a true, if only approximate, measure and standard of reality, as evidenced in our use of these standards with success in our practical day-to-day life. If, for instance, a new colour or degree of brightness is discovered existing in Nature to-morrow, by means of any instrument, surely it does not imply that the colour or degree of brightness did not exist yesterday because we did not perceive them. We are thus constantly making and renewing our standards, which, although relative, are continually approaching absolute reality as our knowledge advances with the progress of the human race.

Professor Haldane concludes by co-ordinating objective and subjective worlds in his biological interpretation of phenomena. Unfortunately his theory is an idealistic one, for his objective and subjective worlds are both spiritual—that is, mental—in form. His physical is an abstraction from the biological, the biological is an abstraction of the personality or psychological, and the individual personality is derived from the divine personality; thus, after a whole series of abstractions, we come to the supreme abstraction. Professor Haldane thus teaches that mind is the prime, and matter is derived from it, whereas the biological sciences and the law of evolution prove that mind is derived from matter. With the growth and evolution of the nervous system in animals we find simultaneously the growth and evolution of the mind, until now, in man, it has become the highest function of matter—that is, the brain.

We may well ask Professor Haldane what was the interpretation of the world millions of years ago, when the world was a molten mass and no life existed therein. The answer, I suppose, would be, "The Creation story"; and at the time of the Deluge the answer would be, "That of the Bible," and the answer to the question "What we realize that matter is the prime and mind is derived from—until we recognize the existence of an objective reality and our approximate interpretation thereof—we shall find scientific tendency to lapse into idealism"—I am, etc.,

London, E.C.1, Dec. 21st, 1933

S. LANE

The Nutrition Report

SIR,—May I point out that the reference of the B.M.A. Committee on Nutrition was "To determine the minimum weekly expenditure on foodstuffs, etc.,"; also that (*Supplement*, November 25th, 1933, p. 13) it is claimed that the costs are based on mean figures furnished by medical officers of health. This being so, the criticisms of the report in Dr. Mackay's letter (December 16th, 1933) are justified, and your annotation in the same number does not answer them. The price of milk given in the report is 2½d. a pint; a retailer who sells milk at less than 3½d. a pint is liable to a fine of £50. The price given for an egg is 1d.; eggs can be obtained at this price only for a few weeks in the year. These cannot be regarded as "mean" prices, if mean is used in the sense of average. These gross instances, and others given by Dr. Mackay, raise suspicions concerning all the prices. For example, the prices given for meat appear to be those of meat with bone, while the food values are those of meat without bone. Moreover, this report cannot be regarded as an academic exercise, *in vacuo*. It must be taken in its practical applications, especially with regard to the adequacy of unemployment benefit and relief. In this connexion it has already been quoted widely, without qualification. It is therefore unfortunate that the prices on which the costs of the diets are based are most untrustworthy.—I am, etc.,

Sawbridgeworth, Herts, Dec. 24th, 1933. JOHN MARRACK.

* We welcome this criticism of the report of the Nutrition Committee, for it enables us to make certain points clear in regard to the practical use of the report. Our correspondent does not fully realize that there can be no universally applicable figure for the minimum cost of adequate food. If any such figure had been proposed by the committee it could only have applied to the particular markets studied and at the particular time when the prices of commodities were ascertained. Variations in price may be due to the locality, market, or season, or to the operation of economic factors of supply and demand. On page 17 of the report the committee recorded the opinion that "no single figures for the minimum cost can be regarded as generally applicable." A range of cost was therefore given, based on the Stockton figures as the lower limit and the mean cost of foodstuffs furnished by medical officers of health, but it was observed that "even higher figures might apply to certain localities." In anticipation of such criticisms as those of our correspondent and Dr. Mackay, the committee was at pains to point out that only by ascribing local prices to the commodities listed on the minimum desirable diet scales can the appropriate minimum weekly expenditure be calculated for particular individuals and families from time to time. The question of unemployment relief was not the committee's concern.—ED., B.M.J.

Compound Fractures of the Tibia

SIR,—I am relieved to find that Mr. Simpson-Smith's advocacy of immobilization of the ankle in the equinus position in fractures of the shaft of the tibia has not escaped condemnation, and I would endorse Mr. Tippet's comments. There are a few bone and joint injuries in which it is essential to hold the foot in the position of full equinus (backward dislocation of the ankle with anterior marginal fracture of the tibia, and dislocation of the subtarsal joint with fracture of the neck of the astragalus). In fractures of the shafts of the leg bones, on the other hand, the equinus position is entirely unnecessary, it delays recovery, and it may be responsible for a slough. If the ankle is allowed to stiffen in the position of equinus a considerable period of treatment is

necessary before full dorsiflexion is regained, and during this period there is constant strain at the site of fracture. Unless the fracture has been immobilized for such a long period that consolidation is already quite complete, the efforts of the patient to put the heel to the ground, and of the masseuse to push the foot up into dorsiflexion, are calculated to produce the very backward angulation of the fracture which Mr. Simpson-Smith is attempting to avoid. The association of an unconsolidated fracture of the lower shaft of the tibia angulating backwards, with an ankle-joint stiff in equinus, is unfortunately not infrequently seen, and presents considerable difficulty in treatment.

It must be acknowledged at once that Mr. Simpson-Smith's difficulty is a very real one, and he is to be congratulated on again drawing attention to the fact that it is the attempt to secure right-angled dorsiflexion which is responsible for the backward angulation so frequently seen, particularly in low oblique fractures of the tibia. The problem is not to be solved, however, in the way he suggests, but by applying traction to the heel with the limb hanging vertically during the application of the plaster. Traction applied behind the ankle-joint will at the same time dorsiflex the foot and correct the angulation. It is in this type of case that the "tibia traction apparatus" I have described (*British Medical Journal*, June 11th, 1932) finds its most useful application.—I am, etc.,

Liverpool, Dec. 24th, 1933.

R. WATSON JONES.

Anaesthetic Deaths after Basal Hypnotics

SIR,—I was interested to read Dr. Graeme Bentlif's letter in the *Journal* of December 23rd, 1933, and thank him for his very kind reference to me. I am inclined to agree with his view that the addition of morphine or its derivatives to the barbiturates increases the risk attaching to the latter, probably because it delays their excretion. In the case to which Dr. Bentlif refers it certainly appeared to do so. On the other hand, the combination of morphine with the barbiturates is so generally used—and in the large proportion of cases with impunity—that few, if any, professional anaesthetists can have a long series of cases in which barbiturates alone were used which could be compared with a second series of cases in which the barbiturates were combined with morphine. Dr. Bentlif's experience is founded on a comparison of this nature, but a large number of cases are required, I think, before one can be dogmatic.

The fact is, Sir, that in this imperfect world nothing worth having can be bought for nothing, and the advantages of basal hypnosis as a preliminary to anaesthesia are purchased by a certain increase in the risk—small, I agree, but very definite nevertheless. No doubt increased experience, improved preparations, and, above all, a simple and reliable means of testing beforehand the vital value of the renal and hepatic cells (if such can be invented) will diminish the risk, but I doubt if we shall ever reach that ideal state when benefits received are entirely free of cost.—I am, etc.,

London, W 1, Dec. 26th, 1933.

HERBERT CHARLES.

SIR,—The letter by Dr. Graeme Bentlif of Jersey is extremely interesting. In my opinion there is a reasonable explanation for most of the trouble, and I think "luck" can be definitely ruled out. Most of the patients had morphine as well as the barbiturate: both depress respiration—the morphine perhaps more than the other. Consider the morphine first. It is a well-known fact that exophthalmic goitre cases and "plus-thyroid" patients will take a large dose of morphine with a minimum of effect; they take all basal anaesthetics, avertin as

well as the barbiturates, extremely well; hypothyroid cases give one anxiety with even a very small dose of morphine. It seems to me probable that the cases which gave trouble were, in some degree, deficient thyroid ones. If the basal metabolic rate is taken it is probable that these susceptible cases can be identified, and precautions taken. Animal experiments may be misleading: I have seen a dog weighing about 4 cwt. given 10 grains of morphine, and he was only drunk after eight hours. The veterinary surgeons give 1 grain to a terrier weighing 20 to 28 lb. as a usual dose for therapeutic purposes! I agree with Dr. Bendif that basal hypnotics give the most pleasant anaesthesia possible in the present state of our knowledge, and should be more extensively used than they are, but to be safe there should be much more preliminary investigation done than is usual. One great obstacle is that the anaesthetist rarely sees the patient before he or she comes into the anaesthetic room, and afterwards too often not at all. When there is an operation list of ten or twelve there is difficulty in having them all adequately watched during the prolonged sleep which usually follows most of the basal hypnotic anaesthetics. Very few anaesthetists will say that the intravenous route is safer than the oral, although it may give some indication of a patient's extra sensitivity to hypnotics. Until we breed a standard race of people I am afraid all these "one shot" body-weight doses will be fraught with a considerable amount of risk.—I am, etc.,

E. J. CHAMBERS,

Anaesthetist, Rotherham Hospital and
Doncaster Royal Infirmary.

Serum Reaction for Malignancy

SIR,—I had not intended entering into the controversy about Dr. Cronin Lowe's modification of the Benden reaction at the present stage, and should not have done so had not the experience of others been called for. I have hitherto carried out forty to fifty tests only, and have just discarded all my results, as I have only just standardized my technique. My own results have been unexpectedly confirmed on two occasions, and though I have apparently been wrong on others the final confirmation is still lacking. I believe, however, that I am beginning to be able to differentiate malignant from non-malignant sera, and I shall continue to carry out the tests until I have done at least half as many as Dr. Cronin Lowe, after which perhaps my opinion will be worth having.

It would be a great help if Dr. Cronin Lowe would give the exact details of his method, as the test appears to depend very largely on minutiae, and to be a very delicate one. I have found, for instance, that the method of allowing the blood to clot makes a difference. In my earlier cases I used to allow the blood to stand in a test tube immersed in cold tap water to clot out, but I have since found it better to let it stand at room temperature. I think that if Dr. Abbott would adopt Dr. Cronin Lowe's standard method of mixing serum and reagent he would not find his precipitates going so far to the left in the "A" row. I had the same difficulty as he had at first. Particular care should be taken not to let precipitate be further during mixing. Another difficulty which I have experienced is that I sometimes find the "B" index fainter than the "A" index, so that it is impossible to get a run read at all, and I imagine that Dr. Cronin Lowe has noticed the possibility, as he states in *British Medical Journal*, March 11th, 1933, p. 426, "conversely, when the 'B' index is slightly enhanced, i.e., 'No reaction.' Obviously, if the 'B' index is about the reference value, the 'A' index would be the same as for the 'A' row, so that one would not be able to express the

ratio numerically, though the interpretation of the test would not be affected. I have had a few cases in which the "C" reading was less than the "A" reading.

I have an impression, which I cannot yet confirm, that both the ether and the thermal bile effects are more marked in young subjects than they are in older ones. I should be interested to hear whether other observers have noticed this. I am myself using a 5 mm. observation chamber with my interferometer, and I do not find the wide differences in readings which others seem to get. For instance, I find that my lowest "B" index figure is 34 and my highest "C" index figure is 68, so that all my fractions come out much nearer unity than Dr. Cronin Lowe's figures. Can anyone explain this? In conclusion I would like to submit that Dr. Cronin Lowe's total of 1,700 tests will take a good deal of beating, and that it would be a very great pity if further research were discouraged by adverse criticism based on insufficient evidence and on methods other than those of the creator of this particular modification of Benden's test.—I am, etc.,

C. J. STODOL, M.A., M.D.,

RCR, DPH, DML, CH,

London, G. 11, U.S.S. 1933.

LANCET, Dec. 29th, 1933.

Ultra-violet Rays and Seminal Stains

SIR,—In cases of rape, and in charges in connection with sexual crimes, it is necessary as corroborative evidence to examine the clothing of the person assaulted, and also of the person accused, for the presence of spermatozoa. This is sometimes not an easy matter, since the underclothing of those so assaulted is by its means characterized by its cleanliness, and, indeed, very often bears traces of dirty habits.

As a general rule seminal stains are, when dry, of a greyish-white appearance, and impart a stiffened, starched feeling to the examining finger. This, of course, is a general rule, and it must be remembered that the same description applies to stains of other origin.

Leucorrhoeal discharges have the same characteristics, and are found in like positions on the underclothing. When seminal fluid is shed on a greyish-white coarse material it is very difficult for the naked eye to perceive the stain, which in consequence might be quite easily overlooked. Seminal stains, even when made to the naked eye, have a strong fluorescence when exposed to filtered ultra-violet light. Fig. 1 is a photograph in



FIG. 1.—A photograph of a seminal stain on underclothing, showing the characteristic fluorescence when exposed to filtered ultra-violet light.

ultra-violet light of a piece of underclothing from a case of rape. To the naked eye there was no visible stain. To the finger there was a stiffened feeling, and it was supposed to be clean. It was, however, found to be a seminal stain when exposed to ultra-violet light. The stain became evident when exposed to ultra-violet light. The fluorescence of the stain was very strong.

on the nature of the fabric upon which the seminal fluid is shed, and on the colour of the material; furthermore, much depends on the degree of dryness of the stain. The great value of the fluorescence test lies in the rapidity with which stains not visible to the naked eye may be detected, not only on garments (where in the past it has been necessary to trust to a laborious tactile examination if the material were of a dark-coloured coarse texture), but also on such articles as floor rugs, which were almost impossible to tackle without the assistance of these rays.—I am, etc.,

Forensic Medicine Department, Glasgow
University, Nov. 28th, 1933.

F. W. MARTIN.

Christmas Gift Fund

SIR.—I wish to take the first opportunity of informing you that the sum of £663 19s. 6d. has been received in response to my appeal for the Christmas Gift Fund of the Royal Medical Benevolent Fund. May I ask that my acknowledgement and grateful thanks be conveyed to your readers? It will be a matter of satisfaction to you, Sir, to know that, owing to the very generous and whole-hearted support of many friends, we were able to send a Christmas gift of 30s. each this year to all who were in need of it—both annuitants and grantees. I feel particularly indebted to all who brought my appeal to the notice of various committees and societies and held collections, which action so very materially assisted in making the appeal successful.—I am, etc.,

11, Chandos Street, Cavendish
Square, W.1.

THOS. BARLOW,
President, Royal Medical
Benevolent Fund.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated.

THIRD M.B.—Part I (Surgery, Midwifery, and Gynaecology):
T. L. Barbour, A. M. Barrett, C. H. D. Bartley, R. L. Benison,
I. R. Bellington, T. B. L. Bryan, K. L. Buxton, N. A. Buxton,
R. J. Baxton, R. C. F. Catterall, A. C. E. Cole, I. R. Dickinson,
I. F. Edwards, C. E. Elliott, W. A. Elliott, A. B. R. Finn,
R. N. Graves, G. D. Hadley, E. A. M. Halsted, R. S. Hamley,
L. A. Hawkins, N. T. Holden, M. J. Ingram, A. Innes, B. S. Jones,
J. E. V. Jones, C. W. C. Karran, D. P. King, R. E. K. Levick,
C. R. McLaughlin, C. J. Martin, I. C. Martin, J. D. Martin Jones,
F. H. Masina, P. C. Matthew, H. B. May, S. G. Mayer, A. Miller,
W. G. O. Mills, J. S. Mitchell, L. O. Mountford, B. H. Page,
C. G. Pantun, C. G. Parsons, W. H. Phillips, G. D. Pirrie,
G. I. Pitts, T. A. Ratcliffe, T. L. H. Shore, T. W. Smalles,
M. S. Spink, B. Thorne Thorne, A. S. Tiff, T. P. Ward,
M. Williams, R. H. Winfield. **Women:** H. M. Applebaum, C. M.
Cavell, H. Drummond Robinson, D. I. Thomson. **Part II**
(Principles and Practice of Physics, Pathology, and Pharmacology):
I. C. G. Appleton, W. I. Bain, T. M. Bell, E. V. Devan, R. W.
Bellington, W. R. Bellington, H. W. L. Broadbent, G. O. Brooks,
R. H. Brown, J. Cann, I. Chiffen, F. H. Coleman, P. T. Cooper,
J. H. Dixon, J. R. Duffell, W. G. Evans, P. R. Goodfellow,
G. P. Gresham, S. I. Haldell, R. S. Hamley, N. H. Harwood,
Yarrol, E. C. Herten-Greaves, R. Hill, A. C. L. Houston, T. B.
Jones, C. W. C. Karran, A. Kekwick, W. H. Lewis, I. L. Lovdell,
J. S. Metcalf, C. C. Morgan, W. F. Nicholson, E. G. Penn,
I. R. Bellington, G. C. D. Roberts, H. J. M. Robinson, K. Robson,
A. C. Rogers, T. W. Smalles, J. Smart, J. T. W. Spindon-
Morgan, I. V. Tattersall, A. R. Thomas, S. M. Thompson,
G. I. H. Toffin, F. H. Turner, T. P. Ward, W. E. Wells,
A. W. W. Wilson, H. E. Densdale, P. L. Holliday, F. C. Nash,
E. D. H. ...

UNIVERSITY OF LONDON

Dr. H. R. Ing will deliver a course of six public lectures at University College, Gower Street, W.C., on Mondays, February 12th to March 19th, at 5 p.m. The subject for his first lecture will be "General structure and Pharmacological Action of Alkaloids in the vegetable kingdom."

The following candidates have been approved at the examination indicated:

M.D.—Part I: W. J. Forster (University Medal), W. S. ...

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—W. J. Chisnall, F. J. H. Crawford, R. P. Kemp, J. W. Pickup, A. L. Potter, A. Seddon, J. F. D. Shrewsbury.

Ch.M.—M. Silverstone.

FINAL M.B., Ch.B. (1924 Regulations)—(Part A): H. H. L. Pentz, S. V. Cullen (Pharmacology and General Therapeutics; Forensic Medicine and Toxicology), H. W. E. Jones (Public Health). **(Part B):** C. S. Anderson, J. D. Bryan, W. L. Dove, Dorothea M. N. Harris, A. G. Leigh, Joan M. Matthews, W. Milburn, J. Morgan, I. Pugh, W. E. Pycraft, D. Simpson, W. G. Timmis, O. Walker. **(1929 Regulations) (Part I):** J. L. Brown, C. F. Crampton, H. W. F. Croft, H. R. G. Davies, S. G. Griffin, F. Harrison, J. E. E. Hughes, G. B. Marsden, A. G. H. Menzies, Moira Murray, C. H. H. ... **(Part II):** T. Lathwaite (Pharmacology), J. L. Lancelotti, F. A. Lomax.

M.Cit.Omn.—R. W. Agnew, H. Bell, J. Edelstein, H. A. Sweetapple.

DIPLOMA IN TROPICAL MEDICINE—G. P. A. Amirtha Nayagam, N. E. W. Anderson, J. E. Armah, V. B. Athavale, L. F. Chan, F. M. Day, N. Din, R. Dyal, L. C. Feng, L. P. Greson, G. R. Gribbon, M. A. L. Hassouna, A. H. Ismail, *G. D. Lehmann, Christina M. McTaggart, J. D. Robertson, C. M. Ross, Freni M. Shaw, C. W. A. de Silva, M. S. Zan.

D.P.H.—D. F. Morgan.

* Recommended for the Milne Medal.

UNIVERSITY OF SHEFFIELD

The following candidates have been approved at the examinations indicated:

M.D.—Doris Butler, Ethel Skerritt.

FINAL M.B., Ch.B.—(Part I): Kathleen M. Adamson, J. K. A. Beverley, M. B. Brody, J. Hollingworth, H. J. Lee, T. Lodge, G. F. E. Ramsden, H. R. Vickers, W. D. Wallace. **(Part II):** B. A. Hamid.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY—J. H. Bentley, T. Gardner, N. C. Lendon, J. Lipschitz, B. C. M. Palmer, D. A. Smith.

MEDICINE—A. H. L. Baker, S. A. De Souza, J. P. Fitzgerald, J. C. Harvey, G. F. Metcalf, S. G. Nathan.

FORENSIC MEDICINE—W. H. Bayley, H. L. Canaval, E. C. Dax, J. C. Harvey, A. J. McGuire, G. F. Metcalf, E. N. Morgan, S. E. Roberts, H. D. Robinson, J. S. Scott, J. E. G. Wright.

MIDWIFERY—H. L. Canaval, S. Grodd, B. C. M. Palmer, J. S. Scott.

The Diploma of the Society has been granted to Messrs. H. L. Canaval, J. P. Fitzgerald, N. C. Lendon, S. G. Nathan, and D. A. Smith.

The Services

HONORARY SURGEON TO THE KING

His Majesty has approved the appointment of Major-General FitzG. G. FitzGerald, D.S.O., as Honorary Surgeon to the King, in succession to Major-General W. R. Blackwell, C.B., C.M.G., who has retired.

DEATHS IN THE SERVICES

Colonel Arthur Hunt Safford, C.B.E., late R.A.M.C. (ret.), died in the cottage hospital at Fleet, Hants, on November 29th. He was born on December 6th, 1873, was educated at University College and King's College Hospitals, and took the L.S.A. in 1899, also subsequently the D.P.H. of the London Colleges in 1908. Entering the R.A.M.C. as lieutenant on December 4th, 1899, he attained the rank of brevet-colonel on June 3rd, 1919. He served in the South African war throughout from 1899 to 1902, when he took part in operations in the Orange Free State, including the actions of Paardeberg and Poplar Grove, and in the Transvaal and Cape Colony, receiving the Queen's medal with three clasps and the King's medal with two clasps, in the war of 1914-18, when he was mentioned in despatches in the *London Gazette* of December 30th, 1918, and in the war on the Afghan frontier in 1919-20, when he received the C.B.E., and was mentioned in despatches. He was the son of the late Herbert Safford of Longroft and in 1903 married Dorothy Jeanne, daughter of A. Backlock, Esq., of Taunton.

[illegible]

It is not clear whether the above results are due to the fact that the model is not a true model of the system, or whether the results are due to the fact that the model is not a true model of the system.

he attempted. He was a keen and excellent shot, and one's mind goes back to many pleasant Saturdays with him and his son—whose untimely death was so great a blow—on a little shooting near Edinburgh, where there was no keeper and each of the three carried a game-bag, and where the day was often prolonged till the mile to the station had to be covered at a trot! On such days as these his habitual reserve vanished, and no more genial companion could have been desired. In his younger days he was, after W. G. Grace, one of the best amateur batsmen in England. For "W. G." he had a profound admiration, and regarded him as the best batsman who had ever lived. He had an unmitigated contempt for the type of modern batsman who plays the ball with his legs, and in a conversation less than a fortnight before his death reiterated the change in the l.b.w. rule which he had frequently advocated, the details of which, however, are too technical for this *Journal*!

He was a popular teacher of clinical surgery, considerably over a hundred students being often at his clinics. His teaching connexion with the Edinburgh Medical School closed more than twenty years ago, but his students will remember him with gratitude and his colleagues with respect; and to those who had got past his reserve and enjoyed his friendship his death will be a source of real and personal grief.

JOHN STEWART, LL.D., F.R.C.S.Ed.

Formerly Professor of Surgery and Dean of the Medical Faculty,
Dalhousie University

We regret to announce the death, on December 27th, 1933, at Halifax, of the veteran Canadian surgeon Dr. John Stewart, who resigned in 1932 from the post of dean of the faculty of medicine at Dalhousie University. For more than half a century he was the leading figure in the medical life of Nova Scotia.

John Stewart was born in 1847, and, after studying medicine at Dalhousie University, went to Edinburgh, where he graduated M.B. and C.M. in 1877. While a dresser in the surgical wards of the Edinburgh Royal Infirmary he won the regard and confidence of Lister, whose house-surgeon he became and whom he later accompanied to King's College Hospital, London. After a year in London he returned for family reasons to his native Province, where he introduced the principles of the new antiseptic surgery. In 1913, being then professor of surgery at Dalhousie, he received the honorary degree of LL.D. from the University of Edinburgh, and was elected an honorary Fellow of the Royal College of Surgeons of Edinburgh. On the outbreak of war in the following year, being then aged 67, Dr. Stewart volunteered his services in the field and came to Europe as commanding officer of the No. 7 (Dalhousie) Stationary Hospital unit, with the rank of lieutenant-colonel C.A.M.C. On his 70th birthday he was honoured by the King reviewing the unit. In March, 1918, he was appointed consulting surgeon to the Canadian forces in France. His war service was recognized by mentions in dispatches and the award of C.B.E., and McGill University conferred upon him its LL.D. degree *honoris causa*.

On his return to Canada from overseas Dr. Stewart was appointed dean of the Dalhousie Medical Faculty, and the subsequent great progress of the school owed much to his wisdom and experience. He was one of the first Canadian surgeons to be elected a Fellow of the American College of Surgeons. In the summer of 1927, during the Annual Meeting of the British Medical Association in Edinburgh, Dr. Stewart played a prominent part in the latter's centenary celebration, and in 1930, when the Association met in Winnipeg, he took the chair on the occasion of Lord Metchum's Listerian Oration.

J. A. RAWLINGS, M.R.C.P.Ed.

Consulting Physician, Swansea General Hospital

By the death of Dr. John Adams Rawlings the town of Swansea has lost its best known and most respected citizen. Few, if any, who knew him would disagree with that statement. Though many differed from him in his pronounced and uncompromising opinions on temperance, the observance of the Sabbath, and certain social problems, no honest man could doubt his sincerity, nor fail to admire him for having the courage of his convictions. His long life was devoted with tireless energy to the service of God and man. Physician and lay preacher of the Gospel, town councillor and magistrate, musician and *littérateur*, politician and philanthropist, he took a keen interest in all human affairs that he considered worthy of attention. Frequently engaged in controversy, he sometimes blazed with righteous indignation, but he was always filled with a truly Christian love for his fellow men, and all who had the privilege of knowing him intimately loved him dearly.

John Adams Rawlings was born on May 20th, 1848, at Pickering, Yorkshire, his father being Charles Rawlings, a Wesleyan minister. He was named Adams after his uncle, the Rev. John Hughes Adams, an eminent divine. The family came to Swansea in 1863, when the Rev. Charles Rawlings was appointed superintendent of the circuit. At the early age of 14 J. A. Rawlings was organist to a chapel at Hull, and at 17 he became organist at Wesley Chapel, Swansea. He was fortunate in his musical tutors, one of whom, Herr Catenhausen, had been a pupil of Mendelssohn. He was a student at Guy's Hospital, London, and qualified as M.R.C.S.Eng. and L.S.A. in 1870, and immediately started practice in Swansea. Six years later he became M.R.C.P.Ed. He soon established an extensive practice, and was dearly loved by all his patients, especially by the poor, amongst whom he did much gratuitous work. Dr. Rawlings was a member of the honorary medical staff of the Swansea General Hospital for sixty-three years. He was appointed out-patient medical officer in 1870, honorary physician in 1881, and consulting physician in 1897, an appointment which he held until his death on December 6th, 1933. In addition to his professional duties he took a very active part in the management of the institution.

Dr. Rawlings was a member of the B.M.A., an expresident of the South Wales and Monmouthshire Branch, and a vice-president of the Section of Obstetrics when the Association met at Swansea in 1903. He was not a total abstainer in his earlier years, but soon after starting practice he came under the influence of the late Sir Benjamin Ward Richardson, who so convinced him of the physical, moral, and social evils of alcohol that he became a total abstainer himself and an ardent advocate of temperance reform. He was averse from prescribing alcohol even in illness. During a serious epidemic of typhoid fever at Swansea in 1884, contrary to the then prevailing medical opinion that alcohol was essential in the treatment of typhoid, he refused to allow its administration to a single one of the numerous cases he treated. His results compared favourably with those of his colleagues, who all prescribed alcohol freely. This caused some surprise at that time, but we see nothing remarkable about it nowadays, except that Rawlings had the courage of his convictions to act contrary to accepted medical teaching, although he was only a young country practitioner. With one exception in 1907, I have not attended a case of typhoid since the Boer war, but I gather from my medical colleagues that alcohol is now seldom prescribed in the treatment of this disease.

Dr. Rawlings was first elected to the Swansea Town Council in 1884, and was in office continually for twenty-six years. At one time or another he was a member of all the principal committees. On the formation of the

he published in 1882 an account, "Endemic Haematuria of Hot Climates caused by the presence of *Bilharzia haematobia*," contributed the article in the first edition of Clifford Allbutt's *System of Medicine* (1897), and remained interested in until the end of his life. In 1881 he went out as a doctor in the first Boer war, but otherwise he never engaged in ordinary practice, wrote on strictly medical subjects, or put his name on the *Medical Register*. From 1882 to 1884 he was naturalist in the yacht *Marchesa* exploring Kamschatka, New Guinea, and the Malay Archipelago, and in 1887 worked at zoology in Cyprus. In 1888 he was elected to the lectureship on geography, then established at Cambridge, and lived opposite Pembroke College, of which he was later made an honorary member. After a year he gave up the lectureship, and in 1892 accompanied Sir Charles Euan-Smith on the mission sent by Lord Salisbury to negotiate the terms of a commercial treaty with the Sultan of Morocco. Guillemard, who was general editor of the *Cambridge Geographical Series* from 1896, was the author of many books and papers on geography, travels, and natural history, edited the works of others, and had committed to paper his reminiscences, *The Years that the Locust Hath Eaten*, but did not intend to publish them. His artistic tastes were shown by his collections, especially of pictures and furniture, in the charming Old Mill House on the Trumpington Road, about two miles from the centre of Cambridge, where he had lived since 1898. There with servants who had been with him for over thirty years he lived much in the style and comfort of Victorian days, without the telephone, electric light, central heating, or a motor car. With an old-fashioned courtesy he was a most interesting companion, an original member of the "Arcades," one of the inter-University dining clubs, and naturally had a wide circle of friends. H. R.

ANNIE JACKSON, M.D.

Anæsthetist, Derbyshire Hospital for Women

In her seventy-first year Miss Annie Jackson, M.D., passed away on December 30th, 1933, with little or no warning that her health was impaired. She was born at Garstang in Lancashire in 1863, and was educated at a Quaker school at Scarborough, being brought up in, and remaining a member of, the Society of Friends. It was not until the age of 35 years that she began the study of medicine, when she entered the Medical College for Women at Edinburgh, and obtained the degree of M.B., Ch.B. in 1904. The year following she took the diploma in midwifery in Dublin. After holding the posts of house-physician to the Leith Hospital, and resident medical officer at the Hospital for Women and Children in Edinburgh, she entered private practice at Derby in 1908. She was actively engaged in a busy practice until the day of her death, and her sound knowledge and wise judgement were well known to her medical colleagues. In 1915 she proceeded to the M.D. degree. During the war years many colleagues and patients were indebted to her for a great deal of extra work. Dr. Jackson was always keenly interested in the scientific side of her profession, and although she did not see her way to accept the presidency of the Derby Medical Society, she served on the council and was a regular attendee at the meetings. She was a member of the Panel Committee at the time of her death, and had held office on the Executive Committee of the Division of the British Medical Association. For many years she was honorary medical officer to the Home of Rest, and was a highly skilled anæsthetist to the Derbyshire Hospital for Women. Temperamentally she was more inclined for private than public activities, but she held a position, respected by her medical colleagues and the public, which was uniquely her own.

The death took place, on December 25th, 1933, following an operation, of Dr. C. B. GUNN of Peebles. Born at Edinburgh in 1860, Dr. Gunn took his medical course in the University of Edinburgh, where he graduated M.B., C.M. in 1882. After a period as assistant to a doctor at Newburgh, Fife, Dr. Gunn began practice in Peebles, and was one of the best-known practitioners in the South of Scotland for close on half a century. In addition to a large practice, he was medical officer to the Manor Valley Sanatorium, and held numerous local appointments as certifying factory surgeon, medical officer to the Scottish Education Department, medical referee under the Workmen's Compensation Act, etc. He had a strong literary vein which made him known to a much wider circle than that in which he practised. His father had been on the staff of the *Edinburgh Evening Courier*, and from him Dr. Gunn inherited a strong literary ability. His inclinations lay especially towards the historical and antiquarian side of literature, and his *Books of the Churches of Peebleshire* provides valuable material for students of church history and of social customs in Scotland. This work involved patient investigation for many years, and will probably form his most noteworthy memorial. His *Books of Remembrance of the Town and County of Peebleshire* forms a record of the Peebleshire men who fell in the great war, and was an arduous labour of love. He also published a volume of verse entitled *A Doctor's Thoughts*. His antiquarian interests led him to revive many old Border customs and traditions, among them the annual summer festival of Beltane, and in the restoration of the old Cross Kirk of Peebles he rendered valuable assistance to the Office of Works. His services to the town in which he practised were recognized in 1933, when he was made a Freeman of Peebles. Dr. Gunn is survived by a widow, two sons, and two daughters.

Dr. ALEXANDER PAINE, formerly director of the Research Department of the Cancer Hospital, Fulham Road, S.W., died at his home in Shanklin, Isle of Wight, on December 21st, 1933, aged 67. He began the study of medicine at St. Mary's Hospital with an entrance scholarship in natural science, and graduated M.B., B.S.Lond. in 1893, obtaining the M.D. degree in State Medicine in the following year, and the D.P.H. of the English Conjoint Board shortly afterwards. After serving for a time as assistant pathologist on the staff of the Lister Institute of Preventive Medicine, he was appointed assistant bacteriologist and lecturer on bacteriology at St. Mary's Hospital, a post which he relinquished on becoming director of the Cancer Hospital Research Institute. Dr. Paine was a member of the Pathological Society of Great Britain, and a laureate of the Paris Academy of Medicine.

The death, on December 1st, 1933, of Dr. JOHN NEWSOM LAIRD removed from Macclesfield one of its citizens who had been prominent in municipal and scientific as well as in medical circles. Born in 1875, he received his medical education at Trinity College, Dublin, where at one time he was lecturer in botany and zoology, and a member of the Senate of the University. He graduated M.B., B.Ch., B.A.O. in 1902; the next year he proceeded M.D., and obtained the diplomas of public health and L.M. After holding various appointments at Dublin hospitals he came to England to fill the post of house-surgeon at Bootle Hospital. In 1908 he removed to Macclesfield and commenced general practice. His public appointments included those of medical officer to the Sutton and Rainow districts under the board of guardians, school medical officer under the Borough Education Committee, surgeon to the volunteer fire brigade, medical superintendent of the local branch of the St. John Ambulance Brigade, and during the war, medical examiner of recruits at Stockport. He was also deputy commissioner of medical services in Manchester and heart specialist to the Board, and in 1920 was called by the Ministry of Pensions to superintend five neurological boards in that city. Nearly twelve years ago he was elected to the Town

Council as a Conservative; he subsequently sat as an Independent, and, later, as a Labour member. As chairman of the Municipal Library Committee he was very active in reorganizing the administration of the library and in extending its activities until it became a vital factor in local education. He was at various times a member of the Watch, Health, Salaries, and Finance Committees, and his wife also was a member of the Town Council. Dr. Laird's scientific interests were wide, and included archaeology and pathology. Articles by him were published in the *British Medical Journal*, the *Proceedings of the Pathological Society*, the *Journal of Pathology and Bacteriology*, and in other periodicals. He was a member of the British Medical Association and of the Pathological Society of Great Britain.

Dr. OWEN LANKESTER died suddenly on December 25th, 1933, at his home in Upper Wimpole Street, London, where he had been in general practice for many years. Alfred Owen Lankester, born on October 26th, 1859, was the youngest son of Dr. Edwin Lankester, coroner for Central Middlesex; his eldest brother was Sir E. Ray Lankester, the eminent biologist; and his sister, Miss Fay Lankester, was secretary of the old National Health Society. From St. Paul's School he went to St. Bartholomew's Hospital, where he was one of the founders of the students' amateur dramatic society, and he qualified as M.R.C.S.Eng. in 1884. He then held house appointments at Bart's, at the City of London Chest Hospital, and at the East London Hospital for Children. Before moving to Marylebone he practised for some time in South Hampstead. His honorary appointments included those of surgeon to the St. Monica's Home Hospital for Sick Children at Kilburn, and consulting physician to the East London Nursing Association. Owen Lankester, with his great height and massive build and hearty manner, was an unforgettable figure in the medical world of London and in many social circles. His genuine kindness and shrewd common sense endeared him to all who sought his help, and his mere presence in a sick-room did the patient good. Ever willing to give a hand in a good cause, he will be affectionately remembered far and wide, and not least by those who served with him upon the council of Epsom College.

Medical News

In the Section of Surgery of the Royal Society of Medicine (1, Wimpole Street, W.) on Tuesday next, January 9th, at 8.30 p.m., there will be a discussion on Professor G. E. Gask's presidential address, "Strategy in the Fight against Cancer," a report of which appeared in our issue of November 11th, 1933 (p. 868). The discussion will be opened by Professor Gask, Lord Moynihan, Sir Cuthbert Wallace, and Mr. J. P. Lockhart-Mummery.

A meeting of the Pharmaceutical Society of Great Britain will be held on January 9th, at 8.30 p.m., at 17, Bloomsbury Square, W.C., when Professor I. M. Heilbron, F.R.S., will lecture on isoprene as a fundamental unit in the synthesis of plant products. Modern research work has revealed that there exist in Nature numerous groups of substances which, though apparently unrelated, are in effect all chemically derived from the isoprene unit. A general view of some of the more important members of each class will be given, and it will be shown how, by progressively increasing the number of isoprene units, one can pass from the simple essential oils both to the complex carotinoid pigments and to physiologically active and biochemically important substances such as phytol, vitamin A, squalene, and probably the sterols and bile acids.

At the next meeting of the Illuminating Engineering Society in the hall of the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W., on January 9th, at 6.30 p.m., a paper on portable lamps and their applications, by Mr. A. Cunnington, will be followed by a discussion.

Dr. A. T. Stanton was admitted to the honorary degree of Doctor of Science by the Senate of the University of Toronto on November 10th. Dr. Stanton is chief medical adviser to the Secretary of State for the Colonies, and has held the position of Director of Government Laboratories in the Federated Malay States. He was to have received this degree at the opening of the Banting Institute in 1930, but was unable to be present on that occasion, and it has now been conferred upon him *in absentia*, by special statute of the Senate.

Professor C. H. Best, University of Toronto, will give a course of three lectures, illustrated by lantern slides, on "The Role of the Liver in the Metabolism of Carbohydrate and Fat," at University College, Gower Street, W.C., on January 11th, 15th, and 18th at 5.30 p.m. In his first lecture Professor Best will describe the methods of investigating the role of the liver in the metabolism of carbohydrate and fat; in the second, the liver and carbohydrate metabolism; and in the third, the deposition of fat in the liver. The chair will be occupied at the first lecture by Professor C. A. Lovatt Evans, F.R.S. Admission is free, without ticket.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that a new series of lecture-demonstrations has been arranged to take place at the National Temperance Hospital on the second Saturday of each month at 3 p.m. The first of these lecture-demonstrations will be given by Dr. Leonard Findlay on January 13th, and will deal with children's diseases. Another new series of lecture-demonstrations will be given at the Medical Society of London, 11, Chandos Street, W., every Tuesday afternoon from 2.30 to 4 p.m., by Dr. A. E. Clark-Kennedy. The subject of this series will be "General Medicine: Common Symptoms—their Diagnostic Significance, Pathogenesis, and Treatment." The first will take place on January 16th, and will deal with "Indigestion." Each lecture is to be followed by a discussion or a demonstration of cases. On Tuesday, January 9th, at 8.30 p.m., Mr. R. Lindsay Rea will give a demonstration on the fundus oculi, at the West End Hospital for Nervous Diseases, Gloucester Gate, N.W. Three demonstrations of x-ray films and electrocardiograms will be given at 11, Chandos Street, W., as follows: Tuesday, January 16th, at 8 p.m., Dr. Peter Kerley: x-ray films, "Diseases of the Heart and Lungs." Wednesday, January 17th, at 4.30 p.m., Dr. Kenneth Harris: Electrocardiograms. Thursday, January 18th, at 4.30 p.m., Dr. Kerley: x-ray films, "Diseases of the Gastro-intestinal Tract and Bones." Among the special courses taking place in the near future are: cardiology, at the National Hospital for Diseases of the Heart, January 15th to 27th, and dermatology, at St. John's Hospital, January 29th to February 24th.

The annual congress of the German Society of Climatology will be held in Berlin under the presidency of Professor Vogt of Bad Pyrmont, on January 22nd and 23rd.

The January issue of *The Practitioner* is almost wholly given up to a group of eleven papers on diet. The contributors are Drs. Robert Hutchison (history of dietetics), S. J. Cowell (vitamins in clinical medicine), J. A. Nixon (adequate diets in diabetes mellitus), Anson Clark (diet in urinary infections), Hugh Gainsborough (ketogenic diet), E. C. Dodds (dietary treatment of obesity), A. H. Douthwaite (rheumatic disease), Alan Moncrieff (disease in childhood), S. W. Patterson (diseases of the colon), H. Gardiner-Hill (endocrine deficiency), and Sir James Dundas-Grant (treatment of lupus).

The issue of *Pans Medical* for December 23rd, 1933, which is dedicated to the memory of Emile Roux and Albert Calmette, contains extracts from Roux's classical papers on diphtheria toxin, the first clinical use of diphtheria antitoxin, and antitubercular serum therapy, and from Calmette's papers on anti-venom serum therapy, vaccination by B.C.G., and anti-tuberculous dispensaries. Portraits of Roux and Calmette are inserted in the text, including one of Roux on his deathbed.

Dr. Arthur Lankester of Purley has been placed on the Commission of the Peace for the County of Surrey.

British Medical Association Lecture

ON

THE TREATMENT OF CARDIAC CASES*

BY

MAURICE A. CASSIDY, C.B., M.D., F.R.C.P.

SENIOR PHYSICIAN TO ST. THOMAS'S HOSPITAL

I have often noticed that when I am honoured by an invitation to address a meeting such as this, the secretary suggests as a suitable topic "modern methods in the diagnosis," or "modern methods in the treatment," of whatever pathological state happens to be specially to the fore in the medical press at the time. Now I do not for one moment wish to criticize this desire to hear about recent developments—they are not always advances—in our art, for it is as admirable to be progressive as it is reprehensible to be reactionary. But in our efforts to keep in the van of progress there is a risk of travelling too far from the base of assured facts, so that we may find ourselves, for instance, dosing our hypertensive patients with the latest muscle or pancreatic extract, so persuasively introduced to us by its enthusiastic manufacturers, rather than giving them humdrum advice as to regime, from which, in the end, they are more likely to benefit.

I have purposely chosen as my text "the treatment of cardiac cases" rather than "the treatment of cardiac disease," because a very considerable proportion of cardiac cases have, as you know, no cardiac disease. By a "cardiac case" I mean a patient whose symptoms, such as shortness of breath, palpitations, or precordial pain, suggest to him, and possibly to his doctor, that the heart is at fault. Before we attempt to treat such a case it is essential that we establish as accurate a diagnosis as we can, and this diagnosis should be a comprehensive one, embracing, if possible, aetiology, morbid anatomy, and disturbance of function. For example, we should not be satisfied with a diagnosis of, say, mitral stenosis, but should aim at describing such a condition as a case of rheumatic heart disease with mitral stenosis and, it may be, auricular fibrillation, with or without congestive failure.

It may interest you to study the figures of an aetiological classification of cardiac cases as seen in consulting cardiologist practice. They are as follows:

843 Cardiac Cases (private practice):			
Neuropathic	...	...	29.5 per cent
591 Cases of Organic Heart Disease:			
Congenital	...	...	3.0 "
Infective	...	...	11.0 "
Rheumatic	...	...	5.6 "
Syphilitic	...	...	1.5 "
Endocarditis (acute or subacute)	...	...	0.9 "
Various	...	...	3.0 "
Toxic	...	...	8.0 "
Thyroid	...	...	5.0 "
Alcoholic	...	...	1.5 "
Various	...	...	1.5 "
Degenerative	...	...	62.9 "
Hypertensive	...	...	31.3 "
Decrescent	...	...	31.6 "
Respiratory	...	...	4.9 "
Doubtful and unclassified	...	...	10.0 "

I am sure you will be surprised at the relative infrequency of valvular disease, the incidence of which is only 5.6 per cent., or about the same as that of the thyrotoxic heart. It will be seen that nearly one-third of the patients sent to the cardiologist have, so far as he can ascertain, no organic cardiovascular disease, and that there is an overwhelming preponderance of the hypertensive and decrescent cases (by decrescent cases I mean those in which there is believed to be myocardial degenerative change, presumably secondary to coronary sclerosis, and not attended or preceded by hypertension).

To the average medical man I think it is still true that "heart disease" is almost synonymous with valvular disease and murmurs. This is not surprising, for the bulk of the cardiac cases which he sees in his student days have valvular disease, and most of the pages of his textbooks are devoted to valvular disease, pericarditis, and thoracic aneurysm, with perhaps one skimpy chapter giving a very inadequate account of the all-important hypertensive and decrescent cases. Even that valuable journal *Heart*, quite rightly the pride of English cardiology, is not without sin in this respect, for not long ago there appeared in it a contribution of fundamental importance by R. T. Grant entitled "After-histories for Ten Years of a Thousand Men Suffering from Heart Disease" (vol. xvi, p. 275). This paper is invaluable as a store of statistical evidence as to the prognosis in various forms of valvular disease, and I advise you all to read it. But unfortunately it gives an entirely erroneous view of the relative incidence of the various aetiological varieties of cardiovascular disease as seen in ordinary practice, based as it is on a selected group of the population—namely, war pensioners—in whom, for very obvious reasons, valvular disease predominated.

Now a word or two as to the treatment of cardiac cases in general. I have a conviction that, as a profession, we tend to treat these patients with an excess of caution, erring in the direction of too much rest, and unduly limiting activities. Very rarely do I see cases in which harm has been done by a doctor encouraging his patient to overexert himself; whereas I constantly see patients on whom undue restrictions have been enjoined, and in whom, as a result, it is sometimes very difficult to restore confidence in the heart's capacity for effort. We all know that prolonged rest is essential after any acute infection of the heart, and especially if this infection is rheumatic. So, also, great caution must be enjoined during convalescence from diphtheria, even though there may have been no obvious manifestations of cardiac damage during the acute stage of the illness. Though prolonged rest in bed is rarely necessary during convalescence from acute tonsillitis or influenza, violent effort should never be allowed too soon after these infections. School doctors should impress on house-masters and matrons the importance of not allowing a boy to run races or play games during convalescence from such infections, even when apparently trivial. The few instances that have come to my notice in which harm has been done by exercises have been where a boy has been allowed to race, or to play in an important match, the day after some mild or brief febrile illness—perhaps one not considered of sufficient importance to be reported to the school doctor.

THE "SCHOOLBOY'S HEART"

This leads me to say a word or two about that perhaps most difficult of all cardiac conditions from the doctor's point of view—the "schoolboy's heart." You are all familiar with this picture; usually a rapidly growing boy, often the son of over-anxious parents, and sometimes a boy who is not altogether averse from being excused from games. He complains of palpitations, and possibly of apical pains, and says he gets more easily "winded" than other boys. The apex beat is perhaps forcible and diffuse, and is felt in, or even outside, the nipple line. The heart rate may be rapid, and accelerates unduly on effort or on emotion. There is often a systolic murmur, and in most cases the symptoms date from the discovery of this murmur, generally during a routine examination in the course of some febrile illness. The boy is brought to you by his parents, who are usually anxious that he should be excused from games. The decision in such a case is often a difficult and an exceedingly important one. We must be very careful not to

* Delivered to the West Somerset Division, November 3rd, 1933.

attach a cardiac label to such a boy at a very impressionable age unless we are quite certain that his heart is in fact an unhealthy one; and we must not run the risk of ruining his school, and probably also his after life, by imposing unnecessary restrictions on him. If there is a definite history of recent rheumatism, or if there is conclusive evidence of valvular disease, or if the heart is without a doubt enlarged, we have no option but to forbid games. But we must not pay any attention to cardio-respiratory, or to so-called haemic, murmurs, and we must remember that many boys have an apex beat in, or even outside, the nipple line without any cardiac enlargement. X-ray examination is of great assistance in these doubtful cases, because it is the only means of ascertaining the size and, even more important, the shape of the heart. My usual practice is to allow games under the supervision of the school doctor, possibly forbidding races, rope-climbing, etc., for a time. I have never heard of any harm resulting, and I am quite certain that the boys' parents would not keep me in ignorance of any evil consequence of my advice! Most of these cases are akin to the "soldier's heart" or the "effort syndrome" of Lewis, and the more you rest them the worse they become, and the more difficult they are to cure once you have finally decided that there is no organic heart disease.

CARDIAC NEUROSES

Let us now discuss the treatment of the cardiac neuroses, which, as I said before, constitute nearly a third of the cases sent to the cardiologist. Here treatment may almost be summed up in a single word—reassurance. But the reassurance must be emphatic and without reservation. It is no use telling these patients that "the heart is a little flabby, but there is nothing seriously wrong," or that "there is a slight murmur, of no great importance." It should always be remembered that in the lay mind anything amiss with the heart, however slight, conjures up future, or even present, possibilities of sudden death, and that it is fear which is at the root of their symptoms. Once we have satisfied ourselves, after careful investigations, including, if possible, electrocardiographic and x-ray investigations (for these help to carry conviction to the patient as well as to ourselves), that the heart is healthy, it is our duty to assure the patient that there is nothing whatever wrong with his heart, and that no restrictions of any sort are necessary. In the case of a patient who has been reduced to a state of cardiac invalidism it may not be politic, or indeed possible, to remove all restrictions at once, but even in such a case we should aim at a return to normal life and full physical effort at the earliest possible date. Massage, passive movements, and, later, graduated exercises may be useful here in the early stages of physical re-education.

Drugs play a very subsidiary part in the treatment of these cases, though a short course of bromide or luminal may be helpful. Digitalis is usually contraindicated; it seldom has any beneficial effect on a nervous tachycardia, and the very fact that digitalis is prescribed is apt to foster the patient's conviction that his heart is diseased.

I am fully alive to the fact that in a few cases the doctor runs a certain risk to his reputation by giving such advice. This is especially true in the case of those nervous patients without any physical signs of organic disease, whose history is suggestive, but not conclusive, of angina pectoris. Even here, I think, one is usually justified in the patient's interests in coming down firmly on the functional side of the diagnostic fence, and in taking an entirely optimistic view of the future to the patient, even though one may have some personal reservations as to the diagnosis. Undoubtedly we take a certain amount of risk by telling such a patient that there

is nothing wrong with his heart, and no need for any restrictions. But it is the only means of curing the patient, who never knows the risk we run in effecting his cure.

ORGANIC CARDIOVASCULAR DISEASE

I have not left myself much time in which to discuss the treatment of organic heart disease. Even here the psychological aspect of the problem must not be disregarded. We must remember that associated with any organic disease there is often a very considerable element of anxiety state. A patient suffering from mitral stenosis, for example, knowing that her heart is diseased, may suffer from precordial pain, from palpitations, and even from dyspnoea, all of purely psychological origin and not directly attributable to the undoubted organic heart lesion. So also an apprehensive man who suffers from angina pectoris due to coronary arteriosclerosis may, through sheer funk, drift into such a state of vasomotor irritability that anginal attacks are induced on the slightest exertion or emotional upset—another example of a functional superstructure on an organic basis. Clearly, then, psychotherapy in the form of reassurance and explanations as to the genesis of symptoms must play an important part in the therapy even of organic heart disease, though this aspect of the treatment is only too often neglected.

Another common mistake is the assumption that all organic heart disease must *ipso facto* produce symptoms and require treatment. I need hardly remind you that this is not true. We all know that valvular disease is often compatible with a normal quiet life, producing no symptoms at all so long as the individual is fortunate enough to be unaware of its existence. For a few years after the war our hospital out-patient departments were thronged with men suffering from valvular disease, real or imaginary, and full of symptoms. Their murmurs had been discovered by medical boards in the Army, they had been "pensioned out," and had suffered from palpitations, precordial pains, etc., ever since. Now, fifteen years after the war, valvular disease has once more become relatively infrequent in the out-patient departments. The subjects of it are, for the most part, at work, symptomless and blissfully unconscious of any disability.

It behoves us, therefore, when we discover the existence of valvular disease, to determine to what extent, if at all, the efficiency of the heart as a pump is impaired, and whether any of the symptoms complained of are due to the organic lesion or to an added anxiety state. We must inquire carefully whether there is any evidence of undue dyspnoea on effort, and if there is, we must note the degree of effort that is required to produce such distress. We must also ascertain whether the patient is able to sleep well with not more than two pillows, and without attacks of nocturnal dyspnoea and wheezing. We look for early signs of congestive failure, engorgement of the neck veins, oedema of the bases of the lungs, and a tender enlargement of the liver. We inquire as to oedema of the ankles at the end of the day.

If a patient is able to carry on the ordinary routine of his life without undue dyspnoea, if he sleeps well, and if there is no evidence of early congestive failure, we can assure him that his valvular lesion is no serious disability, and is compatible with many years of average health. He must not attempt any exertion which makes him badly out of breath, and he must be strictly moderate in food, alcohol, and tobacco. He must lead as normal a life as he can within his limits, and the less medicinal treatment he has the better for him, although he would be wise to undergo periodical medical examinations, and he must send for his doctor at once if he develops a fibrile illness.

INDICATIONS FOR DIGITALIS AND QUINIDINE

When, on the other hand, there is evidence of early congestive failure, or a history of paroxysmal nocturnal dyspnoea, strict rest in bed must be enforced until such signs or symptoms have disappeared, after which cautious experiments must be made to determine how much exercise, and how long a day, can be allowed with safety. It is unnecessary for me to detail the treatment of advanced congestive failure, with oedema and ascites. I need only remind you that if auricular fibrillation is present digitalis must be given in adequate dosage; in other words, it must be pushed until signs of intolerance appear, such as nausea, vomiting, or diarrhoea, or until the ventricular rate by auscultation falls to about 70. It must be stopped at once when the rate falls below 60, and also if digitalis coupling appears. I still see patients who are suffering from auricular fibrillation with gross congestive failure being treated with such an inadequate dose as ten or even five minims of the tincture three times a day.

When dropsy persists in spite of adequate digitalization, or in the absence of fibrillation, when digitalis is not nearly so effective, the mercurial diuretics are often successful. Salyrgan is safer than novasurol, and novurist, I think, safer and better than either; but any one of these three preparations may be successful where the others have failed.

Venesection, and, in obstinate cases of dropsy, the insertion of Southey's tubes, are not, in my experience, employed quite as often and as early as they should be.

For the relief of paroxysmal nocturnal dyspnoea no drug is comparable with morphine, which is too often withheld; not only does it relieve the distressing symptoms, but after a few good nights so obtained an astonishing improvement in the patient's general condition may be observed.

Quinidine is a drug which is used at times somewhat rashly, and in unsuitable cases. It may be helpful, therefore, to say a few words as to the indications for quinidine therapy. Quinidine is perhaps most valuable in the prophylactic treatment of auricular fibrillation. Paroxysms of fibrillation sometimes occur during the early stages of myocardial degeneration; as time goes on these paroxysms become more frequent and more prolonged, until, eventually, fibrillation becomes continuous, with a considerable resultant disability. By a daily dose of three or five grains of quinidine it is often possible to prevent such paroxysms, and to postpone for some years the advent of established fibrillation. What are the indications for quinidine therapy once fibrillation has become established? They are: a short history of fibrillation; absence of valvular disease—and especially of mitral stenosis; absence of any evidence of congestive failure; and an electrocardiograph which shows no evidence of gross myocardial change apart from the fibrillation.

In fibrillation associated with a toxic goitre also quinidine is often successful, though in most cases thyroidectomy is necessary sooner or later if normal rhythm is to be maintained. May I take this opportunity of reminding you of the importance of considering the possibility of a thyrotoxicosis when investigating a case of auricular fibrillation of obscure aetiology? It does not appear to be generally recognized that quite a small, and not at all an obvious, adenoma of the thyroid gland may cause auricular fibrillation, and may do so with very little evidence of other thyrotoxicosis; for instance, there may be no obvious proptosis, no tremor and no sweating, and the basal metabolic rate may be little, if at all, increased. Nevertheless, surgical treatment of such cases is usually followed by restoration of normal rhythm, so that I need not further emphasize the importance of early recognition of this type of case.

THE MINERAL BASIS OF LIFE*

BY

J. H. SHELDON, M.D., F.R.C.P.

HONORARY PHYSICIAN TO THE ROYAL HOSPITAL, WOLVERHAMPTON, AND
HONORARY PHYSICIAN TO THE GUEST HOSPITAL, DUDLEY

Most medical men were brought up on the teaching that, in spite of the great variety of the elemental constituents of the inorganic world, the living body was extremely selective in its needs, and made use of only a few of these elements. For many years the occasional presence of traces of others has been reported by various workers, but their observations have attracted little interest, and it was generally thought that they were accidental contaminants. It is now recognized that the original list of the constituents of protoplasm (C, H, O, N, S, P, Na, Ca, K, Mg, Cl, I, Fe) must be widely extended. In the first place, new methods of research, both chemical and physical, have shown that many other elements, particularly metallic ones, are commonly present in animals and plants. Secondly, there are certain observations which tend to show that in the course of evolution nature has been making experiments in the attempt to find the most suitable metal for certain functions, particularly for use in the respiratory pigments.

The most important evidence that the original list is too exclusive, however, is the successful demonstration by the Wisconsin school, led by Hart, Steenbock, and Elvehjem, of the essential role of copper in the formation of haemoglobin. Their work, which has now become classical, indicates that the presence of copper can no longer be regarded as accidental—the metal, though present only in "traces," has a definite function in which it cannot be replaced by any other element. It is this work in particular, and also the demonstration of the necessity of certain other elements for plant life, that has stimulated a search for those that may be found to occur in living tissues, and for the functions that they may perform. It may be said at once that the former line of work is much the easier, and that in consequence our knowledge of it is in a more advanced state. The pioneer work of Bertrand in Paris, and of Ramage in Norwich, has contributed greatly to our knowledge. The discovery of the actual function in cell metabolism of the mineral constituents presents a problem that does not often yield readily to frontal attack, and depends on the general advance of biochemical knowledge. This may be seen in the case of magnesium, where the recent investigations on the processes of fermentation and of muscular contraction have shown that this element possesses a specific action on the phosphatase enzymes. A review of the mineral basis of life must therefore at the present time largely concern itself with a review of the various elements which have been found to occur with any constancy in living tissues.

1. The Halogens

The presence of chlorine in the body is well known, and its importance needs no stressing. The importance of iodine as a constituent of the thyroid secretion is also well known, but recent work indicates that the role of this element is not confined to its participation in the structure of thyroxine, and that it has other unsuspected activities. Iodine is a constant constituent of the blood in an amount that is generally agreed to be of the order of 12 γ per 100 c.cm. (1 γ = 1/1,000 mg.), the total amount in the blood being, therefore, less than one milligram.¹ The amount is raised in hyperthyroidism and lowered in hypothyroidism, and indeed the level of the blood iodine reflects the functional state of the

* Presidential address delivered to the Staffordshire Branch of the British Medical Association, October, 1933.

thyroid in the same way that the blood sugar reflects that of the islet tissue, or the blood calcium that of the parathyroids. An interesting recent discovery has shown that while all parts of the brain contain iodine, the greatest amount is found in the region of the tuber cinereum, which contains twice as much as the cerebrum and three times as much as the cerebellum.² This fact gains in significance when it is remembered that the tuber lies just above the pituitary, and that in this region is undoubtedly concentrated the control of many of the metabolic processes which are affected by the pituitary. Iodine would therefore appear to be concerned in the control of metabolism through the diencephalon as well as through the thyroid.

The presence of bromine in the normal body has not been recognized for so long, but there appears to be no doubt that bromine must be classed with iodine and chlorine as an element which is constantly present. In one investigation it was found in the blood in each of 150 cases—in an amount from 0.8 mg. to 1 mg. per 100 c.cm.³ A very curious feature, originally described by Zondek and Bier⁴ and since confirmed by the original authors and by three separate groups of workers,^{5,6,7} is that the blood bromine is lowered to half its normal figure in cases of manic-depressive psychosis, and only returns to normal values with an improvement in the clinical condition. The blood bromine also appears to vary with menstruation. In the tissues, bromine is found in greatest amount in the pituitary gland, especially in the anterior lobe, where it occurs in a concentration seven to ten times greater than in any other organ. It shows an extraordinary variation with age; after 45 the amount begins to fall, and in persons who reach the age of 75 the bromine is either present in the merest traces or is not detectable at all.⁸ These facts are intriguing, and strongly suggest that bromine plays an important part in the body economy. It is curious that bromine should be so concentrated in the pituitary, while iodine is concentrated in the tuberal region just above. Bromine also appears to be a normal constituent of plants, the amount varying between 0.17 mg. and 2 mg. per 100 grams of dry matter.

In the case of fluorine, the remaining member of the halogen series, the picture is different, for there is no decisive evidence that it is a normal constituent of either the animal or plant kingdom, although it has been found on many occasions, and is said to occur in blood and milk.⁹ While it is still an open question as to whether fluorine has any physiological function, there can be no question as to its pathological importance, especially with regard to the teeth. In rats, feeding with fluorine produces a characteristic overgrowth of the upper incisors, accompanied by a defective development of the enamel, leading to a mottled appearance.¹⁰ This is of great practical importance, for in Algeria it has been shown that a widespread illness known as "darmous," which affects animals as well as man, and which is characterized by a general cachexia in addition to dental dystrophy, is due to the high fluorine content of the water supply, which is derived from wells containing "natural phosphate." The mottled appearance of the teeth is caused by waste of the patches, which are areas of defective enamel formation. In Iowa an outbreak of mottled teeth was first reported for the first time in the locality where the use of water from new deep wells, the previous water supply having been from shallow wells.¹¹ In a recent study of English children a similar condition of the teeth occurred in children from Middlesbrough, and was found to be associated with a high fluorine content of the water supply.¹² It would appear that the mottled appearance of the teeth can be regarded as evidence of a toxic effect of fluorine.

2. Boron

It is generally agreed that boron is universally present in the plant kingdom, and that it is essential to normal plant growth.¹³ The optimum concentration for plant growth is of the order of 1 part per million. Its effects appear to vary in different species, but in leguminous plants, such as the broad bean, the presence of these minute quantities of boron are essential for the proper formation of the root nodules. In the absence of boron the structure of the nodule becomes defective, and the nitrogen-producing bacteria lose their symbiotic habits and become parasitic, invading the host.¹⁴ Nitrogen assimilation is consequently much below normal. It also plays a part in calcium metabolism, since in the absence of boron the broad bean cannot assimilate calcium. There is no certain knowledge of either its presence or function in the animal kingdom, though Bertrand and Agulhon claim to have demonstrated it in blood,¹⁵ and it has also been demonstrated in human milk.¹⁶

3. Silicon

The pathological activity of silica, especially in regard to the industrial importance of its inhalation as silica dust, is well known. In minute quantities this element is a constant constituent of the plant kingdom, particularly in the stems of cereals. It is concerned with the metabolism of phosphorus. The amount of phosphoric acid taken up by the plant is proportional to the amount of water-soluble silicate in the soil.¹⁷ It is said to be of constant occurrence in human blood,¹⁸ averaging 16 mg. of SiO₂ per 100 c.cm., and a combination of silica and carbohydrate has been demonstrated in gelatin, ox blood, and human urine.¹⁹ The most striking evidence of the widespread occurrence of silica in human tissues is the spectrographic demonstration of its presence in the aqueous humour of the eye.²⁰ It is quite impossible to say whether it has a function, but its presence is not unexpected, in view of its constancy in plants and therefore in food. The silica content of bread varies up to 3.2 mg. per 100 grams (dry), being greater in whole-meal bread than in fine milled bread.²¹

4. Alkali Metals (Na, K, Li, Rb, Cs).

The distribution of the alkali metals is peculiar. Sodium and potassium are, of course, essential to life and of universal occurrence. The remaining elements show great variation. Lithium is sometimes found in human²² and in invertebrate tissues,²³ but only spasmodically. It is constantly present, however, in marine animals, and in plankton it usually reaches a considerable concentration. So far as land animals are concerned, it appears likely that the metal is taken up by the tissues when present, but there is nothing to suggest that it has any definite function. Caesium offers a sharp contrast in that it is almost universally absent from animal tissues, although feeding experiments show quite definitely that it is readily absorbed. Caesium is a constituent of sea-water, and has been detected in plant ash²⁴ and in oyster shells.

Rubidium is of much more frequent occurrence. It occurs in plants,²⁵ and appears to be especially important in the fungi,²⁶ some of which contain quite remarkable amounts, reaching at times 0.2 per cent. (dry), which compares with an average figure for human beings of about 0.003 per cent. It is also of widespread occurrence in the animal world. In invertebrates the analysis of English snails and earthworms showed considerable differences with regard to locality, since rubidium was present in specimens from Liverpool and Marlborough, and absent from specimens obtained in Cambridge and London.²⁷

* It is not known whether this finding has any application to the question of normal embryology.

This suggests that the element resembles lithium in being absorbed by protoplasm in proportion to its availability. In human beings, on the other hand, rubidium is found much more frequently. We found that it was almost invariably present in adult human tissues,²⁵ while in an examination of 111 foetal and infant livers the metal was present in every instance but one.²⁵ A curious feature was that the amount of rubidium was much greater than the average in those dying from congenital pyloric stenosis. Rubidium is present in human milk,²⁶⁻²⁷ which suggests that it may be of physiological importance. The amount in the liver rises slightly during the nursing period, and this, together with its height in pyloric stenosis, suggests that it may be of importance in growth, possibly of the muscles. This suggestion derives some support from one particular fact—namely, that in wheat, barley, and oats—and ratio Rb : K is always higher in the growing point than in other parts of the straw.

5. Alkaline Earths (Be, Ca, Ba, Sr, Mg)

Of these metals, calcium and magnesium are well known as constant and essential constituents of protoplasm. Magnesium occupies a position of particular importance in the plant world owing to the fact that it enters into the composition of chlorophyll. Recent work has confirmed the importance of magnesium. Krause, Orent, and McCollum²⁸ found that animals deprived of magnesium died in a short time, showing marked vasodilatation and tetany. Cramer²⁹ discovered the very intriguing fact that rats fed on a diet deficient in magnesium developed clear evidence of renal damage. Beryllium does not appear to have been described in living tissues, but it is important in that it is capable of producing a severe rickets when fed to animals. Strontium occurs spasmodically in both animals and plants. We found it in the tissues of a few-weeks human foetus, so that it is able to pass the placenta,³⁰ and it has also been found in the human eye.¹³ Snails appear to have a predilection for strontium when it is available,³¹ but show the same type of variation with locality that is found with rubidium. All the evidence goes to suggest that strontium is readily taken up by tissues when it is available, but the irregular character of its distribution does not suggest that it has any definite function. Barium is found much less frequently than strontium, occurring only spasmodically and in minute traces. The solitary exception to this is in the eyes of cattle, which regularly contain barium in the choroid, in amounts which increase with age. Concurrently with this increase in barium there is a decrease in the amount of copper and certain other elements in the choroid. This observation was confirmed for cattle coming from Wolverhampton and Norwich, but it does not occur in any other animal that we have been able to investigate.³⁰ The significance of this observation is entirely obscure.

6. Copper

Copper is so universally present in both animal and plant kingdoms that it may be accepted as an element necessary to life. No extensive investigations of tissues making use of modern methods have failed to demonstrate the presence of copper. In plants it occurs in all parts, but is found in greater concentration in leaves and fruit than in the roots; and it is especially concentrated in the fruit. (This is true also of most of the heavy metals which occur in plants; as they pass up the stem from the root they appear finally to be concentrated in the fruit.)³² In animals the greatest amounts of copper are found in the liver, though it is present in all tissues. It occurs in greater concentration in the blood plasma than in the cells, and the greater part of the serum

copper appears to be in combination with the proteins. The level of the serum copper is normally about 80 to 90 γ per 100 c.cm. It is raised in certain types of anaemia, in pregnancy, and probably in malignant disease,³¹ though much more work is necessary on these points. It is a curious fact that the alterations in the mineral content of the blood tend to be of a similar nature in both pregnancy and carcinoma.

Of the many functions undoubtedly exercised by copper in the body, only one is known with any certainty—its essential role in the formation of haemoglobin. This has been conclusively proved by Hart and his co-workers at Wisconsin in the case of the chicken, pig, rat, and mouse, and their work has also made it clear that no other metal can replace copper in this particular function.³² There is no rigid experimental proof that the same is true of man, but the collateral evidence leaves little doubt that this is the case. The most important evidence is the fact that the human infant is provided with a store of copper in the liver, which is mainly laid down during the last months of foetal life. This store is rapidly used up during the nursing period, and the very close similarity in this respect of the curves for copper and iron strongly suggests that they are both being used for similar purposes. This initial store appears to be true of all animals the young of which depend for a time on a milk diet alone, though it is not the case with animals, such as the guinea-pig, in which a milk diet is supplemented by other food from birth. It should be pointed out that although the copper content of human milk is low it is higher than cow's milk, and that all milk appears to have the power of abstracting copper from metal containers. Thus there is a significant rise in the copper content of cow's milk which has been submitted to pasteurization in contact with copper.³³ The participation of copper in the formation of haemoglobin is, however, not the whole story, for one generally finds that copper is richer in young growing tissues than in adult ones—thus we found a distinct difference between the copper content of teeth of the first and second dentitions.³⁰ This suggests that copper may be directly concerned in the processes of growth. In this connexion it is interesting to note that in carcinoma cells the amount of copper is usually low although the blood copper may be high. There can be little doubt that this element has many important functions, and the demonstration of a copper-porphyrin compound in cells³⁴ suggests that, like iron, it may be concerned in the processes of intracellular oxidation. The pigment of the tail-feather of the touraco is due to the presence of a copper-porphyrin compound.

It has also been suggested that copper acts in the body in relation with the vitamin B complex.³⁵ The available evidence suggests that in vertebrates, at any rate, iron and copper have closely related physiological functions. Copper appears to play a more predominant part in invertebrates. It is a well-known fact that in certain arthropods and molluscs the respiratory pigment of the blood (haemocyanin) contains copper in place of iron. One of the highest copper values in the whole of the animal kingdom is found in the wall of the ink-sac of the octopus,³⁶ where the enormous figure of 914 mg. per kilogram of dry tissue may be found. The ink itself contains only minimal traces of copper, being of melanin nature, and this extraordinary finding suggests that copper may have unsuspected points of contact with the metabolism of the melanins.

From a pathological point of view, copper is of chief interest in relation to cirrhosis of the liver, and to haemochromatosis. A well-known explanation of haemochromatosis is that advanced by Mallory,³⁷ who thought

that the disease was the result of chronic copper poisoning. Although for many reasons this theory is untenable, the fact remains that in haemochromatosis the tissues, especially the liver, do appear to have a higher copper content than normal.²² High copper values are also common in ordinary cirrhosis of the liver (the figures may equal those found before birth); they are, as far as I know, the only conditions in which these high copper figures are found. It would be tempting to conclude that in each case the copper is playing an operative part in the production of the disease, especially in view of the successful experimental production of cirrhosis by the use of heavy metals, but the available evidence strongly suggests that in both instances the high copper content is a secondary phenomenon. The most important evidence lies in the fact that these high values are not universal, and there is clear evidence that cirrhosis can develop with normal copper values. In one example of congenital cirrhosis of the liver which we were fortunate enough to obtain for examination,²³ the copper values were very much less than the normal for that age.

7. Manganese

Manganese is widely spread through both animal and plant kingdoms, and there is abundant evidence that this element is essential for life. The presence of manganese in plants is said to have been discovered by Scheele as far back as 1785. It has been proved to be necessary for the growth of plants,²⁴ and it seems to bear some relation to the formation of chlorophyll, for it is found in leaves in amounts proportional to their greenness.²⁵ Generally speaking, it is far more abundant in those parts in which active chemical changes occur—such as roots and leaves and especially in the reproductive organs—than in the passive parts such as the stem. This has recently been confirmed for Australian plants in a very careful study by Bishop.²⁶ Manganese resembles boron in that, though essential for growth, too high a concentration leads to toxic changes; and a very curious feature described by Bishop is that calcium has the power of protecting the plant from this toxic action. In animal tissues manganese is widely spread, but occurs in greatest quantity in the liver and pancreas, while in some individuals we have found the suprarenals to contain large amounts. Different species show a considerable variation in the manganese content of their tissues. Herbivorous animals such as the guinea-pig usually have high values, while in comparison man has low values.²⁷

Manganese is found in the blood, and so far as our limited observations go²⁸ it occurs in the serum but not in the cells. It is widely spread in invertebrates, but, as with other metals, the amount tends to show considerable variation with locality. Thus snails from some regions possess enormous amounts.²⁹ In human beings there is no pre-natal store of the metal, and the values, beyond showing a slight drop during the nursing period, tend to follow a remarkably constant course throughout life. This suggests that manganese has no particular functions during development, but against this there is the very remarkable fact that mercurium contains a quite remarkable amount of manganese,³⁰ and there is no doubt that the human foetus is normally provided by the mother with an excess of this metal. In view of the general tendency to ascribe to manganese a function as a stimulant of oxidative processes, it is tempting to ascribe the marked temporary provision of this metal to the foetus with the relative oxygen deficiency of fetal blood due to the fact that the placenta is not as good a filter as the lungs.

A series of feeding experiments on animals conducted by Gross and M. C. Hill³¹ have indicated that manganese

is in some way essential to the reproductive processes. Briefly, an absence of sufficient manganese in the diet leads to: (1) an atrophy of the testes in the male, and (2) in the female to a peculiar alteration of the maternal instinct so that she fails to suckle her young. In vertebrate animals manganese has apparently no function in the formation of haemoglobin, though in invertebrates a remarkable fact which should not escape notice is that the Lamellibranch *Pinna squamosa* contains a respiratory pigment very similar in constitution to haemocyanin, except that it has manganese in place of copper. This appears to be a solitary experiment on the part of nature to produce a respiratory pigment having manganese as its metallic basis.³²

8. Cobalt and Nickel

These metals are only rarely found in tissues, and certainly do not possess the universal importance of copper and manganese. There is no satisfactory proof of the presence of cobalt in vertebrate tissues, but it is occasionally found in invertebrates, and, curiously enough, this is generally the case in species which also have a predilection for nickel. Nickel is a more widely distributed element than cobalt. In human beings it is said to be concentrated chiefly in the pancreas,³³ though this awaits confirmation. It is found in some plants, especially the tropical spices, to a considerable extent.³⁴ In invertebrates it has an irregular distribution in polychaetes and molluscs—usually in association with cobalt. A fact which illustrates the extraordinary selectivity exercised by some organisms for these metals is that, of two species, *Halotis* has a high nickel content (0.004 per cent.) without cobalt, while *Archidoris tuberculata* contains cobalt (0.003 per cent.) but no nickel.³⁵ Although nothing is known of any natural function of either of these metals, cobalt in mammals has the power of producing a true red-cell polycythaemia—a fact which may have therapeutic applications.

9. Aluminium

It may be accepted that aluminium is present as a constant constituent of plant and animal tissues, but this is not surprising in view of the wide distribution of this element in soils. On an average human diet the intake of aluminium is somewhere about 12 mg. per diem, of which about half at least comes from the food and not from cooking utensils.³⁶ We have no knowledge of whether it is an "essential" element for the tissues, or whether it is merely taken up passively. In any case, in the amounts absorbed from an ordinary diet it appears that it does no harm, and that there need be no fear of toxic effects from the use of aluminium cooking vessels.

10. Zinc

Zinc is found universally in tissues, and must be regarded as essential to life. It occurs in blood in an amount of from 1.5 mg. to 2.5 mg. per 100 c.cm., and is, in contrast to copper and manganese, mainly present in the cells.³⁷ It occurs in human milk, and in the milk of the cow and ewe, in amounts of 2 to 3 mg. per litre. In all these cases the amount is highest at birth, with a sharp drop to a steady level after ten to fifteen days.³⁸ In the tissues it occurs in greatest amount in the genital organs and in the thyroid, and in the case of the liver recent work suggests that there is a pre-natal store of zinc as well as of copper and iron³⁹—the birth value being of the order of 114.3 mg. per 100 grams (dry) as against 32.4 mg. per 100 grams (dry) in the adult. This, if confirmed, must be regarded as proof of the necessity of the metal for life. Recent work has shown that zinc appears to be essential for normal reproduction in the rat, though it does not appear to be essential for growth.⁴⁰

11. Silver

This element has a very curious distribution. In plants it occurs in some species, but the evidence does not suggest that it is universal. It has, however, a stimulating effect on the growth of watercress, and in the tobacco plant the addition of silver inhibits root growth but causes a precocious development of the nicotine-secreting hairs.³⁰ In fungi it sometimes occurs in remarkable amounts—up to 0.2 per cent. (dry)—and it is a curious fact that in every specimen of edible fungus so far examined Ramage has found silver. This applies not only to English specimens, but also to South African.³⁴ In human tissues Zbinden found it in blood and in all the organs he examined.⁴⁴ Using a less delicate method, Ramage and I have found it in every investigation in about 30 per cent. of the specimens. We are in agreement with Zbinden that the thyroid gland is especially rich in silver, and the same appears to be true of the tonsil.³⁰

12. Arsenic

There is a growing body of evidence that minute traces of arsenic are of widespread occurrence in tissues, and that the element is of physiological importance. In human blood it occurs in an average amount of 63.8 γ per 100 c.cm.³¹ A very interesting feature is that during menstruation the figure rises by 50 per cent. to an average of 92.5 γ , and in pregnancy it rises to a maximum during the fifth and sixth months, reaching a figure of 220 γ . Similar values are apparently also found in carcinoma.

13. Cadmium

This metal, which is closely related chemically to zinc, was never described in living tissues until it was found spectroscopically in 1931 by Fox and Ramage.²¹ The extraordinary feature is that apparently it occurs in one species only, the common scallop (*Pecten maximus*), but in every specimen of that species, obtained from four different localities, cadmium was present in the tissues. This suggests that, as with vanadium, nature has made an experiment with cadmium which has not been carried further.

14. Lead

Lead occurs in the tissues to a much greater extent than is usually believed. Its ubiquity is shown by the fact that it was found in the human eye on spectroscopic examination.⁴⁵ Lead is a normal constituent of sea-water and has been recorded as present in crustacea and molluscs.³² There is nothing to indicate whether in the minute amounts constantly found it is of physiological importance or not.

15. Tin

In human beings minute amounts of tin have been described in the brain, spleen, and thyroid.⁴⁴ In oxen, horses, and sheep the tin content varied from 0.5 mg. per kilo (dry) in the stomach to 4 mg. per kilo in the pancreas.³² The muscle of the tongue gave 12 to 16 mg. per kilo, while the mucous membrane of the tongue gave 18 to 26 mg. per kilo. These extraordinarily high figures for the tongue, and especially for its mucous membrane, suggest that this region of the body may have unsuspected functions.

16. Vanadium

Vanadium occurs regularly in the blood in certain ascidians, where it forms 5 to 10 per cent. of the respiratory pigment.⁴²

This list of elements found in tissues is not intended to be complete—thus, titanium has been described in human tissues and human milk,²⁷ uranium in the chicken's egg, molybdenum in apples, etc.—but is intended as a

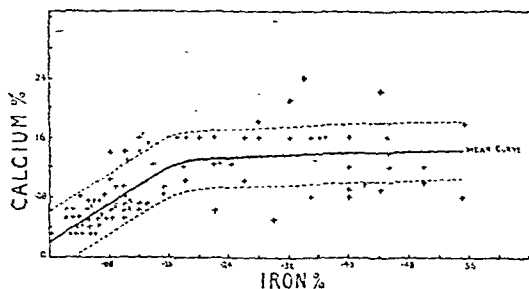
justification of the thesis advanced at the beginning, that the normal metabolism of the body is based on a much wider chemical foundation than was originally thought to be the case. The determination of which elements are of functional importance and which are accidental in their presence must await further work, though it seems clear that copper, manganese, and zinc are of universal importance. The fact that gold is a constituent of sea-water, but is not found in marine organisms, suggests that the other rare elements owe their presence at any rate to a selective absorption. It is unlikely that the whole of life makes use of the same elements, since nature appears undoubtedly to have made experiments which have subsequently been abandoned—this is the best explanation of the species rigidity of the occurrence of vanadium and cadmium. It would not be adequate to leave the matter here, and a few further general remarks seem to be worth making, though it is clear that we are merely on the threshold of a branch of knowledge, the very existence of which is only a recent discovery. The following are points of view which appear to be matters of legitimate speculation.

INTERRELATIONSHIPS BETWEEN MINERALS

It is already clear that the mineral constituents of the body are not independent entities, and that in various ways their physiological activities are interrelated in the directions of either antagonism or synergism.

Antagonism.—The most obvious instance of a biological antagonism can be seen in the mutual relations of calcium and magnesium, for which there is abundant evidence that need not be detailed here.

Synergism.—This is a field which will undoubtedly play an important part in the dietetics of the future. The most striking instance is provided by the mutual relations of calcium, iron, and copper. It has been known for some time that in some way calcium conserves iron in metabolism. In our examination of infant livers³³ we obtained a remarkable degree of correlation between the two metals, which is indicated in the figure. The mean



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curve was obtained by plotting the average percentages of calcium found for each percentage of iron. It will be seen that the two tend to increase together. If lines are drawn parallel to this mean line at a distance representing a variation of ± 0.03 per cent., it is found that 81 per cent. of the cases fall within these limits. It was further found that the average birth value of iron (0.3 per cent.) was never obtained when the amount of calcium was below a certain limiting figure (0.08 per cent. dry).

Similar, but less marked, relations were found to exist between iron and copper, and consequently between calcium and copper. It was noteworthy that the limiting calcium figure for the average copper figure at birth was the same as for iron. There is clearly a close relation between these three metals which cannot be without significance for further nutritional studies. This mutual

relation has clinical significance, for it is stated by Davidson¹¹ that "a normal blood level can be maintained on a diet rich in calcium and moderate in iron, but that anaemia will occur on the same iron intake if the calcium is reduced." In plants the influence of boron on calcium assimilation and of silicon on phosphorus assimilation provide examples of similar close mutual relations. In a satisfactory diet a proper balance between the various mineral ingredients is probably a feature the importance of which comes next to that of the actual presence of the minerals concerned. It is hardly realized yet how much the balance of the "trace" elements may be altered in our diet by the widespread use of various chemical fertilizers and insecticides, but there can be little doubt that with advance in knowledge this will need investigation.

MINERAL DEFICIENCY

In view of the great advances which have followed the discovery that many human beings are living on a diet deficient in vitamins, it is natural to ask whether there is any evidence of a similar deficiency with regard to minerals. It is well known that in some districts there is a shortage of iodine, to which endemic goitre is attributed. In general, however, it may be said that the clearest evidence of deficiency is found in the case of iron, the effects of which are probably accentuated by a parallel shortage of calcium. This is especially the case with the women and the children of the working classes. The famous investigation of Helen Mackay showed that a large number of London children were deficient in iron,¹² and the same was found for the working women of Aberdeen by Davidson.¹³ In this district there are no similar observations, but we have found that meconium, while rich in other metals, has practically no iron,¹⁴ indicating that at any rate the average mother here is unable to provide the foetus with an excess of iron. It might be assumed that this is due to the total absorption of iron by the foetus for storage in the liver; but copper, which is also stored, appears in the meconium in considerable amounts. There is no doubt that the usual diet of the poorer classes in this country is deficient in iron, and that the burden of this falls mainly on women and infants. It must be remembered that calculation of the iron intake based on analysis of uncooked material is very unsatisfactory. In the case of broccoli, for example, 50 per cent. of the iron is lost by boiling for twenty minutes¹⁵—a particularly important fact since vegetables form one of the chief sources of iron in the food.

The case with regard to copper and manganese is not so clear. There are several lines of evidence which suggest that it is rare for there to be a deficiency of these metals in human beings. The average intake of copper in Aberdeen was found to be about 3 mg. per day,¹⁶ which is certainly enough to meet all requirements. This is probably the explanation of the fact that there has never been any satisfactory evidence of the medicinal use of copper having the same effect in nutritional anaemia as it undoubtedly has in experimental animals, in spite of occasional individual successes. The fact that meconium from this district was found to contain strong copper lines on spectrographic examination indicates that the mother is usually able to supply the foetus with all the copper it needs. Although there is nothing to suggest any common deficiency of copper in human diets, this does not occur with animals. In Florida a nutritional anaemia of cattle has been shown to be due to a deficiency of copper in the vegetation.¹⁷ The amounts of the other metals, such as manganese and zinc, which are necessary and essential that there does not appear to be either any evidence of any widespread deficiency.

ISOTOPES

The extraordinary selectivity displayed by living organisms with regard to the elements employed in their make-up leads one to ask whether this same selectivity extends to the isotopes of the elements. For some time I had wondered whether the explanation of the colossal doses of iron now employed in the treatment of anaemia and of some spinal cord degenerations might not find their explanation in the fact that possibly only one of the two isotopes of iron could be employed in the synthesis of haemoglobin or had a therapeutic effect on the nervous system. A selectivity on the part of life, not only as regards the elements but also as regards their isotopes, is so highly speculative¹⁸ that but for the fact that it now has some experimental basis I would not mention it.

Hydrogen consists of two isotopes, of mass respectively (omitting decimals) 1 and 2, which are usually written as H^1 and H^2 .¹⁹ These are present in ordinary hydrogen in a relative abundance ratio of roughly $H^1:H^2$ as 6,500:1, though the exact figures are not settled. Recent physical research has succeeded in effecting an almost complete separation between these isotopes, and it has thus been possible to make "heavy" water, in which all the hydrogen consists of the heavy H^2 isotope—although the amount that can be made is, of course, very small. Such water differs from ordinary water in several physical properties. It has a higher freezing point ($3.8^\circ C.$) and boiling point ($101.42^\circ C.$), but the startling fact is that such "heavy" water is incapable of supporting life. Tobacco seeds failed to grow in it, while controls in ordinary water grew normally. In water in which half the hydrogen consisted of the heavier isotope, development took place, but only at about half the speed of controls in ordinary water. Thus of the two kinds of atom of which ordinary hydrogen is composed, one appears to be inimical to life. Seeing that oxygen and carbon have also at least two isotopes each, the complexity of the organic chemistry of the future stuns the imagination. The future applications of this method of research to the mineral constituents of the body may yield very surprising results.

Studies on the mineral basis of life are only in their very early infancy. They are of extreme interest in that the evidence so far collected tends to show that many of the elements resemble the vitamins in being necessary only in minute amounts. It is clear that, as Bertrand has said, the body cannot be regarded as a democracy, but rather as an oligarchy, in which a large amount of passive elements are ordered and governed by minute amounts of active ones, and the biological investigation of these very active elements cannot but be fruitful.

REFERENCES

- ¹ Curtis, G. M., Davis, C. B., and Phillips, F. J.: *Journ. Amer. Med. Assoc.*, 1933, ci, 991.
- ² Sturm, A., and Schneberg, R.: *Zeit. f. Ges. Exp. Med.*, 1933, lxxxvi, 165.
- ³ Zentek, H., and Bier, A.: *Klin. Woch.*, 1932, xi, 633.
- ⁴ *Ibid.*, 1933, xii, 55.
- ⁵ Klunke, W., and Holthaus, B.: *Deut. med. Woch.*, 1932, lviii, 1588.
- ⁶ Scharfman, J. M., and Veranda, M.: *Klin. Woch.*, 1933, xii, 469.
- ⁷ Uehara, C.-L., and Rotterbaum, C.: *R. Soc. de Biol.*, 1933, cxiii, 411.
- ⁸ Zentek, H., and Bier, A.: *Klin. Woch.*, 1932, xi, 759.
- ⁹ McClure, F. J.: *Physiol. Reviews*, 1933, xiii, 277.
- ¹⁰ Buchaly, W.: *Arch. f. exp. Path. u. Pharm.*, 1932, cxvii, 1.
- ¹¹ Veda, H.: *Arch. Inst. Pasteur d'Algérie*, 1932, x, 41.
- ¹² Ekström, C. J., et al.: *Science*, 1932, lxxv, 575.
- ¹³ Asworth, S. J.: *Brit. Dental Journ.*, 1933, lv, 293.
- ¹⁴ Barton Wright, F. C.: *Recent Advances in Plant Physiology*, second edition, 1933.
- ¹⁵ Dietrich, G., and Aralich, H.: *Bull. Soc. Chim.*, xiii, 295.
- ¹⁶ Kratz, H.: *Hoppe-Seyler's Zeit. f. Physiol. Chem.*, 1931, cxviii, 81.
- ¹⁷ Johnson, J. M.: *Proc. S. Ent. B. and Med.*, 1932, xvii, 760.
- ¹⁸ *Philosophy*, J., and Lewis, S. J.: *Philosophy*, 1932, vii, 760.
- ¹⁹ *Philosophy*, J., and Lewis, S. J.: *Philosophy*, 1932, vii, 760.

- ¹⁹ Berz, R.: *Biochem. Zeit.*, 1932, ccliv, 329.
²⁰ Sheldon, J. H., and Ramage, H.: *Biochem. Journ.*, 1931, xxv, 1608.
²¹ Fox, H. M., and Ramage, H.: *Proc. Roy. Soc., B*, 1931, cxvii, 157.
²² Robinson, W. O.: *Journ. Ind. and Eng. Chem.*, 1918, x, 50.
²³ Ramage, H.: *Nature*, 1929, cxxiii, 601.
²⁴ Idem: *South-Eastern Naturalist and Antiquary; Trans. Norwich Conference*, 1933.
²⁵ Ramage, H., Sheldon, J. H., and Sheldon, W.: *Proc. Roy. Soc., B*, 1933, cxviii, 398.
²⁶ Wright, N. C., and Papish, J.: *Science*, 1929, lxix, 78.
²⁷ Blumberg, H., and Rask, O. S.: *Journ. Nutrition*, 1933, vi, 285.
²⁸ Krause, H. D., Orent, E. R., and McCollum, E. V.: *Journ. Biol. Chem.*, 1932, xcvi, 519.
²⁹ Cramer, W.: *Lancet*, 1932, ii, 174.
³⁰ Ramage, H., and Sheldon, J. H.: *Nature*, August 29th, 1931.
³¹ Locke, A., Main, E. R., and Rosbush, D. O.: *Journ. Clin. Invest.*, 1932, xi, 527.
³² Elvehjem, C. A., and Hart, E. B.: *Journ. Biol. Chem.*, 1932, xciv, 363.
³³ Mackay, H.: *Arch. Dis. in Child.*, 1933, viii, 145.
³⁴ Bost, M., and Königsdorff, H.: *Untersuchungen über Porphyrie*, Leipzig, 1929.
³⁵ Zondek, S. G., and Bandmann, M.: *Deut. med. Woch.*, 1933, lix, 91.
³⁶ Cunningham, I. J.: *Biochem. Journ.*, 1931, xxv, 1267.
³⁷ Mallory, F. B.: *Amer. Journ. Path.*, 1925, i, 117.
³⁸ Herkel, W.: *Ziegler's Beitr. z. Path. Anat.*, 1930, lxxxv, 513.
³⁹ Bertrand, G., and Rosenblatt, M.: *C. R. Acad. des Sci.*, 1932, cxciv, 1405.
⁴⁰ Bishop, W. B. S.: *Aust. Journ. Exp. Biol.*, 1928, v, 125.
⁴¹ Sheldon, J. H., and Ramage, H.: *Biochem. Journ.*, 1933, xxvii, 674.
⁴² Orent, E. R., and McCollum, E. V.: *Journ. Biol. Chem.*, 1931, xcii, 651.
⁴³ Pryde, J.: *Recent Advances in Biochemistry*, 1931, third edition.
⁴⁴ Zhiaden, C.: *Mém. Soc. Faud. Sci. Nat.*, 1930, iii, 233.
⁴⁵ Editorial, *British Medical Journal*, 1933, ii, 578.
⁴⁶ Delzenne, C.: *Thèse de Paris (Sci.)*, 1919.
⁴⁷ Sato, M., and Murata, K.: *Journ. Dairy Sci.*, 1932, xv, 451.
⁴⁸ Bertrand, G., and Brandt-Beaumont, Y.: *Ann. de l'Inst. Pasteur*, 1931, xli, 572.
⁴⁹ Newell and McCollum: *Journ. Nutrition*, 1933, vi, 285.
⁵⁰ Bohn, G., and Drzewina, A.: *C. R. Soc. de Biol.*, 1932, cix, 638.
⁵¹ Guthmann, H., and Giers, H.: *Arch. f. Gynäk.*, 1932, cli, 127.
⁵² Chapman, A. C., and Linden, H.: *Analyst*, 1926, li, 563.
⁵³ Bertrand, G., and Ciurea, V.: *C. R. Acad. des Sci.*, 1931, cxcii, 789.
⁵⁴ Davidson, L. S. P., et al.: *British Medical Journal*, 1933, i, 685.
⁵⁵ Mackay, H. M. M.: *Medical Research Council, Special Report Series*, No. 157.
⁵⁶ Flanley, M. G., and Johnson, E. M.: *Journ. Home Econ.*, 1932, xxiv, 821.
⁵⁷ Neal, W. M., Becker, R. B., and Shealy, A. L.: *Science*, 1931, lxxv, 418.
⁵⁸ *Nature*, 1933, cxxvii, 536.
⁵⁹ Vernadsky, W.: *C. R. Acad. des Sci.*, 1931, cxcii, 131.

CARCINOMA OF THE MAXILLA AND ETHMOID

A SURVEY OF THE NOTES OF FIFTY CASES

BY

EDWARD D. D. DAVIS, F.R.C.S.

SURGEON, NOSE, THROAT, AND EAR DEPARTMENT, CHURCH CROSS HOSPITAL

Carcinoma of the maxilla is fortunately comparatively rare, and statistics show that it accounts for about 1 to 2 per cent. of all malignant tumours.¹ This paper is limited to a survey of fifty cases of carcinoma of the maxilla and the ethmoid seen during the past twelve years. All other tumours of the maxilla have been excluded. These cases can be divided into two definite groups.

TWO GROUPS OF CASES

The first, or lower, group consists of nine cases of squamous epithelioma arising in the alveolus or, hard palate in the region of the molar teeth. The growth extends into the cheek sulcus, or may begin there, and quickly involves the cheek. Sooner or later it bursts through into the antrum and, taking the line of least resistance, fills the antrum with a soft, vascular, necrotic tumour. This squamous epithelioma may commence as the usual typical ulcer, or the growth may be deep-seated and of the burrowing kind, and when it appears on the surface it has already infiltrated the cheek and

antrum. The section of this deep-seated tumour was called an adenocarcinoma.

The second, or upper, group comprises forty-one cases in which the growth arose in the upper part of the nose. At the time of operation it is so extensive and necrotic that it is almost impossible to say where it originally started. There was definite evidence in fifteen of these cases to show that it originated in the floor of the orbit around the infra-orbital canal. In ten patients it began in the ethmoid and spread to the floor of the orbit. In the remaining sixteen the origin of the growth was doubtful. However, in all these it filled the antrum, being attached to the orbital periosteum and having spread into the ethmoid, even to the anterior fossa of the skull and to the other nasal sinuses.

The sections have been described as those of squamous carcinoma, adenocarcinoma, columnar-celled carcinoma, pleomorphic carcinoma. One or two were first called sarcoma, and then changed to squamous carcinoma. There were two endotheliomata arising from the middle turbinal. The sections sometimes revealed variation in the same tumour. The adenocarcinomata were those which arose near the infra-orbital canal. Though pathologists agree that these growths are undoubtedly carcinomata, there is considerable diversity in the nomenclature adopted for the type. Pathologists vary as to the Christian name, so to speak, which they give to a particular carcinoma. As would be expected, French pathologists have a different nomenclature from the British, and between most countries this variation exists. However, to the surgeon and to the clinician the pathology was the same—a rapidly growing malignant epithelial tumour, more malignant than the lower group commencing in the alveolus. The two endotheliomata were definitely less malignant than the true carcinomata. It may be possible to apply Broders's classification of malignancy to these carcinomata. It would be of greater importance to know which types are more radio-sensitive than others.

The first, or lower, group were more commonly seen at a dental hospital or in a general surgical clinic. The second, or upper, group came to the nose and throat clinic or were sent to that clinic from an ophthalmic hospital, so that the difference in the numbers of the two groups is relatively of no importance. There were twenty-seven males and twenty-three females; the ages were from 45 to 70. The younger the patient the more malignant the growth. The patients' surroundings and occupations showed a very wide variation, and the cause of the tumour was as unknown as that of cancer. There was no history of previous disease, and no suppuration of the nose, and there was nothing which could be called precancerous.

SIGNS AND SYMPTOMS

Early diagnosis is of the utmost importance. This should not be difficult in the first, or lower, group of cases; but in spite of this nearly all these came too late for successful extirpation. There was the typical epitheliomatous ulcer, or the deformity of the alveolus and palate with painful or loose teeth. It was rarely necessary to remove a piece for section before operation. If a piece is removed the wound should be sealed by the diathermy button to prevent sepsis or a flare. The early diagnosis of the upper, or second, group of cases is well-nigh impossible, because cancer in itself does not produce any specific symptoms or signs, and it is only when the cancer cells form a tumour that a series of mechanical results appear. Furthermore, the development of these is slow and insidious, particularly in a hidden cavity like the nose, and a patient often only consults a doctor when such symptoms are well marked—frequently too late for successful removal. The general signs, such as blood changes, were of no practical value in the diagnosis.

The most frequent first symptom is a persistent pain in the cheek, radiating to the forehead or temporal region, and accompanied by a blood-stained discharge from one nostril in a patient of cancer age. X-ray photographs should be taken when there is unexplained pain in the distribution of the infra-orbital nerve, and may perhaps lead to an earlier diagnosis. Chronic sinus suppuration accompanied by severe pain, which persists after the sinuses have been drained by operation, demands a search for a tumour. The teeth are frequently blamed for the pain and are extracted. Severe epistaxis in an elderly patient, not arising from the usual causes, with pain in the cheek, should raise suspicion of a growth. In this series of cases the average duration of such symptoms before the patient was seen was three months. An examination of such a case revealed a vascular, polypoid-looking swelling in the middle of the meatus of the nose, which bled freely when probed. Transillumination showed a dark antrum, and an x-ray photograph demonstrated a still more marked opacity of that region. The improved x-ray technique now adopted for the nasal sinuses produces photographs which give such valuable information as to the extent of the growth that it is essential that these photographs should be carefully studied before operation. If there is any doubt as to the presence of a tumour after such signs, exploration of the antrum through the canine fossa, with preparations for a more extensive operation, is advisable. Later symptoms were proptosis, lachrymal obstruction, and expansion of the walls of the antrum, and finally (too late) a puffy swelling of the cheek below the infra orbital margin, where the neoplasm had burst through the wall of the antrum. Secondary growths did not occur except in two or three of the advanced and inoperable cases, when the upper deep cervical glands near the base of the skull were involved.

RESULTS OF OPERATION

All the nine patients in the first, or lower, group were submitted to operation. One case was found to be inoperable, and a complete destruction of the tumour with diathermy or electro-surgery was impossible. There was recurrence of the neoplasm within twelve months. It was considered that a complete destruction of the growth by diathermy had been obtained in the remaining eight cases, but a recurrence appeared in five at the end of twelve months, and in three at the end of two years. Radium was implanted in three instances, with no beneficial result. The growth was well established in all these cases when first seen, but better results should have been obtained by operation and electro-surgery.

Of the forty-one cases of the upper, or second, group seven were obviously inoperable when first seen; the cheek was infiltrated and the orbit extensively invaded. These seven patients died in an average of three months after their first visit and six months from the apparent onset of symptoms. Radium was implanted in two of these with no beneficial result; in fact, one patient died of meningitis six days after the implantation of 20 mg. of radium, but the post-mortem showed that the tumour had burst through the roof of the ethmoid into the skull. Six patients only, out of the thirty-four, were free from recurrence for more than two years. Two of these had encephalomata and survived four and a half and five years respectively. Ohngren's results are decidedly better. Thirty-eight cases of carcinoma out of 104 were free from recurrence after two years.

OPERATIVE PROCEDURE

The operation I carried out have had the following characteristics: (1) a thorough exposure of the growth; (2) to destroy it insofar as far as possible; and

(2) complete excision, followed by diathermy: the orthodox anatomical operation of excision of the upper jaw was discarded. The teeth are put in order as soon as possible after the patient is first seen, and as half of the hard palate is to be removed a denture or obturator of soft velum rubber is made and inserted immediately after the completion of the operation. The most satisfactory form of anaesthesia is the intratracheal, and was employed without any disadvantage. The external carotid artery was ligatured in two instances only, because it was considered that ligature did not diminish the haemorrhage. On the other hand, Ohngren has proved to his satisfaction that secondary haemorrhage after diathermy was materially diminished by ligature of the external carotid. He also advises that the ligature should be applied above the superior thyroid artery, because the clot has been known to be detached and carried into the internal carotid. Ligature is of more value when diathermy is applied to the fauces and soft palate.

The first, or lower, group of cases were attacked by dividing the upper lip in the mid-line and carrying the incision into the nostril, the cheek then being reflected upwards so as thoroughly to expose the alveolus. The neoplasm is excised with a free margin of healthy tissue with the diathermy knife. The floor of the antrum and a large area of the hard palate are removed, the cheek is carefully examined, and any growth is widely removed by diathermy.

In the second, or upper, group of cases permission should be obtained to enucleate the eyeball if a more thorough clearance of the orbit is likely to be required, but the orbital periosteum protects the contents of the orbit. The modified Ferguson incision is made from the fronto-nasal suture down the side of the nose, around the nostril, and through the upper lip. This incision can be made with the diathermy needle, which has the advantage of diminishing the haemorrhage. The cheek is reflected upwards and outwards to the malar bone, the infra-orbital margin is defined, and the whole bony wall of the side of the nose and antrum is removed. The tumour, with the floor of the orbit, is peeled off the orbital periosteum. The ethmoid infiltrated by the growth is coagulated by the diathermy button, and removed up to the base of the skull and as far back as the sphenoid.

Diathermy arrests the haemorrhage, and is applied whenever practicable and to any areas where growth is suspected. The hard palate and floor of the nose is not infiltrated by the tumour, but they should be removed to form a window, so that its area can be inspected and diathermy and radium applied after the skin incision has been closed. The details of the technique of the operation have evolved and have been improved in the later cases, when more experience had been gained. All the patients made an uneventful recovery, and not one died from the immediate or remote effects of the operation. Meningitis and injury to the eyeball was expected, but particular care was taken in dealing with the tumour in these areas. The contents of the orbit can be protected by a thin spatula insulated by a covering of rubber or vulcanite. Ohngren, who has operated on a large number of these cases with diathermy, has seen meningitis, cerebral oedema, and cerebral abscess occur with and without radium application. The application of diathermy to the orbital periosteum, and also radium exposure, has been followed by necrosis of the eyeball. In three of the above cases blindness from optic atrophy appeared with the recurrence of the growth. After diathermy, patients frequently complain of the offensive odour, in spite of irrigation with eusol. Ohngren has painted the charred area with a 2 per cent. permanganate solution and irrigated it with a 1 in 2,000 permanganate solution with success.

The results of radium therapy up to the present has been disappointing. Deep x-ray exposure and telerradium—that is, exposure to the radium bomb—has been tried before operation, but the lowered state of nutrition, the risk of the increased sepsis, and the fact that the inflammatory reaction after radiotherapy delays operation counteract any possible beneficial result of such exposures. Treatment with radium immediately after operation delays healing, and the severe sepsis which follows makes the patient desperately ill. The implantation of radium is unsatisfactory, and has increased the pain and discomfort. The surface application of radium—that is, radium in small doses fixed to the upper surface of the dental obturator and applied for a prolonged period some weeks after diathermy—may produce better results. The combination of electro-surgery and x-ray and radiotherapy is now advocated. A free access to the growth is of course essential.

It is generally found at the operation that the tumour is more extensive than anticipated; on the other hand, cases which appear to be hopeless often do better than expected. The difficulty of early diagnosis and the inaccessibility of ethmoidal carcinoma make it doubtful whether such a mutilating operation is worth while. Nevertheless, the number of successful cases seen in Professor Holmgren's Clinic at Stockholm is encouraging. Operation relieves the patient of pain, and he has the satisfaction of knowing that determined effort has been made to rid him of the disease with a hope of success. The condition of the inoperable patient is truly a miserable one.

REFERENCE

Holmgren, L. G.: *Acta Oto-laryngologica*, Supplementum XIX.

THE LABORATORY DIAGNOSIS OF ENTERIC INFECTION

WITH REMARKS ON THE PERSISTENCE OF INFECTION

BY

A. W. DOWNIE, M.D.

LECTURER IN BACTERIOLOGY, UNIVERSITY OF MANCHESTER

AND

R. W. FAIRBROTHER, M.D., M.R.C.P.

LECTURER IN BACTERIOLOGY AND ASSISTANT DIRECTOR OF THE PUBLIC HEALTH LABORATORY, UNIVERSITY OF MANCHESTER

Although the incidence of enteric infection in this country has greatly diminished during the present century, the continued occurrence of small outbreaks of sporadic cases indicates the endemic nature of this disease. The reason for such persistence of infection is largely the presence of carriers or undiagnosed cases in the community, as demonstrated in an unfortunate manner by the recent outbreak at Malton (Shaw, 1933). A recently published study of enteric carriers in Glasgow (Browning *et al.*, 1933) gives details of individuals who were excreting bacteria of the enteric group over a period of years. As the ultimate source of infection must always be the discharges of human beings harbouring the particular organisms it is certain, that unrecognized carriers are responsible for many of the sporadic cases of the disease.

It is thus obvious that control of enteric infection in a community depends largely on early diagnosis of cases, examination of contacts, and repeated examination of convalescents until they can be pronounced free from infection. The following report illustrates the necessity for this measure, and deals with the laboratory examination of specimens from cases in the north-west of England. Only cases which have been proved by the isolation of

the infecting organisms have been considered. Cases in which diagnosis was by agglutination tests have been omitted.

MATERIAL REVIEWED

During the last three years the following organisms have been isolated from individual cases under examination:

<i>B. typhosum</i>	25 cases
<i>B. paratyphosum</i> A	1 case
<i>B. paratyphosum</i> B	48 cases
<i>B. enteritidis</i>	6 cases
<i>B. aertrycke</i>	13 cases

The last two organisms were associated with food poisoning, except in two cases of prolonged fever from which *B. enteritidis* was isolated by blood culture. These bacteria are not considered further in this paper. The typhoid and paratyphoid infections occurred in twenty-seven municipalities; their sporadic distribution indicates the endemic nature of the diseases.

Cultures were isolated from the blood, faeces, or urine, but only certain of the results of the faeces and urine are considered in detail. These serve to illustrate the persistence of infection after the febrile period.

BLOOD EXAMINATION

1. *Culture*.—In all cases where blood was received for serological examination the serum for agglutination tests was removed from the clot, which was then placed in a tube containing 10 c.cm. of MacConkey's double strength bile-salt-lactose-peptone-water medium. After twenty-four and forty-eight hours' incubation at 37° C. subcultures were made from this medium on plates of MacConkey's agar or tubes of Russell's double sugar medium. By this technique the infecting organism was frequently recovered in pure culture. Table I shows the number of positive results obtained, and the stage of the disease at which the examination was made.

TABLE I

Organism	No. of Cases Examined	No. Positive	Day of Illness
<i>B. typhosum</i>	20	11	7th-8th
<i>B. paratyphosum</i> B	21	6	5th-12th

The proportion of positive blood cultures corresponds very closely to that obtained by Smith (1932), using a similar technique.

2. *Agglutination Tests*.—In the early stage of enteric infection examination of the faeces and urine frequently gives negative results. More useful information can usually be obtained at this time by the examination of the blood, first, by cultural examination for the presence of the infecting organism, and, secondly, for the presence of agglutinins in the serum. Cultural examination of the blood has already been mentioned, and in the typhoid cases, as shown in Table I, it proved particularly useful. Specimens of blood were not received from all the proved cases in this series, but in those examined the agglutination test gave definite evidence of infection. Since the method of qualitative receptor analysis was introduced by Weil and Felix (1920), the value of the method has received ample confirmation. Our routine procedure has been to combine the qualitative and the quantitative methods by testing dilutions of the serum from 1 in 20 to 1 in 2,560 with both "H" and "O" suspensions of various organisms of the enteric group. The suspensions used were obtained from the Standards Laboratory, Oxford. In Tables II and III, however, only the results with the suspensions of *B. typhosum* and *B. paratyphosum* B have been given. In all cases the infecting organism was isolated from the blood, faeces, or urine.

In Table II the agglutination reactions obtained in cases of *B. typhosum* infection are given.

TABLE II—Typhoid Fever: Agglutination Tests

Case	Sex and Age	Day of Illness	Titre			
			T "H"	T "O"	B "H"	B "O"
1	M 9	9	80	0	0	320
2	F 5	11	640	1,280	0	0
3*	M 47	12	40	0	0	0
4*	F 43	9	320	160	0	160
5	M 60	10	0	0	0	0
		35	0	80	0	0
6*	M 17	18	2,560	180	0	80
7	F 8	22	0	320	0	0
8	F 53	11	40	320	0	160
9	M 10	12	1,280	1,280	0	160
10	M 60	8	0	80	0	0
11	M 21	10	640	640	0	0
12	F 56	—	2,560	0	0	0
13*	F	14	40	80	0	160
14*	M 18	12	640	320	0	0
15*	M 70	7	160	320	0	0
16*	M 60	8	320	320	0	160
17*	M	8	320	0	0	0
18*	F	10	80	640	0	0
19*	F 35	—	160	320	0	0
20*	M 53	8	2,560	640	0	0

* *B. typhosum* recovered by culture of blood clot.

T "H" and T "O" = suspensions of *B. typhosum*.

B "H" and B "O" = suspensions of *B. paratyphosum*.

— not known.

0 = negative in 1 in 40 dilution.

It is seen from the above table that the "O" titre was in several instances higher than the titre of "H" agglutinins, and in three cases "O" agglutinins were present in the absence of the latter. In one case (Case 5) the agglutination reaction for both suspensions was negative ten days after the onset, and positive only for "O" on the thirty-fifth day of illness. Cross-agglutination with "O" suspensions of *B. paratyphosum* B occurred in seven of the twenty cases, but cross-reactions with the corresponding "H" antigen were never observed. These results support the findings of others, that, in certain cases, "O" agglutinins only are produced in response to infection, and also that these may appear earlier in the disease than the "H" agglutinins (Smith, 1932; Wyler, 1932).

The results in infection with *B. paratyphosum* B were somewhat different, as will be seen from a study of Table III.

Here "H" agglutinins for *B. paratyphosum* B were constantly present, the titre was generally much higher than in the typhoid cases. Agglutination of the "O" suspension of *B. paratyphosum* B occurred with all sera, except two, but the titre was never greater than that given by the "H" suspension. Cross-agglutination with the "O" suspensions of *B. typhosum* occurred in a similar proportion of sera as shown for *B. paratyphosum* B in Table II. These serological findings are similar to those recently recorded by Smith (1932), Grier and Staddon (1932), and others. Numerous other serum tests on cases, which were diagnosed as typhoid or paratyphoid fever, but from which the organisms were not isolated in our laboratory, have not been included here. These gave findings similar to those recorded in Tables II and III.

The results seem to justify the conclusion that in the majority of cases evidence of infection may be obtained after the first week of the disease, or even earlier, by means of the agglutination test.

In the course of our work the sera of individuals who had received prophylactic T.A.B. vaccine—mostly between 1914 and 1918—have frequently been examined, but these rarely gave rise to any difficulty. In the absence of infection in such persons agglutinins, if present, were usually of a low titre (1 in 640 or less), and reacted with the "H" suspensions of both *B. typhosum* and *B. paratyphosum* B, and frequently also with *B. paratyphosum* A, while agglutinins for the "O" antigens were almost invariably absent.

FAECES AND URINE EXAMINATION

Culture was made from the faeces directly on MacConkey's agar medium, and also by the brilliant-green technique using 1 in 150,000 and 1 in 300,000 concentrations of the dye. In the typhoid cases no advantage was observed by the brilliant-green method, which always gave negative results when direct culture was negative, and even in a few instances when the direct method was positive. In all the paratyphoid cases, when the organism was recovered by direct culture it was also isolated by the brilliant-green method; but in seven cases where direct culture failed brilliant-green enrichment gave positive results. Culture of the urine was made directly on plates of MacConkey's agar, and again after incubation of the urine for twenty-four hours in the presence of brilliant green added to make a final concentration of approximately 1 in 250,000. All cases positive by the brilliant-green technique were also positive by direct culture.

TABLE III—*B. paratyphosum* B: Agglutination Tests

Case	Sex and Age	Day of Illness	Titre			
			B "H"	B "O"	T "H"	T "O"
1	M 70	25	640	160	0	0
2	F 9	9	2,560	640	0	0
3	M 25	9	2,560	640	0	0
4	M 12	8	2,560	320	0	0
5	M 32	11	2,560	80	0	0
6	F 21	8	2,560	320	0	80
7	M 23	15	2,560	2,560	0	2,560
8	M 51	8	2,560	320	0	320
9	F 27	10	2,560	160	0	0
10	F 53	11	2,560	160	0	0
11*	M 19	12	640	160	2,560	320
12	F 10	12	2,560	80	0	0
13	F 48	11	2,560	0	0	0
14	M 22	12	2,560	80	0	0
15	F 50	7	2,560	80	0	80
16	M 21	15	2,560	320	0	0
17*	M 18	8	2,560	320	0	0
18*	M 20	5	1,280	160	0	0
19	M 18	7	1,280	80	0	0
20	F 32	25	2,560	40	0	80
21*	F 15	7	2,560	320	0	0
22*	M 22	11	2,560	0	0	80
23*	F 29	8	2,560	160	0	0

* *B. paratyphosum* B recovered from blood clot.

The results of culture from faeces and urine in relation to the duration of the illness in the typhoid cases are

shown in Table IV. In Table V similar results are shown for those cases of paratyphoid fever where more than one examination was carried out. Of the total number of cases mentioned above, single examinations only were carried out by our laboratory in certain instances; these have been omitted here owing to insufficient data.

TABLE IV.—Typhoid Fever: Cultural Results

Case	Sex and Age	Faeces	Urine
1	M 9	+ (17), - (29), - (43), - (61), - (69), - (75)	- (17), + (13), - (31), - (63)
2	F 5	+ (21), - (255), - (239), - (332), + (332), - (472), - (540)	+ (21), - (255), - (283), - (332), - (332), - (472), - (43)
3*	M 47	- (48)	- (7), + (48), + (83), + (114), + (142), + (172), + (200), + (230), + (260), + (293), + (324), + (360), + (388)
4*	F 43	+ (48), + (59), + (74), + (375), + (555)	
5	M 60	+ (19), - (34), + (40), - (59)	- (19), - (34)
6	M 17	+ (51), - (63)	+ (51), + (56), + (74)
7	F 8	- (4), - (98), - (110)	
8	F 30	+ (10), - (43), - (50)	
9	M 10	+ (14), - (47)	- 57
10	M 60	- (21)	
11	M 21	+ (23)	
21	M 21	- (30), - (43), - (56), - (62), - (2)	+ (30), - (56), - (62)
22	F 3	+ (11), - (26)	- 11, - (36)
23	F 12	- (30), - (73)	+ (30), - (70)
24	M 67	+ (22), - (40)	
25	M 35	+ (10)	

* Cases still under observation.

+ = *B. typhosus* isolated. Figure indicates day after onset of illness.

TABLE V.—Paratyphoid Fever: Cultural Results

Case	Sex and Age	Faeces	Urine
1*	M 70	+ (13?), + (21), + (26), + (33), + (39), + (49), + (56), + (73), + (110)	
2	F 9	+ (12), + (35), - (54)	
3	M 25	+ (43), - (73)	+ (43)
4	M 12	+ (13), - (38), - (47)	- 13, - (38), - (47)
14	M 22	+ (15), + (21)	
15	M 50	+ (18), + (23), - (45), - (52)	+ (18), - (45)
16	M 21	+ (38), - (53), + (56)	- (53), - (56)
19	M 18	- (8), + (21), - (49), + (63), - (81)	- (81)
20*	F 32	+ (32?), + (122), + 157, + (247), + (260), + (340), + (373), + (420), + (470), + (510), + (630)	+ (122), + (157), - (247), + (300), + (340), - (373), + (420), + (470), + (510), + (630)
24	M 18	+ (15), - (25), - (32)	
25	F 21	+ (6), + 28	
26	M 21	+ (30), + (47), - (64)	- (30)
27	M 6	+ (27), - (26), + (46), - (56), - (66), - 76	- (50), - (76)
28	M 15	- (34)	+ (34), - (46)
29	M 41	- (35), + (72)	+ (35), + (70)
30	F 11	+ (7), + (21)	
31	M 11	- (10), + (25), - (32), - (37)	
32	M 47	+ (11), + (19), - (26), - (31)	
33	M 7	+ (55), + 69, - (83)	
34	M 18	+ (0), + (29), + (29), - (37), - 49	

Figures indicate day after onset of illness. * Cases still under observation. + = *B. paratyphorum* B isolated.

The examinations in Tables IV and V were incomplete in the sense that, although the majority of the cases apparently made a complete clinical recovery, the probability of freedom from infection was not established in all. Certain of the cases from which repeated exam-

inations were made showed positive cultures at the time of the last examination—for example, Cases 1, 16, and 20, Table V; of these Cases 1 and 20 are still under observation. Of the sixteen typhoid cases shown in the table the organism was recovered from the faeces, in one case six months, and in another eighteen months, after the onset of illness, and in two cases from the urine after four months and twelve months. Of the twenty paratyphoid cases shown in Table V, six were still excreting paratyphoid bacilli after two months; of these one had the organism in both the urine and the faeces after twenty months.

The results indicate that in the examination of convalescents it is necessary to emphasize the fact that a single negative examination of the faeces and urine is not sufficient to justify the conclusion that an individual is free from infection. Cases 19 and 27, Table V, illustrate this point. Here the excretion was intermittent; Case 19 gave positive cultures thirteen and twenty days after previous negative examinations. The results do not indicate that either age or sex plays an important part in determining the persistence of infection with either typhoid or paratyphoid bacilli.

DISCUSSION AND CONCLUSIONS

The fact that the control of enteric infection depends to a large extent on the early diagnosis of cases and the detection and control of carriers was mentioned above. In the diagnosis by laboratory examination the guiding principles, although perhaps not sufficiently appreciated, are well established, and are illustrated by the findings recorded above.

Towards the end of the first week—and the patient is frequently ill a few days before enteric infection is suspected—examination of the blood by cultural methods and agglutination tests with the serum will in the majority of cases afford evidence of the nature of the disease. The evidence obtained by the agglutination test should, however, be confirmed by isolation of the infecting organism from the faeces or urine wherever possible. Later in the course of the illness agglutination tests with the patient's serum generally give more marked reactions and, while blood cultures are less frequently positive, the isolation of the causal organism from the urine and faeces is more readily effected, especially during the second and third weeks.

In the detection of carriers examination during convalescence is of the utmost importance. The carrier state may be merely temporary, the organisms being excreted for some weeks or months after the febrile period. Such cases tend to clear up spontaneously, but in order to prevent the spread of infection from these, adequate methods of testing for freedom from infection during convalescence must be employed. At least three successive negative reports on faeces and urine should be received at weekly or fortnightly intervals before a person can be considered probably free from infection. In the permanent carrier excretion of the organisms in faeces or urine, sometimes intermittent, persists indefinitely, and this presents a much more difficult problem: The only satisfactory method for removing the source of infection appears to be operation (Browning *et al.*, 1932).

The necessity for the examination of contacts is illustrated by Cases 1 and 20 in Table V. These had no clinical manifestations of infection, and were detected in the examination of members of the families where several cases of illness had occurred. The investigations on these two cases showed that they were carriers of the permanent class, and it would appear that they were probably the original source of the associated outbreaks.

Although there is nothing new in this communication the experiences of this laboratory may serve to emphasize

to physicians and laboratory workers alike the necessity for bacteriological control of enteric fever.

BIBLIOGRAPHY

- BRIDGES, C. H., et al.: Medical Research Council, Special Report Series, No. 129, 1931.
 GORDON, A. D., and STURINGTON, E. F.: *Journ. of Hyg.*, 1932, XXXI, 516.
 HALL, W. A.: Ministry of Health, Reports on Public Health and Medical Subjects, No. 19, 1933.
 SCHUB, J.: *Journ. of Hyg.*, 1932, XXXI, 143.
 WOLF, L., and FELIX, A.: *Zeit. f. Internat. Med.*, 1920, XXIX, 21.
 WOLF, J.: *Journ. of Hyg.*, 1932, XXXI, 375.

COLLAPSE THERAPY IN BRONCHIECTASIS

A WARNING

BY

H. P. NELSON, M.D., F.R.C.S.

ASSISTANT SURGEON TO THE EXAMPTION HOSPITAL FOR DISEASES OF THE CHEST

Collapse therapy has earned a great reputation in the treatment of pulmonary tuberculosis. A bronchiectatic cavity, on the other hand, differs from a tuberculous one in that it is lined with epithelium, and, however long the epithelial surfaces are in contact, they will never unite. In bronchiectasis, therefore, the procedure cannot be regarded as a curative, but only as a palliative, treatment. Collapse therapy in bronchiectasis possesses, however, a disadvantage which I do not think is fully appreciated by those who advocate it—namely, that it greatly diminishes the possibility of a successful lobectomy, should this become necessary. In the modern one-stage lobectomy it is essential to obtain an early expansion of the remaining lobe, and so obliterate the pleural space before infection can set in. A paralysed diaphragm removes the principal factor in expanding the lung, and a prolonged artificial pneumothorax so anchors the remaining lobe that it will not expand quickly enough. I would like to quote two unfortunate experiences which have prompted me to give this warning to others.

Case 1.—A woman, aged 28, was admitted to St. Andrew's Hospital, Bow, on January 11th, 1933. Seven years ago she had a so-called pneumonia on the right side, followed by an empyema which healed with rib resection and drainage. Since that time she had had a persistent cough, with about one ounce of offensive sputum every morning. Four years ago she started to spit up blood (about four ounces at a time), and this recurred three or four times every year. By 1932 the condition had become much worse, and the bleeding was more frequent. Her sputum was negative for tubercle bacilli. Lipiodol demonstrated severe bronchiectasis in the lower lobe. In November, 1932, a right phrenic evulsion was performed, but following this there was no improvement in the symptoms. In January, 1933, I saw her for the first time. She was then having severe haemoptyses every week, was anemic, and it was obvious that something had to be done to try to relieve her condition. On February 8th I performed a right basal lobectomy. Owing to the previous empyema there was a mass of adhesions round the lower lobe, particularly on its costal surface. But by entering the endobronchial space I managed to strip the lobe free. There were adhesions in the interlobar fissure, but none over the upper lobe. The day following the operation I found her dead, and there was a fatal shock of the endobronchium. During removal of the lower lobe a full pleural space was left in the pleural cavity. At the end of the operation the chest was drained by a closed waterlocked drainage. The patient lay in the bed, unable to expand the lung, and died on the eighth day after operation. The gross pathological changes in the right pleural cavity were those of a chronic empyema.

Normally, the upper lobe expands to fill the whole hemithorax, and the lower lobe expands to fill the rest of the hemithorax. But in the case of a bronchiectatic lung, the upper lobe expands to fill the whole hemithorax, and the lower lobe expands to fill the rest of the hemithorax. Thus, if the upper lobe is removed, the lower lobe expands to fill the whole hemithorax, and the upper lobe expands to fill the rest of the hemithorax.

and there is extreme risk of the patient dying from an infection of the pleural cavity.

Case 2.—A girl, aged 19, was admitted to St. Bartholomew's Hospital on September 21st, 1933, under Dr. F. G. Chandler. At the age of 3 she had had double pneumonia, and since then had had cough and sputum. In 1929 lipiodol demonstrated a bronchiectasis in the left lower lobe. She then had several ounces of offensive sputum daily. An artificial pneumothorax was therefore induced, and maintained with monthly refills of 500 c.c.m. There was at no time any pleural effusion. The pneumothorax succeeded in reducing her sputum to a few drachms of inoffensive sputum daily, but by 1932 this had started to increase again. The lung was almost completely collapsed, except for a small part situated behind the heart shadow. Lipiodol demonstrated dilated bronchi in the collapsed portion of the lung. By September, 1933, she was producing one ounce of sputum in the twenty-four hours. A lobectomy was therefore advised, and was performed on October 17th. On opening the chest I found that the whole pleural cavity was lined by a thick white membrane, which completely obscured the anatomical landmarks. This was stripped off the lower lobe and a left lower lobe lobectomy performed, but with some difficulty owing to adhesions in the interlobar fissure. After removing the lobe I attempted to decorticate the white membrane off the upper lobe. This, however, was only partially successful, as it was firmly adherent in one place. At the end of the operation the chest was drained with a closed waterlocked drainage. This patient now (December, 1933) has a complete empyema on the left side, and there is practically no expansion in the remaining upper lobe. I fear that we will therefore have substituted a large chronic empyema for a left basal bronchiectasis.

In an artificial pneumothorax of more than a year's duration, even in those cases where there is no pleural effusion, the lung is likely to be encased in a white membrane and expansion of the remaining lobe therefore severely hampered. In future, before performing a lobectomy in a case of artificial pneumothorax, I shall inspect the pleural cavity with a thoracoscope.

DISCUSSION

After a phrenic evulsion for a basal bronchiectasis there may be a temporary improvement, but subsequently, when the diaphragm has completely atrophied, the patients return to the same, or a worse, condition. In cases of dry bronchiectasis, suffering from haemoptysis only, I have seen a definite improvement in symptoms following paralysis of the diaphragm. It is, however, advisable first to try a temporary paralysis, by crushing the nerve, to see if this is going to be effective in controlling the bleeding.

Artificial pneumothorax frequently fails owing to extensive pleural adhesions, but when a complete collapse is obtained the symptoms may disappear, as in those cases quoted by Dr. F. G. Chandler and referred to by Dr. Beaumont in the correspondence in the *British Medical Journal* of October, 1933. The collapse must, however, be maintained by refills for the rest of the patient's life, and, should obliterative pleurisy develop, with subsequent expansion of the lower lobe, one has probably burnt one's boats as far as lobectomy is concerned.

Thoracoplasty for basal bronchiectasis has, on the whole, given extremely bad results, and involves the sacrifice of a whole lung for a basal lesion, which is obviously wrong. But this operation still has a place in the treatment of unilateral bronchiectasis, when all the lobes are grossly affected and there is a large quantity of sputum. By means of a very extensive resection it is possible in these cases to reduce the sputum from, say, 20 ounces to one or two ounces; occasionally, they may even be sputum free, but in the majority it recurs again—although never, of course, to the same extent as before operation.

Thus the choice of therapy in basal bronchiectasis seems to me to rest between (a) posture and bronchoscopy, and

(b) lobectomy, which in selected cases carries a mortality of between 8 and 10 per cent.

CONCLUSION

The object of this paper is to point out that, when collapse therapy is applied to cases of bronchiectasis, it must be appreciated that such therapy may exclude the possibility of a subsequent lobectomy, should it become necessary.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

HERNIA OF THE LUNG

This condition, although rare, is nevertheless of sufficient clinical interest to justify recording the details of a case which came under my notice. Most surgical textbooks give little more than a passing reference to the subject.

CASE HISTORY

A miner, aged 30, was injured while at work in the pit on January 28th, 1929, being struck heavily on the back by a loaded "tub." He was admitted to the General Infirmary at Leeds under the care of Mr. J. F. Dobson soon after the accident. He was found to have a fracture of the body of the right scapula, fractures of the second, third, and fourth right ribs in the antero-lateral wall of the thorax, and a considerable subcutaneous tearing of the fibres of the overlying pectoralis major. He was treated by the application of strapping, and was discharged to the care of his panel doctor ten days later. Soon after his arrival home he had what was described as an attack of acute bronchitis.

He was next seen in May, 1930, in the out-patient department, complaining of persistent pains and grating sensations over the right side of the chest, together with a spasmodic, unproductive cough. On examination there were harsh rhonchi and pleural friction sounds at the right base. X-ray examination of the chest showed malunited fractures of the second, third, and fourth ribs on the right side; the lungs were clear save for some increase in the root-shadows. In July, 1930, he was noticed to have a definite defect in the right chest wall and pectoralis major just above and to the outer side of the right nipple; the defect measured about three and a half inches in its vertical diameter and two and a half inches transversely. Through this defect a soft, crepitant mass appeared on deep inspiration, and, to a greater degree, on coughing; this was obviously a hernia of the lung. A corset with a pad to fit the defect was supplied.

Early in 1931 the man was given light work in the lamp-room at the colliery; he carried on this work satisfactorily for about two or three months, but subsequently he said he was unable to do any kind of work. In November, 1932, he was seen again, the corset controlled the hernia satisfactorily, but he complained of much spasmodic cough and shortness of breath. The hernia was no larger than when it was first seen, and there was no other abnormality to be detected in the chest on physical examination. X-ray examination of the chest showed nothing abnormal save the malunited fractures of the ribs.

COMMENTARY

Ætiology.—Hernia of the lung, or pneumatocele, may be of congenital or acquired type. The congenital herniae occur at the site of developmental defects in the thoracic parietes, and usually are incompatible with life. The acquired herniae may be of traumatic origin, or may follow some pathological process in the chest wall, or may even arise spontaneously. Most commonly they are of traumatic origin, following such injuries as stab and gunshot wounds which damage intercostal muscles or nerves, or the ribs themselves; some follow non-union or malunion of fractured ribs. The traumatic type of hernia

may appear soon after injury, or, in what Morel-Lavallée¹ termed the "consecutive" type, the hernia appears some considerable time after the injury, presumably on account of the yielding of scar tissue. Spontaneous hernia of the lungs occurs in such people as glass-blowers and wind-instrument players; it has also been recorded as occurring during labour. While traumatic cases may arise at any situation in the chest wall, spontaneous herniae usually are found anteriorly near the sternum, where the external intercostal muscle is replaced by membrane. At the corresponding place posteriorly the weak area is guarded by the mass of erector spinae, although Wightman² recorded a case of spontaneous pneumatocele in a trombone player beneath the trapezius and erector spinae, about one and a half inches to the right of the seventh dorsal spine. Sometimes the hernia protrudes into the neck through a defect in Sibson's fascia, and rarely into the abdomen through a defect in the diaphragm. Pathological causes include caries of the ribs, empyema necessitatis, lung abscesses, and the extensive operations of Estlander and Schede, but such herniae are very uncommon. Most pulmonary herniae occur in males, usually under the age of 45.

Prognosis.—Inflammatory changes may lead to the formation of adhesions between the sac and its contents, with resulting irreducibility; strangulation is rare, and spontaneous cure practically never occurs.

Treatment.—This must depend on the type of hernia and the cause. A hernia through a gap in Sibson's fascia is probably best treated conservatively; Chorel³ treated one such hernia by means of a pad and bandage. In cases of hernia through the bony chest wall treatment of the cause, such as caries of a rib, may result in cure. In traumatic and spontaneous cases palliative treatment may suffice; this involves the fitting of a corset with an obturator to fit the defect in the chest wall. It may also be necessary in such cases to modify the patient's occupation, although the disability when following occupational injuries sometimes diminishes in a remarkable fashion when the claim for compensation has been settled. Operative treatment should be directed in the first place to the treatment of any pathological process in the chest wall. Cure has been reported in cases of cervical pneumatocele after packing the hernial sac with iodoform gauze. Simple excision after ligation of the sac has been performed on several occasions. Montgomery and Lutz⁴ turned an osteochondral flap upwards from the fifth rib on a periosteal hinge to close a gap in the fourth intercostal space in a case of pneumatocele following a stab wound; this operation resulted in cure, and for herniae through the bony parts of the thoracic parietes this type of repair seems to be the most practicable.

The case recorded above is clearly of the consecutive type; eighteen months elapsed between the date of the accident and the appearance of the hernia. As a result of the chronic cough the scar tissue in the chest wall and pectoralis major yielded, allowing the hernia to appear. As far as the treatment is concerned the defect in the chest wall is rather large for satisfactory closure by means of an osteochondral flap; the hernia is controlled adequately and comfortably by the corset.

I am indebted to Mr. J. F. Dobson for permission to publish this case.

A. B. PAIN, Ch.M. Leeds, F.R.C.S.,
Surgical Tutor, University of Leeds,
and Surgical Registrar, General
Infirmary, Leeds.

REFERENCES

- ¹ Morel-Lavallée: *Bull. et Mém. Soc. Chir. de Paris*, 1845-47, i, 75.
- ² Wightman, C. F.: *British Medical Journal*, 1898, i, 365.
- ³ Chorel, Professor: *Lancet*, 1889, i, 1002.
- ⁴ Montgomery, J. G., and Lutz, H.: *Ann. of Surg.*, 1925, lxxii, 220.

HAEMATURIA IN CHILDHOOD ASSOCIATED WITH ACUTE MASTOIDITIS

Mr. E. Carew-Shaw's note on the above subject (*Journal*, October 28th, 1933, p. 780) prompts me to record a somewhat similar case.

A. P., aged 6 years, first seen in the out-patient department of the Birmingham Children's Hospital in August, 1933, gave a history of pain in left ear for three weeks, and discharge from the left meatus for two weeks. On examination there was found to be a profuse discharge from the left meatus and also definite mastoid tenderness. The temperature was 99.6° F. A diagnosis of acute mastoiditis was made and the child admitted to hospital. The usual routine examination of the urine prior to operation was carried out, and definite haematuria was discovered (no previous history of this). The child was kept under observation for twenty-four hours, and it was then decided to operate. The haematuria and mastoid tenderness were still present, although the temperature was not quite so high as on admission. A Schwartz mastoid operation was performed, and within forty-eight hours there was a definite improvement in the urinary condition. Within five days the haematuria had completely disappeared. The child's condition was very satisfactory when he was discharged from hospital five weeks after admission.

This case confirms Mr. Carew-Shaw's conclusions that the haematuria was secondary to the mastoiditis, and that the presence of haematuria associated with mastoiditis is a very definite indication for early operation.

I am very much indebted to F. D. Marsh, F.R.C.S., for his courtesy in allowing me to report this case.

LAURA L. BATEMAN,
Resident Surgical Officer, The Children's
Hospital, Birmingham.

Reports of Societies

CONGENITAL AORTIC STENOSIS

At a meeting of the Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland, held on December 15th, 1933, with the president, Dr. W. J. Jessor, in the chair, Professor A. FRANCIS DIXON showed the heart of an infant in which there was considerable stenosis of the aorta proximal to its connexion with the ductus arteriosus. The ductus arteriosus was small and contracted. The right atrium was very large and the right ventricle formed by far the greater part of the heart. There was no interventricular communication, and the foramen ovale was small. The left atrium and the left ventricle were both very small. The right and left atrio-ventricular valves were normal. Macroscopically the stenosis appeared to be due to endarteritis. The specimen was obtained from a case which had been under the care of Dr. Collis.

Dr. W. R. COLLIS said he had seen this baby about five hours after it was born. The child had had a syncopal attack. There was no obvious murmur, and it was difficult to make out whether the heart was enlarged, what had actually caused the attack, and whether it was a case of congenital heart disease. A diagnosis of congenital heart disease was made, and in twenty-four hours time the child had another attack, and was admitted to hospital, where she died on the third day after admission. While in hospital she had attacks of "blueness," and became cyanosed, but in between the attacks she was a very good colour. It was interesting to note that, from the clinical point of view, there were two types of stenosis of the aorta, one in which the stenosis was proximal to the ductus arteriosus and the other in which it was distal to it.

The President said that it was very difficult to account for the attacks of "blueness" in this case. He wondered if there was any question of spasm of the pulmonary vessel which would account for them.

Reviews

"YEAR BOOK OF RADIOLOGY"

The *Year Book of Radiology, 1933*, by CHARLES A. WATERS and IRA I. KAPLAN, is assured of a warm welcome from the radiologists in this country. The first edition was published in 1932, and was an immediate success. It gave a concise yet complete account of all the principal advances in radiology that had occurred during the preceding fifteen years. It is not to be inferred, however, that the 1933 *Year Book* is merely a revised edition, for, although the design is similar, the work has been brought up to date, and a much more extensive investigation and abstracting of foreign literature undertaken. In order to make full use of the new edition it must be read in conjunction with the 1932 *Year Book*. It does, however, contain so much new material that by itself it will prove an invaluable addition to the library of all radiologists.

The work is divided into two parts: I, Radiological Diagnosis; II, Radiotherapeutics. In regard to the first, there are some who think that the limit of possibilities in radiological diagnosis has been reached, but each year there is something new to record in both technique and diagnosis. In the compilation of this book the radiological literature of all countries has been searched and abstracts made of all the important papers. The references are accurately given, so that when desired the original papers may be consulted. It is, of course, impossible to do more than indicate the main features of the work. All the systems of the body are dealt with, the osseous system being especially well done. Abstracts of papers dealing with bone changes in diseases of the endocrine glands, with xanthomatosis and other rare diseases of bone, will be found in this section. The illustrations are numerous, and placed in close relationship to the text—which is very helpful to the reader. Other chapters which deal with technique, history, teaching, and medico-legal matters are of great interest.

The second part of the *Year Book* opens with a general discussion on radiological physiology, biology, and physics, the views of many readers being given regarding the action of x rays and radium on living cells. The general considerations in radiotherapy are clearly stated, and a large section is devoted to the radiotherapeutic treatment of cancer. Abstracts of papers dealing with the relation of dosage to gene mutation rates are of great interest, and many papers give critical analyses of the results of radiotherapy. All the methods of irradiation are referred to, many of the papers laying particular stress on the underlying physical principles on which these methods are based. There is no doubt that, apart from malignant diseases, irradiation is being called for in an ever-increasing number of ailments. The reader will find the latest information, abstracted from the literature of all nations, assembled in the various sections into which Part II is divided. Some of these sections will be of particular interest to specialists other than radiologists—for example, radiation in dermatology, in ophthalmology, in mouth, nose, ear, and throat, in gynaecology, in neurology, and in genito-urinary conditions. One section which should appeal to all is that dealing with injuries in radiation therapy.

It should be noted that throughout this work the authors are not expressing their personal opinions, but are putting before the reader carefully compiled abstracts assembled on a definite plan, so that any subject can be readily referred to. There is an excellent index of both subject-matter and authors. The numerous illustrations

Year Book of Radiology, 1933. By C. A. Waters and I. I. Kaplan. Chicago: Year Book Publishers Inc. 1933. (Pp. 844; 780 figures. 7s. 6d.)

are of first-class quality, as is also the print. It is obvious that no expense has been spared in the production of a work of reference which appeals not only to the radiologist but to specialists in many other branches of medicine.

LOCAL ANAESTHESIA

Dr. ARTHUR E. HERTZLER's volume on *The Technic of Local Anaesthesia*² continues to be deservedly popular, as is evidenced by the publication of a fifth edition. The reasons for its popularity are not far to seek. It is simply written and easy to read, it is well supplied with excellent illustrations, and, above all, it shows itself to be the work of a practical man, who has acquired his knowledge and developed his technique in the course of extensive experience. Dr. Hertzler is not biased in his views as to the value of local anaesthesia. If general anaesthesia is the method of choice he has no hesitation in saying so. He states quite frankly that he has very little enthusiasm for the use of splanchnic block in abdominal surgery.

The introductory chapters deal with the various drugs which are commonly employed to produce local anaesthesia and the technique of administration. Sound advice is given with regard to the care of the patient, both before and during the operation. The author stresses the point that preliminary hypnotics should be given a full hour or two before operation if they are to exert their maximum benefit. He also advises the employment of gas and oxygen, with or without ether, as a supplement to local anaesthesia in certain cases. A chapter on spinal anaesthesia has been written by Dr. Arch. E. Spelman, who shows a marked preference for the use of novocain. The chapter might with advantage have contained some reference to the use of percaine, which has now passed beyond the initial experimental stage. We do not agree with Dr. Spelman when he states that spinal anaesthesia should never be given with the patient in the sitting position. There is also a short chapter written by Dr. Raymond F. Gard on intravenous anaesthesia, with particular reference to the use of sodium amytal.

Dr. Hertzler's book has been well produced, and is in no sense unwieldy. We can confidently recommend this very practical volume to those who are interested in the employment of local anaesthesia.

SURGICAL ASPECTS OF PULMONARY TUBERCULOSIS

A book combining the medical and surgical treatment of pulmonary tuberculosis,³ and written by one individual, should prove to be of considerable value, and the wide experience of the author, Mr. MORRISTON DAVIES, entitles him to cope efficiently with such a problem. From this point of view we regret that more of the personal results of the author are not included, rather than groups of results gathered from various foreign clinics, to illustrate the value of the different procedures advocated.

We agree with the view that early cauterization of adhesions is not advisable, as many of them disappear after continuance of the pneumothorax for three or four months; but the main and only real necessity for the operation—namely, the closure of cavities—hardly appears to be sufficiently stressed. The chapter on phrenicectomy is full, and few comments need be made, but the anaesthesia for the operation would appear to be unnecessarily widespread, and by the method advocated it entails the

presence of an extra assistant if many operations are performed successively. The value of the operation in relaxing adhesions holding out cavities during pneumothorax treatment as an alternative to cauterization could be added to the indications given. Thoracoplasty in various forms is widely discussed and described, and the modern view of the extensive but localized upper thoracoplasty is indicated. Many thoracic surgeons, however, will not support the author in the use of chloroform, a definite cardiac poison, as many of these patients have been subjected to a low-grade toxæmia, in some cases for years, before operation. Furthermore, the author states that heart failure is the commonest cause of death after thoracoplasty.

An account of the operation of scalenectomy is also given, and Mr. Morriston Davies records his results in eleven cases. The value of this operation is to be regarded as *sub judice* at the present time, and it is certainly doubtful if it will justify its use, particularly in view of the fact that it necessitates a major operative procedure entailing definite risks of its own and offering relatively minimal results. It is difficult to agree with the author that irrigation of the closed pleural cavity with Carrel-Dakin solution is of little value in tuberculous pleural effusions. Such irrigation will often permit complete re-expansion of the lung, a result particularly desirable when the original infection has been chiefly pleural rather than pulmonary. In primary pulmonary cases it is often inadvisable to attempt to get full re-expansion, because cavities previously healed may be reopened and the pulmonary lesion thereby reactivated.

The minor nature of these criticisms indicates that this book is of a high standard, and cannot fail to be of considerable value to all those interested in the modern treatment of pulmonary tuberculosis, whether from a medical or from a surgical standpoint.

ST. BARTHOLOMEW'S REPORTS

The *St. Bartholomew's Hospital Reports*⁴ are, next to those of Guy's Hospital, the oldest in London, and for sixty-six years have recorded the work of the oldest teaching hospital in the metropolis. Of the eleven chief articles in the current volume the first and the last are historical, on worthies of the staff, and the intervening nine give the results of investigations into the modern problems of medical science and practice. The first article is a sympathetic "In Memoriam" by Sir D'Arcy Power of his contemporary Richard Gill, a phenomenally brilliant student, who gave anaesthetics at the hospital for thirty-five years, and thus must have taught this subject to more medical men than has any other teacher. Otherwise Gill was a rather aloof, perhaps almost mysterious, personality mainly interested in economics, and the author of publications on free trade from as far back as 1887. This memoir gives a sketch of the life of a house-surgeon in 1880-1, the arduous duties being performed efficiently by Gill, but without arousing enthusiasm, perhaps because he was already engaged in thinking out the economic problems which occupied so much of his after-life. The history of anaesthetics at the hospital is also outlined, and shows that in 1875 an "administrator of chloroform" was for the first time appointed in the person of Joseph Mills, who was a good organizer, punctual, never perturbed, who hardly ever spoke, and who had only one other interest—namely, dancing. Gill was appointed his assistant in 1881, in 1893 his successor as "chief chloroformist," and wrote seven papers and a two-volume book on the subject. The other biographical article, the "Life and Works of Percivall Pott," by G. Marner Lloyd, is the Wix Prize

² *The Technic of Local Anaesthesia*. By Arthur E. Hertzler, A.M., M.D. Fifth edition. London: H. Kimpton. 1933. (Pp. 292; 148 figures. 25s. net.)

³ *Pulmonary Tuberculosis*. By H. Morriston Davies, M.D., M.Ch., F.R.C.S. London: Cassell and Co., Ltd. 1933. (Pp. 464; 77 radiographic plates, 69 figures. 27s. 6d. net.)

⁴ *St. Bartholomew's Hospital Reports*, vol. lvi. London: John Murray. 1933. (Pp. xxiv + 363; 49 illustrations. 21s.)

Essay for 1933, and more than justifies the establishment of such prizes.

An instructive symposium on sympathectomy is introduced by Mr. R. E. Norrish's demonstration at the hospital, before the Surgical Section of the Royal Society of Medicine, on the anatomy of the various parts of the sympathetic system, which is admirably illustrated by figures. This is followed by seven reports on the effects of this operation on cases of megacolon, hydro-ureter, Raynaud's disease, angina pectoris, chronic gastric ulcer, spasmodic dysmenorrhoea, and chronic arthritis. The complete recovery from a crippling arthritis of the right shoulder, wrist, and hand after removal of part of the inferior cervical sympathetic ganglion and the first dorsal ganglion is cautiously left open as either a *propter hoc* or a *post hoc* event. Mr. J. Beattie records three cases of the rare condition of injury of the lumbo-sacral cord during parturition. The health of the nurses serving their four-year indenture at the hospital during a recent period of years is considered by Dr. W. P. S. Branson, who shows that during their first year nurses are specially prone to sore throats, and that in 1931 the modest allowance of an apple a day cost the hospital £463. This is followed by Miss M. H. Hart's essay on pre-Reformation nurses in England, which was awarded the Nutting-Dock Prize. Dr. G. A. Harrison discusses the clinical chemistry of alkaliuria and melanogenuria, Dr. L. P. Garrod inhibitory selective culture media, Mr. H. J. Burrows' tissue culture in its relation to surgical pathology, and Dr. W. J. Oakley the blood urea clearance; these articles prove what an amount of valuable research work is going on at the great hospital of the City of London. Mention should also be made of Mr. Raven's account of the valuable work done by the Follow-up Department.

VARICOSE VEINS AND HAEMORRHOIDS

Under the title *Varicose Veins and Haemorrhoids and their Treatment*,¹ Dr. V. MEISEN has published his experimental and clinical studies in connexion with these two common disorders. To all who are acquainted with the Continental literature on these subjects Dr. Meisen's name needs no introduction, and in both subjects dealt with here he has had exceptional experience. The translation into English is the work of Dr. Hans Andersen, and it has been well carried out. A considerable portion of the book is naturally devoted to modern injection therapy, but the author has not fallen into the all too common error of many writers on these subjects of seeing in this particular form of treatment the beginning and the end of the treatment of varicose diseases.

The preliminary chapters deal with the anatomy and physiology of the venous system, and the disturbances of function which occur in association with the varicose state. As regards therapeutic injections, Dr. Meisen believes the ideal drug has yet to be found, and does not confine himself to the use of only one preparation. Glucose, glucose and sodium salicylate, sodium salicylate and sodium chloride, and 25 per cent. and 30 per cent. sodium salicylate all find a place in his armamentarium, though the real necessity for such a variety of drugs is not clearly described, nor are the indications for the use of each adequately dealt with. In connexion with the subject of recurrences of varicose veins after injection treatment Dr. Meisen quotes Svend Hansen's recent paper, in which a recurrence rate of some 25 per cent. was noted. It has to be remembered that varicose veins are invariably a progressive disorder, dependent

very largely on something inherent in the "soil," which injections will do nothing to eradicate, and recanalization can only be accurately determined in the case of veins which are easily chartable and recognizable. Undoubtedly many so-called recurrences are the result of incomplete injection treatment and too short a period of observation after treatment.

English readers of the book must be warned that the use of the word "phlebitis" is confined to deep phlebitis, or thrombosis of the femoral vein, and not as in this country for the designation of superficial phlebitis. This latter condition Dr. Meisen always refers to as thrombosis. Whether the distinction between thrombosis and phlebitis of a superficial varicose vein is often a practicable one is a moot point, but from the point of view of injection treatment it is advisable to regard all cases as potentially bacterial in origin.

A short chapter on the injection treatment of haemorrhoids is included, but this is not, on the whole, up to the level of the rest of the book, and no clear indications are given as to the limitations of injection treatment—a matter of considerable importance if the best results are to be obtained.

SPECTROSCOPY

*Spectroscopy in Science and Industry*² is the title of a small volume by Dr. JUDD LEWIS describing the principles on which spectroscopy has been applied to the elucidation of a great variety of problems. The delicacy of spectroscopic work in certain fields is well known, but it will be learnt with astonishment by many that morphine may be identified with certainty and the amount determined spectroscopically with a quantity of no more than one-hundredth of a milligram. Recent spectroscopic investigation appears to have cleared up the doubt affecting the absorption of aluminium by the human system. It has been found that blood normally contains less than one part in ten millions, and that the quantity rises to a maximum of about one part per million on the continued ingestion of an aluminium salt. Such a finding would be almost impossible by means of chemical reagents, but this result was accomplished spectroscopically with quantities of blood no greater than 1 c.cm. It appears that even a pathological condition of blood serum is distinguishable by the spectrometer. The volume describes the newest forms of apparatus used, and gives an outline of the methods by which these remarkable determinations have been accomplished.

Notes on Books

There must be many practitioners who, in spite of, or perhaps in consequence of, numerous discussions on the subject, have very vague opinions on the value of tuberculin in relation both to diagnosis and to treatment. In a short collection of papers³ by Dr. ROBERT CARSWELL, who has long cultivated a practical study of the subject, readers will find both information and guidance. Dr. Carswell has come to some very definite conclusions, and he produces the evidence on which these rest. Thus he is satisfied that by the use of tuberculin timely intimation of the existence of tuberculosis can be obtained even when all other methods of examination have proved negative; and similarly, that, by the same agent, cure of the disease in the initial stage is possible. In short, on the latter point, he holds to the original teaching of Koch, that by a proper method of immunization incipient tuberculosis can be cured with certainty. The doses in which the remedy should be used, the methods employed, and the

¹ *Varicose Veins and Haemorrhoids and their Treatment*. By V. MEISEN, M.D., Copenhagen. Translated by Hans Andersen, M.D. London: Baillière Tindall, 1933. (Pp. vi + 344, 41 figures. 2s. 6d. net.)

² *Spectroscopy in Science and Industry*. By S. JUDD LEWIS, D.Sc., F.R.C., F.R.C. London and Glasgow: Baillière and Son, Ltd. 1933. (Pp. vi + 94, 41 figures. 2s. 6d. net.)

³ *Papers on Tuberculosis*. By Robert Carswell, M.A., M.B., Ch.B. London: The Baillière Press, 1933. (Pp. 17.)

nterindications, Dr. Carswell describes, as he has used them in his own practice, and the manner in which he presents his argument claims an attentive airing.

Who's Who for 1934¹ contains some 40,000 biographical sketches neatly printed on 3,650 double-columned pages. It is no small achievement on the part of the publishers, Messrs. A. and C. Black, Ltd., to assemble so vast an array of personal facts within the covers of a thick but not unwieldy volume weighing under 4½ lb. as a work of reference it is invaluable in newspaper offices, libraries, clubs, etc.; and to some people with time on their hands it is a never-failing quarry of unconscious humour. Here and there will be found, even on casual inspection, a "living notability"—the phrase is Messrs. Black's, not ours—with a pretty turn for exhibitionism.

It is pleasant to note what is on the whole a progressive improvement in the textbooks on science subjects which are intended for use in elementary schools. Miss LIESE KNIGHT, the head mistress of the Marlborough C.C. Girls' School, Chelsea, should know what to provide, and her recent contribution—*The Golden Science Series*,² Book I—may be welcomed. It consists of a number of excellent chapters for seasonal nature study

¹ *Who's Who*, 1934. An Annual Biographical Dictionary. London: A. and C. Black, Ltd. (60s. net.)

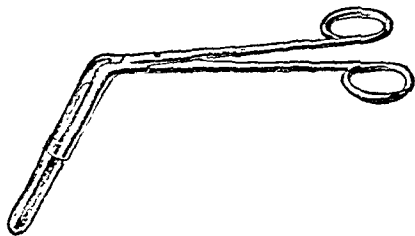
² *The Golden Science Series*. By E. V. M. Knight, B.Sc. Book I. London: University of London Press Ltd. 1933. (Pp. 240; illustrated. 2s. 3d. and 2s. 6d.)

Preparations and Appliances

CATGUT TUBE FORCEPS

Dr. JOHN W. STRETTON, F.R.C.S. (Dudley), writes:

These forceps—the Guest Hospital catgut tube forceps—have been designed for lifting cylindrical glass tubes containing catgut. The catgut tubes, submerged in antiseptic fluid, stand vertically in glass jars. The jaws of the forceps are



curved so that they partly encircle the catgut tube, and thus grasp the tube securely.

I am indebted to those of the Guest Hospital personnel and to Messrs. Arnold and Sons (John Bell and Croyden), 50-52, Wigmore Street, London, W.1, who assisted to bring my idea to a practical conclusion.

A MASK ATTACHMENT FOR ADMINISTRATION OF CHLOROFORM CAPSULES IN LABOUR

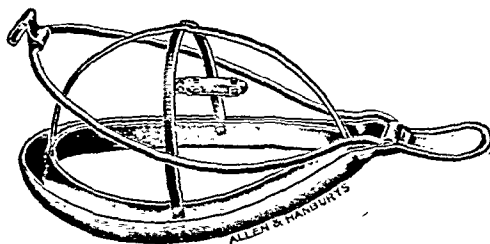
Dr. J. MARSHALL SCOTT (Exeter) writes: During the past fifteen months I have had considerable experience of the administration of chloroform capsules to women in labour. The usual method of using these has been to break a capsule at the onset of a uterine contraction, the broken capsule being then tucked between one of the struts and the gauze covering a Schimmelbusch mask, which is then applied to the patient's face. Two objections to this practice have been observed. (1) Occasionally by the time the capsule is broken—some are quite difficult to break with the fingers—and tucked inside the mask the worst part of the pain may be over. (2) With the movements of the patient's head during a uterine contraction the capsule is liable to fall out of its position.

To obviate these difficulties and to facilitate the administration of capsules, I have had made a small attachment which

fits inside the Schimmelbusch mask. A small metal plate is firmly attached half-way up one of the lateral struts of the mask by means of a screw. Projecting into the mask and fixed to each end of the base plate are two spring clips, into which the chloroform capsule is passed in the period between the pains. As a pain commences the capsule is pressed by the finger against a small wedge fixed to the base plate, and

The second edition of CALKINS's *Biology of the Protozoa*¹ shows considerable alterations from the first, although the main concept of a changing organization brought about by continued metabolism has been retained. It has been strengthened by a considerable rearrangement of the chapters, and by the addition of a special chapter on parasitism and disease. Although the whole volume is professedly biological in its outlook, there is included, as the final four chapters, an account of the special morphology and taxonomy of the main groups of the protozoa. The volume is more interesting to biologists than to medical men. It remains an excellent introduction to the phenomena of cell division, maturity, sex, fertilization, and senescence, as well as to the general physiology of the protozoa.

¹ *The Biology of the Protozoa*. By G. N. Calkins. Second edition. London: Baillière, Tindall and Cox. 1933. (Pp. 607; 2 plates, 223 figures. 37s. 6d.)



is readily broken. When the capsule is spent it is simply pulled out and replaced by a fresh one in readiness for the next pain.

The attachment has been in use in the maternity department of the North Middlesex County Hospital, and has proved most satisfactory. The capsule holder has been made for me by Messrs. Allen and Hanburys Ltd., to whom I am indebted for valuable suggestions and for the careful way in which they have carried out my instructions.

VITAMIN C: ASCORBIC ACID

As already mentioned in this column there is evidence to show that the antiscorbutic properties of fresh fruit and vegetables are due to the presence of "hexuronic acid," first isolated by Szent-Györgyi and recently renamed "ascorbic acid." The acid has been isolated from oranges, lemons, cabbages, and other vegetable sources, and also from the cortex of the suprarenal gland. It has been supplied for research purposes by Messrs. Burroughs Wellcome and Co. for more than a year, and is now issued as "tabloid" ascorbic acid, 0.005 gram, each product being equivalent in vitamin C activity to two teaspoonfuls of freshly expressed orange juice. This is the second pure crystalline vitamin to be issued as a "tabloid" product, vitamin D having been issued for some years, first as "tabloid" irradiated ergosterol and now as "tabloid" calciferol.

British Medical Journal

SATURDAY, JANUARY 13th, 1934

RADIUM AND RADIATION THERAPY

During the last months of 1933 no fewer than three reports were issued by responsible authorities on the subject of radium and radiation therapy. Of these the first to appear was that of the Radium Commission, which has already been reviewed in these columns. The next was that of the Medical Research Council, and an interesting feature of both is the importance they attach to research work and to the provision of facilities for carrying it out. The third report is that of the committee set up by the Section of Radiology of the Royal Society of Medicine, which appeared as a supplement to the November number of that Society's *Proceedings*, and from the point of view of the majority of our readers it is perhaps the most interesting of the three. The recommendations of this report include the establishment of a special radiotherapeutic hospital in or near London and the appointment in connexion therewith of a director having a "wide experience of x-ray and radium therapy." How far it may be desirable to equip new institutions, and thereby to add to the already vast expenditure on bricks and mortar, may be a matter of opinion. Many consider that readjustment of the arrangements of existing institutions would satisfactorily meet the case; but on the second recommendation there can be no difference of opinion among those best qualified to express an authoritative view upon the subject. It is indeed matter of common knowledge among radiologists that it is high time for x-ray therapy and radium therapy to take their proper place in this country. There has been—and in too many places there still is—a tendency to regard radiation therapy as an adjunct to surgery. In plain words, the surgeon is looked upon as the predominant partner and the radiologist as an assistant to carry out such therapeutic measures as may be "desired" by the surgeon. Such a view expresses a fallacious estimate of the relative positions of radiologist and surgeon in this matter. If radium therapy merely consisted in the suitable disposal of a series of platinum needles the problem would obviously be a purely surgical one. This is, however, by no means the case; the platinum needles contain the radioactive material which is the source of the radiation intended to produce certain therapeutic effects. The part of the surgeon is therefore secondary to meeting the requirements of the radiological experts. The manipulative skill necessary for the efficient carrying out of the "surgery of access" is in no way depreciated by this view of the matter; but the situation is one which must be grasped.

A brief glance at the committee's report will show how different are the conditions at the most important Continental and American centres: indeed, in this country we are still in a transition stage which has been long passed in those countries where radiotherapy has reached its proper position. Too much attention is paid here to merely empirical clinical results, and far too little to the fundamental problems of experimental radiology. It is not asking too much to urge that surgeons wishing to specialize in radium therapy should as a preliminary obtain a diploma in radiology. X-ray therapy and radium therapy are closely associated, so closely indeed that the intelligent study and practice of the one demands a competent knowledge of the other. On the Continent and in America fully equipped high-voltage x-ray units are recognized as forming an integral part of any well-run radium department. In this respect we are woefully behind them: there does not seem so much difficulty in raising funds for the establishment of elaborate x-ray diagnostic departments, but in the majority of our radium centres the x-ray therapeutic equipment falls far below even the minimum requirements. X-ray and radium therapy are complementary, and, that being the case, it is obvious that the director of such work should be one having a wide knowledge not only of the clinical but of the theoretical side of the subject. Radiological, physical, and pathological knowledge must come first. Undoubtedly in the past difficulties have arisen which have placed x-ray and radium therapists in awkward and invidious positions. The nature of his work makes it necessary that the director should be a whole-time salaried official. No less essential is his recognition as the full equal of his honorary colleagues on the hospital staff, and in his own department as definitely holding the premier place.

Admittedly very excellent clinical results have attended the use of radium in the past; it will, however, be found that the best results have been obtained in just those places where the collaboration between radiologist and surgeon has been the most complete, and where the dominant influence has been scientific. It is absurd to suppose that an adequate knowledge of radium therapy can be acquired by the haphazard methods which are even now still only too frequent in this country, where attendance at a brief course of instruction supplemented by a few visits to Continental or American centres seems to constitute the utmost that some consider necessary. The subject is one that demands a life study, and for its efficient therapeutic application a knowledge of physics, pathology, and of the mode of action of radiations upon living tissues is essential. A large amount of most valuable work upon experimental radiology has been done in this country which is but too little known outside the circle of immediate workers. It is this work which provides the basis for an adequate system of x-ray and radium

therapy. Certainly therapeutic and experimental departments should work in the closest collaboration, with specialists in physics, pathology, and such other branches of science as may be found necessary. It should also be remembered that funds are needed for the efficient carrying out of this experimental work: the clinician is able to secure his maintenance while gaining experience; the research worker, on the other hand, is dependent upon endowments. For this reason it seems open to question whether it would be well to embark upon further extensive building operations with the consequent expense of lay officials such as clerks and secretaries in greater or less number.

There are signs in at least some of our great institutions that radiology is at last beginning to come into its own instead of being regarded as a mere accessory to other therapeutic methods, and but too often as a last resort when other methods have failed. The situation has to be faced; it is therefore best to face it boldly and at once by placing radiation therapy upon the basis to which it is now entitled.

MEDICAL PROBLEMS OF WINTER

The manifold problems which confront medical practitioners at all times of the year become particularly difficult during the cold season, since the co-operation which he has always to stimulate in the organism is especially difficult to invoke at this time. The important influences exerted by climate and weather on the general tendency to develop infections have induced our contemporary the *Deutsche medizinische Wochenschrift* (December 8th, 1933) to devote an entire issue to the consideration of the problems involved. The matters dealt with are very wide in scope, but we will refer to only a few of the more outstanding of them.

The liability of certain chronic affections to become aggravated in winter is well known, and increased care is necessary, particularly in such cases as prostatitis, cystitis, and any other conditions involving the urogenital tract. Patients with chronic nephritis tend to lose more urinary protein in winter, and diabetics are not infrequently found to require an increase in both diet and insulin. The actual exposure of a healthy subject to cold is not in itself sufficient to initiate disease: indeed, it was the experience of the German Himalayan expedition that, whereas all the members of the party were quite well at a temperature of -20°C ., a sudden change in the weather with a rise in temperature to 0°C . was followed by a development of catarrh of the upper respiratory passages. The tendency, however, of parents to "harden" the child by such draconic measures as sleeping close to an open window, cold douches, or wearing very short socks is not to be encouraged where the climate is damp or when the child complains of cold. On the other hand, heating the bedroom is not so wise a procedure as using a hot-water bottle, and if a child complains of cold feet it is usually sufficient to bathe them in hot and cold

water alternately, and then rub them vigorously with a warm towel. The addition of yolk of egg and an increased amount of butter to the winter diet of the child, and also a small amount of cod-liver oil, is recommended by Rietschel. "High sun" treatment, if employed for ailing children in winter, should be carried out in the home of the patient, and it is well to remember that infections may follow if great care is not exercised in controlling the dose, etc.

The problem of winter clothes is an old one, and, however scientific the recommendations of the medical adviser may be, many patients continue to load themselves with enormously thick and impervious coverings. The important thing in keeping heat in is the air content of the clothing, and garments of loose, light material fulfil this object better than a series of layers of heavy stuffs. A properly chosen winter garment has a lower specific gravity than a summer garment, so that, in spite of the greater actual bulk of the former, its total weight does not much exceed that of the latter. Recent work has also shown that the common practice of adding an undergarment during the winter is of little or no value in helping to retain heat, but it does undoubtedly prevent the sudden chill which might take place in passing from warm rooms to the cold outer air. The "airiness" of clothing is also very important, since the comfort of the body depends to a large extent upon a free exchange of air, allowing evaporation to take place easily and preventing undue condensation of perspiration in the garments. It is interesting to recall that fur, containing 95 per cent. of air, is the most efficient of materials for retention of heat, but its impermeability to water vapour makes it a poor covering if any considerable amount of perspiration is produced, as, for example, during hard work.

The change in the consistency of certain foods (for example, vegetables) which occurs in winter may bring certain ills in its train. In contrast to the delicate vegetables obtained in summer, winter vegetables are coarser and richer in cellulose, and hence more difficult to digest. This makes itself felt in vagotonic subjects, who, as a result of such food, develop intestinal pain and spasm of the colon. Similarly, in cases of cholangiopathy, winter conditions may bring about an aggravation of symptoms. The question of vitamin deficiency in winter is less serious nowadays than it used to be, many alternative active preparations being available in concentrated form. Prophylaxis against winter ills is a very difficult matter, and it is not at all clear that the pathologist's vaccines, or the non-specific injections of protein, lipoids, or blood, have much to recommend them in the prevention of the common winter infections. General principles still seem to be the best, such as hygiene of the mouth and pharynx, and in some cases "high sun" treatment. Van den Velden recommends diaphoresis, carefully carried out so that no ill effects follow, as a useful prophylactic measure. The decision as to the necessity for change of climate must remain a matter dependent upon individual conditions.

A TREATMENT OF CANCER

For some twenty-odd years Professor Fichera¹ of Milan has been carrying on research into the growth-promoting and growth-inhibiting properties of various organs of the body. He found that tumours implanted into various organs of the rat grew at different rates. In some (for example, the testis and the ovary) the tumours grew rapidly. In others (for example, the spleen) growth was inhibited. He found that the growth-inhibiting organs, *par excellence*, were the spleen, the thymus, and the bone marrow—tissues which house the reticulo-endothelial system. At the International Cancer Congress, held in Madrid in October, 1933, Fichera read a paper on the chemotherapy of cancer, in which he stated that he had, since 1930, treated 300 cases of cancer with injections of extracts of what he calls "antiblastic" organs (spleen, thymus, lymph gland, and bone marrow). A hundred of these cases were inoperable, and these received Fichera's "biological therapy" only. The remedy is prepared as follows. The thymus, spleen, lymph glands, and bone marrow of freshly killed calves are extracted in saline in the presence of thymol and toluol in an incubator from a week to two months. The dosage is 1 c.cm. twice weekly (intramuscular or intravenous injections), continued for several months. In 9 per cent. of his 100 cases the tumour disappeared (in two cases, a three-years' cure, and in seven a two-years' cure), while in 8 per cent. there was partial regression of the tumour or the condition remained stationary. He also claims improvement in another twenty cases. Forty of the patients died, and in twenty the tumour was advancing. In an earlier paper,² which must have been prepared for final publication about two years before the Madrid conference, Fichera stated that he had obtained improvement in twenty-eight patients out of fifty-five who had received biological therapy only. It is difficult, with existing data, to assess the value of this form of treatment. The number of cases treated by biological therapy alone is small, the successful results claimed are relatively few, the time that has elapsed (three years) is too short to state unequivocally that the "cures" obtained will be permanent. In his publications Fichera has given only very scanty clinical details of his cases. It should be understood that no claim is made that the method of treatment ought to supplant that by the recognized therapeutic measures of surgery, x rays, and radium.

PATHOLOGICAL EFFECTS OF LIGHT

Much has been written on the benefits of sunlight. It remains for Dr. Jausion and Dr. Pagès to write on the diseases caused by light and their treatment.³ They describe, in the first place, the physiological effects of light upon the skin, and the protective mechanisms which produce the pigmentation and hypertrophy of the horny layers, which are universally recognized. Subsequently they go on to enumerate various compounds that render the animal organism sensitive to the action of light, of which the most important are the various porphyrins occurring in nature, and drugs,

such as sulphonal, which determine their production in the body. They themselves have particularly investigated the action of substances derived from acridine, especially gonacrine. This body, if injected subcutaneously, renders the skin liable to develop dermatitis when exposed to strong light, and the dermatitis is speedily followed by pigmentation and later by hypertrichosis. Jausion and Pagès have taken advantage of these properties of gonacrine in the treatment of leucoderma or vitiligo. First of all they administer a series of injections and then subject the patient to a course of light baths, either artificial or natural. He then has an intravenous injection of a mixture containing hyposulphite of soda and a minute percentage of pilocarpine and methylene-blue, and is subjected to treatment with infra-red rays. As a result of this procedure, it is said that both the pale and the hyperpigmented patches, which are characteristic of the disease, tend to approximate to the same tint. The authors, while confessing that the result is not perfect, claim that their patients gain permanent benefit. They have some interesting observations to make. They have been successful in relieving two patients—subjects of hydroa vacciniforme—by a combined treatment with resorcin and with gonacrine, which is directed towards diminishing the vulnerability of the skin to light by increasing its capacity for producing pigment. Whether this procedure is practicable for clinical purposes or not is still doubtful, but the authors are trying to work on scientific lines, and those who are interested in the pathological effects of light will do well to note their experiences.

MEDICAL HISTORY WITH PRICKLES

The issue of the *Canadian Medical Association Journal* for December, 1933, includes a lecture on the reading of history, given to the College of Physicians of Philadelphia by Sir Andrew Macphail, professor of the history of medicine, McGill University, Montreal. No abstract could convey the vintage flavour of this essay; it must be read as a whole. Those who remember Sir Andrew Macphail's contributions to our pages will expect to find here something out of the common, and they will not be disappointed. They will read in the opening paragraphs such phrases as these: "History is not a series of falsities agreed upon. Rather, it is two series of alternatives or contradictions, with their respective protagonists at the head. . . . And the historian is a man; his history arises from his heart; it mounts to his head, and trickles through his fingers upon the written or printed page. Before we can accept as true what he writes, we must know something of his heart, head, and hand. That is the task of modern historical criticism; and the critics are now in full cry, with a result that is devastating of traditional opinions. The history of medicine has been too long immune from this critical process." And again, further on: "Medicine is a large part of life; and the history of medicine is a large part, possibly the largest, of the history of life. Human activity is governed by sickness and health." These last two sentences sound the keynote of the lecture, and Sir Andrew develops his theme with a dry and sometimes mordant humour, which will not be to everyone's liking but makes first-rate reading. He tells us that the widest gulf between

¹ *Lancet*, 1933, 1, 100.² *Lancet*, 1933, 1, 100.³ *Lancet*, 1933, 1, 100.⁴ *Lancet*, 1933, 1, 100.⁵ *Lancet*, 1933, 1, 100.⁶ *Lancet*, 1933, 1, 100.⁷ *Lancet*, 1933, 1, 100.

Dr. H. Jausion

Dr. H. Pagès

Dr. H. Jausion

Dr. H. Pagès

Dr. H. Jausion

historians is religious belief. "This bigotry has vitiated the whole history of medicine too. In general it takes the form of a charge that the Church has been a consistent enemy of science as a whole and of medicine in particular." But since the term "Church" is here used to mean equally "the Churches that had their respective sects in Rome and in Geneva," he picks out from each side a few cases to illustrate some of the main sources of such error in reading the history of medicine. A point he insists on throughout is that history must be studied in the light of the temper and beliefs of the period. Here is a prickly passage for authors and editors: "We must read and judge ancient medical journalism as we read and judge our own. There were advertisers in those days, but their methods were less refined than ours. And yet, our journals contain the outpouring of laboratory note-books, papers describing not what the writer has done, but suggesting what he proposes to do, preliminary deliverances, so that a possible competitor may be forestalled." Summing up the present period Sir Andrew Macphail hazards a guess that it will be classified as that of the iatro-biochemists; future historians, he thinks, will fail to understand the medical writing of to-day, and may well doubt if we understood one another, for our observation has outrun our power of expression, and we coin new words as we go along. But there is one movement that earns his commendation. He sees in the most modern medicine a definite tendency to bring the theories begotten in the laboratory to the test of the bedside. As we gather it, the general message of this provocative lecture is twofold. Wrong opinions of the past breed wrong opinions of the present. It is for the doctors of to-day, with their better knowledge of Nature's ways in collateral fields of science, to make better use of the method bequeathed to them by the greatest physicians of all the ages, who looked upon disease with fresh minds unclouded by tradition or authority.

VACCINATION AGAINST TYPHUS FEVER

R. Weigl has lately described a vaccine successfully employed during the last three years in the prophylaxis of typhus fever.¹ It is prepared from the intestinal contents of lice. The lice are infected by rectal inoculation with rickettsia. The organisms multiply in the intestine, reaching their maximum numbers in a week. The intestine is removed and ground up in phenolized water. The resulting product constitutes the vaccine. Up to the present over 6,000 vaccinations have been performed, and the results appear to be very satisfactory. Its use has been restricted mainly to the medical personnel working in typhus-stricken areas and to contacts of known cases. Of 2,755 persons in Poland who received three doses—corresponding to the intestinal contents of 120 to 175 lice—not a single one developed typhus fever. On the other hand, during the course of the vaccinations about 0.5 per cent. of those inoculated developed typhus, though in a more benign form than usual. They were apparently in the incubation period at the time of inoculation. This and other evidence suggests that full immunity is not established till a little while after the course of vaccinations is completed.

¹ Arch. de l'Inst. Pasteur de Tunis, November, 1933.

REFUGEE DOCTORS IN FRANCE

On April 21st, 1933, the Armbruster law governing the practice of medicine in France was promulgated. According to the first article, no one may practise medicine in France without possessing a French State diploma of medicine or being a French subject. This law, not being retrospective, does not penalize foreigners hitherto entitled to practise in France, but it is an insuperable obstacle to newcomers, not least to the refugee Jew from Germany. The executive committee of the *Confédération des Syndicats Médicaux Français* adopted last April a resolution expressing indignation against the "veritable persecutions of which certain German doctors are at present the victims," and insisting on the right every civilized country enjoys of freedom of choice between doctor and patient. In the presence of the Armbruster law and the crying need for its enforcement owing to the congestion in the ranks of the medical profession, this resolution must, of course, be taken as a Platonic gesture and nothing more. It would, however, be unfair to suggest that French hospitality is limited to passionate declarations of fraternal solidarity. Here and there openings are being found for individuals; and, at the Pasteur Institute, one of Calmette's latest administrative measures was to provide elbow-room for half a score of German doctors expelled from their own country on account of their Semitic ancestry.

BIRTH CONTROL CLINICS

Two of the more important of the societies established a few years ago to promote contraception among those in need of it have recently issued their annual reports for the year 1932-3—the National Birth Control Association (26, Eccleston Street, S.W.1) and the Society for the Provision of Birth Control Clinics (153A, East Street, Walworth Road, S.E.17). Each of them records definite progress for the cause which they represent. New clinics have been established, and most of those previously in being have shown increased activity. It appears that the number of local authorities known to have taken some action in this field has increased to seventy-three, as compared with forty-seven a year ago. The action which such authorities can take is, however, restricted in character and extent by a memorandum of the Ministry of Health, and it is claimed that there is great need for a less strict interpretation of these limiting regulations and for a widening of the sphere of action permitted. This may well be true, but any considerable movement in that direction on the part of the Ministry would arouse active opposition in some quarters and create difficulties in a good many areas. If only for tactical reasons it might be advantageous to consider extension in another direction, the need for which must surely make itself evident from time to time. There are married women of the poorer classes who want guidance not as to how they can best reduce their liability to become pregnant, but how, if possible, they may overcome the sterility which distresses them. Ought not the staffs of clinics, especially of those established or aided by national or municipal funds, to be as ready to help the one woman as the other? A "women's welfare clinic," comprehending both functions though not in equal measure, might be more easily tolerated by some people than the restricted

service now known as "birth control clinics." The National Birth Control Association has incorporated the very useful Birth Control Investigation Committee, which has done, and is doing, good work under the chairmanship of Sir Humphry Rolleston. The report states that "the work of this committee has proceeded satisfactorily" and indicates the nature of some recent researches conducted under its auspices. It was a pleasure in noticing a year ago the last report of the Society for the Provision of Birth Control Clinics to give an appreciative recognition of the special report by the medical officers of the Walworth Women's Welfare Centre. This year their report is on equally practical and sensible lines, but is not so striking, as it for the most part merely repeats and confirms the findings that emerged from the experience of the previous year. It is interesting, however, to note that the unfavourable opinions then expressed about the Grafenberg intrauterine ring and the stem (utero-vaginal) pessary have been confirmed, and that "of ninety-seven patients who ceased to practise birth control because they wished for a child, ninety-six became pregnant and had their babies." It is still too early to be certain of such a universal negative proposition as that the practice of contraception has no ill effects from the medical point of view; but evidence is gradually accumulating to show that sterility is not liable to be produced by any reputable methods.

THE PUBLIC HEALTH OF DENMARK

Last year a lecture was given by special invitation in Paris by Professor Madsen, director of the State Serum Institution in Copenhagen. This lecture, published in *Revue d'Hygiène et de Médecine Préventive* for November, shows that it is not by fortuitous circumstances, but by organization and centralization, that Denmark now has a lower tuberculosis death rate than any other country in Europe, and has achieved many other important advances in public health. The State Serum Institute centralizes the epidemiological work of the whole country to such a degree that practically every sample of pus, blood, etc., requiring a special examination finds its way to the Institute. Thanks to a grant from the Rockefeller Foundation, the Institute is able to send out as field workers specialists in public health fully equipped to investigate epidemics on the spot and in their earliest phases. The campaign against typhoid is so efficiently organized that at the present time no convalescent is allowed to leave hospital without a series of bacteriological examinations having been made of his stools, etc. If they continue to harbour the typhoid bacillus, and the convalescent cannot remain longer in hospital, the medical officer of health of the district to which he returns is notified in order that the necessary measures may be taken. Such a carrier is not allowed to handle food, particularly milk. If necessary he is given compensation. The Institute keeps an up-to-date record of all these carriers, whose change of address is promptly reported to the local medical officer of health. Owing to these and other public health measures, the incidence of typhoid in Denmark has dwindled from 40 per 10,000 inhabitants some forty years ago to 0.2 in 1930. In 1931 there were only eighty cases of typhoid in the whole country, whereas the number of registered carriers was 100.

Another field in which a vigorous campaign has yielded remarkable results concerns whooping-cough, whose death rate is apt to exceed that of diphtheria, scarlet fever, measles, poliomyelitis, and meningitis combined. The Institute has taken an active part in ensuring early diagnosis and effective vaccine treatment, and this has done much to reduce the mortality from whooping-cough. Other, and sometimes similar, measures have been taken with all the important infectious diseases. In the period 1890-9 every fifth death (20.5 per cent.) in Denmark was due to some epidemic disease. In 1930 this ratio had fallen to 6 per cent. During the same interval the tuberculosis death rate has changed its place on the list from the second to the seventh, by falling from 14 to 6.8 per cent. There is now one hospital bed for epidemic diseases for every 1,000 inhabitants—a provision which, with modern means of transport, ensures prompt isolation everywhere in Denmark. In two sentences Professor Madsen summarizes one of the most important changes in medicine in our time: "It is interesting to note that one has less and less recourse to disinfection. It is infinitely more important for the general practitioner and the medical officer of health to employ all possible means in tracking down the centre of infection (water, milk, another case of the disease, or a carrier) as soon as a case of infectious disease is discovered."

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been prepared and will be ready shortly; they will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or all of the indexes can obtain what he wants, post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

The biennial Huxley Lecture, on recent advances in science in their relation to practical medicine, will be delivered by Professor Julian S. Huxley at Charing Cross Hospital Medical School on Wednesday, January 24th, at 5 p.m. His subject will be "Embryology as an Experimental Science," and the chair will be taken by Dr. Gordon M. Holmes, F.R.S. Admission free, by ticket to be obtained from the dean of the Medical School, Chandos Street, W.C.2.

Since the retirement of Sir George Berry from the House of Commons in 1931, the combined Scottish Universities constituency has been without medical representation in Parliament. The recent death of Mr. D. M. Cowan, M.P., creates a vacancy which it is to be hoped will be filled by the nomination and election of a member of the medical profession.

We regret to announce the death of Mr. J. B. Lawford, LL.D., F.R.C.S., consulting ophthalmic surgeon to St. Thomas's Hospital, consulting surgeon to the Royal London Ophthalmic Hospital, Moorfields, and past president of the Ophthalmological Society of the United Kingdom.

MATERNAL AND FOETAL MORTALITY

AN AMERICAN REPORT

The White House Conference on Child Health and Protection, organized by President Hoover in 1930, has already published a number of valuable reports, but few can have possessed greater interest for the English reader than does the report of the Subcommittee on the Factors and Causes of Foetal and Maternal Morbidity and Mortality, of which Professor Ehrenfest of St. Louis was the chairman.¹ The subcommittee consisted of thirty-five members, representing all the most important medical centres in the United States; the authoritative character of its pronouncements is thus assured. The report consists of twenty-three articles (or reports as they are called in the text), each dealing with a specific subject. Most of the articles are written by obstetric teachers, but the admirable and comprehensive report on heart disease and pregnancy is from the pen of Dr. William W. Herrick, professor of clinical medicine in Columbia University. The article on parasitic infections in pregnancy is the joint work of a professor of obstetrics and a professor of parasitology in New Orleans.

Generally speaking, the articles all show evidence of careful preparation and wide reading; one important article concludes with a bibliography of sixty-one references. Instances of overlapping are rare, and it is clear that collaboration among the contributors has been well maintained. The common aim has been to deal with "factors and causes" as they exist in the U.S.A. American conditions are of course complicated by the existence on the one hand of a large negro population, and on the other of large sparsely populated areas in which medical services are deficient. This must be borne in mind in considering the high rate of maternal mortality with which the United States as a whole have to deal; this stands at about 6.5 per 1,000 live births, and showed no appreciable diminution in the period 1915 to 1929. Dr. Ehrenfest, in his summary, draws attention to the high rate of foetal, maternal, and infant mortality among the negroes, and attributes it to: (1) the relative frequency of contracted pelvis, (2) the high incidence of venereal disease, and (3) the "utter ignorance of the first principles of hygiene and of the care and nourishment of the infant." In sharp contrast stands the case of the Chinese in San Francisco, where "a thorough and competent survey" shows that mortality of both mothers and babies "compares most favourably with that reported for the entire city" (p. 21). No European country has comparable difficulties to face, and we shall watch with sympathetic interest the result of the strenuous efforts now being put forth by our American colleagues to deal with their exceptionally complex problem.

PULMONARY TUBERCULOSIS IN PREGNANCY

It is impossible within the limits of this review to do more than select for notice one or two of the larger subjects dealt with in the report. The articles on diseases of the endocrines during pregnancy will be welcomed for its clear statement of the present phase of the constantly changing picture of the endocrine functions. It is written by Professor Robert A. Muesey, and well maintains the reputation of the famous Mayo Clinic. The article on pulmonary tuberculosis in pregnancy, by Professor Otto Schwarz, reveals the fact that "the care given to pregnant tuberculous women in the U.S.A. is very much less than that accorded to non-pregnant tuberculous women." This unfortunate defect of organization, from

which we in this country are not free, appears to be common to all countries. The city of St. Louis has organized a maternity department in one of its sanatoria where women can stay throughout pregnancy and labour, and we learn from Professor Schwarz that a sanatorium near Dresden is building a separate division for the same purpose. Other countries will no doubt, in time, follow the example thus set. The best analysis of the results of cases of tuberculosis and pregnancy is to be found not in this article, but in another on fever in the puerperium, by Professor Caldwell of New York City. Here, in a series of 410 cases, it is shown that improvement in the mother's condition during pregnancy occurred in a large proportion of the "slight" cases, in a considerable proportion of the "mild" cases, and even in a small proportion of the "advanced" cases. The author's view is that it is "not the baby in the uterus but the baby in the home" which seriously endangers the life of the mother, through extra work, worry, and loss of rest. American practice is to forbid pregnancy in all cases of active tuberculosis for the reasons just stated, and for the further reason that post-natal infection of the child is almost certain to occur (p. 76). Early therapeutic abortion is accordingly advised in cases of active disease; in all other circumstances abortion is discouraged.

OPERATIVE DELIVERIES

The author of the article on forceps and Caesarean section, Professor E. D. Plass of Iowa City, draws attention to the fact that in the period 1915 to 1929 the neonatal death rate in the U.S.A. from birth injuries has risen from 3.9 to 5.5 per 1,000 births. German writers have recorded a similar tendency, and there can be little doubt that the great increase in operative deliveries which has characterized obstetric practice generally during the last fifteen years supplies the explanation of this increased loss of infant life. The author, in his review of the conditions which have led to the great increase in operative deliveries, particularly deplors the "exaggerated idea of the value of the infant's life in comparison with that of the mother" which is now in vogue. It is staggering to read that there are "a few clinics in this country [U.S.A.] in which the application of forceps is routine except when a precipitate delivery interferes with the obstetrician's plans" (p. 230). There is a type of operation known as "convenience forceps" which is extensively employed by those affected by the "operative furor," many of whom have come to regard "any variation in the foetal heart tones" as an indication for extraction by forceps. That great divergencies in practice occur is clear from the figures given, which show that in the special hospitals the forceps rate varied from 3.8 per cent. to 50.4 per cent., while in other hospitals it varied from 0.5 per cent. to 81 per cent. In Professor Plass's view a forceps rate of over 5 per cent. savours of middlesome midwifery.

In discussing Caesarean section the author deplors the fact that "the range of employment of this operation has been extended until it includes every imaginable complication of pregnancy and labour," and yet it has "the highest mortality of any delivery operation." Figures obtained from hospitals in important centres of different States show a case mortality varying from 4.2 per cent. in Los Angeles to 16.1 per cent. in New Orleans. From another American city comes the report that over a certain period fifty-one Caesarean sections performed by general practitioners or surgeons resulted in a maternal mortality of 33 per cent., while fifty-six operations by obstetricians in the same period yielded a mortality rate of only 1.8 per cent. These figures, which could probably be paralleled in other countries, form a striking illustration of the results which may ensue when men of less

¹ Foetal, New-Born and Maternal Morbidity and Mortality. A publication of the White House Conference on Child Health and Protection. London: D. Appleton Century Co. 1933 (12s. 6d. net.)

skill and experience attempt to follow the example set by obstetricians. They also invite inquiry whether the special hospitals have duly weighed their responsibility in setting up an example which will probably be followed by all practitioners who desire to be "up to date"! The major operations of midwifery must often fall to practitioners whose experience of them is small, and in whose hands the operation risk will consequently be greater than in the hands of the specialist. It is therefore of the first importance that the leaders should set an example of restraint, knowing that what they do will be attempted by others. The conservative tone of Professor Plass's article will be warmly welcomed in this country.

HOSPITAL PROVISION FOR MIDWIFERY

The important article on fever in the puerperium, which has been already referred to, is worthy of careful study. In discussing contact infection the author emphasizes the risk that, after the birth of the child, attention may be relaxed and errors of technique may consequently occur. It is strongly advised that changes of gowns, gloves, masks, and dressings should be made before the genital canal is examined for lacerations, for that is the moment at which the risk of infection is greatest.

Another interesting point brought out in the same article is the effect of the great increase of hospital accommodation for midwifery which has occurred in the U.S.A. during the last ten years. In ten of the largest cities from 56 per cent. to 85 per cent. of the total births now occur in hospital, and yet "the increased hospitalization has not decreased, but has rather increased, the total morbidity and mortality" (p. 328). This unexpected result is attributed in part to the impossibility of providing the hospitals with the highly trained personnel, both medical and nursing, which they require to deal with the larger number of cases, and, further, it has not been sufficiently recognized that the "parturient woman must be separated from the sick and from all sources of possible contact infection." It would appear that provision is lacking, in the extensions, for the isolation of suspect and infected cases—a defect which is by no means peculiar to the U.S.A. The fact is that in the campaign against maternal mortality the primary requirement is, not more hospital beds, but better trained doctors and midwives.

It is impossible to notice them in detail, but other articles well worthy of attention are those on breech presentation and on abortion in relation to maternal welfare.

France

[FROM OUR CORRESPONDENT IN PARIS]

Reminiscences of Calmette and Roux

Professor Konrad Birkhaug, of the Pasteur Institute in Paris, has recently drawn attention to a curious episode in Calmette's life, and to some of Roux' most characteristic ways. Calmette, it will be remembered, remained at the Pasteur Institute in Lille while it was occupied by the Germans, who accused him of sending wireless messages to French headquarters. His laboratory was searched for wireless apparatus, and nearly stripped of scientific instruments. He was accused of using his experimental pigeons as messengers, and when several pigeons were found with the legs ringed and marked with a serial number and the name "Antwerpen," the situation became dramatic. Calmette declared that these pigeons were used for the transmission of fowl tuberculosis. His explanation was not believed, and he was asked to

show the laboratory records of his experiments. Under a threatening guard he searched through his files, and the meticulous order with which he kept his records doubtless saved his life. He not only found the required data, but also the bill of purchase signed by his assistant. It proved that the pigeons had been sent him from Antwerp, and that their serial numbers corresponded with those stated in the bill of purchase. The incident was not, however, closed. A post-mortem examination was ordered by the commanding medical officer, and was performed by the German bacteriologist Pfeiffer. The one pigeon examined proved to be tuberculous, and the accusation against Calmette was withdrawn. "Fate played me a kindly trick that time," he remarked afterwards, "for among all the pigeons inoculated with tuberculous material, only the one examined had contracted tuberculosis."

As for Roux, Professor Birkhaug says that if one had come across him in the gardens or the corridors of the Pasteur Institute, without knowing him, one would have instinctively asked: "Who is this queer old man?" Here he wandered to and fro on his billy rounds, old, grey, and poorly clad, stooping, sallow, and pathetic; he conveyed the impression that being alive was to him a source of grief. But within this pitiable outward frame was a highly critical and richly endowed personality. He refused to accept the salary to which he was entitled as Director of the Institute. "I really don't need the money," he would say, "and they give me board, room, light, and heat, and whenever I become hungry the maid brings me food. The Pasteur Institute needs the money more than I." When called out on professional duties in inclement weather he would turn up the collar of his overcoat as he hastened to catch the nearest bus or tram. He would not use a taxi: "A taxi costs too much, and we need the money for scientific work." His extreme modesty and frugality knew no limits, and science and hard work were for him the two most important things in life.

Doctors Murdered by the Insane

It has recently been calculated that every year some three to seven French doctors are murdered by their patients. The annual mortality is between 0.10 and 0.25 per thousand. Little wonder, therefore, that most life and accident insurance policies discount this special risk to which the medical profession is subject. It would seem from certain expressions of opinion that much could be done to protect alienists and others who are most likely to be injured by the insane. As Dr. G. d'Heuqueville points out in a recent number of *La Presse Médicale*, a goodly proportion of these murders are committed by persons with a long record of previous acts of violence. To illustrate his point he quotes the recent case of a woman who tried to murder a provincial professor of neurology. During the great war she was repeatedly dismissed for acts of insubordination when an army nurse. She became the mistress of a doctor, and was known to have brandished a revolver in his face. Later she married a doctor, by whom she had a child, and over the child's dead body she wove a persecution mania. She was confined in an asylum, but succeeded in escaping. She promptly brought an action against her husband and discharged a revolver in the law court, wounding him. She gained access to the consulting room of the medical superintendent of an asylum, at whom she fired five revolver shots. In Paris such patients are already being dealt with more strictly and systematically than heretofore. Those who have been discharged from asylums are liable, on the first exhibition of eccentricity, to be promptly conducted to the special police infirmary, where they are examined by psychiatrists with powers to inter-

them or set them free. There is also Dr. Toulouse: at the Henri-Rousselle Hospital he has organized a system of prophylaxis, one activity of which is the dispatch of specialists to the homes of persons denounced by their neighbours as mentally abnormal. These visiting specialists may, if need be, sign admission orders, on which action is taken forthwith. For well-to-do mental suspects an investigation, by a commission, has been proposed, on which psychiatrists, magistrates, and legal experts would be represented.

The Care of Cardiac Cases

In a recent communication to the French Academy of Medicine there was an account of the organization Dr. Vaquez has provided for patients suffering from heart disease. Aided by generous American friends he founded in 1929 the association "Aide aux Cardiaques." This association begins its work in the schools, where, with the help of the teachers and school inspectors, the subjects of heart disease are picked out and kept under special supervision. When they leave school, occupations least likely to injure them are chosen. One of the most effective means for assuring continuity of supervision is the child's health passport, on which his physical ailments are recorded. As the child passes from school and runs the gauntlet of examinations for industrial employment or military service, the record of such a passport is invaluable to him. The "Aide aux Cardiaques" follows its protégés through adult life, intervening with advice, material aid, and consultations with employers when a breakdown threatens or actually occurs. Young as it is this association has already been the model on which similar organizations in Rumania, Czechoslovakia, Spain, Mexico, and the Argentine have been, or are being, founded.

The Sick Stranger Within the Gates

The French are more than a little embarrassed by their many resident visitors. The healthy swell the ranks of the unemployed, and the unhealthy occupy hospital beds to which the French taxpayer must subscribe. There is also the special problem of the foreign lunatic injudicious in his choice of targets. In 1925 there were 19,500 admissions of foreigners to the public hospitals in Paris; this was 7 per cent. of all the hospital admissions. By 1930 this figure had grown to 33,485, and the percentage to 12. In 1931 there was a reduction to 28,563 admissions (11.5 per cent.), but even so the figures are impressive. The ratio of sick foreigners to the total varies from 4.8 to 6.2 per cent. In 1913 there were 10,125 mental cases admitted to the asylums of the Department of the Seine. By 1931 this figure had increased to 15,815. How many of these are foreigners? Statistics available for 1926 show that among 14,257 lunatics admitted to asylums in the above area in that year there were as many as 560 foreigners, or 3.9 per cent. These are minimum figures; they do not take into account the sick foreigner who dispenses with the hospitality of public institutions in Paris.

"What's in a Name?"

Much, to judge by a recent legal verdict in France. The case shows in what an uncomfortably invidious position the tradesman may find himself when he tries to express admiration for a pioneer of medicine by tacking his name on to a proprietary remedy. An enterprising dentist, having devised a presumably new formula for a tooth paste, permitted a company to exploit it. The company called itself "Laboratoires Pasteur et Compagnie," and the paste it sold was called "Dentifrice Pasteur." The authorities of the Pasteur Institute refused to accept this new product as a complimentary

gesture, and were the more inclined to take exception to it as some of the new company's correspondence wandered by mistake into the Institute. Accordingly, a formal protest was made in the autumn of 1931. In response to this the company introduced the letters "A & B" between the words "Laboratoires" and "Pasteur"; at the same time omitting the termination "et Compagnie." This shuffling, in the opinion of the Pasteur Institute, made confusion worse confounded, for now the public might be beguiled into believing that the letters "A & B" stood for two of the many laboratories within the Institute. In the interests of the public and the good name of the Pasteur Institute it was deemed necessary to bring an action against the pseudo-Pasteurians, who have just lost their case, and who have been condemned, among other things, to publish the findings of the Court in five newspapers to be selected by the Pasteur Institute.

Scotland

Royal Infirmary, Edinburgh

At the annual general meeting of the Court of Contributors to the Royal Infirmary of Edinburgh Sir Thomas B. Whitson, who presided, said that the annual report was one of the most important that the institution had issued. During the past year 20,159 patients had been treated in the Infirmary, of whom over 60 per cent. had been discharged cured; there had been 14,500 surgical cases. Of the patients admitted 9,252 came from Edinburgh and over 10,000 from outside the city. There had been 69,000 out-patients, an increase of 3,000 on the figures for the previous year. The question of motor accident cases was causing serious concern; 428 persons injured in such accidents had been admitted to the wards, while 437 had been treated as out-patients, and it was calculated that the treatment of these cases had cost the institution £3,593, while the amount received from insurance companies under the Road Traffic Act had been only £1,504. The average daily number of persons on the waiting list during the year had been over 3,000, and although every effort had been made to reduce the number, the popularity of the institution had prevented the managers from effecting any material reduction. There had been a deficit on the ordinary account of £30,287, with a further deficit of £2,834 on the convalescent house and of £6,693 on Bechmount. The total deficit for the year had been £47,300; this had been covered by legacies and donations to the extent of £40,000, so that the real cash deficit was about £7,000, and this sum had to be taken out of the capital account. There had, however, been bequests for special purposes amounting to over £16,000. Speaking as an accountant, Sir Thomas continued, he did not like to use legacies as ordinary revenue, for the main reason that, as a result of the long-continued high taxation, the amount to be received from legacies in the future was bound to fall. The Infirmary had a limited public to which it could appeal for subscriptions, since all the other cities of Scotland had their own local hospitals to support, and, although appeals were constantly made to Scotland from hospitals in England and the south, it would serve no good purpose to make any appeal either to London or to the rest of England. In Edinburgh at the present time there were only 1,340 individuals or firms who subscribed £1 and upwards. There were, he estimated, 10,000 people in Edinburgh who lived in houses of a rental of £50 and upwards, and if the municipality, contrary to the public wishes, should be forced to take over the Infirmary, the assessment on a rental of £50 for hospital

purposes would much exceed 20s. The total ordinary expenditure for the past year had been £148,000, but the managers had been paying very particular attention to expenditure, and this was £9,000 less than in the preceding year. It was to be regretted that the original proposals for the extension had had to be seriously curtailed. It had been found impossible to erect a combined gynaecological and maternity hospital and a nurses' home, and the scheme had had to be restricted to a maternity hospital and a new nurses' home. Even the cost of this was likely to exceed the funds at present raised for the purpose by £100,000. Meanwhile the appeal was in abeyance as the time was unsuitable, but it would be renewed at a later date. The annual report for the year from October 1st, 1932, to September 30th, 1933, showed that the ordinary income had been maintained at the same level as for the previous year. The average cost per occupied bed had been £152 as against £160 in 1931-2, while the average cost per patient per day had been 8s. 4d. as against 8s. 9d. The scheme for building a new pavilion to house the skin department and the venereal diseases department had made considerable progress, and it was anticipated that the work of construction would be begun early in the present year.

Diet in Health and Disease

In a recent address to the Women Citizens' Association, Edinburgh, Dr. Chalmers Watson surveyed the knowledge gained in recent years concerning the pre-eminent importance of diet in the prevention and treatment of disease. In medicine of the future, he said, successful management would be largely in proportion to the attention paid by the medical practitioner and the public to diet, to the psychological factor, and to the study of what was comprised in the term "the healing powers of nature." Increasing attention was being directed to certain deficiencies in ordinary diets, which were regarded as the fundamental cause of many common ailments, and which arose from the devitalizing of food by modern methods of preparation and preservation. For many years highly skilled laboratory workers had sought to determine the nature of the illusive substance or property called "vitamin," and to manufacture vitamin preparations which could be added to food or administered in medicinal form. The general experience of practising members of the profession, however, had indicated that the clinical value of such vitamins fell far short of expectations based on laboratory teaching. The impression was steadily gaining ground that the best way of administering vitamins was to give fresh foods of suitably mixed and varied kinds, especially fresh vegetables and fruits. The addition of any vitamin to the diet was unnecessary if adequate attention was paid to the value of good fresh milk, good butter, wheat grain which had not been debased by the process of manufacture, fresh fruits, and vegetables. Authorities had come to regard with misgiving the existing tendency to add medicinal vitamins to foods.

Scottish Housing Association

Presiding at the annual conference of the Scottish Housing Association in Glasgow Mr. Joseph Sullivan said that when the Royal Commission on Housing issued its report it was stated that 237,000 houses were required in Scotland to raise the level of housing, and to reduce the number of one-apartment dwellings, while 10,000 were required annually to meet the ordinary wastage. Mr. Joseph Westwood, former Under Secretary of State for Scotland, said that no material progress had been made since 1919 in dealing with Scottish housing problems. The greater part of the responsibility for this should be laid at the doors of the local authorities. The census of 1931 had revealed that in the county of Lanark 12.6 per

cent. of the population were living more than four to a room, while in other districts conditions were not much better with 10.4 per cent. in West Lothian, 8.1 in Renfrew, 6.6 in Stirlingshire, and 7.5 in Glasgow. There were also over 3,000 two-roomed houses in Scotland where there were more than nine persons to a house. The minimum standard should be a three-apartment dwelling. At the present time too many people had to consider a suitable rent rather than a suitable house. The total cost to the State of dealing with housing in Scotland since 1919 had been £14,818,882. He believed that, if suitably tackled, the housing problem in Scotland could be solved by 1936.

Public Assistance Attendance in Fife

A scheme for medical attendance on public assistant patients was considered at a meeting of the Public Health Committee of Fife County Council at Cupar on January 4th. Dr. G. Pratt Yule, county medical officer of health, said that the cost of the Public Assistance Department in Fife had increased by £17,000 during the last year, and the cost of the able-bodied poor alone had increased by £15,000 in the past two years. There were anomalies in regard to medical attendance; one parish medical officer received a salary of £28 for five patients, another £50 for twenty-six patients, while in the more industrial part of the county a medical officer with 1,050 patients received only £125, and another with 1,211 patients £160. Increased poverty in West Fife had thrown burdens on the medical practitioners altogether out of keeping with the payments made to them. The object of the scheme now advanced was the distribution of the work throughout the profession. It was proposed that the "open choice" method should be adopted, and that the rate of payment should be fixed at 3d. per week for a family, and 9d. per month for the individual. The estimated cost of the new system was £1,788 as against the present salaries of medical officers of £1,838. It was believed that this scheme would be equitable to all practitioners, and would be agreeable to the poor, who would have more say in the choice of their doctor. A sub-committee was appointed to investigate the scheme, and to give consideration to attendance upon the unemployed who had now ceased to be entitled to medical benefit under the National Health Insurance Acts.

England and Wales

International Exhibition of Cripples' Work

The third international exhibition of cripples' work will be held in the Colston Hall, Bristol, next October under the auspices of the Central Council for the Care of Cripples. The previous exhibitions were in Exeter in 1929, and in Nottingham in 1931. The principal objectives are to stimulate and encourage the work of cripples and to assist their education by an interchange of ideas and methods. The organization of this year's exhibition is being undertaken by the Winford Orthopaedic Hospital, the Bristol Crippled Children's Society, the Frenchay Park Sanatorium, and the Rotary Club of Bristol. It is proposed to charge a rent for the stalls, ranging from £2 according to size, the smallest being 8 ft. by 4 ft. The following categories will be included: handicrafts taught in hospital schools; occupational corrective work under the surgeon's orders; home work by bed-ridden or seriously disabled cripples; the work of those training for employment in the open market; the work of employees in undertakings established on a commercial basis for the disposal of skilled work done by crippled persons; and the work of inde-

pendent craftsmen. The exhibition will not be run for profit, and all fees will go towards the expenses of running it; any surplus will be allocated by the organizers at their discretion. It is hoped that every exhibitor reserving a complete stand will send a representative to take charge of it, but where this is not possible the exhibition committee will make arrangements for the charge of stands locally. Special efforts will be made to attract commercial and other buyers likely to be interested in the wares. Great success attended the two previous exhibitions, and it is hoped that the forthcoming one will prove even more popular in view of the marked advances which have been made since then in the education of cripples. Applications for stalls and notice of intention to participate in the exhibition must be sent by May 1st, 1934, to the honorary organizing secretary, Mrs. Hey Groves, 25, Victoria Square, Clifton, Bristol 8, who will welcome suggestions for improving the arrangements. A number of trophies and challenge cups will be open for competition.

National Institute for the Deaf

According to the annual report for 1932-3, the National Institute for the Deaf has quite outgrown its present premises in Bloomsbury. A library is required for persons who come to consult the literature on deafness; a room is needed for a lip-reading centre; meetings of the committee and of allied bodies are poorly accommodated, and the provision for the staff is quite inadequate. A fund is being opened, therefore, to enable the Institute to remove to more suitable premises, possibly in the west central part of London. Gifts have already been received to this end. It is suggested that conferences might well be held in various localities to enable the community to realize the immense amount of unrelieved suffering that awaits attention. The future possibility is envisaged of an Act whereby county and county borough councils would be empowered to deal with the deaf on lines similar to those for the blind. The recommendation of the late Dr. Eichholz for the constitution by the Ministers of Health and Education jointly of a standing advisory committee would have more far-reaching beneficial effects than could be expected to accrue from any other proposal made hitherto. The report contains numerous illustrations of the various activities carried on by the Institute in spite of its present handicaps. The accounts for the year showed a balance of £700 income over expenditure, due to an increase in the amount received from donations and legacies mainly, and not to the more permanent source represented by subscriptions. Yet if the Institute is to obtain its much-needed expansion of premises and activities there will have to be a larger annual income. It is pointed out that, whatever degree of State assistance may be reasonably hoped for in the future, the nature of the work among the deaf is such as to demand a continuance and increase of personal individual support. The prevalence of irregular practitioners who claim falsely to be able to alleviate deafness is again lamented.

Remuneration of Medical Staff at London Mental Hospitals

Following upon representations made by the British Medical Association that the scale of pay for assistant medical officers is less favourable than that prescribed in the Askwith memorandum, the Mental Hospitals Committee of the London County Council has reviewed the current rates of pay for medical staff in institutions under its management. The Askwith memorandum proposed for assistant medical officers at mental hospitals a minimum commencing salary of £350, rising by four annual increments of £25 to £450, with emoluments of board, lodging, and washing, and an additional allowance

of £50 a year to the possessor of a diploma in psychological medicine. The scale adopted by the London County Council for assistant medical officers in the mental hospital service does not provide for residential emoluments, but furnishes an inclusive money payment which, at the minimum of the scale, is £475 a year, and, after deduction of £117 in respect of charges for full board, lodging, and washing, leaves a net cash remuneration of £357. This is more than the Askwith minimum, but the Council's scale provides for only three increments, the first of which is not payable until the D.P.M. has been obtained. After careful consideration it is now proposed that the present scale of remuneration shall be amended to provide for an increment of £25 at the end of each of the first four years' service, but the initial scale rate is to be reduced to £470, instead of being £475. The allowance of £50 a year to the holder of the diploma will still obtain. Each of the four increments, however, is to be conditional upon the submission of a certificate by the medical superintendent, to the effect not only that the conduct, work, and general efficiency of the officer are in all respects satisfactory, but that if he is not in possession of the diploma, he is making proper endeavours to secure it, and also that he exhibits qualities which, so far as can be seen, point to his being suitable at a later date for promotion to a post of divisional responsibility. A condition that the appointment shall be determined at the end of three years if within that time the officer has not obtained the diploma is to be continued, and strengthened by a proviso that retention in service after three years shall depend on the submission of a definite report by the medical superintendent that the officer has shown himself to be entirely suitable for promotion if and when opportunity arises. With regard to existing staff, it is proposed that officers on the present scale who are in possession of the diploma shall receive a further increment, beyond the maximum of the scale in force since April, 1931, of £20 a year, but subject to the proviso that the total remuneration, including this allowance, shall not exceed £627. It is also proposed that the remuneration of house-physicians appointed to the mental hospital service shall be increased to £365 a year if non-resident. According to the scheme approved in 1931 officers of this grade were to have a salary of £230, without emoluments, but so far no appointment of house-physician has been made to the mental hospital service, probably because the rate of pay has not been sufficiently attractive.

Medical Officers in Slum Clearance Schemes

Additional medical staff will be required in the public health department of the London County Council in connexion with the carrying out of the Council's accelerated programme of slum clearance. At present the work on the medical side relating to housing is performed by a divisional medical officer, and it is believed that two more whole-time medical officers will be required. It is also the view of the Council that to obtain suitable candidates some prospect of permanent appointment should be offered, and that in view of the responsible duties to be carried out those appointed should rank as divisional medical officers (scale of salary £800, rising by increments of £50 to £1,000). On the completion of their work in connexion with the slum clearance scheme, which it is anticipated will be in sight to ten years' time, they will be allotted to other branches of work in the department. The medical officer who will be in control of their work, and will have additional responsibilities, is to be given temporary rank as principal assistant medical officer (£950-£50-£1,250). From the outset of the slum clearance scheme additional work will be created, including the preparation and giving of evidence at local inquiries.

and the examination and report upon proposals of metropolitan borough councils for dealing with areas within their boroughs.

Guy's Hospital Founder's Day

Founder's Day at Guy's Hospital was commemorated on January 6th by a special service in the hospital chapel and the reopening, by Dr. Luke Paget, formerly Bishop of Chester, of the crypt, where lie the remains of Thomas Guy. For eighteen months past work has been proceeding in the crypt, the discovery having been made that the foundations of the chapel were by no means secure. Supports have now been carried down fifteen feet below the springing level of the vaults, and the chapel stands as firmly as when it was built 200 years ago. At the same time the vaulting and walls of the crypt have been cleaned of the whitewash with which they have been covered for about 150 years, revealing the fine old brick-work beneath, and a mosaic floor has been laid down between the tombs of Thomas Guy and three famous surgeons of the hospital who were buried there near the founder—Astley Cooper, William Hunt, and John Love.

CORRESPONDENCE

Team Work

SIR,—The annotation headed "Team Work in Medical Practice" which appeared in the *Journal* of January 6th calls well-timed attention to the inspiring address on the influence of medicine on surgery delivered to the Hunterian Society by its president, Mr. W. E. Tanner. The address, charged with home truths, acknowledged those responsible for recent advances in medical science, but at the same time revealed between the lines the uncharted drift of medicine and surgery in many directions. It is suggested that the complexity of modern medicine has led to a dangerous increase in the number of specialists. Specialization is regarded by Mr. Tanner as dangerous in the hands of those who have not had sufficient experience in the science and art of medicine and surgery as a whole. "The true surgeon must not be content to be a mere craftsman; he may laugh at the stethoscope, but he should use it, for he has no right to say he knows nothing about the chest." He adds, "The medically minded surgeon is a great asset, for it is from him we may expect real advance and achievement." With similar thoughts Dr. Charles Mayo declared that we were getting to know more and more about less and less.

Mr. Tanner may have struck a note out of harmony with a fashionable refrain, but it calls us to attention, it makes us think. Without suggesting for a moment that the specialist has only the little knowledge which is dangerous, it would be admitted by the specialists themselves that their viewpoint is limited and circumscribed. It will be conceded by all that this circumscribed knowledge is deep and convincing. It plays an important part in remedying a particular defect in a small portion of a complex machine. The difficulty arises when we consider how often one defect is dependent on other more remote defects, and how the machine often must be overhauled as a whole before the fault can be isolated.

With specialization, as it exists to-day, we cannot, for example, expect the genito-urinary surgeon to be an authority on the intricate and all-important lesions of the cardiovascular system which afflict his patients in considerable numbers. It is unreasonable to request an orthopaedic surgeon to undertake treatment while obscure diseases of the central nervous system or disordered metabolism cloud the issue. The gynaecologist, consulted by the obese woman, whom he has attended in the past during pregnancy, may be confused as to whether the

presence of gall-stones contributes to the symptoms in a case of pelvic disorder. The surgeon who confines himself exclusively to the abdomen is conscious of the fact that mistakes could be eliminated if he had a wider outlook, and frequently is in need of further advice. The cardiologist may have doubts about the state of the thyroid gland or the presence of infection in the biliary tract.

It is clear that the complexity of modern medicine to which Mr. Tanner alludes demands one of two alternatives. If the patient belongs to that large group (from which emergency and traumatic surgery is excluded) requiring careful investigation, either a number of specialists must be summoned to the bedside, which is often impracticable, or the consultant in the first instance must have a wide experience of surgery or medicine as a whole. The need for a specialist may come later. The necessity for a consultation is decided in the first instance by the general practitioner. All will agree with Mr. Tanner that it is upon the general practitioner that the successful handling of any patient, whatever the disease, depends.

In selecting the consultant a difficulty arises. The physician in view may have too academic a mind to be of service in a clinical problem, the suggested surgeon may be "the mere craftsman" who is quite ineffectual in a consultative capacity. If the case is *prima facie* a surgical one the general practitioner is not always in a position to realize that, whereas the combination of good surgery and good craftsmanship is ideal, the latter divorced from the former is a menace. It is a complex problem for those outside the ranks of surgery, but it deserves careful attention. The fundamental distinction which may exist between good surgery and good operating may indeed be only fully appreciated by those who lean towards surgery, and who have gained experience by travel abroad. (Preconceived ideas may be shattered by travel, but out of this wakening good may come. The shaking of a disposition to self-assertion and dogmatism may prove the first step towards a distinguished career.)

It is possible in a few sentences to outline the attributes of a good surgeon and to draw a distinction between him and "the mere craftsman" to which Mr. Tanner alludes. In the one case many hours are spent at the bedside in personal conclave with medical and laboratory colleagues. Quality and not quantity is the goal. "Safety first" are the watchwords. Days or weeks may be occupied in pre-operative preparation and in refreshing the memory from current literature. No stone is left unturned to secure in advance a minute knowledge of what Lord Moynihan referred to as the "pathology of the living." The right moment is chosen for operation; the procedure is carried out with mature judgement and meticulous care. The post-operative period, often pregnant with sinister possibilities, is personally supervised. In the fatal case the post-mortem is attended by the surgeon, together with all those colleagues who shared the responsibility of diagnosis and treatment.

On the other side of the picture may be seen the handyman, content with operative dexterity, and with the favourable impression left upon ill-informed observers. In this case the ward work has been neglected, and information, when sought from the physician, radiologist, and other co-workers, has been accepted second-hand. Pre-operative and post-operative care in the modern sense have been disregarded. Surgery practised thus does not result in the less than 1 per cent. mortality in such conditions as Graves's disease, at best the morbidity is high.

Team work in surgery goes further than that to which Mr. Tanner had time to refer. It is futile to attempt major surgical procedures in the belief that modern standards can be reached with ever-changing assistants and anaesthetists, with unfamiliar equipment, and in a varying surgical environment. Without uniformity in

these respects men of ability and promise are condemned to a position of mediocrity as judged by the surgical world of to-day. Young recruits who visit famous clinics abroad come home impressed. They have witnessed departments presided over by an all-powerful chief, with his permanent or semi-permanent first and second assistants, reinforced by highly trained subordinates. Facilities for investigation and research are at his hand and his command. The daily work proceeds under the same roof both for pay patients and for the reverse. Time and efficiency are thus conserved. Members of the team, nurses included, by long association can almost anticipate the thoughts of one another. Those who in commencing their career are less fortunately placed, in one of the uncultivated fields of surgery at home, may seek reform, but the dice are too heavily loaded against them, and they become submerged by a combination of bolstered traditions and insular habits. The economic question comes in, but the fact remains that it is in the large and rich centres that mediaeval workmanship prevails and flourishes. The best team work often is practised in smaller places where poverty prevails.

The influence of medicine on surgery, and of team work upon both, can be best appreciated by those who travel. The mortality and end-results in different centres throughout the world should be studied and compared, and finally an effort should be made to imitate that system which gives the best service to a trusting but ill-informed public. The moment appears ripe for thoughts of reform in many institutions, both time-worn and new, for the scrapping of antiquated conceptions, and for a radical change.—I am, etc.,

London, W.I., Jan. 7th.

W. I. DE C. WHEELER.

Continuous Intravenous Saline

SIR,—As one of the first, if not the first, to use intravenous saline infusion, in massive or repeated doses, for the treatment of haemorrhage, I am much interested in the method of continuous use advocated by Messrs. Bailey and Carnow. (My first case occurred on April 24th, 1888, see *Lancet*, i, 1892, pp. 1289, 1357.) But I wonder whether, at least in the case of haemorrhage, it would not be equally efficacious and more convenient if given *subcutaneously*, after the volume of the blood had been restored by the intravenous method.

With regard to their suggestion that "an enterprising firm of druggists should put up in ampoules" the saline, I may say that the late Mr. Martindale, more than forty years ago, made for me glass tubes containing 2 drachms of sodic chloride in solution, and sealed during ebullition. They were exhibited at the December meeting (1893) of the Obstetrical Society of London (*Transactions*, vol. xxxv).—I am, etc.,

London, W., Jan. 6th.

HERBERT R. SPENCER.

SIR,—I should like to support what Mr. Hamilton Bailey and Mr. Carnow say in their article on this subject in the *Journal* of January 6th. I have used the method intermittently for several years. During the last two years I have employed it as a routine procedure both before and after operation in certain dehydrated cases, and reported my opinion in my Hunterian Lecture, which was published in the *Lancet* on June 3rd and 10th, 1933.

Anyone who has employed this method often enough to compare its effects with those seen after the use of the more usual procedures cannot fail to have appreciated its greater value, which is largely dependent, I think, on these factors—namely, the fluid is delivered into the blood stream with certainty, in known quantities, and slowly; the rate can be varied according to requirements. I usually give it at the speed of one drop per second, and have administered as much as forty pints without

having to move the cannula to another vein. I utilize one of the veins at the elbow as a rule, and do not find it necessary to restrict the arm movements beyond warning the patient to keep the limb reasonably still; it is, of course, a different matter in the case of a restless patient. Mr. Bailey and Mr. Carnow say it is unnecessary to be concerned about the temperature of the fluid. I am not sure about this. Anyway, it is perfectly simple to run the tube through a small radiant-heat appliance, and this is my practice.

This method of intravenous administration permits the addition to the circulation not only of fluid but of other substances, and presently, with the help of biochemistry, I have no doubt we shall be able to make use of it as an artificial gland, which will temporarily deliver to the circulation in a reasonably physiological manner such elements as may, for the time being, be absent or diminished. Indeed, in one or two instances it has already been so employed.—I am, etc.,

Leeds, Jan. 6th.

E. R. FLINT.

SIR,—I was much interested in Mr. Hamilton Bailey's description of a method of continuous intravenous use of saline, gum arabic, etc., but I am sorry that he attributes its origin entirely to the United States, as I can assure him that it was in use in Bristol in 1926, under a similar technique.

Two points about his method (and ours), however, I have never been able to make my mind up about. (1) At what pressure (that is, at what height should the funnel holding the saline be) should the injection be given? The number of drops depends on the size of the cannula. (2) What is the total maximum that can be administered in, say, twenty-four hours safely?

One case I remember—a case of amputation in Raynaud's disease—developed oedema of the lungs after twenty-four hours. I am in most full agreement with Mr. Hamilton Bailey in the choice of a small vein, as this ensures slow percolation, though we had only a small well-paraffined cannula available. This is a line of treatment which I have always felt has a very large field of usefulness, not only in surgical but also in medical cases, especially those in which the continuous administration of a drug not well tolerated hypodermically is needed. I instance acute streptococcal septicaemia, and the need for an intravenous antiseptic.

Incidentally, I have noticed in a case of septicaemia treated with mercurochrome intravenously (not continuously) marked pink tinging of urine, faeces, and sweat, as in Mr. Hamilton Bailey's case.—I am, etc.,

Bath, Jan. 6th.

WARREN MORRIS.

Marking X-Ray Films

SIR,—In the *Journal* of December 16th, 1933 (p. 1133), Mr. H. A. T. Fairbank made an appeal for the marking of x-ray films with the patient's name and the date of the examination. This practice is universal in the case of private patients sent to radiologists in London and, I think, elsewhere; but, as Mr. Fairbank has pointed out, it only too frequently happens that the patient, regardless of any question of means, is sent to the nearest cottage hospital for a radiographic examination.

All round London to-day is a ring of such hospitals. In almost every one there is an x-ray outfit, put in at the instance of the sellers of apparatus, who start their campaign by telling the hospital secretary that an x-ray outfit will pay for their hospital. The result is that each of these small institutions is equipped to do x-ray work, and films are taken, on which some unfortunate radiologist is supposed to report, in the hope that wealthier patients will be referred to him at his consulting rooms. But, as

things work out, the net result is that practically all the patients of the district are referred to the x-ray department of the small hospital, and little or nothing in the way of fees comes through to the radiologist as a consultant.

When Mr. Fairbank or any other consultant is handed unmarked films I would suggest that he should ask the doctor who has brought the case where and how the films have been taken. I think he will find that, as a rule, the films have been "borrowed" from the department of one of these small hospitals, where the radiologist's services have been given for nothing, or for a nominal fee, and the films have been removed before he has even had time to review them and mark them.

The real tragedy of this situation lies in the fact that the more efficiently the radiologist does his work at the hospital the less hope is there that any patient will be sent from that district to consult him in London. No consultant in any branch of medicine has a heavier outlay for equipment, or has to pay a larger rent for the accommodation necessary for his work, than the radiologist. Nevertheless, in my experience, I have never known an instance of films sent out from a hospital department unmarked; but how can the radiologist help it if he comes to the department and finds that the films have been abstracted without his knowledge or consent?—I am, etc.,

London, W 1, Dec 28th, 1933.

J. L.

Painful Injections: An Avoidable Cause

SIR,—The investigation to be described was undertaken as a result of sharp pain experienced by patients who were receiving hypodermic or intradermal injections. Difficulty was encountered at a diphtheria-prevention clinic during the process of Schick-testing, and it was at first suspected that the Schick toxin contained some irritant substance. Some of the toxin was accordingly returned to the Wellcome Physiological Research Laboratories, but, after exhaustive tests, no fault could be found in the material. I then remembered that Dr. V. J. Glover, medical officer of health for Waterloo-with-Seaforth, in his annual report for 1932, made some remarks which might have some bearing on the subject. He had been in the habit of soaking inoculating syringes in methylated spirit, and had traced painful reactions to this source. The nuisance ceased when he boiled his syringes in water instead of washing them out with spirit.

Although I and many of my colleagues had been in the habit of boiling all syringes, yet, in the case of Schick-test injections, the needle of the syringe had been dipped in spirit after each injection. It thus appeared possible that when the syringe was being charged with Schick toxin a small bead of spirit ran down the needle into the toxin bottle. In this manner it will be seen that the last quantity of toxin in the bottle might well contain a percentage of spirit. It was also realized that by dipping needles in spirit between injections drops of the spirit might adhere to the needle and run down to the point as the latter was being introduced into the skin.

Accordingly 1 in 20 dilutions in normal saline were made from the forms of alcohol and methylated spirit ordinarily used for cleaning and mild sterilizing purposes. Those selected were (1) absolute alcohol; (2) industrial methylated spirit (technobutyl); (3) ordinary coloured methylated spirit; (4) a well known brand of "surgical spirit" having an aromatic colour. Of these dilutions 0.2 c.c.m. was injected into the skin of my forearm, and also into the arms of a medical colleague. A thick control injection of normal saline was given. The results are of interest.

Solutions 1, 2, and 3 produced a prickling pain on injection which lasted for about half a minute in the case

of absolute alcohol. Industrial methylated and ordinary methylated spirit produced much the same effect, but in both cases the sensation was rather more unpleasant than when absolute alcohol was employed, the pain lasting rather longer in the case of the two spirits. The injection of "surgical spirit" gave rise to severe pain, lasting for four or five minutes. Practically all children would cry if subjected to this degree of discomfort. The control injection of 0.2 c.c.m. of normal saline was practically painless, both at the time and afterwards. The syringe from which the latter injection was given had not been in contact with any methylated spirit.

It appears that the washing of syringes or needles with spirit is apt to cause considerable unnecessary discomfort, and that the pain is greatly exaggerated when so-called "surgical spirit" is used. This substance was employed for the dipping of Schick syringe needles on the occasion when the painful injections giving rise to this investigation were noted. It seems desirable, therefore, to boil syringes on every possible occasion. If, owing to force of circumstances, alcohol must be used, I suggest that absolute alcohol or pure industrial methylated spirit be employed. Subsequently every drop of this alcohol should be expelled from the syringe before filling it to make an injection. For a series of injections, as at a Schick clinic, the needle of the test syringe may be immersed in boiling water for a short time after giving each injection. In the case of diabetic patients requiring hypodermic injections daily, pain such as is caused by spirit remaining in the syringe, or on the needle, assumes some degree of importance. Three hundred and sixty-five or more pains a year are worthy of avoidance if possible.

It would be a kindness if practitioners would inform users of insulin of these facts, as it appears possible that the hard subcutaneous nodules which sometimes develop in the region of insulin injections may be the result of methylated spirit irritation.—I am, etc.,

London, S.E.5, December, 1933.

GUY BOUSFIELD, M.D.

The Tuberculosis Problem

SIR,—I notice in the *Journal* that a correspondent complains of some of the leaders and annotations on the subject of tuberculosis you have lately published, so evidently he does not see the need for overhaul of our present methods. The M.O.H. for Cumberland, in his annual report for 1932, states:

"Under existing conditions I regret to say that I see no hope of any substantial improvement in the tuberculosis problem as it exists in this county. During 1932, of the 189 deaths from all sources of tuberculosis, eighty-nine cases, or approximately 50 per cent., did not come to our notice at all until these cases were within three months of death. It is also obvious that a large number of cases come to our notice at a stage which, if not exactly hopeless, is at any rate sufficiently advanced to render the prospect of cure or arrest of the disease unlikely. This does not give sanatorium or any other form of treatment a fair chance."

It is common knowledge that every sanatorium in the country records the fact that so few early cases are received; and thus it is brought out that our present system does not bring to light, and for treatment, cases in the earliest stages of disease in the great majority of instances. With this failure, it is essential that our present methods of diagnosis should be overhauled and the possibility of protecting the public against the average risks of infection examined.

The value of x rays, in assisting us to form a diagnosis, cannot be overlooked. The part that tuberculin should play in assisting us has never been clearly defined. Most observers agree that a negative tuberculin reaction shows, in the great majority of cases, absence of living germs of tuberculosis in the body, and in the case of children it

is considered to be conclusive evidence. What is needed is evidence as to the real meaning of a positive tuberculin reaction. Does a positive reaction mean that infection has taken place, and that there are living germs of tuberculosis present? Many observers claim that in the case of children, as soon as a positive reaction is obtained, it is easily possible to detubercularize them by treatment, and that such children do not as they grow up ever become tuberculous. If this contention can be confirmed, it is a most important fact, and should be made known. If it is possible to detubercularize children with a positive reaction who have little or no signs of active tuberculous disease, can we easily detubercularize adults who show a positive tuberculous reaction, and who show no signs of active disease?

The problem of the prevention of tuberculosis has not as yet received the amount of attention it should. It is known that children with a positive reaction and definite signs of tuberculosis can often be permanently cured without any treatment beyond taking them away from their present surroundings and placing them under suitable conditions. Unfortunately, this method cannot be adopted in the great majority of cases, so the possibility of being able to protect children who are in contact with known cases of tuberculosis is of the very greatest importance. The late Professor Calmette advocated the use of B.C.G.; other workers claim that they have been able to protect children by various methods of tuberculin treatment, and the workers at the Tasch Laboratory at Basel claim that they can do so with their antituberculin serum.

In place of criticizing the action of the *Journal*, I welcome its attitude, and strongly urge that these problems, which await a solution, should be carefully considered by such a public body as the Royal Institute of Public Health. The methods advocated by Drs. Chown and Medovy, as described in the *Journal* of December 2nd, should be carefully considered. What is needed is an examination into the reasons for the failure of our methods to bring forward for treatment cases in the earliest stages of the disease, or to cure the disease permanently by any present known treatment, or to protect the public against the ordinary average risks of infection.—I am, etc.,

GORDON TIPPETT, M.B.Lond.,
Medical Superintendent, Northcote
upon-Mendip.

Blaeden, Bristol,
Jan. 5th.

Pay Wards for Tuberculous Patients

SIR,—There has recently been a good deal of correspondence in the Press on the subject of "pay wards" in our general hospitals. In view of this I think your readers may be interested to know our experience in connexion with "pay wards" for tuberculous patients.

Bearing in mind the desirability of providing pleasant wards at reasonable prices, we designed our new eighty-four-bed Bernhard Baron Memorial Hospital accordingly; and we have constructed a number of private wards, with wide balconies, facing south, with bathroom and lavatory accommodation separate from the rest of the hospital. These we find are much in demand, at prices ranging from 3½ to 5 guineas a week inclusive. We feel that "extras" might prove a source of worry to patients, whose recovery would thus be retarded; and so we include everything, even x rays and pneumothorax refills, for the weekly fees indicated.

I feel that the knowledge that there is a demand for this accommodation on these terms may perhaps lead to the provision of similar facilities elsewhere.—I am, etc.,

PENDRILL VARRIER-JONES,
Medical Director, Penworth
Village Suburban.

Penworth Hall, Cambridge,
Jan. 5th.

Physiological Precision and Clinical Medicine

SIR,—In his notice of *Starling's Physiology* (*Journal*, January 6th, p. 18) your reviewer wonders what relation the very precise results obtained by the physiologist "bear to the kind of information which is really of value to the investigator of the human body." I believe the relation to be very close. A difference of no more, and sometimes of even considerably less, than 1/1,000 mm. in the average diameter of a patient's red corpuscles distinguishes a macrocytic, or microcytic, anaemia from a normal blood, and a difference of no more than a very few milligrams of calcium per 100 c.cm. of blood affords the only means of diagnosing a parathyroid tumour. The diagnosis of acidaemia and alkalaemia depends upon the discovery of almost infinitesimal differences in the hydrogen-ion concentration of the blood; and indeed the whole subject of clinical biochemistry, which is of such enormous importance in the modern methods of diagnosis, rests upon very minute differences in the quantitative composition of the blood.

The scientific physician visualizes the time when the very exact measurements obtained in the physiological laboratory will enable him to elucidate many more of the clinical problems with which he is daily confronted. Your reviewer quotes as an example of the lack of relationship between physiological precision and clinical application "the exact time relations measured in thousandths of a second of the waves passing over the auricles of the heart." May I point out that an exact knowledge of even such minute time relations can be usefully applied in clinical medicine? The presphygmic or isometric period of a ventricular systole—that is, that period at the beginning of the systole when the ventricle acquires sufficient tension to overcome the diastolic pressure in the aorta (or pulmonary artery) to force open the semilunar valves and drive the blood into the big vessels—is believed to last no more than 0.05 second (the whole systole occupying 0.3 second). Mathematical considerations based upon hydrodynamic principles tell us not only that the duration of this period is prolonged in the case of a leaking auriculo-ventricular valve, but that the amount of lengthening varies logarithmically with the size of the leak. Indeed, it is possible to derive a formula by means of which the exact size of the leak can be calculated from the observed duration of the presphygmic period. But for such an estimate to be made possible it is, of course, necessary to know "the exact time relations measured in thousandths of a second of the waves passing over the auricles of the heart."—I am, etc.,

London, W.1, Jan. 6th.

W. M. FELDMAN.

Ether Convulsions or Heat-stroke?

SIR,—Will you allow me space to suggest that heat-stroke might be an alternative diagnosis to that of ether convulsions in the interesting case described by Mr. A. Dickson Wright in the *British Medical Journal* of December 30th, 1933 (p. 1210)?

The history of the case suggested that the child possibly might have been susceptible to the effects of the sun. During the hot weather the child had been ill for four days and was also constipated. There was considerable toxæmia at the time of operation. It is possible that the heat-regulating mechanism might have been upset by the combination of unaccustomed hot weather, constipation, and the administration of atropine, causing the development of heat-stroke. The clinical description of the attack bears a strong resemblance to a case of heat-stroke.

I venture to offer this explanation for the convulsions because, when I was attached to a hospital in Mesopotamia, it was considered inadvisable to give

atropine to patients before operation in the hot weather on account of its effect in decreasing the heat loss. I neither saw nor heard of any case of ether convulsions during the summer months when conditions were favourable for its occurrence, although ether was largely used as an anaesthetic.

There arise from these remarks two points, which probably have already received consideration: (1) The rectal temperature should be taken as soon as fits develop under ether anaesthesia. (2) Nembutal should be tried in heat-stroke cases suffering from convulsions which are not controlled by the usual methods and after due attention has been given to any malarial complication.—I am, etc.,

London, W.1, Jan. 3rd.

F. W. G. SMITH.

Left-sided Stance for Urethral Instrumentation

SIR,—In the *Journal* of December 30th, 1933 (p. 1211), the senior surgeon of the Kashmir Mission Hospital, under the heading of "Litholapaxy Simplified," writes: "It is customary for the surgeon, when passing catheters and bougies, to stand upon the left side of the patient; when manipulating a lithotrite, however, this position places the surgeon at an obvious mechanical disadvantage. For many years I have adopted a central position." Among the advantages claimed for this and for other technical details are that "turning movements of the beak of the instrument to right or left, and search for fragments in a retroprostatic recess, are greatly facilitated."

While any statement on stone emanating from India necessarily commands attention, one is surprised to hear of a search with the lithotrite for stone fragments in a retroprostatic recess. With sufficient prostatic enlargement to justify the description of retroprostatic recess, one would rather suppose prostatectomy, with incidental removal of the stone, to be the usually indicated line of treatment. With regard to standing on the left of the patient when passing a catheter or bougie, this position is recommended by some authorities, but I have never understood why, or what advantage is to be so gained, unless the operator is left-handed, or ambidextrous, or has specially trained himself to stand on the left. With these exceptions, the consequent mechanical disadvantage, which is obvious in the case of a lithotrite, is still present, if less obvious, in the case of a catheter or bougie. The left-sided position is certainly not customary with those whom I have seen passing catheters and bougies. If any rule be needed, it is to stand where one is most comfortable, and that will nearly always be on the patient's right.—I am, etc.,

London, W.1, Jan. 2nd

ALEX. E. ROCHE, F.R.C.S.

SIR,—I have read with interest Mr. Nève's memorandum in the *Journal* of December 30th, 1933 (p. 1211), and agree that it is difficult to operate from the left side. But the central position as described by him does not appear to provide a comfortable support for the left elbow, which in my opinion is essential.

I stood or sat on the right side and rested my left elbow on the table, which gave a firm support and enabled a long operation to be performed with a minimum of fatigue. For beginners at least litholapaxy would be more simple and less dangerous if textbooks omitted to illustrate the lithotrite beak downwards picking up pieces of stone from the floor of the bladder, as in all cases (except those with enlarged prostate or sacculated bladder in which litholapaxy is contraindicated) fragments of stone can be picked up by depressing the floor of the bladder with the instrument and opening the bladder.

When difficulty is experienced due to accumulation of debris, the bladder should be washed out. This is best done by filling the bladder with a syringe, then gently pressing the abdomen above the pubes with the left hand, whilst shaking the cannula with the right. It is not usually necessary to use an evacuator until the end of the operation.—I am, etc.,

T. S. NOVIS,

London, S.W., Jan. 3rd.

Lieut.-Colonel I.M.S. (ret.).

Renal Histology and Nephritis

SIR,—I was attracted to Dr. John Gray's paper in the *Journal* of December 23rd, 1933 (p. 1165), by the title, but was disappointed to find an incomplete story. The very great difficulty in determining the mechanism of the kidney function—how the blood volume, the alkalinity of the plasma, the molecular concentration, and the percentage of nitrogenous and other waste products in the blood, and possibly the return to the blood of special products formed by the kidney (an internal secretion related to striated muscle mass and function), are controlled—naturally renders the picture of renal states in disease correspondingly difficult of interpretation. The difficulty is not lessened by leaving aside from consideration an integral part of the kidney—for example, the medulla, which Dr. Gray does not mention.

Since the blood from the vascular arches passes on the one hand into the cortex, and on the other into the medulla, it is clear that the resistance to the blood flow in the medulla must condition the blood flow in the cortex. Since the uriniferous tubules in the cortex dip down into the medulla and loop back from there into the cortex before entering collecting tubules, it is plain that the resistance to the flow of urine through the medulla must influence the transudation of water from the glomeruli into Bowman's capsules. That these factors are of paramount importance is shown by the effect of therapeutic measures in acute nephritis and allied states (anuria). I mention the beneficial effects of limitation of fluids, of venesection, and of other measures to lower the blood pressure—for example, spinal anaesthesia in acute anuria—and decapsulation of the kidney. These can only be supposed to act by relieving a medullary congestion, by which tubules in the part are compressed and even occluded. Examination of the kidney in the early stages of acute nephritis, as in so-called suppression of urine, will, I think, show a marked, a clearly pathological, congestion of the medulla, especially near the intermediate zone. Relief of this condition clinically causes the urine locked in the convoluted tubules of the cortex to escape, so that blood can enter the cortex more freely than before and more urine be formed, provided changes in the cortex (extravasation of blood into the glomerular tufts, etc.) have not occurred to prevent it. The filtration hypothesis—that the pressure of the blood in the glomerular tufts is high, whilst the pressure in Bowman's capsules is low—has always seemed to me impossible. The capillary walls and the investing layer of Bowman's capsule are so thin and delicate that if the pressure of the blood within the capillaries were high whilst the pressure in Bowman's capsules were low (as is commonly supposed) the glomerular tuft would expand, completely filling Bowman's capsule, and effectually block the tiny orifice through which the water escapes into the convoluted tubules. During activity the glomerular tufts never fill the Bowman's capsules: there is always a space (filled with water) surrounding these tufts.

We know quite well that the kidney will only work when the blood pressure is sufficiently high, and we must thus suppose that during distress the pressure of the blood in the glomerular tufts is considerable. The

pressure of the water in Bowman's capsules must also be considerable: it must correspond—being, indeed, only less than the pressure of the blood by the tensile strength, the resistance to expansion caused by the endothelial cells of the capillaries and the thin, similar, tessellated cells of the capsule investing them. To obtain the necessary pressure of the urine in Bowman's capsule, the urine apparently is prevented from escaping too readily by the circuitous route of the uriniferous tubules. I see no other explanation for the existence of Henle's loops in the medulla, and I know of no other put forward by anyone.—I am, etc.,

Rugby, Dec. 23rd, 1933.

R. H. PARAMORE, F.R.C.S.

Pharyngeal Haemorrhage

SIR.—Dr. P. Shackleton's two cases (*British Medical Journal*, December 23rd, 1933) and Mr. E. D. D. Davis's letter (*January 6th*, 1934) interest me very much. In the *British Medical Journal* of May 24th, 1919, I reported a case in which, as the only successful means of stopping a dangerous and intractable haemorrhage after tonsillectomy, I was compelled to tie the external carotid in the neck.—I am, etc.,

London, W.1, Jan. 5th.

H. LAWSON WHALE.

Rest in the Treatment of Neuroses

SIR.—While there is no doubt that Dr. J. W. Astley Cooper (December 30th, 1933, p. 1231) is right in calling attention to the importance of rest in the treatment of the neurotic of the anxiety type, he does not mention that a considerable proportion of the neurotics met with in general practice are individuals who simply cannot afford to stop work. The anxiety underlying the symptoms may be related to the work which the patient is doing, but financial obligations have to be met, and the patient has to struggle on.

I should be interested to hear how Dr. Cooper would treat, for example, a man with dyspepsia of emotional origin who would almost certainly lose his job if he were to go sick for a month.—I am, etc.,

Edgbaston, Dec. 31st, 1933.

PHILIP R. KEMP.

Comments in the Coroner's Court

SIR.—Surely all members of the medical profession are amazed at the power possessed by the lay coroner and at the damage that can arise from one of his sweeping conclusions. Severe injustice may be inflicted upon a firm, an individual, or an institution by the condemnation which he can mete out, often, it would appear, without sufficient information. It is merely a further proof of the danger of a little knowledge.

A patient recently was seen at hospital with apparently minor head injuries, detained, and later allowed home; he remained well for a week, then developed coma, had a decompression performed, and died. At post-mortem a small fracture not seen at operation was found; yet the following day the Press, with large headlines, commented on how an institution could have allowed a man with a fractured skull to leave. Every well-qualified man has seen such cases sufficiently often not to blame anyone, but rather to wonder that it does not happen more often.

Again, the value of various narcotic drugs, and their makers, can be put into dispute through a much too sweeping condemnation. If the number of successfully treated cases were given the fatalities would show an almost negligible proportion, yet a single fatal case—not definitely attributable to the drug—gets so much publicity that harm must result.

Often at an inquest the hospital is represented by a junior house-surgeon, or even one of the nursing staff, and as a result, in many cases, remarks are allowed to go unchallenged and thus may appear in the lay Press. In the possible event of such happening it is surely the duty of the member of the visiting staff involved to put in an appearance at the inquest. Most coroners do not intentionally produce the injury that often occurs; it is often the result of the cross-questioning of a clever barrister with a weak opposition.

The coroner's court should deal merely with the primary facts of the patient's death, let further details go to a higher court, where there will be expert witnesses and advice from both sides; or else do away with the coroner's inquest, and have, as in Scotland, a private court of inquiry.—I am, etc.,

December 27th, 1933

CONSULTING SURGEON

"Bornholm" Disease

SIR.—On reading Dr. Carter's letter in the *Journal* of December 23rd, 1933, I was forcibly reminded of an epidemic which occurred when I was at school at Winchester in the 'eighties. So far as I can remember, the symptoms were identical with those which Dr. Carter describes. I remember being suddenly attacked by the disease when I had obtained special leave to go into the town to do some shopping, and having the greatest difficulty in getting back to my house. Whether any records are kept which would throw light on the subject I do not know. It would be interesting to inquire. At the time we called it "the plague."

May I, as one who has visited Bornholm and admired its beauties and its many objects of antiquarian interest, venture to suggest that it is perhaps not quite kind to attach the name of "Bornholm" to a disease which surely cannot be attributed to any conditions that are peculiar to the island.—I am, etc.,

Hampstead, Jan. 3rd

E. A. H. JAY.

Road Dangers

SIR.—Recent correspondence on this subject in the *British Medical Journal* has rightly stressed the responsibility resting with individual motorists. Another source of road accidents must, however, be kept in mind—that is, the careless pedestrian. In the report on fatal road accidents issued by the Ministry of Transport for the first six months of 1933, it is shown that 3,025 persons were killed on the road, of whom no fewer than 1,581 were pedestrians. These latter fatal consequences would have been avoided, almost entirely, if pedestrians practised a single simple rule—one that has been frequently emphasized, publicly in *Things to be Desired*, reviewed in your columns of February 18th last, and individually on many occasions. The rule is—for ordinary two-way traffic—"Always look first to the left and then to the right before stepping off a path or pavement when crossing a road."—I am, etc.,

BURTON HILL, SUSSEX, Jan. 1st W. W. SHEPHERD, D.P.H.

SIR.—In reply to Dr. Clauson, I certainly agree that safety on the road depends on the "good will" or, as I would say, "consideration for others" of individual drivers. But, alas! there are a small number of drivers who consider no one but themselves, and these are frequently the cause of accidents, and they should be taken off the road. It is the duty of the "authorities"—that is, magistrates—to see to this. But so often they altogether lack the necessary knowledge of what actually constitutes dangerous or inconsiderate driving that they merely fine these drivers and treat trivial matters as

almost as severely. At present the inconsiderate driver has no "fear of penalties," for he is likely to be treated much the same as if he had left his car too long outside a shop or his back lamp had gone out without his knowledge.—I am, etc.,

December 30th, 1933.

M.D.

The Beer Campaign: A Medical Protest

SIR,—You will doubtless have seen in the general press of the country a reference to the speech recently made by Sir Edgar Sanders with regard to the projected campaign for advertising beer. Directly on receipt of a copy of his speech we wrote on behalf of this league to a large number of representative men and women in the medical profession, feeling sure that whatever their views may be with regard to the use of alcohol as a beverage, they would certainly deprecate an attempt "to instil the beer-drinking habit into thousands, almost millions, of young men who do not at present know the taste of beer, that they may become the mainstay of the public-house."

We had intended to get a very much larger list of signatures, but the statements made by Mr. Samuel Storey, M.P., the Archbishop of Canterbury, and others, have drawn so much public attention to the matter that we decided not to continue our manifesto any further. I thought that you would like to see the statement and the names of those who so readily and immediately responded to our letter. We received a large number of letters accompanying the signatures which show in a very unmistakable manner the strong feeling that Sir Edgar Sanders's lamentable speech had evoked.—I am, etc.,

COURTENAY C. WEEKS,
Director and Medical Lecturer,
National Temperance League.

33, Bedford Place, W.C.1,
Dec 29th, 1933

* The statement, signed by 261 medical men and women, runs as follows:

"We, the undersigned, view with serious apprehension the projected campaign which would seek to enlist the young men of the country who do not know the taste of beer into the beer-drinking habit. As a result of several causes and tendencies, there has been a vast improvement in national sobriety in recent years. There has also been a corresponding diminution in the disease, poverty, crime, and inefficiency which are traceable to drink. The beverage use of alcohol is not really necessary to the highest exercise of individual and social life. We therefore deprecate the initiation of an effort to promote the beer-drinking habit among the young, and we would regard the success of such a campaign as a step backwards and as detrimental to the best interests of individual and national welfare."

The Services

DEATHS IN THE SERVICES

Lieut.-Colonel John Blacker Whitha Buchanan, R.A.M.C. (ret.) died on November 7th, 1933, aged 70. He was born on August 26th, 1863, and was educated at Trinity College, Dublin where he graduated M.B. in 1884 and B.Ch. in 1885. Entering the Army as surgeon on January 30th, 1886, he became lieutenant-colonel after twenty years' service, and retired on February 4th, 1911, but resumed service in the war of 1914-18. He served in the South African war in 1899-1901, when he took part in the actions at Colenso, Tugela Heights, Pieters Hill and Laings Nek, and in the relief of Ladysmith, and also in operations in the Transvaal and Orange River Colony, was mentioned in despatches in the *Lancet* on Feb. 1st and February 8th, 1901, and received the Queen's medal with seven clasps.

Medico-Legal

LEGAL OWNERSHIP OF X-RAY FILMS

From time to time the question is raised of who is the legal owner of an x-ray film or print. An idea of the position from the point of view of the medical man may be gained from a summary of some correspondence which appeared in the medical press last year. For the sake of convenience, the writers will be called A, B, C, and D. Writer A, a general practitioner,¹ sent a patient to a radiologist for examination. The patient subsequently entered a mental hospital on a voluntary footing, and the writer sent the films to the medical superintendent. The patient's relatives claimed the films as their property on the ground that they had paid the fee of the radiologist. The writer suggests as possible alternative owners: (1) the radiologist who sent them to the general practitioner to support his report; (2) the patient or her relatives who paid the fee; (3) the general practitioner, since the films are part of the report addressed in confidence to him; and (4) the medical person for the time being in charge of the case, as temporary owner.

B, a practising radiologist,² considers the practice of giving films to the patient a very unsound one; patients occasionally refuse to settle his fee until the films are handed over; and he then points out to them that the films are his property and that the patients are paying for the skill and knowledge required to obtain and interpret the radiograms.

C, a specialist in bone-and-joint surgery, who uses a diagnostic x-ray outfit in his consulting room, takes the view³ that in many cases the radiogram is one of the means whereby he forms his opinion, just as his inch-tape informs him of measurements. If he chooses to screen the patient instead of exposing a film, the patient cannot claim as his property the fleeting impression on the screen. The taking of the radiogram is not considered in fixing the consultation fee. Similarly, if a surgeon sends a patient to a radiologist the patient is paying for the radiologist's opinion and not for the film, which therefore remains the property of the radiologist. The surgeon who sends the patient is entitled, C thinks, to see the films, and usually finds the radiologist eager to co-operate.

The fourth correspondent, D, quotes⁴ with approval a motion on the status of radiologists passed by the German Röntgen Society in 1912. This contained the claim that all plates, dia-positives, tracings, orthodiagrams, and teleröntgenograms prepared for the diagnosis of the case are the property of the radiologist, just as the histological preparations belong to the consulting pathologist. The röntgenologist will—the motion continues—always be ready as a matter of courtesy to place his plates and prints at the disposal of the consulting physician.

SOME AMERICAN DECISIONS

So much for the medical point of view. As an introduction to the legal point of view it is useful to look at the American decisions. In *Hurley Hospital v. Gage*,⁵ a Michigan hospital sued a former patient for non-payment of part of his account. He had been radiographed in the hospital and the charge had been included in his bill, but he had refused to pay it unless the films were delivered to him. The hospital sued him before a justice, who decided for the patient, so it appealed to the circuit court of the county. At the hearing of the appeal, at which the patient did not appear and was not represented, the court held that patients bought and the hospital sold knowledge and experience, not the material of an x-ray film, which was the property of the hospital. It thought, moreover, that the protection of the hospital against

¹ *Lancet*, 1932, i, 55.

² *Brit. Journ. Radiol.* 1932, x, 186.

³ *Ibid.*, p. 282.

⁴ *Ibid.*, p. 164.

⁵ *Journ. Amer. Med. Assoc.*, 1931, xcvi, 1512.

litigation might depend largely on the proper preservation of the films.

In *Thocker v. Barnum*,⁶ the circuit court of Ingham County, Michigan, found no evidence that the films in dispute had any intrinsic value, and they could therefore not be recovered by an action of replevin. This point would hardly be material in England, for the action of replevin has been obsolete for many years; it used to be brought by people whose goods had been wrongfully distrained by creditors. On the other hand, the point that the films had no intrinsic value seems sound as expressing the view that the patient pays for service and skill only, and the court touched the real point at issue when it went on to say that where x-ray films and pictures are taken by a physician there is no implied undertaking that they will be handed over to the patient. The court found it to be customary for the physician to retain the films as part of the records.

In the latest case, *Leas v. Otto*,⁷ a dentist in Ohio took a radiogram of a lady's teeth, for which he charged her husband ten dollars. At a second visit he stated his diagnosis and gave his advice on the work to be done, and charged for this service five dollars. The husband decided not to have the work done and asked for the film, which the dentist declined to give up. The husband thereupon paid the five dollars for the advice but refused to pay the ten dollars for the taking of the film, so the dentist sued him for this sum. The only question at issue was the ownership of the film.

The court gave judgement for the dentist on the doubtful ground that an x-ray film is not a chattel in the sense that it can be bought or sold. Nevertheless, the rest of the judgement shows that the judge appreciated the essentials of the situation. He found that a film has no value for anyone but the doctor or dentist with sufficient knowledge and skill to diagnose the particular case; it is part of his equipment and of the information on which he diagnoses the case and prescribes treatment. The interpretation, he said, is the all-important part of an x-ray examination, and the film is simply the basis of the interpretation. The practitioner sells, not material, but knowledge and experience. He buys apparatus and the material for making radiograms, and when a radiogram is made it becomes part of the records of the particular case. It is customary for the practitioner taking a film to keep it, for it is just as necessary that he should keep a film as that he should keep a temperature chart or any other record. Moreover, he relies largely on it for his protection (presumably against litigation, which seems to be a far more serious affliction to the medical profession in America than it is here). In the face of this custom the law will not infer an implied agreement to transfer the ownership of a film from doctor to patient when no such agreement has been expressly made; in the present case no such agreement was expressed.

With respect, the learned judge was perhaps a little incautious in laying down so sweeping a rule of law as that an x-ray film is not a chattel in the sense that it can be bought or sold. A film is just as much a chattel as anything else; he himself implies that its ownership can be transferred by express agreement. He would have been better advised to avoid this dangerous word altogether, as the issue does not in the least concern the law of property, but is purely one of the exact nature of the contract to be implied between doctor and patient.

STUDIO PHOTOGRAPHS

It is perhaps worth while to take a glance at the legal relation between a professional photographer and his subject. This relationship has not much in common with that which exists between a radiologist and his patient, but is the nearest analogy to it and may throw a little light on the problem. It is first of all necessary to put firmly on one side all ideas concerning copyright, for they are irrelevant to the question of who owns a photographic negative. Copyright merely enables its possessor to

prevent the legal owner of the negative from using it in certain ways—chiefly from selling reproductions of it. The ordinary contract between a photographer and his customer, like most contracts, is not fully expressed, and when a dispute arises the court has to infer from the circumstances what the exact conditions of the agreement were. It is settled law that in the ordinary way, when a customer has his photograph taken, and there is no express agreement to the contrary, the customer pays for a certain number of prints and the negative remains the property of the photographer. If the customer wants to buy the negative and the photographer to sell it they must make an express agreement; if they do not the court will not imply one, for this is not a usual condition of such contracts. This agreement need not be in writing, but if one of the parties wishes to enforce it against the denial of the other he must bring adequate evidence that it was made.

Another implied condition which the courts will infer unless there is an express agreement to the contrary is that a photographer who takes a photograph of a customer to supply him with copies must not, without his consent, print copies from the negative for sale or exhibition. To sell or exhibit copies of the negative is therefore a breach of his contract. The photographer owns the negative, but what the law will let him do with it is another matter.

In *Pollard v. Photographic Co.* (1888) Mr. Justice North thought that the bargain included an agreement that the prints were to be appropriated to the use of the customer only. The glass negative was the property of the photographer, but the man was using it for an unlawful purpose, which amounted to a breach of his agreement, in exhibiting copies therefrom in his window. No one suggested that the photographer had wronged the sitter because the negative was the sitter's property which had been used in an unauthorized fashion; the wrong was in the breach of a confidence which he had tacitly agreed to respect.

THE INTENTION OF THE PARTIES

When a court of law has to interpret a doubtful contract, one of the most important problems before it is to discover what the parties meant their bargain to include when they made it. When a patient goes to a medical man for x-ray examination, the contract is not only unwritten but also largely unspoken. The general practitioner may have told the patient what the fee will be and arranged an hour for the examination; otherwise the conditions are all "implied," which means in this instance that no one has bothered much to consider what they are. If, therefore, a patient ever goes to an English court claiming the delivery-up of radiograms, or is sued for the radiologist's fee and says in defence that he has not received the films, the court will have to decide what contract the parties really intended to make. In making this decision it will first inquire into the usual custom in the profession, since if the parties have not expressed an intention and the transaction seems to be a usual one they will generally be thought to have intended to follow the current custom in their dealings with one another. The court will therefore inquire: Is it the custom of the profession to hand over the x-ray films to the patient as part of the service for which he pays? If the court found that such a custom did not exist it would be very slow to suppose that the parties intended, at the time they made their bargain, to do something unusual. It would only infer an unusual condition from evidence that the parties had expressly agreed to it—evidence either of an actual agreement in so many words or of some behaviour by one or both parties which clearly showed that they had agreed to this condition. Moreover, if the patient declares that he and the radiologist agreed that he was to have the films he must prove it; and if he declares that it is the custom for films to be handed to the patient, he must prove that before he can win his case. It is not for the radiologist to prove the contrary, though, of course, he would be well advised to bring evidence that it is customary for radiologists to retain

⁶ *Ames Jour. Rept.*, 1932, XXXII, 693.

⁷ *Journ. Amer. Med. Assoc.*, 1932, C, 1357.

films. As far as legal ownership is concerned, the court would probably find that it remained with the radiologist or other medical man who took the films. As there seems to be no doubt that this is really the custom of the profession, it does not seem at all likely that any party could succeed in establishing a claim to the films taken in the ordinary course of medical practice.

THE PATIENT'S POINT OF VIEW

Nevertheless, the patient also has a point of view, which has not been stressed by the medical men who have discussed this subject and has not been reflected in the American judgements. An ordinary photographer owns the negative, but the customer has rights over it which restrict his ownership. Similarly, a surgeon or radiologist probably owns the x-ray film, but a patient may have rights to which that ownership is subject. Suppose, for instance, that a patient breaks the head of a femur and consults his family doctor, who calls in a London surgeon, who supervises treatment and, when the patient is able to move about again, sends him to a radiologist for examination and report. Several years later the patient is living in Manchester and fractures the bone again at the same site. He consults a Manchester surgeon, who wishes, in order better to understand the injury, to see the films of the original fracture. Can the patient, as of right, demand that the films be sent to the Manchester surgeon?

By the standards of justice which are recognized in ordinary life, irrespective of legal views, the patient certainly seems to have a right in these circumstances to benefit by the information which the films contain. He has paid for a service which includes the preparation of a permanent record of the state of his case at a certain time. If in the future his medical adviser needs the information for the better treatment of his case, surely the original fee which the patient paid the radiologist includes the future use of the films—irrespective of who owns them—at any time when they might be of use. Many medical men, and possibly many radiologists, will agree with the principle that the part a radiologist plays in the case is not a momentary one, but continues as long as the data revealed by his examination are relevant. Again, if the patient, soon after being examined by the radiologist, changes his surgical or medical adviser, he is surely justified in expecting the radiologist to give his new doctor full information about his case and to show him the films, if not without further fee, then at least for a minor one commensurate with the slight trouble of preparing and sending a duplicate report.

In practice, as C says, radiologists are nearly always eager to co-operate for the good of the patient; they are no less helpful and generous than other specialists; and the question of whether or not the patient has a legal right to the use of the films in such circumstances as these does not often arise. As it has never been settled by an English court its answer remains a matter of pure opinion, unsupported by any solid legal foundation. It would be possible to engage in lengthy and possibly quite interesting speculation and argument on which way the court would be likely to decide each of a series of hypothetical cases based on a variety of circumstances, but it would be quite profitless. In the writer's opinion, however good a right the patient may have by the standards of ordinary men, he would almost certainly not succeed in enforcing that right in a court of law.

ITS LEGAL VALIDITY

Suppose a patient has paid for an x-ray examination of his knee some years previously, and now wants the radiologist to lend the films or prints to another doctor, and the radiologist refuses. Has the radiologist broken an implied term of his contract? The court would ask what the parties had intended by their bargain when they made it. Will the patient stand in the box and swear that he understood one of the implied terms to be that if his knee gave trouble years afterwards the films, or prints from them, were to be available to his medical man? It is most unlikely that such a contingency ever crossed his mind. The radiologist, for his part, could quite truth-

fully deny that he had ever agreed, or intended, to part unconditionally with any films he might make in the course of examining this patient. On the evidence the court could hardly assume that the parties had respectively claimed and admitted in their contract the right which has just been mentioned. When courts interpret contracts they do not inquire closely into the "rights" of the parties by standards of natural or legal justice. They are concerned with the bargain the parties have actually made, and if it is a one-sided bargain that is the business of the parties, not of the court. The court will often suppose that the parties meant to follow the current custom. If the patient could show that it is customary for radiologists to put their films at the patient's disposal in the circumstances described, he might successfully maintain that the radiologist had broken an implied agreement to follow that custom. But because many radiologists give a certain facility as a matter of professional courtesy, it by no means follows that they are obeying a professional custom, and there is very little likelihood that the patient would succeed in proving that it was the custom of radiologists to give this facility. Suppose, to take the matter to its extreme, the court found that the radiologist actually had broken his contract. Could the patient get specific performance of the implied agreement to send a report and the films to the new medical adviser? The films would be of very doubtful value without the report, and the report of an unwilling specialist on a case five years old would be of even less. Moreover, the radiologist might have lost the films, and they are irreplaceable. As the court never gives specific performance where it cannot enforce it effectively, this remedy would not be available. The only other remedy is damages. What damage has the patient suffered because, owing to the radiologist's breach of contract, his medical man cannot see the films? It would be practically impossible to prove he had suffered any. He might ask for that portion of the fee which the court considered to represent the value of the service which the radiologist has refused to render. He might ask for the expenses of a fresh radiological examination. All these remedies are heavily tinged with absurdity, and the only conclusion to which it is reasonable to come is that there has really been no breach of contract at all. Even if the patient has a right by ordinary standards to the benefit of the films, it is not one which he could hope to enforce by an action for breach of contract. If the radiologist had lost the films, could the patient get damages against him for negligence? Only if he could prove that the radiologist owed him the duty of keeping them, and it is difficult to imagine what evidence he could usefully bring for this purpose.

The only other case in which the question would be likely to arise is where a radiologist sues for payment of his bill and the patient refuses to pay because the radiologist will not show the films to the new medical adviser. Here again the patient could only succeed if he could show that to lend films was part of the service for which he had paid.

As far as it is possible to form an opinion from the scanty available data, therefore, the patient not only does not own films taken by a medical radiologist, but he would probably find it impossible to make good even a right to the use of them after the radiologist has given his first report.

If this view be correct, correspondent A was right in refusing to give the films to the relatives of his patient. He has respected the moral or extra-legal right of the patient to have the benefit of the information contained in them, for he has put them at the disposal of the medical adviser for the time being.

OTHER SUGGESTED OWNERS

This writer suggested as an alternative owner the general practitioner, since the films are part of the confidential report made to him by the radiologist. It is fairly certain in law that, whoever can claim films made by radiologists, the general practitioner cannot, for the reason that he is not one of the parties to the contract. The agreement with the radiologist is not between the

radiologist and the general practitioner; it is between the radiologist and the patient, the general practitioner acting at all times as the patient's agent and never as a principal. To a general practitioner claiming ownership of a film the lawyer would answer: "What have you paid for it?"—or, in legal terms, "What valuable consideration have you given for it?" The answer is that the general practitioner has given the specialist nothing in exchange for the film and therefore cannot claim to own it. If he argues that his introduction of the patient is valuable consideration, the lawyer will reply that he is no more entitled to expect in return an x-ray film than a portion of the patient's fee; his part is throughout one of agent and nothing else. It is also difficult to see how, as suggested by writer C, he can claim of his own right even to see the films. He is not a party to the agreement and he cannot claim anything. (Of course, if he is not shown the films he may well send his next patient to another radiologist!) Nevertheless, as the patient's agent, it is his duty to uphold the patient's right to have the films shown to his medical adviser. It is also possible that, if the radiologist sends the films attached to his report without reservation, the property in them passes to the general practitioner.

The suggestion that the films are the temporary property of the medical person in charge of the case does not appear well grounded, for in law there is no such thing as temporary ownership; a person who lawfully possesses the property of another has no ownership, though he may have the rights and duties of a "bailee" or a trustee. It is, of course, open to any person, as C suggests, to go to a village chemist who owns an x-ray tube—or, much better, to a properly qualified radiographer—and have films taken of any part of his person. The contract is then obviously for a radiogram or a series of radiograms, but both parties will probably understand the terms beyond risk of dispute.

The British Institute of Radiology has apparently not expressed a definite opinion on the question of who owns films. The British Medical Association, according to writer B, has stated that films taken in hospital belong to the hospital and should be kept there and treated as confidential documents. This view agrees with that of the judge in the Michigan court, and almost certainly with the law of this country. A patient who pays nothing obviously has no claim to a hospital radiogram. A patient who pays a weekly sum obviously pays for board, maintenance, and service, and perhaps pays for skilled treatment and nursing, but can no more claim to be paying for radiograms than for temperature charts.

A patient in a nursing home which possesses an x-ray installation of its own may be in a slightly different position. In many of these institutions the patient is charged specially for such services as the use of the operating theatre, hydrotherapy, or massage, and sometimes a diagnostic x-ray examination is a special item. In this instance he pays a fee for the use of the apparatus and the help it gives in diagnosis. Although the films are part of the apparatus and do not become his property unless there is an express agreement that they should, it seems probable that, having paid for the special service, he could claim the use of them if at a later date a medical adviser wished to see them. He is, it is suggested, in the same position as though he had paid a radiologist's fee as a private patient.

When a general practitioner or a consultant is the owner of a radiographic apparatus and takes films in the course of his examination, the question of ownership or of the patient's right to the future use of the films could hardly arise if, like C, he does not consider the taking of the films in fixing the fee. He is then, it seems, using his apparatus as one means to assist his diagnosis, and both the ownership and the disposal of the films must remain entirely in his hands. Many practitioners who own an x-ray apparatus, however, make their use of it a separate item in the account, and when they do this they seem to place themselves in exactly the position of a radiologist, so that all that has been said about the rights and duties of a radiologist applies equally to them.

CONCLUSION

To sum up, the question of who owns an x-ray film depends for its answer on the intentions of the parties to the contract. When the contract is between a patient and a medical practitioner, the parties will probably be taken, in the absence of an express agreement to the contrary, to have intended to follow the custom of the profession. It is almost certainly the custom that the films remain the property of the medical man who takes them, or under whose direction they are taken. Although many radiologists recognize an informal right in the patient to have the films lent to a practitioner who may at a future time have charge of his case for his guidance in its treatment, it is unlikely that the patient could enforce such a right at law.

Obituary

T. SWALE VINCENT, M.D., D.Sc., LL.D.

Formerly Professor of Physiology, University of London

We had to announce with regret last week the death, on December 31st, 1933, at the age of 65, of Thomas Swale Vincent, M.D. Lond., D.Sc. Ed., LL.D. Manitoba, F.R.S. Ed., F.R.S. Can., latterly professor of physiology, University of London, at the Middlesex Hospital Medical School, and chairman of the St. Albans Division of the British Medical Association in 1932-3.

Swale Vincent was born on May 24th, 1868, the son of J. Vincent and Margaret Swale, and was sent to King Edward VI Grammar School, Birmingham. Proceeding to the Mason University College (now the University of Birmingham), he qualified in medicine at the age of 24, and, finding that his interests lay rather in research than in practice, he studied under Kossel at Heidelberg, whence he returned to Birmingham to take up his first appointment as demonstrator of physiology.

In 1896 his first paper, entitled "The Suprarenal Capsules in the Lower Vertebrates," was published in the *Proceedings of the Birmingham Natural History and Philosophical Society*. The study of the recently discovered functions of the endocrine organs which he thus embraced was destined to be one to which he devoted the greater part of his life, and it was natural that he should welcome contact with E. A. Schafer, the original discoverer of those functions. Soon afterwards the opportunity came in the form of an appointment as British Medical Association Research Scholar, and he went to Professor Schafer's laboratory at University College, where he continued his investigations. He there confirmed his important discovery that in Elasmobranch fishes the internal body corresponds to the mammalian suprarenal cortex, while the paired segmental suprarenal bodies correspond to the medulla. In 1897 he succeeded Benjamin Moore as Sharpey scholar, an appointment which at that time carried with it the post of chief assistant in the physiology department, and in 1899 he continued as Sharpey scholar and assistant professor under Professor Starling. In 1900 he was appointed lecturer in physiology at Cardiff. One of his students there was T. Lewis, now Sir Thomas Lewis, with whom he published two papers on the biochemistry of muscle. Sir Thomas Lewis writes to me: "I first knew Vincent when he came as demonstrator of physiology at Cardiff, and soon knew him intimately. He was a vigorous and stimulating personality. It was while working in his class of physiological chemistry that Vincent asked me if I would care to undertake a research with him on the proteins of vertebrate muscle. The request came as a complete surprise to me. I readily agreed, and afterwards worked at his suggestion, and under his supervision, at the hewn bench of muscle. I have always been grateful to Vincent for giving me my first introduction to scientific work." He left this post

in 1902 to hold the Francis Mason Research Fellowship for investigating the physiology and pathology of the thymus and other ductless glands, for which purpose he rejoined Professor Schafer in the physiology department of Edinburgh University, which had now become an active centre of endocrinological investigations. He collaborated there with two advanced students—W. Cramer, now of the Imperial Cancer Research Fund Laboratories, and thenceforth his close friend, and W. A. Jolly, now professor of physiology at Capetown.

In 1904 he was appointed to the chair of physiology in the University of Manitoba. He served as a member of the Industrial Fatigue Committee of Canada, and was honorary secretary of the Winnipeg Scientific Club for fifteen years. He had to create the new department at Winnipeg, and when in 1920 he left Winnipeg to return to London as professor of physiology at the Middlesex Hospital, the University of Manitoba paid him a well-deserved tribute by conferring upon him an honorary LL.D. In London it again fell to his lot to reorganize a department of physiology, and its active scientific state when he retired in 1930, to be succeeded by his pupil and former assistant, Samson Wright, bears witness to the success of his efforts. Swale Vincent held many examiner-ships, and took considerable interest in the affairs of the British Association, being secretary of its Ductless Glands Committee since 1898.

Professor Vincent's numerous publications cover a large part of endocrinology. Beginning with a study of the suprarenal glands, he proceeded to investigations on the pituitary, the thymus, the thyroid and parathyroid glands, and the islets of Langerhans. Dr. W. Cramer writes: "He was a prominent representative of the Sharpey-Schafer school of physiology, which, regarding the cell as a basic unit of physiological functions, combines histological studies with experimental technique. The present generation of physiologists, who can buy most of the various internal secretions in a more or less pure state at a chemist's shop, must find it difficult to realize the laborious investigations required to understand the morphological and functional relationships of the different parts of the endocrine organs, most of which are formed as a result of the joining up of histogenetically and functionally different tissues." Swale Vincent laid stress on the existence in all tissues of substances producing a marked lowering of blood pressure, and differing from choline. The subsequent discovery of the important physiological properties of histamine and acetylcholine has shown how potent such substances may be.

Vincent was a careful worker, with a highly critical and sceptical mind—qualities which not only enabled him to make positive contributions of lasting value, but also led him to, at all events, attempt the apparently impossible task of ridding endocrinology of much that smacked of deliberate or unconscious quackery. In this attempt he was courageous and outspoken. He had a high international reputation, and contributed a series of reviews on the ductless glands for the *Ergebnisse der Physiologie*. His opinions were later published as a book, *Internal Secretion and the Ductless Glands*, first appearing in 1912, which soon became a standard treatise, and passed through three editions. He also published, in 1924, an *Introduction to the Study of Secretion*, and in 1929, with Professor Samson Wright, *Introduction to Practical Mammalian Physiology*. Professor Swale Vincent was (as he used to quote Dr. Cramer) "a man of firm principles and high ideals on which he would not compromise." He was essentially a shy man, and this sometimes gave an impression of brusqueness, while to those who had the privilege of knowing him well he was a staunch friend and a charming companion. He had a deep love and a great understanding of music, and was himself no mean pianist.

He was president of the Men's Musical Club of Winnipeg. In 1914 he married Beatrice, daughter of Mr. W. Overton of London, who survives him, and had two daughters. To these our deepest sympathy goes.

C. LOVATT EVANS.

ROBERT PROSSER WHITE, M.D.

Consulting Dermatologist, Royal Albert Edward Infirmary, Wigan

By the death of Dr. R. Prosser White, Wigan has lost one of her most distinguished sons and the medical profession an outstanding personality. The only son of the late Dr. James White, J.P., who practised long in Wigan, Robert Prosser was born in 1855, and was educated at the Royal Grammar School, Clitheroe, Edinburgh University, and University College, London, taking the degrees of M.B., C.M.Ed. in 1878, the M.R.C.S. diploma in 1880, and proceeding M.D. in 1890. In 1885 he was elected honorary physician to the Wigan Infirmary, and later became a life vice-president. He founded the skin department, and gave the first x-ray and Finsen light apparatus to the hospital. On retiring from the active staff ten years ago he was elected honorary consulting dermatologist. For many years, up to the time of his death, he was certifying factory surgeon for this area, a post which gave him full scope for the study of his pet subject—occupational diseases of the skin—in which he gained an international reputation as an authority.

Dr. Prosser White was a past-president of the London Dermatological Society, of the Manchester Medical Society, and of the Certifying Factory Surgeons' Association, and a member of the Permanent Committee for the Study of Occupational Diseases constituted under the auspices of the League of Nations at Geneva. He was also Associate Editor of the *Journal of Industrial Hygiene*. Outstanding among his contributions to medical literature is the book on *Occupational Affections of the Skin*, published in 1915, the fourth edition of which is actually in the press. This work has been translated into every European language, and there have been several American editions. A book full of his own work, it is considered the greatest compilation of facts and references that has ever been published on the subject, and will long remain the standard textbook. In 1930 the Labour Bureau of the United States Government invited Dr. White to deliver a series of lectures on the occupational diseases of the skin, but he felt that the strain on his heart would be too great. Dr. White founded an annual lecture in dermatology, to be delivered by an eminent authority selected each year by the council of the Dermatological Society. His articles on naphthalene, dinitrobenzol, and aniline poisoning, baker's itch, and fur eruptions reveal painstaking work, the conscientious mind, and careful judgement. Only those who knew "Prosser," as he was affectionately welcomed by his friends, realized the amount of work embodied in every article he wrote. His knowledge was wide in the fields both of medicine and of men. With his unbounded energy (although suffering from a cardiac disability for forty years) and his keenness in medicine, it is not surprising that he had no time for the uninterested or the slacker.

"Prosser's" love of that branch of medicine which he chose for his life's work was almost equalled by his love for his native town and its people. About the year 1880 he published a manual for the Church Lads' Brigade Medical Staff Corps, and became principal medical officer and surgeon colonel of the Brigade, and Editor of the *Brigade's Medical Corps Manual*. The proper training of the youth was an essential in his view of life, and he took pains to see that it was done. He was much interested in the Wigan Mining and Technical College, and founded a "French travelling scholarship," whereby

Wigan students could spend three months in France, or in any Continental country, to study their special branch. In his younger days the idea of the preservation of records of Wigan led him to commission young artists to paint and make drawings of the old buildings in the town. These are collected in the Public Library. The fifty-fifth picture was added only two years ago. He was also a poet, and several of his poems have been published. His artistic temperament was demonstrated by his interest in music, and this also took a practical and beneficial form; he founded the Wigan Parish Church Musical Fund for the purposes of ensuring an annual organ recital by some well-known organist. In 1924 he founded the Medical Book Trust Fund at the Wigan Public Library. The object of the fund was to buy books on original research in medicine, expensive textbooks, and works in the ancillary sciences. This has been a very valuable and much appreciated branch of the library.

A philosopher, Prosser White's outlook on life is exemplified by his book-plate—a scantily clad man turning away from the lamp of knowledge, the flame of which is a large note of interrogation, and going into the unknown towards the rising sun: the legend is "Why and wherefore?" He was a very fine character. Although breezy and cheerful, and going out of his way to help the under-dog, his mind was always on the ultimate good that might accrue from his work. To his widow and sons we extend sympathy in their great loss. "I feel, Prosser,"

W. E. COOKE.

JAMES COSSAR EWART, M.D., LL.D., F.R.S.

The death took place on December 31st, 1933, at his residence, Craigyfield, Penicuik, of Emeritus Professor Cossar Ewart, who from the year 1882 to 1927 held the post of professor of natural history in the University of Edinburgh.

Born at Penicuik, near Edinburgh, in 1851, James Cossar Ewart took his medical course at Edinburgh University, where he graduated M.B., C.M. in 1874. He never practised, but after a year as demonstrator of anatomy at Edinburgh he was appointed conservator of the Zoological and Anatomical Museum in University College, London. Here he added a considerable number of preparations to the Museum, and engaged in the study of bacteria, collecting the results of his researches in a thesis for the degree of M.D., for which he was awarded a gold medal in 1878, the same year as Koch published his great memoir upon the organisms responsible for surgical infection. In this year also Ewart was appointed professor of natural history in the University of Aberdeen, where in 1879 he established a small marine laboratory. In 1882 he was appointed a member of the Fishery Board for Scotland. He carried out a number of important researches on the fishing industry of Scotland, which were published in such papers as *The Fertilization of Herring Ova* (1884), *Fish Culture in America* (1884), *On Whitebait* (1886), *On the Preservation of Fish* (1887), etc. At the same time he was doing anatomical work, and published *The Locomotor System of Echinodermata* (1884), *The Olfactory Organs of the Skate* (1888), *The Cranial Nerves of Elasmobranchs* (1889), *The Development of the Limbs of the Horse* (1894), etc.

In 1882 he was transferred to the chair of natural history in the University of Edinburgh, which he held for forty-five years. He was elected a Fellow of the Royal Society in 1893, and received the honorary degree of LL.D. from Edinburgh University in 1928. One of his best-known works, *The Principles of Zoology*, published in 1889, dealt with an extensive series of breeding experiments in pigeons and horses, in connection with which the theory of heredity was investigated. He devoted a considerable amount of attention to the breeding of domestic

sheep and to the development of wool, visiting Australia in 1923. As a result of his work the Board of Agriculture formed in Edinburgh a committee on animal breeding in 1913, and after the war this committee organized the scheme of work of the animal breeding research department in the University of Edinburgh, which, under Professor Crew, was constituted a chair of animal genetics. Professor Ewart was a pioneer in the application of biology to animal breeding and in bringing a scientific outlook into practical agriculture. He had a large farm at Fairbairns, Penicuik, where he kept a flock of sheep for experimental purposes, and he was made a member of the council of the Woollen and Worsted Research Association at Leeds. He is survived by his widow, a daughter, and a son, who is a surgeon in London.

DR. ALEXANDER PAINE

Dr. F. J. POYNTON writes:

It is with a certain sadness that I noted in the obituary of my old collaborator and friend Dr. A. Paine no allusion to his experimental work on rheumatism. That work revolutionized for this country the study of chronic heart disease, arthritis, chorea, and appendicitis. No small achievement. The proofs are to be seen in the Hunterian Museum, and in the schools of the medical faculties of Harvard, Toronto, and Melbourne Universities. I thank God that I have been allowed to live long enough to have done my friend a last honour in the medical Press. Future generations can then at their leisure assess what Paine did for English medicine, and his work will not be forgotten while his collaborator is not only alive, but actually in active hospital service. Countries other than England have much respect for Dr. Paine, and possibly a greater knowledge of his work. The great war and other difficulties broke his health. He was always a reserved man, with that curious temperament, so often a part of genius—for in his work he was a genius—which led him to cut himself adrift from London and all connected with it. He subsequently married, and leaves a widow and one son.

DR. JOHN STEWART

We are indebted to Sir StCLAIR THOMSON for the following tribute to Dr. John Stewart of Halifax, Nova Scotia:

The small band of Lister's immediate disciples is rapidly disappearing. We had lately to deplore the death of Hamilton Russell of Melbourne, one of the later of Lister's house-surgeons, who had carried the example of modern surgery to Australasia. Now comes news of the death of a pupil who was one of the most devoted of the apostles of the great master in North America and who, from the depth of his affection, was able to record for both continents some of the most sincere pen-pictures of his beloved teacher. Dr. John Stewart had also the advantage of being one of the small band who, having accompanied Lister from Edinburgh to London, was with him at the most fertile period of the *Stoma and Drain* which followed that migration.

This was in 1887. Lister, when accepting the invitation to occupy the chair of clinical surgery in King's College Hospital, stipulated that he should be allowed to bring with him, as assistants, those who had already been trained in his methods. The late Sir W. Watson Cheyne came as his house-surgeon and John Stewart as a clerk. They were, each in his way, typical specimens of two races which are found in Scotland north of the Grampians. Watson-Cheyne with his red hair and well-coloured beard showed the Scottish strain even of the inhabitants of Scotland, just as his Highland dog of the sea suggested his Viking ancestry. Stewart was a small specimen of the English and had the broad, flat, white hands and dignified gait which are characteristic of the old stock of the north. He was a quiet, reserved man, but a keen and clear-headed thinker. He was a thoroughbred Englishman, and his sense of duty was of the highest order. He was a man of the highest character, and his death is a great loss to the medical profession.

at the hospital! But this, he at once adds, was the only embarrassment he felt, for his fellow residents were most generous in welcoming and making smooth the arrival of these Scotch invaders. What he did feel deeply, with astonishment and a naturally loyal resentment, was what he described as the "colossal apathy," the "monstrous inertia to the force of new ideas," with which the evangel of Listerism was received in London. After the excitement of the first novelty had worn off, the Edinburgh invaders were, so far as their message of healing was concerned, left severely alone. The surgeons of the metropolis did not even trouble to come to King's to listen to the expounding of the principles of antiseptic surgery and study the technique founded on them. Students neglected the Listerian wards, as they were not taught the tips to get them through "the College and Hall" (that is, the College of Surgeons and Apothecaries' Hall, the two usual diplomas of those days). After the crowded class of some three to four hundred students who flocked to his clinical lectures, he felt this neglect in London as "a

John Stewart succeeded Cheyne as house-surgeon to Lister's wards in 1878. I was then a first-year student, and naturally, as such, had but a slight and distant acquaintance with him. But I remember the courtly kindness with which he dressed (in a cloud of carbolic spray) my hands, which had been wounded when I got a toss over the handle-bars while riding a high, iron-rimmed bicycle of the "penny-farthing" type. It was many years before we met again. It must have been in 1916 or 1917, when, on going into a Canadian hospital at Havre, I unexpectedly recognized in command the same handsome Highlander, though the black beard had become silvery. He remained in France until the end of the war. From that time we had frequent communications, and it was a delight to see him at the Annual Meeting of the British Medical Association in Edinburgh in 1927, and, although for the last time, at Winnipeg in 1930.

It is interesting to anyone to read Stewart's reminiscences of his great master. It was always an encouragement to note how this devoted and affectionate pupil had been strengthened and guided in his lifework by the inspiration which can be imbibed from a great teacher. What he had learned, in Edinburgh and in London, he freely and gladly passed on to others. Canada is fortunate in having had such a worthy son to illustrate, by his life and writings, the influence exerted by one of the great masters on a devoted pupil.

PROFESSOR IRVING CAMERON

Professor GREY TURNER writes:

No notice of the activities of Irving Cameron would be complete without reference to the regularity with which, for many years, he attended the Annual Meetings of the British Medical Association. I always expected to meet him at this annual event, and he was usually to be found in the Surgical Section. I remember so well that it was he who set the ball rolling in that Section at the splendid meeting held in Toronto in 1906. But apart from the meetings of the Association, he was so proud of his Scottish descent that he made it a practice to visit the land of his ancestors each year in order that he might pay his respects to his chieftain, Cameron of Lochiel. His appearance was very characteristic, and his thin, sharply cut features with the goatee beard reminded one of the pictures which used to adorn the pages of Oliver Wendell Holmes's breakfast-table series. In 1930 I called upon him at his own home in Toronto and found him a delightful host. Unfortunately, he was much crippled with some sort of arthritis, and he bitterly regretted that this had prevented him making his customary trip to see his chieftain. But mentally he was as alert as ever, and it was a delight to enjoy his conversation. One of his remarks exhibited that intense loyalty to the Empire which was so characteristic of him. I chanced to mention that I intended to go to Washington, principally because I wanted to take my wife to see Mount Vernon, the home of George Washington. His retort was very striking, for he said: "Whatever do you want to go there for? Why, George Washington was a rebel!" He was very

well read and a good classical scholar. Sometimes he spoke at public functions, and while the matter of his speeches was always excellent, his weak voice and rather poor delivery usually ended in his losing the attention of his audience. Irving Cameron was a very lovable man, and I feel sure he will be sadly missed by many friends on both sides of the Atlantic.

The death occurred on December 12th, 1933, of Dr. OSWALD DYKES ROBSON of Somercotes House, Alfreton. Dr. Robson was the son of Dr. William Robson of the Indian Civil Service, and was born in India in 1866. When 4 years of age, however, he was sent to Edinburgh, and travelled by sailing ship round the Cape, the Suez Canal not having been constructed. From George Watson's College he proceeded to Edinburgh University, where he graduated M.A. in 1888, and M.B., C.M. in 1892. After a period as house-surgeon at Leicester Royal Infirmary he purchased a practice at Somercotes, and remained in active work until a few weeks prior to his death. Though he never sought public office, and was never in the limelight, Dr. Robson was universally and deservedly popular with all sections of the community, and not least amongst his own professional colleagues. A member of the Chesterfield Division of the British Medical Association, he took no active part in its work, but could always be relied upon for loyal support whenever the need arose.

H. W. P.

Dr. GEOFFREY FREDERICK DIMMOCK, who died at Harrogate on December 24th, 1933, at the age of 38, had received his medical education at the University of Leeds, where he graduated M.B., Ch.B. in 1926. Before this he had had a long career in the Army. During the war he passed through the Royal Military Academy, and was gazetted lieutenant in the Royal Garrison Artillery. A short time before his death he had taken up flying with a view to obtaining a pilot's certificate. He had also graduated B.Sc. in engineering at the University of Durham. Since qualification he had been practising at Harrogate, where his father, Dr. A. F. Dimmock, is also in practice. He was keenly interested in archaeology, and with Mr. S. Barber took part in the excavations at Knaresborough and Aldborough some years ago. He was a member of the British Medical Association.

The death took place on December 31st, 1933, at Tobermory, Mull, after a short illness, of Dr. DONALD MORISON, one of the best-known practitioners in the West of Scotland. He was born in Mull in 1853, and, taking a medical course at Glasgow University, graduated M.B., C.M. there in 1880. He practised at Beeford, Yorkshire, for thirty years, and then in Mull until his retirement four years ago. He had a wide private practice, and acted as medical officer of health for Tobermory. He was deeply interested in all Celtic affairs, and was one of the founders of the Mull Highland Games. He was enthusiastic also for the maintenance of the Gaelic language.

Universities and Colleges

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated.

MD—(Branch I, Medicine) F. E. Camps, *E. H. Capel, W. I. Carl, V. P. de Souza, E. H. Evans, Mary Fraser, B. Halpinny, *C. H. S. Harris, Alison F. Z. Judd, Nellie I. Lankerton, K. S. May, R. G. McInchaur, N. S. Plummer, W. M. Pnest, M. D. Rawkins, C. H. Rogers, R. Stanford, W. R. Throver, W. J. Tindall, E. R. Williams. (Branch II, Medicine and Diseases of Women) J. D. S. Flew, * Evelyn E. Goultrey, J. I. Hackwood, J. C. Hutnick, Elsie E. A. Ridley, Patricia H. S. Sher. (Branch III, Hygiene) C. Links, E. Grundy, Dorothy M. Llewellyn, Laura H. Macfarlane, D. Corbin, Makepeace, C. M. Ockwell, R. H. Parry, L. A. Seckman. (Branch VI, Tropical Medicine) *D. J. F. Leung.

* Awarded a rank of lieutenant. * University Medal.

The Senate has appointed a special committee to report fully as a matter of university policy on the amount and nature of technical study at present carried on in the University, and as to the feasibility of instituting a new Faculty of Applied Science or Technology.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Lectures

The course of lectures for 1934 is arranged as follows: January 15th and 17th, *Protes* or W. E. Le Gros Clark, The evolutionary origin of the primates; January 19th, Mr. L. R. Broster, The adrenogenital syndrome; January 22nd, Mr. H. C. Edwards, Diverticula of the duodenum and jejunum; January 24th, Mr. H. C. Edwards, Diverticula of the colon and vermiform appendix; January 26th, Mr. Alan Brown, A clinical research on the rational treatment of carcinoma of the cervix uteri; January 29th, Mr. Arnold Sorsby, Retinal atrophy; January 31st, Mr. K. H. Watkins, The bladder function in low spinal injury; February 2nd, Mr. E. G. Muir, Carcinoma of the prostate; February 5th, Mr. A. A. Davis, The prostatic nerve: its anatomy, physiology, pathology, and surgery; February 7th, Mr. J. M. Yelloly, The study of lymphoid tissue; February 9th, Mr. Cecil P. G. Wakeley, The surgery of the spinal gland; February 19th, Mr. Denis Browne, Talipes equinovarus; February 21st, Mr. C. Bowdler Henry, Aberrant third molars and their menace; February 23rd, Sir Thomas Dunhill, Diaphragmatic hernia (non-traumatic). The lecture hour is 5 p.m.

On February 13th, at 4 p.m., Sir Cuthbert Wallace will deliver the Hunterian Oration.

Medical News

The Hunterian Lecture will be delivered before the Hunterian Society of London, at the Mansion House, on Monday, January 15th, at 9 p.m., by Dr. Jacques Forestier of Aix-les-Bains, on "Rheumatoid Arthritis and its Treatment by Gold Salts."

The annual meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C.1, on Wednesday, January 17th, at 5.30 p.m., when the presidential address will be delivered by Mr. Conrad Beck, C.B.E., on "Some Recent Advances in Microscopy."

At the meeting of the Royal Sanitary Institute in the Town Hall, Wakefield, on January 19th, at 5 p.m., there will be discussions on town and country planning, to be opened by Mr. Percy Morris, and on the prevention and control of infective diseases, to be opened by Dr. Thomas Gibson. Before the meeting there will be visits to a housing estate, an isolation hospital, a council school, a milk pasteurization depot, and to the pathological laboratory of the West Riding County Council.

A discussion on the aetiology of acute rheumatism and chorea in relation to social and environmental factors will take place at a joint meeting of the Sections of Epidemiology, State Medicine, and Diseases in Children of the Royal Society of Medicine (1, Wimpole Street, W.) on Friday, January 20th, at 8 p.m. The speakers will be Dr. J. Alison Glover and Dr. W. S. C. Copeman, and Dr. Reginald Miller and Dr. E. C. Warner.

An address entitled "Traditional Morality and Modern Life" will be given before the British Institute of Philosophy by Professor W. G. de Burgh, at University College, Gower Street, W.C., at 8.15 p.m. on Tuesday, January 16th, with Sir Herbert Samuel in the chair. Cards of admission can be obtained from the director of studies, at University Hall, 14, Gorden Square, W.C.1.

A meeting of the Eugenic Society will be held at the Linnean Society's rooms, Burlington House, Piccadilly, W., on Tuesday, January 16th, at 5.15 p.m., when Dr. R. Lancelotti, Dr. E. M. Mapother, and Dr. C. P. Bicker will speak on "Sterilization in Eugenic Sterilization," with Sir Humphry Rolleston in the chair.

The annual meeting of the International Society of Medical Hydrology is to be held from Sunday, January 28th, to Friday, February 2nd, inclusive, at Zermatt, Valais, Switzerland. The president-elect is Professor O. Vassuth of the Faculty of Medicine of Zurich University. The principal subject for discussion are the thermal bath reaction (acute thermalism) and the physio-logical and therapeutic effects of high mountain climates. There will be taken into consideration the nomenclature and classification of muds, peats, etc., used in physical medicine. The meeting is open to other medical men

and their wives, at a fee of 20s. and 10s. for the lady. Applications to attend should be made immediately on a form to be obtained from the general secretary, I.S.M.H., 169, King-way, W.C.2. A party to the festival, via Dunkirk, is being organized by The Great Eastern, Ltd., and will leave London on January 24th.

The Fellowship of Medicine and Post Graduate Medical Association (1, Wimpole Street, W.) announces that the first of Dr. Clark-Kennedy's lecture-demonstrations at 11, Chandos Street, W., will be on January 16th, at 2.30 p.m., on the subject of indigestion; the second, on January 23rd, will deal with nervous dyspepsia. These demonstrations for M.R.C.P. candidates will be given at the same place, as follows: January 16th, at 8 p.m., Dr. Peter Kerley, x-ray films—diseases of the heart and lungs; January 17th, at 4.30 p.m., Dr. Kenneth Harris, electrocardiograms; January 18th, at 4.30 p.m., Dr. Kerley, x-ray films—diseases of the gastro-intestinal tract and bones. Six demonstrations on the interpretation of psychograms will be given by Dr. Mather Conder at 8 p.m. on Tuesdays and Fridays from February 13th to March 2nd.

Designed on lines corresponding to those of the recent winter exhibitions of Flemish, Dutch, Italian, Persian, and French art, the Royal Academy winter exhibition of 1934, which opened on January 6th, gives a comprehensive view of British art from the tenth to the nineteenth century. It consists of paintings in oil and water-colour, drawings, sculpture, engravings, tapestries, furniture, silver and other examples of fine craftsmanship, collected with the purpose of showing that the achievements of British artists, in their characteristic aims and excellences, are worthy of comparison with the creations of other countries.

At a meeting of the court of directors of the Society for Relief of Widows and Orphans of Medical Men, held on January 3rd, with Mr. V. Warren Low, president, in the chair, the death of one of the vice-presidents, Dr. F. G. Crookshank, was reported. Two new members were elected. The sum of £1,998 15s. was voted for the payment of the half-yearly grants to the widows and orphans on the funds. This included £141 5s. as special grants to orphans, to enable them to continue either their education or their professional studies. The widow of a member was voted a yearly grant of £20. The total number of widows at present receiving relief is fifty-three. With the purpose of making the society better known and obtaining new members, a new attractive booklet has been prepared. Membership is open to any registered medical man who at the time of his election is residing within a twenty-mile radius of Charing Cross. Relief is only granted to the necessitous widows and orphans of deceased members of at least three years' standing. Further information, and application forms for membership, may be obtained from the secretary at 11, Chandos Street, Cavendish Square, W.1.

At a meeting of the General Council of King Edward's Hospital Fund for London, held on January 9th at 10, Old Jewry, E.C.4, it was reported that the Prince of Wales had appointed Mr. Samuel Storer, M.P., to be an additional member of the Voluntary Hospitals (Plumstead) Committee. On the motion of Lord Southampton (in the chair) the resolutions providing for the work of the Fund for 1934 were adopted.

The results of two inquiries into diet and health expenditure have just been published. The first comes from the Newcastle Diet Survey and the second from the Economics Research Section of the University of Manchester. From the data obtained it is interesting to note that, as pointed out in the report of the F.M.A. Nutrition Committee, when economic data are based on the purchases of food, the figures are not a true estimate of actual food intake, as the consumption of food, taken into the house, is not necessarily reflected in the purchases of food.

The December issue of the *Manchester Medical Gazette*, 1934, and *General Practitioner*, 1934, are the last of the kind published by Professor August Martin of the University of Manchester at the age of 77. He has been editor of the *Manchester Medical Gazette* for thirty-six years at the time of his death.

The November supplement of the *Bulletin of the Johns Hopkins Hospital* contains a revised student's check list of texts illustrating the history of medicine, compiled by Fielding H. Garrison.

Amongst the latest contributions to King Edward's Hospital Fund for London is the sum of £1,000, being the annual subscription of His Majesty The King, Patron of the Fund.

Dame Janet Campbell, M.D., M.S., retired at the end of 1933 from her post as senior medical officer for maternity and child welfare at the Ministry of Health, and chief woman medical adviser to the Board of Education.

Dr. William Habgood will retire in March, after twenty-six years' service as medical officer of health for the urban district of Sutton and Cheam.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, *British Medical Journal*, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, *British Medical Association House*, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the *British Medical Association* and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aithology Westcent, London*.

FINANCIAL SECRETARY AND BUSINESS MANAGER

(Advertisements, etc.), *Articulate Westcent, London*.

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The address of the Irish Office of the *British Medical Association* is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Chlorophyll and Crème de Menthe

Surgeon Rear-Admiral CHARLES M. BEANFILL, R.N. (ret.), writes: The late Sir Ray Lankester, F.R.S., in an article, "The Simplest Things," in *Science from an Easy Chair* (published 1940), states that chlorophyll "may be seen in solution in the liqueur known as 'crème de menthe,' being used to give it its fine green colour to that preparation." Recently, however, a friend of mine informed me that he examined this liqueur spectroscopically side by side with an ethereal extract of the leaf-green of the nettle, and that whereas the latter showed the characteristic bands in the red of chlorophyll the former did not. Can any of your readers inform me whether the makers of this liqueur have or have not given up chlorophyll as a dye, and, if they have, the nature of the colouring matter now in use?

Convalescent Home

Dr. J. S. McLAUREN (Stratford-on-Avon) was glad to learn of any convalescent home which would take in an elderly gentleman (75 years of age) who is recovering from a nervous breakdown. Not a mental institution, but a home which is not too large, and preferably one with a resident medical officer, and fees about 5 guineas a week.

Mental Allergy?

"A. G." (Bath) writes: Allergy in the physical sphere has, I think, rather a remarkable mental or psychic counterpart. Just as some bodies react violently to usually innocuous substances, so some minds seem unable to tolerate the presence of certain harmless objects. I am alluding to the well-known horror which many people suffer from mice, the cat, spiders, etc. That this fear is an integral part of the mental make-up, and not the result of superimposed experience, seems to be borne out by the harmless nature of the creatures objected to. It would be of interest also to know whether the dread is hereditary. It does not appear

to be confined exclusively to the human species, as I have read of a male chimpanzee at the Zoo, of which it was said that "a mouse reduces him to a state of abject terror and makes him scream like a terrified child." This shuddering dislike seems to be usually aroused by living creatures, but I can remember the unspeakable terror with which, during the first few years of my life, I was filled by cobwebs, and when a little older by the sound of a particular steam saw. It would be interesting to know whether these abnormal sensations occur chiefly in allergic individuals or families, as there is so strange a resemblance between the two conditions.

LETTERS, NOTES, ETC.

New Year Honours: Addendum

The name of Major JOHN GILMOUR, M.C., F.R.C.S.Ed., President of the International Quarantine Board, Egypt, upon whom has been conferred the honour of C.M.G., was omitted from the list of New Year Honours published in our issue of January 6th (p. 30).

Treatment of Scabies

Dr. R. R. CLIPSTEIN (London, E.8), writes: In the *Journal* of January 6th (p. 16) Dr. A. D. Matthews states that he found sulphur ointment and β -naphthol ointment (24-7½ per cent.) ineffective in a case of severe scabies. Personally I have found the following ointment valuable in this condition: acid. carboll. liq., mx; sulph. præcip., grains x; resorcin., grains x; paraffin. moll., ad 5i. It invariably relieves itching, and I have never yet observed any unpleasant reaction, even in young children. It appears to be as effective as the Bayer preparation "mitigal," and has the great advantage of being inexpensive.

Advertising by Medical Men in Former Days

Dr. O. B. SHELSWELL (Forest Green, Dorking) writes: Unless my grandfather was over the lines of medical etiquette of his time, of which I think him incapable, advertising by medical men seems to have been resorted to at a considerably later period than that mentioned by your correspondent in the *Journal* of December 30th, 1933, as evidenced by the following. This somewhat florid notice was found at the Bodleian Library, Oxford, in the *Oxford Journal* dated November 26th, 1803: "H. Shelswell respectfully informs his friends and the public in general that he succeeds his Uncle, Mr. Mead, deceased, at Sibford aforesaid, where the practice of Surgery, Midwifery, and Medicine will be carried on with the utmost care and attention—and he hopes to merit the approbation of those he may have the honour of attending by the strictest assiduity and attention in the different branches of the profession and on the most reasonable terms."

A Warning

A correspondent in West London writes: The police have asked me to communicate the following circumstances, in the hope of catching a crook. A man called at my house yesterday and said that he had been out of work, but had at last got it. He was, he said, a joiner by trade, and must first get his tools out (presumably from pawn). Could I give him any work? I said he could make some bookshelves for me. This he agreed to do, taking measurements and giving an estimate. He then said he must have £1 for the wood. This I gave him, and never saw him again. The police office to which I applied was at Askew Road, Shepherd's Bush.

Prices of Insulin "A.B."

Messrs Allen and Hanburys Ltd and The British Drug Houses Ltd, joint manufacturers of insulin "A.B.," announce a reduction in the prices as from January 11th, as follows: 5 c.m. phials (100 units), 1s. 10d.; 10 c.m. phials (200 units), 3s. 6d.; 5 c.m. phials (200 units), 3s. 6d.; 5 c.m. phials (400 units), 6s. 9d.

Corrigendum

We are asked to correct a date given in the report of Professor Leyland Robinson's presidential address before the North of England Obstetrical and Gynaecological Society, published last week at page 18. Chapman published his book in 1733 not 1773.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 40, 41, 42, 43, 46, and 47 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 15.

An Address

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SOME ALARMING SEIZURES*

BY

JOHN A. RYLE, M.D., F.R.C.P. LOND.

PHYSICIAN TO GUY'S HOSPITAL.

In the course of medical practice we are confronted from time to time by peculiar "seizures" or "nerve storms," which lack conformity with the more familiar descriptions, some of these seizures cause great alarm to their victims, and that they seem to threaten paralysis, speechlessness, unconsciousness, or even death itself, or because they occasion profound states of instability and prostration. The appearance and sufferings of the patients during these attacks may further alarm relatives or onlookers, and even the medical man, unless he be familiar with the true nature of the "seizures" or fully alive to the history of the case, may be taken unawares, and feel so dubious about their purport and outcome as to be unable to give a reassuring prognosis.

And yet the seizures which I have in mind are all consistent with long life and with good health at other times. These with the more local effects may simulate or suggest organic disease of the brain; those causing serious instability may also be wrongly attributed to cerebral vascular disease or cerebral tumour; those which cause pallor, distress, disturbances of pulse rate, precordial pain or discomfort and, more rarely, loss of consciousness, are apt to be ascribed to disease of the heart. We might reasonably include in this category ordinary faints or syncope and epileptic attacks, and Gowers,¹ who did more to illumine this subject than anyone else, discussed together under the broad heading of "The Borderland of epilepsy," syncope, vertigo, and certain other "nerve storms" to be described.

Fainting and epilepsy, as being better known, I shall not consider here. The particular seizures which I wish to review include the aphasic, hemiplegic, and vertiginous varieties of migraine; vertigo, whether due to labyrinthine disease or more transient vestibular disturbance; and the so-called vasovagal attacks of Gowers. If we except labyrinthine vertigo there is no demonstrable organic basis or any of these seizures. The physical overhang between attacks, unless there be a coincidental pathology, gives a negative result. They are therefore placed in the category of the "paroxysmal neuroses." In the migrainous episodes temperament and heredity, sometimes with hypersensitiveness or allergy on the one hand, and transient disturbances of physiological equilibrium due to fatigue, worry, eyestrain, constipation, or mental stress on the other, may all play a determining part. To no inconsiderable extent the same influences play a part in increasing the liability to vertigo and vasovagal attacks. Anxiety of mind occasioned by the symptoms themselves, and the subsequent prostration when the storm is past, are apt to keep the patient in an unduly receptive state, and so prone to further storms.

It is my purpose to amplify a brief general account of these interesting, and by no means rare, neuroses with one or two histories illustrating their symptomatology, and, as I think you will agree, their inclusion in the list of the "alarming seizures." Thereafter I shall briefly consider a few important principles in the management of cases.

MIGRAINE AND ITS VARIANTS

If we are to study its less frequent variants we shall start with a clear image of the better-known phenomenon of migraine. As commonly seen it is a disorder of the active period of adult life, affecting both sexes, depending strongly upon hereditary endowment, and showing a tendency, better marked in men than in women, to spontaneous remission after the age of 50. It is characterized by symptoms of very variable severity, and occurs in intermittent paroxysms separated by days, weeks, or months. The paroxysms come "out of the blue," and often for no apparent reason; on the previous day the patient may have felt partially well. They commonly start on waking in the morning. The first symptom may be a hemianal brow ache, or more generalized headache, but before this there is often a passing disturbance of vision. Fortification spectrum or teichopsia on the one hand, or a blind patch or hemianopia on the other, are the commoner forms of aura. The headache in a case of average severity becomes more intense during the day; sometimes it is completely crippling, and necessitates retirement to a quiet and darkened room. Nausea or repeated retching and bilious vomiting follow. The patient looks pale and ill, with dark rings under the eyes. Twelve hours is a usual duration for the attack, but it may be prolonged to twenty-four hours or, more rarely, through two or three days. The patient is often left with a sense of prostration, which takes another day or two to pass. Cold, fatigue, worry, eyestrain, train and motor journeys, and certain food-stuffs or beverages—notably rich or fried foods, chocolate, and eggs—are among the recognized precipitating causes. Mental workers who get little exercise are more prone to the disorder than others. The menstrual period and the menopause in women are particular times of aggravation.

Some patients escape with occasional attacks of hemianopia or teichopsia; some with slight headaches which cause little or no interruption to work; some experience the more familiar attacks at one time, and at another the aphasic, hemiplegic, or vertiginous variants which I am about to describe. There are also variants of another kind, in which abdominal symptoms predominate, whether as sickness, diarrhoea, or pain, or some combination of these with a general malaise, but always tending to a periodic or intermittent behaviour, and an equivalent duration of symptoms. Sometimes the abdominal manifestations are severe enough to suggest food poisoning or an abdominal emergency. In some cases there is a vague sense of soreness or discomfort about the liver region, and a look of sallowness almost approximating to icterus. Gall-bladders have been removed in cases of chronic misdiagnosed as cholecystitis. If a barium meal examination is made during an attack of migraine or similar dyspepsia the stomach is found to be inert; it may take upwards of six hours to empty, and I have seen one patient accused and another suspected of pyloric stenosis on this account.

In aphasic and hemiplegic migraine, usually on a background of the more typical ocular and homonymous symptoms, there is superimposed a confusion of speech, the patient knowing well what he wants to say, but being unable to say it. With this there may be a sense of weakness in the arm, or sensations of numbness or tingling in the hand and lips and face of one side. More rarely there is motor weakness or even a transient paralysis. It can well be understood how "strokes" are feared, or perhaps it has been actually diagnosed in such cases. The symptoms, however, pass over quickly with the rest of the storm, and leave no lasting behind them. Moreover, they can occur in subjects in whom it would be unreasonable to

* Given to the Medical Faculty of the Royal Medical Association.

genuine physical instability coming on without warning and beyond all voluntary control. A conditioning physical cause is also much more likely to be operative during states of nervous tension and unrest.

Case 5.—A woman, aged 60, who had previously consulted me for other troubles of a minor kind was seized, after a period of grave family worry, with a succession of vertiginous seizures, in which she was prostrate, vomited repeatedly, and experienced much singing in the ears, especially in the left ear. She did not sleep, she was terrified by the attacks, and apparently had feared a stroke. She had lost a stone in weight since her previous visit to me a year before. The only physical finding was deafness in the left ear. The entry in my notes was "labyrinthine vertigo; aggravation by fatigue, loss of weight, constipation, and worry."

Case 6.—A man, aged 54, stated that he was well until three years previously, when something suddenly "popped" in his left ear, and he had a severe attack of vertigo. He remained liable to attacks of giddiness thereafter, in which he had to grasp neighbouring objects for support. The attacks were steadily diminishing in severity. His blood pressure was 230/140. I have never convinced myself that hyperpiesia itself (apart from a vascular lesion) could cause true vertigo. In a long series of cases of vertigo a normal or low blood pressure was found to be more common than a high one. In this case, however, I surmise that the high blood pressure may have been indirectly responsible by causing a local vascular accident.

Case 7.—A young man, who had undergone a great deal of domestic strain for a number of years, lost his mother suddenly. On the day before the funeral, and again on the morning of the funeral, he awoke with nausea and intense giddiness, the fireplace appearing to revolve to the right. There were no physical signs of disease, and in this case no deafness or tinnitus, and there was no history of migraine or tobacco excess. He had always been able to make his right Eustachian tube "click." Here the evidence for an aural contribution was minimal, and I concluded that emotional stress was the predominant factor.

Case 8.—A professional man, aged 54, who had been under my care four years previously for a duodenal ulcer, came to see me much exercised about symptoms of quite another kind. For six months he had noticed increasing deafness in the right ear. One day he suddenly collapsed with intense giddiness and violent vomiting, and thought that he might die in the attack. He had to be carried home, and remained ill all day. Four other attacks followed in the next few weeks. He was greatly relieved in his mind by the reassurance given. Three months later he reported that deafness had become complete in the affected ear, and that he no longer had any giddiness.

I could recount the histories of many other cases of vertigo in which anxiety and apprehension were much in evidence, leading in some to a bed-ridden invalidism. Whatever other contributory measures of treatment are employed, I have again and again been impressed with the value of a simple explanation and a full reassurance. Disabuse your patient of all ideas of "strokes" or of cerebral or heart disease, and you will have given him a valuable helping hand. There is no specific medical treatment of the ear disease, and the cases suitable for treatment by the neurological surgeon must remain in a minority and be selected with the most exclusive care. There is the more reason, therefore, to concern ourselves with the associated factors in the management of these cases.

VASOVAGAL ATTACKS (GOWERS'S SYNDROME)

I have mentioned the sense of impending death as an occasional symptom of vertigo. In vasovagal attacks (Gowers's syndrome) it is one of the most constant and quite the most urgent and dreaded of symptoms. These attacks affect adults of either sex and any age; they are more frequent in women than in men. In my experience the victims, almost without exception, have been affected simultaneously by a minor cause of general physical ill-

health, and by some anxiety or mental stress. As with vertigo and fainting, but for an even more imperative reason, the anxiety engendered by the attacks themselves is a strong perpetuating factor. The attacks "come out of the blue," and may last minutes, or half an hour, or for longer periods. They leave a sense of prostration afterwards. A visceral disturbance, such as vomiting or diarrhoea, a bowel wash-out, or an oesophageal or intestinal spasm have sometimes precipitated the seizure, but no such disturbance can be traced in the majority of cases.

The chief complaint is of "a sense of dying"—not a fear of death, which is sometimes even desired, so intolerable is the distress of the attacks. I have sat by the bedside and been assured by a patient that this time the end had come. In other cases of a minor kind a sense of "something dreadful about to happen," of "fading away," of "floating in space," or a peculiar "sense of unreality" are described. There is a complaint of profound malaise, of coldness, sometimes of shivering or trembling, and of heaviness, immobility, or powerlessness in the limbs, and, in these circumstances, patients have told me that even if a cup of restorative were within reach they would be unable to lift a hand to take it to their lips. This immobility is strongly reminiscent of the frozen powerlessness observed in the rabbit "fascinated" by the stoat or snake, and one patient, who had seen an animal in this state, was forcibly reminded of the incident by her own symptoms. Precordial or substernal discomfort, or genuine pain spreading into the left side of the neck and down the left arm, or a sense of constriction in the chest is common, and tingling in the finger-tips and sometimes true tetanic spasms are also described. To observers the patient looks very ill and pale, and may be cold to the touch. Even medical men have been deceived, and thought that death was imminent. The pulse may be rapid or very slow. In one case of mine it fell on occasion to 60 and once even to 19 to the minute. Sometimes the general symptoms, sometimes the cardiac symptoms, predominate, but the "angor animi" is rarely absent. These attacks are often diagnosed erroneously as "heart attacks." Some of them do, indeed, closely simulate angina pectoris. Many of the so-called pseudo-anginas in women and younger subjects are examples of Gowers's syndrome. As a rule consciousness is retained, but occasionally it is lost, and when this occurs it is for much longer periods than in the case of an ordinary faint.

Case 9.—A young man, aged 21, of outstanding energy and conspicuous fearlessness in the pursuit of sport, a motorcyclist, a member of the Auxiliary Air Force, and a keen rider to hounds, consulted me on account of attacks in which he suddenly had a feeling of impending death. These attacks had "scared him terribly." Associated symptoms included an uncomfortable feeling about the heart, an appearance of objects being "blacked out," and a "wobbly" sensation at the knees. The attacks would last from half to one hour. Three years previously he had sustained a concussion and a fractured leg in a motor accident, and had been given anti-tetanic serum. Two months previously he had sustained further injuries in another accident, and was again given serum. Serum sickness with urticaria and fever followed, and a little later he developed mumps. It was during the serum sickness that he had his first vasovagal attack. He was an excessive smoker. His father had experienced identical attacks at the age of 27, and had outgrown them. I have another example of vasovagal attacks occurring in a mother and a daughter.

Case 10.—A young woman, previously healthy and placid, underwent an operation for appendicitis. During convalescence she developed almost every morning a pain across the abdomen, followed by a bowel action. On ten or twelve occasions this was succeeded by tachycardia, feelings of dizziness or numbness in both arms, especially in the left, generalized tremor, and a most acute sense of dying. She then

remain obscure it is a matter for comfort that it lies within our power to recognize that some of the more alarming episodes of medical practice need not, in fact, occasion any fear of an unhappy ending.

REFERENCES

- ¹ Gowers, Sir William: *The Borderland of Epilepsy*, 1907.
² Wilks, Sir Samuel: *Lectures on Diseases of the Nervous System*, 1883.
³ Ryle, J. A.: *Guy's Hospital Reports*, 1925, lxxviii, 371.
⁴ Idem: *Lancet*, 1931, i, 737.

THE MENACE OF HEREDITARY BLINDNESS

BY

J. MYLES BICKERTON, M.A., B.Ch.CANTAB., F.R.C.S.
 SENIOR OPHTHALMIC SURGEON, KING'S COLLEGE HOSPITAL; OPHTHALMIC
 SURGEON AND DEAN, ROYAL EYE HOSPITAL; CONSULTANT
 OPHTHALMIC SURGEON TO ST. OLAVE'S AND LEWISHAM
 HOSPITAL

The total world figures relating to blindness must be of staggering dimensions. In China one disease (trachoma) has been estimated to have blinded one million in both eyes, three to four millions in one eye, and to have gravely injured twenty millions—this out of a population of, say, 400 millions. In the United Kingdom the registered blind were reported as follows:

TABLE I

Year	England and Wales	Scotland	Total
1919	23,840	—	—
1929	52,727	—	—
1930	56,853	8,516	65,369
1932	62,438	? 10,000	? 72,727
War blind	—	—	2,000

About 8,000 of these blind are also mentally defective, and many are deaf.

There has been an increase, therefore, of 35,000-odd in the registered blind in the last twelve years, while in the year 1929-30 the increase was 4,126, or over eleven a day. The total figure, however, is by no means a true indication of our blind population, for the following groups of persons are largely excluded, and may increase it to 250,000 blind persons.

1. Almost all blind persons of the well-to-do classes.
2. Infants below school age (many die blind).
3. Those who become blind after leaving school at 14 or later, and are not registered until reaching blind pension age at 50. Many of these refuse to be certified, regarding it as rather a disgrace.
4. Those who become blind after 65 and are not registered. They obtain the old-age pension, which is the same in amount as the blind pension—namely, 10s. weekly. This is a very large group, and is likely to grow as the average length of life increases.
5. Those blind persons who are eligible for the blind pension—that is, they are between the ages of 50 and 65—but who do not apply for it because they have never heard about it.

On one random afternoon at hospital recently I saw ten persons who, although blind, were not registered, or not likely to be registered, as matters stand to-day.

The certification of the blind, however, is done in a very haphazard way in this country, and the real causation of blindness is not truly shown, so that the figures in Table II are only approximate. A child, I should explain, is considered blind if it cannot read school books with safety to the eyes; while the criterion for an adult is the capacity to do work for which eyesight is necessary.

TABLE II.—Rough Figures of Causation of Blindness in the United Kingdom*

Cause	Per cent.	Largely avoidable per cent.
Trachoma	2	2
Purulent conjunctivitis	2	1
Ophthalmia neonatorum	5	5
Accident	5	2
Congenital defects	6	6
Senile degeneration	10	—
Glaucoma	10	1
Myopia	14	14
Syphilis	15	10
Senile cataract	15	1
Others	16	2
	100	44

The 44 per cent. in column 2 may represent 70 per cent. of blind years lived. Those blind in one eye may number about one million.

Under 1 Year of Age*

Cause	Per cent.	Category
Accident	2	Neglect
Syphilis	5	Heridity
Purulent conjunctivitis	8	Dirt
Congenital defects	30	Heridity
Ophthalmia neonatorum	50	Dirt
Others	5	
	100	

(21 per cent. of the blind are blinded in the first year of life.)

A glance at Table II will show that blindness in the more active years of life is very largely avoidable, while much of it is due either to definitely dysgenic births or to the unrestricted production of children in poor or bad circumstances. In this table I have given the groups of the blind and the percentage in each group which could, in my opinion, be greatly reduced by certain preventive measures, since for practical purposes bad genes and certain types of bad environment may be included together as causes of blindness.

Trachoma (2 per cent.).—This disease does not occur in clean households (see China, Egypt, etc.).

Purulent Conjunctivitis (2 per cent.).—This condition rarely occurs in clean households, and in my opinion 1 per cent. is entirely avoidable (only one child in five is born into a clean home in England).

Ophthalmia Neonatorum (5 per cent.).—This disease, due to gonococcal infection at birth, could and should be entirely wiped out by the prevention of unsuitable births.

Accidents (5 per cent.).—A fair number of these occur to infants, a fact which has considerable relevance to the limitation of births. A woman explained in a South London court, for instance, that she was the only person alive and responsible for sixty-eight children (three marriages). There was recently reported a family in Buckinghamshire of thirty-nine children, and one woman, newly-married, had nine children in two and a half years (three sets of triplets). How can she manage with a husband earning £3 a week?

Syphilis (15 per cent.).—It is probable that 10 of the 15 per cent. syphilitic blind owe their condition to congenital syphilis, which might be called a "pseudo-heridity" since it never goes beyond the second generation, and which could be entirely eliminated by preventing syphilitic women from having children. Naturally, if a woman has been shown (by the Kahn, Wassermann tests, etc.) to be syphilitic, she should avoid conception at all costs, unless, and until, she has been completely cured. If, however, her condition is not discovered until after conception, the problem becomes more difficult; but treatment during pregnancy will always obtain a non-syphilitic child if the treatment is thorough and commenced about the fourth month. If treatment cannot be thorough the choice is between the birth of a congenital syphilitic and inducing an abortion, and I, for my part—

* Column I is modified from Harman, and the other figures are my own estimates.

though I know many will not agree with me—am strongly inclined to the latter. Congenital syphilis, which shows itself in the eyes anywhere between the ages of 2 and 35 (usually between 5 and 25), is a slow and terribly distressing affliction to patient, parents, and even doctors. From two to ten years' treatment is often necessary before even a quiescent stage is reached, and it may cause blindness in three different ways: by interstitial keratitis (or inflammation) of the cornea; by a widespread choroiditis with destruction of the retina; or by juvenile optic atrophy. Needless to say, a congenital syphilitic is often ament, and is never really healthy. In my opinion, therefore, Wassermann (or other) tests should be compulsory in appropriate cases, and a positive indication should be followed by treatment, contraception, sterilization, or abortion, according to the circumstances. I have said "compulsory," but I believe that if the women of England knew that congenital syphilis, with all its terrible concomitants, could be entirely eliminated, they would welcome the appropriate routine from the medical profession. As it is, large numbers of syphilitics marry and produce defective children. At King's College Hospital last year 34 per cent. of the new syphilis cases—mostly eye cases—were congenital.

Of greater importance and interest are those types of blindness which are strictly hereditary—congenital defects 6 per cent., glaucoma 1 per cent., extreme myopia 14 per cent., senile cataract 1 per cent., other types 2 per cent.—a total of 24 per cent., or practically one-quarter of all forms of blindness. As a prelude to discussing them I should like to repeat the platitude, too often forgotten, that normal sight (emmetropia) is also hereditary, a great number of genes being jointly at work in its production. The various departures from normality are due to the aberration of one or more members of this gene-complex.

GENETIC TYPES OF BLINDNESS

Heredit is the study of differences or variations, the laws of which show that we may all differ in three ways: (1) by modification (environment); (2) by combination in accordance with Mendel's laws; (3) by mutation, the production of new hereditary types. In certain simple forms of life 10 per cent. of the offspring are mutations; and according to Darwin's law of natural selection, the best or hardiest of these varieties survive. Thus variation has a beneficial effect on the community if the law of natural selection is operative. The trouble in England now is that we have dysgenic selection. Mutations act very well plus eugenic selection. They act furly well plus natural selection. They act badly plus dysgenic selection, and very badly plus dysgenic selection. We must get back to natural selection first, and then to eugenic selection. This conclusion is logically irrefutable. Education and environment have remarkable effects upon the individual during his lifetime, but they do not influence his hereditary equipment.

We know more about the hereditary diseases of the eye than about those of any other organ, and for the good reason that, being the most important and complicated of our sense organs, its slightest defects cause marked disturbances of function.

The genetics of variations in normal eye colour are too well known—though not yet fully elucidated—for mention here, and the abnormal condition of albinism is also fairly widely recognized as a simple recessive. But the eye defects associated with albinism are not so generally realized, nor is it always understood that they are really but symptoms of a general defect. Practically all albinos are defective in the average in health, and with the exception of a few, all albinos are defective in sight. The reason for this is because their eyes lack the pigment to protect the retina from light. The consequence is that they hang their heads, pucker their brows,

and half close their eyelids to shut out the light; often, moreover, they suffer from nystagmus or myopia. The incidence in the population is 1 in 10,000, and 30 per cent. of it is due, like so many similar recessives, to consanguineous marriages.

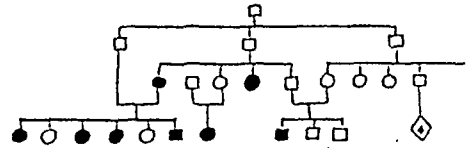


CHART 1.—Albino (Tertsch).

The Myopia Group

The genetics of this varied group have not been fully disentangled, but one can say for certain that short sight never arises in the absence of a hereditary predisposition, though that predisposition may remain latent in good health or be accentuated by illness and physical disability—as the myopia increases the eye stretches until the retina is destroyed. Dysgenic births are the chief cause of severe myopia, and many high myopes go blind, while there are immense numbers whose very defective vision is practically equivalent to blindness, but who do not come within the scope of the Blind Persons Act.

Without intending to imply that it is a simple unit character, I must agree with Clausen, who considers that myopia tends to be recessive. Wilson, for instance, found that in 100 families with one myopic parent there were 200 myopic children and 250 non-myopic, while in ninety-one families with neither parent myopic only 100 children were myopes and 300 non-myopes. Therefore, although short-sighted offspring are often born of normal parents, when both parents are short-sighted their children invariably suffer from the same defect.

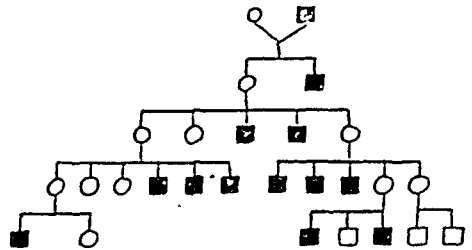


CHART 2.—Sex-linked myopia (Worth).

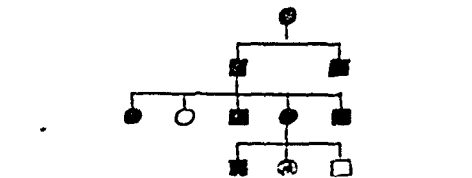


CHART 3.—Dominant myopia with nystagmus (Voss).

Wilson's figures are interesting. In 677 myopic children hereditary evidence was as follows: grandparents, 54; mothers, 369; fathers, 254; siblings, 164; uncles, aunts, 31; cousins, 9.

Father to son	79
Father to daughter	149
Mother to son	111
Mother to daughter	231

Hereditary evidence was found in 65 per cent. of low myopes, up to 3 dioptres; in 69 per cent. of medium myopes, 4 to 6 dioptres; in 67 per cent. of high myopes, 7 to 12 dioptres; and in 67 per cent. of very high myopes, over 12 dioptres. It was also found in 65 per cent. of

school children, 63 per cent. of home workers, 68 per cent. of factory workers, 60 per cent. of clerks, and 60 per cent. of labourers. The run of the figures in these last groups indicates independence of environment.

Reference must be made here to detachment of the retina, which is a fairly common sequel to high myopia. Bogatch reported a family of eleven high myopes, in seven of whom detachment of the retina supervened in one or both eyes. Retinal detachment is found as a dominant, recessive, or male sex-linked in different pedigrees.

In the same way astigmatism, long sight, and squint (which is often associated with long sight) may be inherited. Squint, from which more than 2 per cent. of school children suffer, is responsible for a large number of blind eyes.

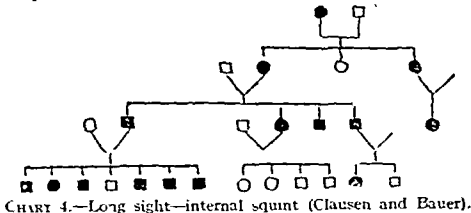


CHART 4.—Long sight—squint (Clausen and Bauer).

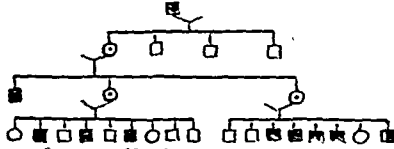


CHART 5.—Hereditary nystagmus (Holm).

Microphthalmia, or very small eye, with anophthalmos (lack of an eye) as the extreme form, has been found as a dominant, recessive, or recessive sex-linked (Ash).

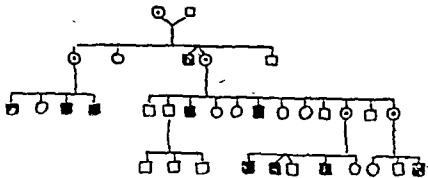


CHART 6.—Microphthalmia (Ash).

Retinitis Pigmentosa

Czellitzer says that nearly 4 per cent. of all the blind are due to hereditarily determined atrophy of the retina. Some 300 pedigrees are given in the *Treasury of Human Inheritance*. The condition begins in early youth and progresses to complete blindness sooner or later, often round the age of 40. As in other diseases, there are several forms, as shown by their different heredity, the commonest being recessive; 33 per cent. of those thus affected owe their condition to consanguinity. In some families the condition is linked with deafness.

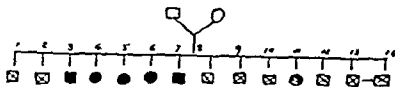


CHART 7.—Retinitis pigmentosa (Sambuc).

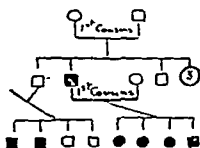


CHART 8.—Retinitis pigmentosa (Mooren).

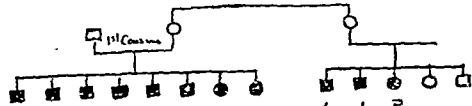


CHART 9.—Retinitis pigmentosa (Mann). Leber's optic atrophy.

Optic Nerve Atrophy and Optic Neuritis

These frequently cause blindness, and the hereditary variety is well recognized by ophthalmologists, 1,000 pedigrees being available for study; 85 per cent. of those affected are males. The disease comes on at different ages, the average being about 20. Diminution of vision is the chief symptom, and often appears suddenly; there is a central scotoma, and after six months or so the disease remains stationary. The malady has been traced once through six generations, twice through five generations, and often through four generations. Leber's optic atrophy is a name for the sex-linked variety. It appears to be an abiotrophy, or lack of vital force, occurring at the prime of life.

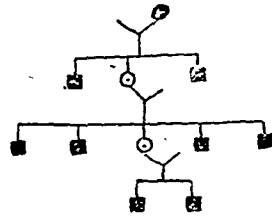


CHART 10a.—Hereditary optic atrophy (Hawkes).

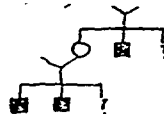


CHART 10b.—Hereditary optic atrophy (Bickerton, 908).

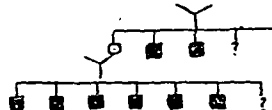


CHART 11.—Hereditary optic atrophy (Thomsen, 802).

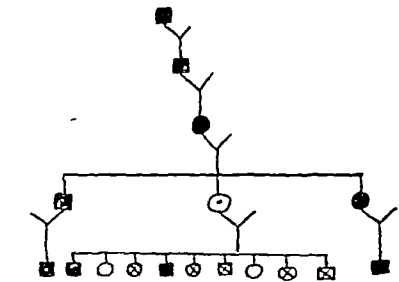


CHART 12.—Hereditary optic atrophy (Norris, 750).

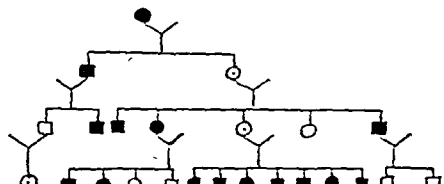


CHART 13a.—Hereditary optic atrophy (Norris, 881).

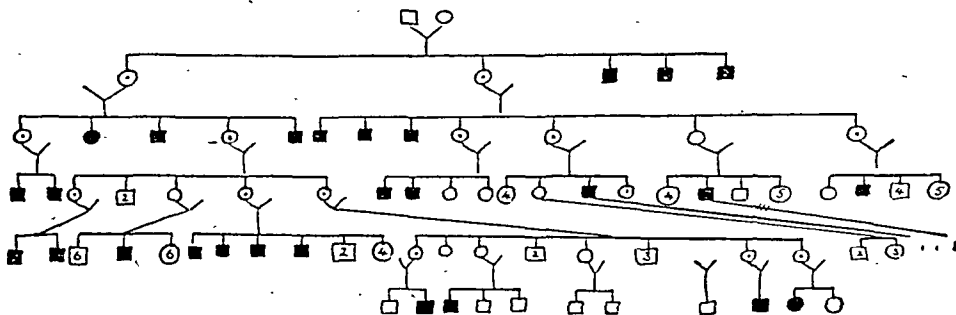


CHART 13b.—Hereditary optic atrophy (Hogg, 837).

Aniridia

All cases of aniridia (absence of the iris) that I have seen have been of blind standard. I particularly wish to call attention to the Risley pedigree (1915) of aniridia: one blind man with this affection had thirteen children similarly affected (100 per cent.), sixty-one grandchildren out of sixty-three, and thirty-nine great-grandchildren out of forty-two (Chart 14).

Congenital Cataracts and Senile Cataracts

These are usually dominant, and are very important; Macklin states that 13 per cent. of the pupils in blind schools are blind through cataract, and Hirst gives 10 per cent. in 1,300 blind persons (anophthalmia and microphthalmia being next) (Charts 15 to 17).

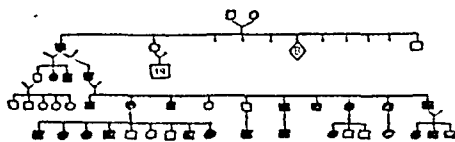
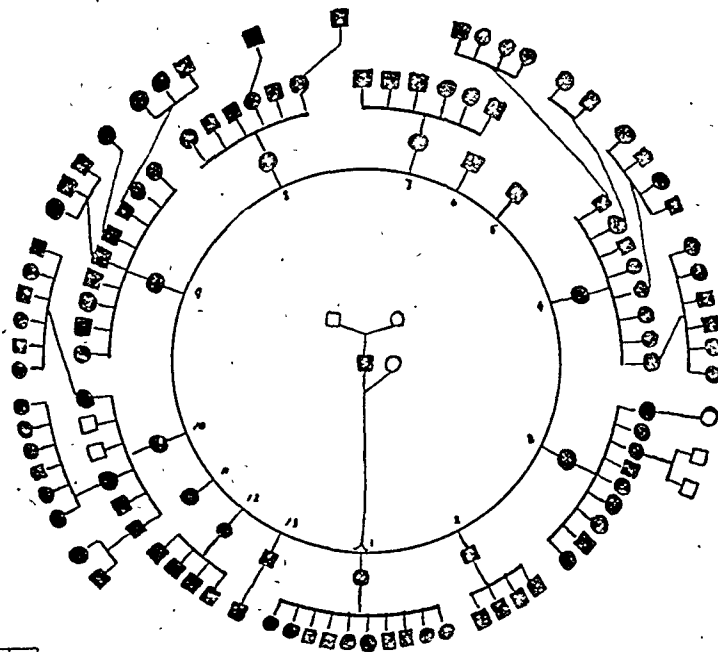
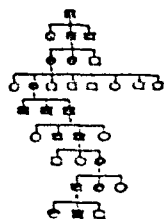


CHART 15a.—Lamellar cataract (Nettleship).



1
13 Affected children (all blind).
63-61 Defective (blind).
42-39 Defective (blind).
CHART 14.—Aniridia [absent iris] (Risley, 1915).



1
13 Affected children (all blind).
63-61 Defective (blind).
42-39 Defective (blind).
CHART 16a.—Cataract (Nettleship).

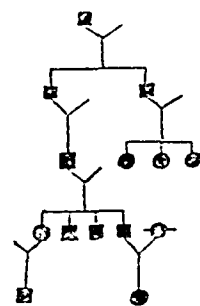


CHART 16b.—Cataract (Loeb, 32).

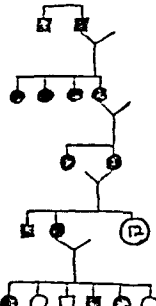


CHART 16c.—Cataract (Fremant, 20 L).

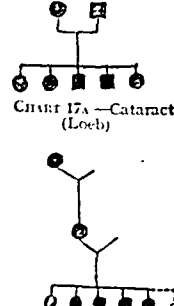


CHART 17a.—Cataract (Loeb)

CHART 17b.—Coralliform cataract (Nettleship).

Ectopia Lentis

Ectopia lentis (congenital displacement of the lens) has been traced as a dominant through six generations, though in some pedigrees it is recessive. Cameron's pedigree shows both lenses affected in each case.

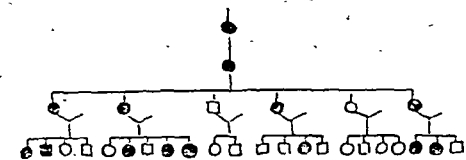


CHART 18.—Hereditary dislocations of lens (both) (Cameron).

Glaucoma

In this group the hereditary factor is not always very marked, though congenital glaucoma does occur, and there is a probable hereditary predisposition to it in many other cases. This is known as hereditary anophylaxis, or abiosis—a lack of vital force, which causes the structure to die before its time. Many pedigrees suggest a dominant heredity, but the hereditary course is occasionally interrupted, and casual causes are often necessary to bring out the disease. It may arise early in life as a juvenile glaucoma.

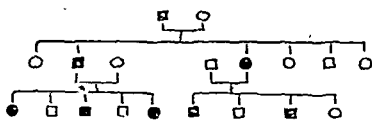


CHART 19.—Inflammatory glaucoma (Howe).

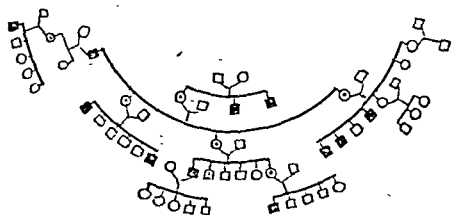


CHART 20.—Juvenile glaucoma (Kamenetzki).

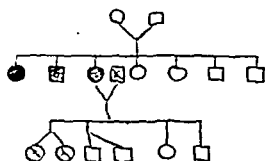


CHART 21.—Glaucoma (Bickerton, 1932).

Blue Sclerotics

This is a condition in which the coat of the eye is too thin or too transparent, accompanied by a failure in development of connective tissues. It is often associated with fragilitas ossium, or brittle bones, and with a type of deafness due to otosclerosis. The female is more likely both to show and to transmit it. Seventy-three pedigrees since 1903 show 463 defective individuals; it is usually dominant. Of adults with blue sclerotics 60 per cent. had liability to fractured bones, 60 per cent. had otosclerosis, and 44 per cent. had all three defects.

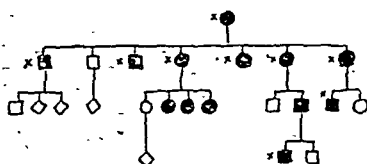


CHART 22.—Blue sclerotics. x = Fragilitas ossium (Burrows). Otosclerosis 40 per cent.

Glioma

This is a rare malignant growth, occurring in infants, of the nerve elements of the eye, which in some families shows a strong hereditary tendency, and is apparently recessive. It often affects both eyes (25 per cent.), and their early removal is necessary to save life. Some sufferers survive, marry, and often transmit the defect. Mohr considers the condition to be lethal in a homozygous condition. The death of a child with glioma of the retina is an appalling experience for parents and child, and may take as long as two years. The law which forces us to withhold euthanasia in these cases at the same time forces us to act in a barbarous and monstrously inhuman fashion, and is, in my opinion, indefensible.

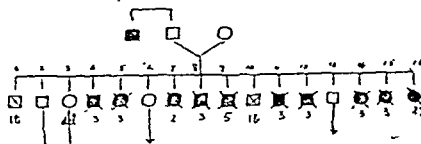


CHART 23.—Glioma retinae (Newton, 339).

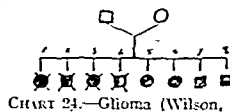


CHART 24.—Glioma (Wilson, 349).

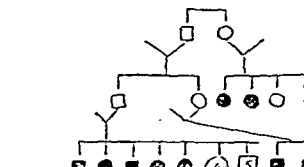


CHART 25.—Glioma (Thomson and Knapp, 325).

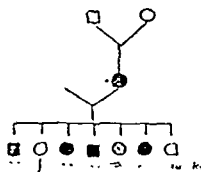


CHART 26A.—Glioma (Griffith, 333).

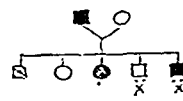


CHART 26B.—Glioma (Letchworth, 1888).

Maculo-Cerebral Degenerations

Several conditions might be described under this heading, including the rare disease of the central nervous system known as amaurotic family idiocy. Commencing at about 5 or 7 years of age, the children go blind within two years and mentally degenerate within the next two; death occurs about the age of 17 or 18. Amaurotic family dementia is a diffuse tapeto-retinal degeneration causing total, or nearly total, blindness, beginning at

birth or later, and frequently associated with cerebral degeneration producing idiocy. It is a not infrequent cause of congenital blindness.

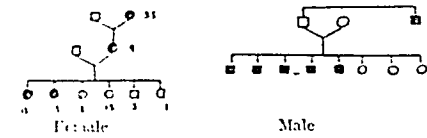


CHART 27A and 27B—Amaurosis sex-linked (Sedgwick).

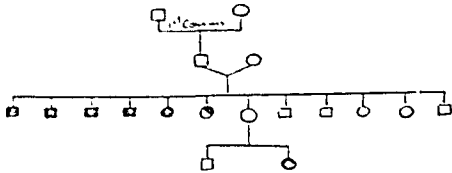


CHART 28—Amaurotic family idiocy—"Tav Sach" (King, Rus, Stewart).

Night- and Day-Blindness

Night-blindness is due to a defect of the rod vision (colourless vision). At dusk these cases are blind, though their sight is normal in good daylight. The famous Nougaret pedigree, by Nettleship, shows 135 affected persons out of 2,116 in nine generations (a dominant heredity). There are also a recessive sex-linked type, which is regularly associated with myopia, and one or more simple recessive types (Switzerland, Japan).

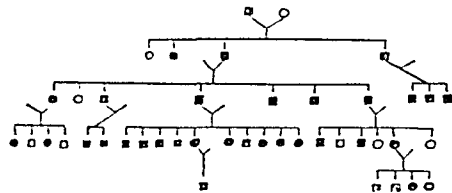


CHART 29—Progressive night-blindness. Death sixteen months after complete blindness (Bordley).

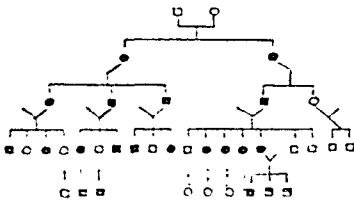


CHART 30—Stationary night-blindness (Sedan).

Day-blindness is a cone vision defect; such cases are colour blind and also of "blind standard."

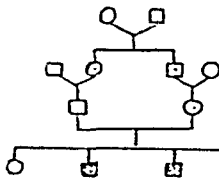


CHART 31—Day-blindness (Hess-Leng).

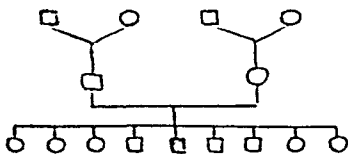


CHART 32—Day-blindness (Hess-Leng).

POSSIBLE REMEDIES

The cost in misery and unhappiness of this state of affairs is appalling, and the cost in money (potential happiness) runs into millions. Are we justified in looking on complacently or are we blameworthy? Our aims are to prevent blindness by improving environment and heredity. Here are some of the means available.

1. Constructive birth control to avoid overcrowding and poverty.
2. Sterilization of mental defectives (and possibly certain criminals) as in America.
3. Review of the obsolete and ancient abortion laws, seventy years old. They are no longer effective, and are acting deleteriously and dysgenically. Abortion should act as a second line of defence to conception control, as in Russia.
4. Euthanasia for infants with gross defects to be available for parents who wish to make use of it.
5. Segregation of the mentally defective is difficult owing to the cost; some 300,000 are now at large.
6. The Catholics recommend control of marriage for the mentally defective, but this does not prevent illegitimacy.
7. The Wassermann reaction during or before pregnancy. This is done in Rumania before marriage.

In Mexico the State of Vera Cruz has put into effect laws for the legalization of birth control, sterilization of certain criminals and mental defectives, prevention of hereditary ailments where practicable, and the prevention of marriage by persons who are mentally deficient or physically or economically unfitted to have children. How long must we in England continue with our present inhuman methods?

THE CLASSIFICATION OF THE BODY CONSTITUENTS BY WATER CONTENT*

BY

HAROLD G. CLOSE, M.D. LOND.

ASSISTANT BACTERIOLOGIST AND LATE GRIFFITHS DEMONSTRATOR OF
PATHOLOGY, GUY'S HOSPITAL

For the sake of convenience it has been customary to describe the body by regions (anatomy), systems (physiology), or origin from embryonic layers (embryology), but for biochemistry there appears to be no such simple grouping. To remedy this deficiency a classification based on water content has been made and is presented here. Water deserves to be singled out for distinction because of its unique position in the economy of the body, both in the past and now. Besides being at one time the only medium in which life existed, it now forms the greater part of all living tissues, and plays an essential part in most, if not all, biochemical reactions. The data from which this classification was derived were obtained partly by estimations made on the chloride and water of tissues, and partly from the literature, and have been published elsewhere.¹ Unfortunately, there are still many gaps in our knowledge, but it is possible even now to see the outline of the pattern underlying the construction of tissues.

THE THREE TISSUE GROUPS

If the parts of the body are considered from the point of view of their water content they will be seen to fall naturally into three groups.

- A. The body fluids (extracellular).
- B. The nuclear or cellular tissues.
- C. The anuclear, "matrix," or supporting tissues.

* Formed part of a thesis approved by the University of London for the degree of Doctor of Medicine.

These are shown with their range of water content and the principal members of each group in Table I.

TABLE I.—*Water Content and Designation of Three Tissue Groups*

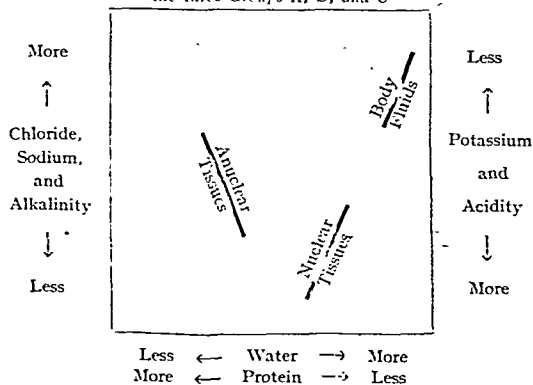
Name of Group	Member	Range of Average Water Content
A. Body fluids (extra-cellular)	C.S.F., lymph, plasma, synovial fluid, etc.	Per cent. 90 to 99
B. Nuclear (or cellular) tissues	Grey matter of nervous system, glands, muscles	75 to 85
C. Anuclear (or supporting) tissues	Connective tissue, cartilage, bone, etc. White matter of nervous system	10 to 13

The upper limits of some of the anuclear tissues may overlap with the lower limits of water content in several of the nuclear tissues, so that actually the division between Groups B and C is not so clear-cut as between Groups A and B. On the other hand, there are important points of difference between nuclear and anuclear tissues. The reaction (*cH*) of tissues of Group B is kept constant by the phenomenon of "buffering"—a property anuclear tissues do not appear to possess.² Then the types of protein in these groups also differ—mainly nucleo-protein in the nuclear, and gelatin-derivatives in anuclear tissues. But these and other characteristics may perhaps be secondary to the main distinction between the two groups—namely, the presence or absence of many nuclei. Tissues with many nuclei (Group B) contain more water than those with few, and this relationship of the nucleus to water content is seen in a striking way in cells which ultimately lose their nucleus. For example, the water content of a young nuclear red blood cell is 75 per cent.; when mature and anuclear, the red cell contains only 65 per cent. of water. The rate of metabolism of a tissue also appears to be related to the presence of the nucleus. First, there are reasons for believing that the nucleus is closely associated with the respiration of the cell³; and secondly, the rate of metabolism in the highly cellular nuclear tissues is far greater than in the supporting-tissue group (C). Warburg⁴ was very doubtful if respiration or glycolysis occurred at all in this latter type of tissue. It may be said, therefore, that the greater the rate of metabolism in the tissues the higher is the water content, a principle which is seen in the process of growing old, when there is a parallel decline in both water content and active metabolism.

THEIR INTERRELATION

The relationships in the three groups between the water, chloride, hydrogen-ion concentration, sodium, potassium, and protein contents are shown diagrammatically in the figure, and summarized later in Table II.

Diagram Showing the Relationships of the Water, Chloride, Acidity, Protein, Sodium, and Potassium Contents in the three Groups A, B, and C



Abscissae = From 50 to 100 per cent. water. Ordinates = From 0 to 5 grams of chloride per 1,000 grams of water.

Chloride and Water

In Groups A and B it is found that with an increasing amount of water there is an increasing amount of chloride. In Group C, on the other hand, this rule is reversed—with an increasing amount of water there is less chloride. No adequate reason can be given at present for this difference of chloride and water relationship in Group C, though one or two suggestions may be made. For example, it appears that the red blood cell (Group C) is enabled to hold more haemoglobin by virtue of its relatively high chloride content (Green⁵). Also, if the gelatin-like proteins of the connective tissues exhibit imbibition pressure rather than osmotic pressure (as is not unlikely they do), a relatively increased amount of a salt such as NaCl would decrease the tendency of the protein to "imbibe," and less water would be present. But perhaps a simpler explanation may be offered. The comparative increase of chloride with less water may be due simply to a concentration effect.

Protein, Water, and Chloride

The weight of a tissue is made up of the weights of the water present and of the so-called "solid" portion, most of which is protein. Consequently the more water there is the less protein there will be. As we know the relationship between the water and chloride in the body (see above), we can say what the relationship between the chloride and protein contents will be. In Groups A and B (body fluids and nuclear tissues), with more chloride there will be less protein; in Group C (anuclear tissues), with more chloride there will be more protein. Generally speaking, these relationships are found to agree with the facts, except in the case of liver tissue and white matter, both of which are rich in lipid bodies.

Water and Hydrogen-ion Concentration

Evidence is accumulating for the belief that the amount of chloride in a tissue or body fluid varies inversely with the hydrogen-ion concentration—that is to say, the more chloride there is, the more alkaline the tissue. Referring again to the chloride and water relationship, we may presume that in the body fluids and nuclear tissues (Groups A and B) as the amount of water increases, the acidity (or *cH*) becomes less—that is, alkalinity increases; in the anuclear tissues (Group C) increase of water is associated with an increasing degree of acidity.

Water, Sodium, and Potassium

As the amount of chloride in a body fluid or tissue tends to vary directly with the amount of sodium and indirectly with the amount of potassium, we have once again an indication of how the sodium and potassium contents are related to the water content in the three groups. Sodium increases, potassium decreases—with increase of water in Groups A and B, but with decrease of water in Group C. One important exception must be noted. The red blood cell, though classed in the anuclear group, has a relatively high chloride content and contains potassium, but no sodium.

DISCUSSION AND SUMMARY

These relationships, when grouped together as in Table II, indicate broadly how tissues and fluids arising from one cell have acquired their present chemical composition in the process of being differentiated. When more definite knowledge of the constitution of tissues becomes available it should be possible to formulate the laws which we now know exist. Marked variations from these laws might then throw light on disease processes, and particularly on the problem of selectivity of a disease for a certain tissue. It might even be an advantage to go back to the former classification of a humoral and

cellular pathology, but with now an additional type—"matrical"—for diseases peculiar to the supporting or "matrix" tissues. Classified under the last-named heading would be such diseases as arthritis, fibrositis, neuritis, etc., about which little is known except that their pathology is unlike that of the other group diseases. But since each of the three groups A, B, and C has its own characteristic make-up (as shown above) it is not surprising that manifestations of abnormality should also be different.

The table shown below summarizes the findings discussed in the text.

TABLE II.—Summary

	A Body Fluids	B Nuclear Tissues	C Annular Tissues
Water percentage ...	50 and over	76 to 85	Below 75
Rate of metabolism ...	Nil	High	Low
Concentration of chloride ...	High	Low	Midway between Groups A and B
Relationship of chloride to water ...	Increases with increasing water percentage	Decreases with higher water percentage	Midway between Groups A and B
Relative reaction ...	More alkaline	More acid	Midway between Groups A and B
Na	High	Low	"
K	Low	High	"
Protein	Low	Midway between Groups A and C	High

Elsewhere I have acknowledged with gratitude the help received from many friends and from the Medical Research Council. I am also indebted to an anonymous* donor for providing the greater part of the expenses of this investigation.

REFERENCES

- * Close, H. G.: *Biochem. Journ.*, 1933, xxvii, No. 4, 967.
 * Rous, P., and Beattie, W. W.: *Journ. Exper. Med.*, 1926, lxiv, 836.
 * Warburg, O., quoted by Bayliss, W. M.: *Principles of General Physiology*, London.
 * Warburg, O., quoted by Rous, P.: *Journ. Exper. Med.*, 1925, xli, 578.
 * Green, A. A.: *Journ. Biol. Chem.*, 1932, xcv, 47.

SYMPATHETIC GANGLIONECTOMY FOR GANGRENE DUE TO THROMBO- ANGIITIS OBLITERANS

BY

H. HAMILTON STEWART, M.A., M.B.,
B CHIR. CANTAB., F.R.C.S.

HONORARY ASSISTANT SURGEON, BRADFORD ROYAL INFIRMARY;
HONORARY SURGEON, BRADFORD CHILDREN'S HOSPITAL

The value of sympathetic ganglionectomy for the treatment of Raynaud's disease is well known, but doubt is still expressed as to its value in the treatment of thrombo-angitis obliterans, or, as it is often called, juvenile gangrene or Buerger's disease. It is the purpose of this paper to give a brief description of this rather rare disease and to record a case treated successfully by sympathetic ganglionectomy.

THE DISEASE

The cause of thrombo-angitis obliterans is unknown. It usually occurs in young males between the ages of 17 and 35, and was originally considered to be almost limited to the Hebrew race; this has now been shown not to be the case. Over-indulgence in tobacco has been said to be a determining factor, but there is little evidence to support this theory. Buerger¹ originally suggested an inflammatory or toxic origin, and workers at the Mayo Clinic² have performed experiments which tend to support this view. In this disease thrombosis occurs in the larger arteries of the limbs, and, if the arterial system is extensively involved, gangrene is liable to occur. The capillaries, arterioles, and forest arteries appear to escape. The thrombosis may affect the whole or only a portion

of an artery at one time, but recurrences of the thrombosis will occur, now in this, now in that artery, until the signs of deficient blood supply to the limb become evident. The thrombus is eventually organized, and may be recanalized, and with this process some degree of periarteritis is prone to occur. The veins of the limbs may be affected in the same way.

It is interesting to note that the actual thrombosis would appear to pass unnoticed by the patient, and to be free from constitutional reactions. This was so in the case I am about to describe, even though the patient had suffered from the disease in three of his limbs and was warned that the last one might be affected in the same way. It is not until the obliterative process has extended so widely as to interfere materially with the blood supply of the limb that the characteristic symptoms of the disease become manifest. The patient suffers from the result of the disease rather than from the disease itself. He (or she) complains in the first instance of a sensation of numbness and coldness in the affected limb in the cold weather, and indefinite pains, which he often considers to be rheumatic in origin. These affect particularly the arch of the foot, calf of the leg, and the wrist. The symptoms of intermittent claudication are complained of quite early in the history of the disease, and when the affected limb is allowed to hang down the extremity acquires a purplish blush, which gives place to excessive pallor on elevation of the limb. Degenerative changes occur in the skin and nails, the skin becoming thickened and cornified and the nails brittle and hard. Ulceration is prone to occur under the nails and in any site of local injury. Later, the patient suffers from persistent pain, and sits holding the affected limb. Gangrene eventually supervenes. On examination the affected limb is cold, and if the progress of the disease has been slow some wasting is evident. It may not be possible to feel pulsation in such arteries as the dorsalis pedis, posterior tibial (at the ankle), popliteal, radial, and ulnar arteries.

It is difficult at first to understand how sympathetic ganglionectomy can improve the blood supply to a limb when the larger arteries are blocked with organizing thrombi. It would appear to act by allowing the smaller arteries to dilate and thus improving the collateral circulation. The value of periarterial sympathectomy is known to be transitory. Now if satisfactory results are to be obtained the appropriate sympathetic ganglia corresponding to the limbs must be removed. In the case here recorded the inferior cervical and first thoracic ganglia were removed on both sides by an exposure obtained by costo-transversectomy at the level of the second rib. In this operation the transverse process of the second thoracic vertebra is removed along with about three inches of the second rib. The pleura is then depressed and a good exposure of the sympathetic chain with its branches is obtained, rather better on the left than on the right side. The desired amount of sympathetic tissue can be removed exactly, and the risk of leaving a portion of the first thoracic ganglion behind is very small. The anterior approach is difficult, the exposure often inadequate, and an incomplete operation is liable to result.

The case described below is that of a young man, aged 25, a gentile, who had lost both lower limbs from gangrene due to Buerger's disease, and who was in imminent danger of losing both upper limbs from the same disease. By a timely sympathetic ganglionectomy on both sides it was possible to save these limbs.

CASE RECORD

The patient comes of a healthy family, and with no history of syphilis on two occasions his Wassermann reaction was negative. At school he was the fastest runner, and was in perfect health until February, 1925, when at the age of 18 a box fell on his right foot. A phibius resulted, which

prevented him from working for ten weeks. During the next three years he limped slightly, and experienced "tightening feelings" in the right calf, with stiffness on occasions. Eventually pain occurred in the calf on exercise, and he was unable to walk far without resting. His foot was cold in the winter months. In October, 1928, he complained of persistent burning pain in the right big toe, and he was admitted to hospital with commencing gangrene of this toe. In spite of periarterial sympathectomy and removal of the toe, amputation through the right thigh was necessary in May, 1929. In April, 1930, a similar series of symptoms occurred in the left lower limb, and in November, 1930, amputation through the left thigh was performed.

November, 1931, marked the commencement of trouble in the left upper limb: The hand began to perspire excessively and itch, and the fingers became cold and dead when exposed to the cold air. The condition of the hand became gradually worse, and by February, 1932, there was spreading moist gangrene of the little and ring fingers, and the pulp of the terminal phalanx of the thumb. The patient was in persistent pain, and sat holding his hand. The pulse could not be felt in either radial or ulnar arteries.

The inferior cervical and first thoracic sympathetic ganglia on the left side were removed under general anaesthesia by the route described. While the ganglia were being dissected away the pulse rate became rapid (135), but settled again after interference with the sympathetic had ceased. Recovery was uneventful. The typical signs of sympathetic loss to the head and upper limb on the left side were evident. There was a pin-point pupil, enophthalmos, increase of surface temperature, and absence of sweating to a sharp line of demarcation at the level of the second thoracic segment. For some few days after the operation near vision was misty, and, on reading, the words split into syllables. Distant vision was normal. The effect of the operation upon the hand was excellent. The pain disappeared immediately and the hand became warm. Lines of demarcation occurred, and the gangrenous portions were removed. The gangrenous part of the pulp of the thumb separated and the terminal phalanx was left healthy.

The patient makes the astounding statement that in the following summer he worked his wheel chair to Morecambe and back, a distance of 120 miles, during a week-end! He experienced no trouble with his upper limb, in spite of the hard work entailed. In December, 1932, he was examined, and the condition of the left upper limb was found to be very satisfactory. A faint pulse could now be felt in the radial artery. In the beginning of 1933 the circulation in the right upper limb became defective and gradually deteriorated, and in April, 1933, after knocking his index finger, septic lesions occurred which failed to heal. The hand became painful and the fingers purplish in colour. The pulse could not be felt in the radial or ulnar arteries.

In June, 1933, the inferior cervical and first thoracic ganglia were removed on the right side by the posterior approach, as before. Recovery was uneventful, and the result of the operation excellent, as on the other side. He was discharged from hospital three weeks after operation, and is at the present time (November) carrying out his work as an artificial flower maker.

SUMMARY

1. A brief description of thrombo-angiitis obliterans, or Buerger's disease, is given.

2. A case is described in which both upper limbs were saved from gangrene by sympathetic ganglionectomy. Both lower limbs had been lost previously from the disease.

3. The posterior route through the chest, for the removal of the inferior cervical and first thoracic ganglia, is considered to be better than the anterior approach. The exposure is superior, and incomplete removal of the first thoracic ganglion, liable to occur by the anterior route, is by this means unlikely.

4. Removal of these ganglia on both sides was not accompanied by any permanent ill effects on the brain, eyes, or heart.

I am grateful to Mr. Goyder for permission to publish this case, which was under his care.

REFERENCES

¹ *Amer. Journ. Med. Sci.*, 1908, CXXXVI, 567.

² *Proc. Mayo Clinic*, November 19th, 1930, p. 437.

RELATION OF THROMBOPHLEBITIS MIGRANS TO THROMBO-ANGIITIS OBLITERANS

BY

A. L. D'ABREU, M.B., Ch.B., F.R.C.S.

ASSISTANT IN THE SURGICAL UNIT OF THE WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF; LATE SURGICAL REGISTRAR, GENERAL HOSPITAL, BIRMINGHAM

In this country thrombophlebitis migrans is usually regarded as a malady quite separate from the general vascular disease known as thrombo-angiitis obliterans. Buerger¹ insists that phlebitis migrans is part of a widespread disease affecting both veins and arteries. He states: "The association of thrombosis of superficial veins of the upper and lower extremities with other evidence of obliteration of the larger arteries occurs in a sufficiently large number of cases to make the affection of the veins almost pathognomonic." After a full description of a series of these cases some of his conclusions are as follows:

1. The disease thrombo-angiitis obliterans is often associated with thrombophlebitis of the superficial veins of the arms and legs.
2. The clinical disease of the superficial veins may be subsiding or it may dominate the clinical picture. . . .
3. Migrating thrombophlebitis may give no symptoms, the signs referable to the deep vessels being of most importance.
4. Patients may suffer at one time from migrating thrombophlebitis, at another from the progress of the occlusive changes in the deep vessels.

He found that in all cases of thrombophlebitis migrans which he studied, the pulses eventually became imperceptible. He based these conclusions upon exhaustive clinical and pathological examinations of limbs, many of which required amputation, and found that both superficial and deep veins, in addition to the arteries, exhibited those curious inflammatory and thrombotic changes so typically seen in thrombo-angiitis obliterans.

In this country we have been slow, or perhaps reluctant, to recognize the apparent unity of the disease processes. Moorhead and Abrahamson² in 1928 described phlebitis migrans as a new disease complex, because in their four cases visceral as well as superficial veins were involved. They write: "It is interesting, though perhaps inapposite, to draw attention to cases quoted by Buerger in which recurrent phlebitis of superficial veins was the precursor of thrombo-angiitis obliterans. Such a sequel has not been encountered by us, and it is likely that Buerger's cases did not belong to the group with which we are dealing." The case described below is reported because the patient for many years clearly belonged to the group described by Moorhead and Abrahamson, with migrating thromboses that involved visceral and superficial veins, and yet ultimately he presented all the features of thrombo-angiitis obliterans, from which he died.

A. B. Walker³ in 1932 published a paper on thrombophlebitis migrans, and collected fifteen cases in which, up to that time, apparently no arterial disease coexisted; he quotes, however, a case recorded by Campbell and Morgan⁴ in which apparently a thrombosis of the posterior cerebral arteries accompanied multiple venous thromboses elsewhere. N. Kletz,⁵ in recording cases of migratory phlebitis, mentions the association with thrombo-angiitis obliterans; he utters the important warning that "though the prognosis has been regarded by most writers as uniformly favourable, this is not so." He records a fatal case, and to this may be added the one described below. F. Parkes Weber⁶ refers to a case he recorded with Schwarz in 1908 under the heading of "Arteritis Obliterans of the Lower Extremity." The patient subsequently developed the typical symptoms of thrombophlebitis

migrans. In the case recorded below the venous thromboses preceded by many years the objective signs of arterial involvement.

CASE REPORT

A man, aged 52, a country mason and married, was admitted to the General Hospital, Birmingham, under the care of Dr J. M. Smellie, on February 7th, 1933, for the investigation of migratory thromboses of wide distribution and of many years' duration. The first attack of phlebitis occurred when he was 12 years old, in the left leg. He was admitted to St Thomas's Hospital, London, eight years later, when portions of the left internal saphenous vein were removed. There were frequent recurrences of phlebitis, and on the outbreak of war he was certified as unfit owing to the condition of his legs. In 1914 the superficial veins of the abdomen were attacked by painful thromboses, and became dilated and obvious. By 1927 the condition had improved somewhat, but attacks of phlebitis in the legs and on the abdominal wall were frequent. In 1931 severe exacerbations forced him to bed for three months. During this period and in the preceding years he had many attacks of haemoptysis, mild in degree with no apparent cause, but associated with some pain in the chest. He continued to improve and relapse periodically until his admission to hospital in 1933.

On examination he was a well-built man of healthy appearance, apyrexial, with a blood pressure of 142/78, and a regular pulse of 76 to 80 beats per minute. The lungs and heart were free from physical signs of note. Both legs showed dilated tortuous veins, with a scar in the right thigh from the operation thirty-two years ago, and with many areas of healed thrombosis on both sides. The abdomen was traversed by dilated superficial veins with evidence of old clotting, but now free from recent thrombosis. A full investigation was carried out: the blood count was normal; there was no leucocytosis; the van den Bergh test, a blood sugar tolerance curve, a gastric test meal, and the Wassermann reaction were all within normal limits. No source of sepsis could be found on clinical or radiological examination. He was discharged with a diagnosis of "thrombophlebitis migrans," and a good prognosis was given.

Readmission and Operation.—On March 28th, 1933, he was readmitted to the hospital, twenty-four days after his discharge. He was complaining of severe cramp-like pains in the right hip and the right foot, the latter showing purple discoloration up to the middle of the dorsum. The foot was cold, and showed slight oedema. The right femoral artery pulsated, but the pulse in the popliteal and dorsalis pedis arteries was imperceptible. A lumbar sympathectomy was considered, and an intravenous T.A.B. vaccine test was done: the fact that although the general body temperature rose to 101.8° F. the temperature of the affected limb scarcely rose (78.80°) contraindicated sympathectomy. The pain became excruciating, and required large doses of morphine for its relief. As the gangrene began to spread, at the direction of Professor Seymour Barling I amputated the leg through the middle of the thigh by means of equal anterior and posterior flaps, in view of the diseased state of the vessels no tourniquet was employed, but the bleeding was extremely slight. The large veins contained organized clots, and the femoral artery showed severe occlusive changes.

Progress.—Two days after the operation severe pain commenced in the left foot, which became cold, numb, and discoloured, with signs of incipient gangrene; the pulse in the popliteal and dorsalis pedis arteries became imperceptible. Six days later the flaps in the amputated limb broke down, and consequently the patient developed a severe hypostatic pneumonia, from which he died twelve days after operation.

The Post-mortem Findings.—The heart was normal, with no disease of the coronary arteries; the aortic arch showed only atheroma. The lungs contained patches of bronchopneumonia, with many small darkened areas suggestive of recent infarcts. The only evidence of vascular disease in the brain was a small area of old softening in the left optic thalamus. An unexpected finding was a complete fibrotic atrophy of the left lobe of the liver, with a compensatory enlargement of the right lobe. The localized affection of the liver suggested a vascular cause. The other abdominal organs were normal. The vessels of the abdomen were carefully examined. The aorta and the inferior vena cava were found to be affected by inflammatory fibrous tissue, which

included many enlarged lymph glands. This inflammatory matting of artery and vein extended down into both lower limbs. On slitting up the aorta a ragged mass of ante-mortem thrombus stretched from a point three inches above the bifurcation; as this was followed down, the large vessels of the arterial and venous systems, from the common iliac downwards, were found to be completely thrombosed. The inflammatory and thrombotic changes were unusually extensive, although Buerger reports cases involving the aorta. Telford and Stopford⁷ record that at operation for a perforated duodenal ulcer in a patient known to be suffering from thrombo-angiitis obliterans, the left common, internal, and external iliac arteries were palpated as pulseless immobile cords.

Histology of the Vessels.—The veins showed organized and canalized thrombi, and the arteries a similar process, both recent and old. The appearances were typically those described so exhaustively by Buerger, and the inflammatory background of the pathological state was well marked.

COMMENTARY

This patient had for forty years suffered from migrating thromboses: these involved the legs, the superficial veins of the abdomen, and the lungs, as shown by the attacks of haemoptysis (haemoptysis occurred in three of the four cases reported by Moorhead and Abrahamson). The onset of severe pain in the leg, succeeded by gangrene, the findings at operation and in the post-mortem room, and the histological appearances of the vessels leave no doubt that the ultimate diagnosis of thrombo-angiitis obliterans was correct. This conforms with Buerger's extended experience of these cases. A diagnosis of "thrombophlebitis migrans" seems to be an inadequate one, and may carry with it a false prognosis of benignity. Perhaps recorded cases of "thrombophlebitis migrans" in English literature, if observed over sufficiently long periods, may be seen ultimately to belong to the wider class of "thrombo-angiitis obliterans." Because of the somewhat doubtful position of "thrombophlebitis migrans" in vascular pathology, it is thought that this case should be reported.

I am grateful to Dr. J. M. Smellie and to Professor Seymour Barling for permission to publish these notes; to Dr. F. Mason Lamb, who conducted the post-mortem examination, which I attended, and who reported on the histology of the vessels; and to Dr. A. Brian Taylor for his helpful co-operation.

REFERENCES

- ¹ Buerger, L.: *The Circulatory Disturbances of the Extremities*, 1924, Chapter LVIII.
- ² Moorhead and Abrahamson. *British Medical Journal*, 1928, i, 586.
- ³ Walker, A. B. *Lancet*, 1932, ii, 936.
- ⁴ Campbell and Morgan: *Guy's Hospital Reports*, 1930, xxx, 34.
- ⁵ Kletz, N. *Lancet*, 1932, ii, 938.
- ⁶ Weber, F. Parkes: *Ibid.*, 1932, ii, 1077.
- ⁷ Telford and Stopford: *British Medical Journal*, 1924, ii, 1035.

INCREASED INTRAOCULAR TENSION IN YOUNG PERSONS AS A CAUSE OF SEVERE FRONTAL HEADACHE

BY

R. L. RAYMOND, M.B., CH.M.
FLIGHT LIEUTENANT R.A.F.M.S.

The four cases to be described are published in the belief that they represent a symptom-complex which is not commonly recognized. Each of these patients came complaining of frontal and temporal headache of varying degree and radiation; each was a young man between 20 and 30, and before the typical glaucoma age. In each case frontal sinusitis, tic douloureux, incipient herpes ophthalmicus, migraine, etc., were considered, and as far as possible eliminated. In each case the pain was increased by pressure on the eyeball, and the tension of the eyeball, as estimated by digital examination, was thought

to be higher than that in the other eye. There was no other constant abnormality in the eyes. The pupils, except in one case, were equal and round, and reacted equally to light. Visual acuity was normal to the individual patients. Cases 1 and 2 resented the glare of the ophthalmoscope, and I was unable to see the disk. Homatropine was avoided for fear of increasing the symptoms. I have since examined the fundi of each case under homatropine. Acting on the assumption that this increased intraocular tension might be the cause of the referred neuralgia, eserine was instilled into the eye in each case, with the results presently to be described in the following extract from the case notes.

CASE RECORDS

Case 1.—A. E. B., an officer, aged 27, complained of intense headache over right frontal and temporal region for twenty-four hours. Pain continuous, with exacerbations. No tenderness over frontal sinus. Nasal mucous membrane normal. Raised intraocular tension present. Pain increased by pressure of examination. Admitted to hospital at noon as probable onset of herpes ophthalmicus. Symptomatic treatment of raised tension by eserine drops, half-hourly for three instillations, and thereafter enough to keep the pupil contracted. By evening neuralgia was distinctly less. At this time anterior chamber was thought to be slightly shallower than on healthy side. Aspirin-phenacetin-caffeine powder was given to encourage sleep. Next day one A.P.C. powder was given to relieve pain of eserine instillation: tension was less. The third day pain had quite gone, and tension was thought to be slightly less than that of other eye. Patient kept under observation for three days. Herpes did not develop. There has been no recurrence of the neuralgia. When examined under homatropine six weeks later the disks were quite normal.

Case 2.—R. E. C., soldier, aged 25, complained of left frontal headache of moderate severity for three days. Awake at night. No previous history of similar attacks. Left pupil smaller than right. Definitely increased intraocular tension, and increase of pain on pressure of examination. Anterior chambers equal in depth. Treatment as above by eserine. A.P.C. powder given on two occasions to relieve pain of eserine instillation, which was distinctly differentiated by the patient from pain of the neuralgia. Tension equal to that of other eye, and pain all gone by third day. Pupils equal. When examined five days later under homatropine there was slightly more cupping of disk than in right eye, and very slight bending of vessels. Visual acuity 6/6. Examined five weeks later, disks were normal: cup 4 D in depth in each eye. No recurrence of pain.

Case 3.—N. M., an Indian servant, aged 30, had severe pain over right brow and in temporal region extending to behind right ear and over mastoid process; no complaint of eye at all. Has suffered off and on with this for eighteen months; treated at various times at other hospitals without relief. No tenderness on pressure over frontal sinus or mastoid. Nothing abnormal detected, except slightly raised tension in right eye and increase of pain on pressure. Anterior chambers equal in depth. Eserine only was used in treatment, and A.P.C. deliberately withheld to avoid confusing the issue concerning the cause of removal of pain. Next morning patient reported quite free from pain, and with tension equal in both eyes. He was genuinely pleased at the success of the treatment after so many months of disappointment. He was kept on eserine for four days, and has not had recurrence of pain since. Examined under homatropine ten days later, right pupil dilated considerably less than left pupil; both had two lamellae of homatropine, with twenty minutes' interval. Fundi and disks were normal. Three months later he had no recurrence of symptoms.

Case 4.—A. C., a soldier, aged 28, complained of continuous, slight to moderate, bilateral frontal headache, rather worse on left side, for three weeks. Pain radiated to the occipital region. Visual acuity normal. Anterior chambers normal in depth. Pupils equal and reacted. Definitely raised tension in both eyes, especially left. Increase of pain on pressure in left eye only. One week ago was freely purged with salines for three days, and A.P.C. given at night. Temporary relief, but now headache is as bad as ever.

Admitted to hospital; eserine instilled into left eye only, t.d.s. Next day pain gone from left side of head, but rather increased on right side. Tension less on left side than right now. Eserine instilled t.d.s. into both eyes. Next day all pain gone, but a heavy feeling in forehead. Tension equal in both eyes, but rather more than normal; eserine continued. Next day all pain and feeling of heaviness gone; tension almost normal. In this case previous course of salines and A.P.C. was unavailing, as was complete withholding of A.P.C. while in hospital. Seven days later there was no recurrence of symptoms, and tension quite normal in both eyes. Fourteen days later disks showed cup 4 D in depth in each eye. Vessels seemed slightly tortuous. Otherwise normal.

DISCUSSION

If from lack of knowledge I am making too much of this, to me, new symptom-complex if it is because I can find no reference to anything of this sort in the ophthalmological textbooks at my disposal, nor have I read or heard of it elsewhere. The condition is unusual, in that primary rise of tension is associated with older persons, and the rise was not accompanied by the usual symptoms and signs of glaucoma, nor was the pain of the same type or distribution. Thus one would not readily associate this type of headache with an ocular lesion. It appears possible that many of the frontal headaches that are diagnosed as migraine in absence of vomiting and nausea may be due to this condition. Further, in view of Case 4, this condition should be borne in mind in all cases of frontal headache of obscure origin. It would seem that to have met four cases in four months in the relatively small community of Ambala suggests that this condition of increased intraocular tension may be a common cause of undiagnosed frontal headache. It would be gratifying and helpful to know whether eye specialists or others are familiar with a syndrome such as the one described.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

CANCER OF THE HARD PALATE: TWO CASES

As two cases of cancer of the hard palate recently came to my notice, interest led me to search the literature I possessed which dealt with this subject. Such descriptions as I have found depart so far from my cases that I consider it may be useful to portray them.

Case 1.—A man, aged 65, and a heavy pipe smoker, had noticed seven years previously a small smooth swelling surmounted by a little white ulcer on his hard palate, adjacent to a necrosed second molar tooth. The only symptom which attracted his attention to the swelling was a sensation of itching, the irritation being increased by pressure. Some two years afterwards he noticed that the swelling had begun to spread, and about the same time he began to have occasional shooting pains to the ear on the same side of the head. This was diagnosed as neuralgia, for which he was treated. Three years later the tooth was removed, but the growth of the swelling was not arrested. Seven years after the onset he consulted his doctor. The Wassermann reaction was negative. A portion of the tumour was removed for microscopical examination, and the following report was obtained: "A carcinoma of basal-cell type, infiltrating the deeper tissues and showing ulceration."

On examination of the roof of the mouth prior to operation a slightly raised swelling was seen covering the posterior half of the hard palate, and extending slightly on to the soft palate. It involved the left alveolus up to the inner margin of the tooth bed, but did not extend on to the right alveolus. The surface of the swelling was somewhat redder in colour than the normal palate, but not markedly so. To the touch it was smooth, and of a varying rubbery consistence; it could not have been described as hard or nodular. Immediately

medial to where the necrotic tooth had been removed was a small ulcer with a grey, sloughy base. The circumferential wall of the ulcer was clean-cut, and pressure on the swelling in close relation to the ulcer caused a small quantity of blood-stained, sero-purulent material to exude. A similar small ulcer was present on the anterior surface of the swelling. There was no glandular involvement. The man looked very grey and ill.

Case 2.—A married woman, aged 62, had a swelling on the inner aspect of two necrotic upper incisor teeth. A few months after it appeared, as the swelling had enlarged, she sought advice. The teeth were extracted, and the blood taken gave a negative Wassermann reaction. A portion of the growth was removed, and the following report was obtained: "Histological examination of this specimen shows it to be a squamous-celled epithelioma deeply infiltrating the tissues."

The swelling in this case occupied the anterior third of the hard palate, and extended forward over the alveolus, but only where the two middle incisor teeth had been. The swelling was again smooth and of a rubbery consistence, and showed signs of a similar ulceration. There was then no glandular involvement. The woman looked unduly ill for the size of the lesion.

The main points of interest in these two cases are: (1) the patients were 65 and 62 years of age; (2) both growths appeared to take origin in relation to necrotic teeth; (3) neither growth presented the hard, irregular, nodular appearance of textbook description. Both were smooth and rubbery in consistence, with clean-cut ulcers upon them; (4) the patients looked unduly ill, having regard to the extent of the lesions.

JOHN J. ROBB, M.C., M.B., F.R.C.S.,
Assistant Surgeon, Dundee Royal
Infirmary.

ON CLEANSING FOUL MOUTHS

The purpose of this note is to record a method of treating cases of generalized stomatitis which has been found useful in practice. It met with particular success in three cases which were marked by very foul mouths secondary to general systemic conditions. These cases were of pemphigus, purpura haemorrhagica, and agranulocytic angina. In the case of pemphigus the mouth and pharynx had become so ulcerated and foul, in spite of ordinary routine mouth toilet, that the patient was almost completely unable to swallow, and a gastrostomy was very seriously considered. The method about to be described cleaned up the mouth in a few days.

Every two hours when the patient is awake, and at least every four hours if asleep: (1) The mouth is thoroughly sprayed in every part of it with a 1 in 2,000 solution of peracaine in glycerin, about half an ounce to an ounce of the solution being used. This renders the mucous membrane sufficiently anaesthetic for the patient to tolerate vigorous swabbing. (2) Advantage is taken of the oral anaesthesia for the patient to be fed, and whatever form of liquid nourishment has been ordered is now given. (3) Every part of the mouth is thoroughly swabbed with a 50 per cent solution of hydrogen peroxide, and then re-swabbed again just as thoroughly with citric acid solution, 10 grains to an ounce of water. Soft swabs held in forceps should be used, and every corner of the mouth must be reached. (4) The mouth is irrigated with a pint of eusol solution, one part to three parts of water. The irrigation is carried out by means of a catheter attached to a douche can or by the use of a Higginson syringe.

The success of the method is dependent upon the peracaine anaesthesia permitting really thorough swabbing, and upon the use of three antiseptics one after the other instead of merely one. Incidentally, I have found eusol solution, 1 in 3 or 1 in 4, the most effective of all gargles for tonsillitis. It should be used hourly.

H. L. MURRIOTT, M.D., M.R.C.P.,
Dental W.I. Royal Medical College, Manchester Hospital;
Assistant Physician, Miller General Hospital

Reports of Societies

THERAPEUTICS AND PHARMACOLOGY

Therapeutic Action of Injectio Ferri

At the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, on January 9th, with Dr. J. H. BURN in the chair, a paper by Dr. L. J. WITTS and Mr. G. N. BURGER, on the therapeutic action of injectio ferri (*B.P.*), was read by the former.

Dr. Witts said that those of them who were interested in the treatment of anaemia were rather surprised when the injection of iron was introduced into the *British Pharmacopoeia*, 1932. The inclusion was made because there was a general feeling that injections of iron were useful; but general feelings of that kind were often erroneous, and, from what he had seen before, the reputation of injections of iron had been almost entirely based on the treatment of patients who would have got well without any treatment at all, or, in many cases, on the psychological effects of injections on patients with debility who were not really suffering from anaemia. The results of following up the treatment by injections of iron showed that the results were almost uniformly unsatisfactory. Until the last few years little was known about the effect of injections of iron. It had been concluded that iron was of no value at all when it was injected, and that it was only active when it entered the body by the alimentary tract or the portal circulation; but recent experiments left no doubt that anaemia in human beings could be cured by the injection of iron; such treatment, however, was found to be fraught with difficulty, because the therapeutic dose of iron by injection was so close to the toxic dose. It was not usually realized how toxic iron was by injection, although this had been established by animal experiments. The maximum official dose of injectio ferri (*B.P.*) was 2 c.cm., which contained 7 mg. of metallic iron. He proceeded to show how these injections had been carefully tested in ten cases of anaemia. These were chronic and torpid cases, which showed no tendency to spontaneous recovery, and were unlikely to be influenced by uncontrollable factors. After an adequate control period injectio ferri (*B.P.*) was given intramuscularly daily for periods of from ten to twenty-one days. In no case were toxic symptoms observed. It was found to be of advantage to add 3 per cent. procaine hydrochloride to the injection of iron, as otherwise there might be local pain. After the experimental period of parenteral administration, oral administration was continued, usually 90 grains of iron and ammonium citrate.

Dr. Witts showed graphs and described in detail the history of eight of the ten patients to whom the official dose was given. All these patients subsequently responded well to large doses of iron by mouth, but two did not respond at all to the injection of iron. The iron was always more effective by mouth than by injection, as shown by the occurrence of a second reticulocyte crisis in every case, and there was also always an increase of haemoglobin. In only one instance was the increase in haemoglobin greater during the injection period than during the administration by mouth. He concluded by saying that hypochromic anaemia in human beings could sometimes be repaired by injection of iron, but this was much inferior to large doses of iron by mouth. Iron absorbed by the body in anaemia was converted, roughly quantitatively, into haemoglobin. It was not a mysterious stimulus to the bone marrow, but a raw material for haemoglobin manufacture. A calculation from the average values for the increase of haemoglobin during the injection period of iron in these cases showed that to cure anaemia of ordinary severity the maximal official dose of iron would have to be injected daily for four months. The only other way in which to approximate to as good an effect by injection would be to double the daily dose (as was done in two of the ten cases for a short period) for about six weeks. In the great majority of cases this

would be intolerable to the patient and fantastically expensive as compared with administration by mouth. One could only reiterate the opinion that the injection of iron was a very unsatisfactory form of treatment for anaemia, save in the most exceptional cases, and that the minute dose of iron so commonly given by weekly or bi-weekly injections was a very irrational form of treatment for anaemia, and one to be deplored.

The PRESIDENT said that he was one of those who were responsible for urging the inclusion of *injectio ferri* in the new *British Pharmacopoeia*, but the trouble was the absence of precise clinical observation. Dr. Witts had very clearly proved his case, and one might almost suggest that it looked as though, if they wanted to get precise clinical observations about any particular substance, they should put it in the *British Pharmacopoeia* first of all, and then people would be more interested to make careful observations concerning its use.

Toxic Effects of the Carbon Tetrachloride Group

Sir WILLIAM WILCOX, at the same meeting, spoke on the toxic effects of substances of the carbon tetrachloride group. He said that these substances were coming into increasing use for many purposes commercially, and their toxic effects must not be disregarded. These effects varied according to the way in which the drug was administered, the time factor, and many other conditions. These carbon tetrachloride substances had been known for many years, and in old literature one discovered that many of them were employed for anaesthetic purposes and afterwards discarded. Carbon tetrachloride, for example, was introduced many years ago at about the same time as chloroform, and it was found to be inferior. All these drugs were anaesthetics. They had a toxic action on the brain, they were fat-soluble, were quickly absorbed, and produced narcotic effects. He had on several occasions called attention to the danger from liver poisoning of this group of drugs. The liver was the great protector against poisons. It was the organ which was usually the first to give up its life, so to speak, for the rest of the body. It had always occurred to him that the toxic effects of a drug really depended on the percentage in the blood at any particular instant, and that was specially so with a drug like chloroform. If there was 6 per cent. chloroform vapour in the air inhaled a few breaths might kill, whereas one might go on breathing 2 per cent. chloroform vapour for days perhaps without danger. In 1909 a young lady was having her hair shampooed at a London stores when she fell back dead. Experiments showed that in the shampoo there was 4 or 5 per cent. carbon tetrachloride, and the inhalation of this would give a high percentage in the blood. The death was due to heart failure, the poison acting on the heart muscle. Recently he had had the opportunity of seeing at the Royal Naval Hospital at Chatham three cases under the care of Captain Dudley of patients who had been subjected to the vapour of carbon tetrachloride, which had been used for extinguishing fires on board ship, and in all of these cases, probably due to the way in which the vapour was inhaled, the blow of the poison fell, not—as he thought it would do—on the liver and brain, but on the kidney, and all of them showed marked impairment of renal function. One of the cases was the most remarkable of its kind that he had ever seen in his career, for there was complete suppression of urine for ten days, with, he was glad to say, thanks to the efforts of Captain Dudley, complete recovery.

Sir William Willcox then mentioned some related substances. Of the methane group there had been a good many cases of methyl chloride poisoning owing to leakage from refrigerators; the substance had a toxic action on the nervous system. Dichloromethane was given a few years ago as an anaesthetic, and there were several deaths from it. Chloroform, another member of this group, occasionally gave rise to toxic effects. As for carbon tetrachloride itself, it was employed very largely as a solvent for fats and resins, and, in medicine, it was

administered internally for ankylostomiasis. There had been a considerable number of deaths from toxic jaundice caused by this substance; even when death did not occur the liver might be damaged. It was also used for fire extinguishers, and its vapour was very toxic. Of the ethylene group, dichloro-ethylene was a toxic substance, but he had not met with cases of poisoning from it. Trichloro-ethylene was being employed commercially for removing fat and as a solvent; and here he mentioned a case under Dr. Reginald Miller of a boy of 16, employed at some electro-plating works, where his job was to dip razor blades into a solution. Before admission to hospital he had had jaundice for a month, he had a little albumin in the urine, and his liver was enlarged. Later the jaundice cleared up, the liver subsided, and the boy got better. On inquiry at the works it appeared that there had been several cases of illness, though not such deep jaundice. Of the ethane group, ethyl chloride was a volatile liquid given as a local and general anaesthetic—not a very toxic substance, but there had been fatalities owing to its action on the brain. Tetrachloro-ethane was used rarely now, but at one time, when it was largely employed for varnishing aeroplane wings, there was a great outbreak of toxic jaundice in the aeroplane factories. It was still being applied, though on a small scale, as a solvent of cellulose, and cases of jaundice were being reported. Avertin, the new anaesthetic, was quite obviously, from its composition, a liver poison and a drug which must be administered with care. It was a good basal anaesthetic, but toxic to the brain and liver, and therefore his advice to those who gave it for anaesthetic purposes was not to use it in such a dose as to give complete anaesthesia, but only amnesia, and to supplement it with a safe anaesthetic such as gas and oxygen.

Captain S. F. DUDLEY, R.N., gave some details of the Chatham cases to which Sir William Willcox had referred. The fire extinguisher cases were practically unique, but it was interesting that cases of carbon tetrachloride poisoning had occurred in the felt hat trade in Germany, where hats were dipped into a solution containing this substance, and this seemed to rule out the possibility which had been suggested that in the Chatham fire the trouble was due to decomposition products caused by heat. The first of the cases began with vomiting and gastric disturbance, and a few days later developed mild jaundice. At the end of ten days the patient suddenly went into epileptiform convulsions, with blood pressure 220 mm. Hg, and blood urea over 300 mg. per 100 c.cm. Oedema of the lungs developed, and it appeared inevitable that the man would die, but he made a most remarkable recovery. There was no significant change in the urine apart from a very mild albuminuria. He thought similar cases might arise in other conditions after the employment of a fire extinguisher, and be attributed to the effect of a stuffy garage or saloon car, nobody remembering the cylinder of extinguisher which was used a day or two previously. The patient, who was almost moribund, had had only five minutes' exposure to the vapour and had emptied only half a cylinder, while another man, who was taking turns with him in putting out the fire, and must have had the same exposure, complained of no subjective symptoms, though on examination he was found to have an increased blood urea and a transient albuminuria. Only the other day there was a fire in one of the electrical shops in the dockyard, and as water could not safely be used in an electrical fire thirty cylinders of fire extinguishers were employed, and fifteen men were exposed for various periods from five minutes to half an hour. This, however, was in a big, well-ventilated workshop, and on examination afterwards he found, except in one man with a slight trace of albuminuria, nothing abnormal. One man had nausea and vomiting, but this he attributed to the sickly fumes from burning electrical installations. There was no sign of kidney damage in any of these men. Cases of slight poisoning from extinguisher vapour were easy to miss, but he imagined there must be a good many cases about that were attributed erroneously to other causes.

Reviews

SCIENCE AND SOCIETY

Our reason for considering in a single review the two books now under notice is that the reflection reached at the end of the one is the basis and *raison d'être* of the other. Professor RAYMOND PEARL concludes his book, entitled *Constitution and Health*,¹ with the statement:

"There is a kind of moral necessity to go forward in the attempt to get a better understanding of the whole nature of man, lest he perish. The material, mechanized civilization he has evolved may easily become a monster to destroy him unless he learns better to comprehend, develop, and control his biological nature. It is beginning to be seen that inventions and discoveries that cannot be intelligently managed after they are made are likely to be a curse rather than a blessing. The fact is, there has been a sad lagging behind the advance of science on the part of the non-scientific world."

The professor of biology in the Johns Hopkins University is concerned primarily with the understanding of human nature, while Dr. FRANK TRINCA, basing the importance and value of his work on a realization of the same need, is concerned primarily with economics in his book entitled *Science and Democracy*.² Until quite recently, and even now, except to a very limited extent, it has not been customary in orthodox works on economics to consider how far an understanding of the human element may modify its dry and abstract conclusions; so that, beyond the motive of setting forth the application of scientific knowledge in their respective spheres, a further link between the two volumes may be found in the necessary relationship of the one sphere to the other. Dr. Trinca strikingly quotes Professor William McDougall as saying:

"When conditions are bad, men are without work, children short of food, the malady from which society is suffering is plain ignorance of how to manage affairs of economics by knowledge of laws of life. In order to restore the balance of civilization, in order to adjust our social, economic, and political life to the violent changes which physical science has directly and indirectly produced, we need to have far more knowledge of human nature and of the life of society than we yet have."

Otherwise the two books are of a very different character.

Professor Pearl's little work—one of the *Psyche Miniatures*—is extremely interesting. Though not formally so divided, it really consists of three sections. In the first is considered the different approach of the biologist and of the ordinary medical man to the subject of human disease. It is put thus:

"The biologist who interests himself in pathology looks primarily upon disease as merely one part of the general biology of the organism. He thinks of it first as an interesting aberration from the usual normal functioning of the whole organism rather than as a specific, discrete, inimical entity, fastening on its victim. Medical men in the practical conduct of their business commonly tend to think of a disease as 'attacking' a man. The physician's function is often described as 'combating' or 'preventing' it . . . The biologist's way of looking at the matter is in sharp contrast to this: for him the alteration of the biology of the organism is the disease."

This passage is very apt just now, when it is becoming more and more important that a biological training should be made the foundation of that of a medical practitioner, and that the biological point of view should be ingrained in his thought and study. In the second section the author is concerned with the proper use and exact connotation of the word "constitution" as applied to

human beings. One usage implies that, at any given time, an individual's constitution is what he is, the totality of the particular individual being biologically considered, without immediate concern as to how it came to be what it is. Another usage implies that "constitution is *genetic* constitution *et præterea nihil*, determined solely by entailed ancestral genes, and therefore irrevocably fixed and without possibility of change except by gene mutations or accidents of meiosis." There is unfortunately a third use of the word by some writers to which Professor Pearl does not refer, meaning the bodily make-up at the moment of birth. This is, of course, merely a particular application of the first concept to a special moment, and should not imply anything as to how it came to be what it then was; but, unfortunately again, some of the writers thus using the word seem to assume that all the elements making up the "constitution" are of hereditary origin, an essential fallacy with serious consequences. It is important to be quite clear in any discussion as to which of these senses should be attached to the word. Professor Pearl would seem to wish it to be confined to the first connotation, but surely the second may be legitimate and useful if definitely understood. The author's discussion is illuminating, and incidentally he gives a somewhat fresh presentation of the meaning of "heredity" and "environment." In the third section Professor Pearl records the results of an investigation into the susceptibility to disease of human beings of different constitutions—the asthenic (tall and slim), the pyknic (thick-set), the euplastic (symmetrical), the dysplastic (asymmetrical). These are, of course, cross classifications as to bodily habitus, both asthenic and pyknic types being euplastic. In view of the importance—an altogether undue importance as many think—which has been recently attached by some physicians and psychologists to these types, the results of the author's investigations are valuable. The conclusions are that:

"None of the differences in respect of health in the several bodily habitus types can be regarded as significant. They are not greater than might be expected to arise in random sampling. There is no sensible difference in general health between asthenics, pyknics, or intermediates taken as classes. . . . A careful statistical examination of rather accurate, if not very extensive, material does not yield evidence of any very marked or striking association between bodily habitus and general health."

Dr. Trinca's book is much longer and more laboriously constructed. It cannot be said to be so scientifically based, and it is adorned by a large number of remarkable split infinitives. It embodies, however, the exposition of a suggestion of fundamental importance with regard to the relations of scientific discovery, industrial expansion, and economic prosperity or depression. Dr. Trinca holds that, while it is the relationship between industry and finance which has hitherto almost exclusively engaged economic thought, the relation between science and industry is of far greater fundamental importance, and that this, if properly understood, will solve many of the difficulties with which the world is now faced and which the professed economists have so far acknowledged to be very incompletely solvable by them. The main fact is that, while there may be an almost continuous movement of minor scientific adaptation and improvement, the basic discoveries resulting in major industrial progress are by no means continuous, as most economists have assumed, but occur only as epochs; and that even when this matter has been perceived by economists its importance and its consequences have not been given the weight which should be attached to them. Dr. Trinca works out his thesis with great care and precision. But it is not every reader who will be able to accompany him so appreciatively through his later chapters.

¹*Constitution and Health*. By Professor Raymond Pearl. London: Kegan Paul, Trench, Trubner and Co. Ltd. 1933 (Pp. 17. 2s. 6d. net).
²*Science and Democracy*. By F. Trinca, M.C. M.B. Melbourne: Brown, Prior and Co. Pty. Ltd. 1933 (Pp. 201, illustrated).

GENERAL EFFECTS OF CHRONIC NASAL
SINUSITIS

A second edition of *Chronic Nasal Sinusitis and its Relation to Medicine*,³ by PATRICK WATSON-WILLIAMS, has been found necessary in a short space of time after the publication of the first edition. The scope of this book is wider than the title might lead the reader to expect, for although the part played by the accessory sinuses is the chief consideration, the work is really an account of the relation of focal sepsis to general medicine. Dr. Watson-Williams has been known for some years as an advocate of examination of the accessory sinuses, especially the sphenoidal, in certain cases of insanity, and he here gives a detailed account of his views on the relation between focal sepsis and pathological states of the nervous system. He has added some further interesting observations in the present edition. The illustrations also have been amplified, in particular by some drawings made by the author himself of the views obtained by nasal endoscopy.

The importance of this aspect of general medicine has now been established for many years, but its importance is no greater than the difficulties and contradictions with which its application is beset. Dr. Watson-Williams does not neglect to indicate the caution required, and warns against an obsession which may cause diabetes or a malignant neoplasm to be overlooked. Although a portion of the book is devoted to rhinological technique, much of which the author has himself devised, the greater part must be of profound interest to the general physician and of help in the elucidation of many obscure maladies.

NEUROPATHOLOGY

Two new books on neuropathology have reached us from Chicago. In the *Histopathology of the Peripheral and Central Nervous Systems*,⁴ Professor HASSIN has drained a rich store of experience and observation. How wide a field is covered is shown by the chapter headings, which include more than one hundred and fifty different morbid conditions of the nervous system. The descriptions of most of these, while not exhaustive, are at least adequate to the needs of the average reader, and they are supplemented by a profuse bibliography and good photomicrographs. The author's training in the German school of neuropathology is everywhere evident. Indeed, his frequent use of German descriptive words may be confusing to those unfamiliar with the subject, and he does not always seem to have corrected his earlier learning in the light of more recent discoveries by the Spanish neurohistologists. He is apt also to take for granted more knowledge of the normal histology of the nervous system than is usually possessed by neurologists, as he has been obliged by considerations of space to omit any general description of neurons and neuroglia cells, and of their alterations in disease. While in most respects the book follows conservative lines, the author's unconventional views of the pathogenesis of some diseases, such as tabes dorsalis and hydrocephalus, give it a spice of originality. The last thirty pages, on staining methods used in neuropathology, are a valuable addition to the book.

Dr. WEIL's *Textbook of Neuropathology*⁵ may be said to fill the gaps left by Professor Hassin. Here the reader will find clear statements of the chemical structure and

metabolism of nervous tissue, as well as of its cellular structure, and of the changes to which its various cell types are liable in disease. The discussion of the effects of post-mortem autolysis and fixation on the brain is valuable and suggestive, and the description of post-mortem technique will be helpful to many. There are excellent chapters on inflammation and the effects of toxins, and the survey of tumours of the nervous system is remarkably complete. From it we learn that tumours of the brain are the cause of death in from 1.5 to 2 per cent. of the population. These figures, which are taken from German sources, and go back as far as the year 1854, are in remarkable agreement with those which have just been published from the Leeds General Infirmary by Garland and Armitage, and which cover the years 1910-31. Throughout the book full use is made of tables, which convey much valuable information at a glance. Indeed, the author has everywhere succeeded in presenting his subject in a concise and yet easily assimilable form. In this he is helped by the numerous excellent illustrations. In many respects it is a book which breaks new ground, and which should therefore be valuable not only to the beginner, but also to those who already possess considerable knowledge of the subject.

RESULTS OF ARTHRODESIS OF THE HIP

Dr. PAUL BUFNOIR was for some years house-surgeon at the Maritime Hospital at Berck-sur-Mer, of which at that time Professor E. Sorrel, now of Paris, was the director. Dr. Bufnoir has since made a study⁶ of late results of operations for the fixation of affected hips in cases of coxalgia to which Professor Sorrel contributes a valuable preface. It is important to ascertain to what extent the apparent good results of arthrodesis, at the time of discharge from hospital, are maintained in the course of years. The facts ascertained by Dr. Bufnoir on this subject should be of considerable value to surgeons anxious to know which method gives the best prospect of permanent relief. He has followed up one hundred cases which were discharged in excellent condition, of which he succeeded in tracing seventy-five, who long after discharge have continued to carry on their occupations and live a normal life. These seventy-five cases have furnished indications from which to judge the value of the different proceedings employed.

In the first part of the work Dr. Bufnoir discusses the arthrodeses effected in cases of active disease (generally in adults), but rarely in children (eight old-standing cases), and concludes that in adults arthrodesis improves the prognosis in hip disease in selected cases. It appears to him that the best method is the para-articular with rigid tibial bone graft after Albee's method. These late results were better than had been expected, and, according to Professor Sorrel, this operation, still rather new (for plenty of arthrodeses for the sequelae of hip disease have been performed, but very few in active disease), deserves to be better known and more often practised than it is at present. In children, on the other hand, arthrodesis seems usually inapplicable, and, except in chronic cases, it should not be done (Sorrel).

In the second part of his book Dr. Bufnoir discusses arthrodesis for the sequelae of hip disease. He quotes thirty-eight old-standing cases, and comes to the following conclusions: Arthrodesis of the hip is a very good operation in cases in which the joint remains movable but painful, with a tendency to a vicious position; there are numerous techniques available; simple intra-articular arthrodesis is generally inadequate and should be abandoned; juxta-articular arthrodesis of the Mathieu-

³ *Chronic Nasal Sinusitis and its Relation to General Medicine*. By P. Watson-Williams, M.D. Second edition. Foreword by Sir Humphry Rolleston, Bart, M.D. Bristol: J. Wright and Sons, Ltd. 1933. (Pp. 382; 122 figures. 15s. net.)

⁴ *Histopathology of the Peripheral and Central Nervous Systems*. By George B. Hassin, M.D. London: Baillière, Tindall and Cox. 1933. (Pp. 481; 227 figures. 36s.)

⁵ *A Textbook of Neuropathology*. By Arthur Weil, M.D. London: H. Kimpton. 1934. (Pp. 335; 260 engravings. 25s. net.)

⁶ *Les Arthrodeses dans la Coxalgie*. Par Paul Bufnoir. Paris: Masson et Cie. 1933. (Pp. 110. 29 fr.)

Willmott type gives excellent results, and better still when combined with an intra-articular method. In a final special chapter the author indicates the troubles which may arise from the opening of foci of active disease in the course of operations; whenever this happened in cases of active hip disease the results were bad. In cases of the sequelae of hip disease, however, the opening of an old focus, not quite extinct but of little virulence, is of no consequence.

This book is illustrated with reproductions of radiographs and case reports, and should be useful to surgeons. No indication is given, however, of the precise pathology of the various lesions discussed. It is to be presumed, however, that at Berck-sur-Mer most of the cases were tuberculous.

THE POCKET ANATOMY

A good rule in learning anatomy is to follow the advice we once heard one student give another—that of looking up any doubtful point at once. With dissections and lectures over, and the examinations approaching, the average student will often have occasion to refer to a book in this way, and the *Pocket Anatomy*¹ has for many years been a favourite for this purpose. The compression which has enabled the main facts of anatomy to be presented in 300 small pages, and the absence of illustrations, make the volume unsuitable as a textbook. Its usefulness lies in the fact that it really will go into the pocket; and, owing to the arrangement under systems, the plan of lettering and bracketing adopted, and the provision of an excellent index, facts can be verified with the minimum of effort. The student will find it necessary to consult the larger textbooks for the more accurate detail. The statement that the posterior thoracic nerve pierces the scalenus medius muscle is not strictly true. A description of the pancreas is given without any mention, for example, of the accessory duct. Such brevities are unavoidable in a book of this size, though they may fail to satisfy the more academically minded. The new edition differs from its long line of predecessors in the change to the nomenclature recently adopted by the British Anatomical Society; here the glossary given at pages 303-306, containing the old equivalents of the new terms, will be found of great value. Another change is in the section on the nervous system, which has been brought up to date by the inclusion of additional matter on the autonomic nervous system. There is no doubt that in its new form the familiar *Pocket Anatomy* will continue to enjoy the popularity it has had for so many years.

Notes on Books

The second decennial *General Index to the British Journal of Surgery*² relates to vols. xi to xx, and covers the period from July, 1923, to April, 1933. In the preface Sir D'ARCY POWER points out that its appearance marks a further stage in the progress of British surgery, for, whereas its predecessor revealed the then domination of war surgery, the present volume is mainly concerned with civil work, attention being devoted more especially to the surgery of the nervous system, the alimentary canal, the liver, and the ductless glands. With advancing knowledge and new achievements a new nomenclature is necessarily being created, and Sir D'Arcy Power remarks that the multiplication of terms will soon call for the compilation of an explanatory dictionary! Book reviews appear in two lists: under their titles and under the names of the authors. The index will unquestionably be of great assistance to those who wish to trace references to topics in any of the widening fields of modern surgery.

¹ *The Pocket Anatomy*. By C. H. Fagge, F.R.C.S. Ninth edition. London: Baillière, Tindall and Cox, 1933. (Pp. 333, 8s.)

² *The British Journal of Surgery. General Index, 1923-1933*. Numbers 41-50. London: Simpkin Marshall, Ltd., 1933. (10s. 6d. net.)

We have received a copy of the August, 1933, issue of *Archivos de Medicina legal e Identificação*,³ the official organ of the Brazilian police. The work contains original articles and lectures on criminal anthropology, new methods of medico-legal laboratory technique, instruction in medical jurisprudence in Brazil during the last hundred years, the detection of mental diseases in prisons, legislation on the insane, the penitentiary of São Paulo, sterilization of the unfit, the psycho-analytic conception of punishment, women in the prevention of crime, and records of cases of medico-legal interest, news, and reviews. This publication will be sent gratuitously to scientific institutions or medico-legal specialists on request made to the director, Leonarido Ribeiro, 84, Rua do Lavradio, Rio de Janeiro, Brazil.

The second edition has now been issued of *The Conjoint Finals*,⁴ a reproduction of all the questions set in medicine, surgery, and midwifery from 1911 to 1932 at the English Conjoint Board examinations. These are classified under the various systems and arranged in the chronological order of their setting. A new section has been added to this edition relating to pathology and bacteriology. Such a compilation will no doubt be welcomed by the medical student approaching his final examinations.

The Imperial Bureau of Animal Health has compiled a list of publications relating to animal health and disease under the title of *Index Veterinarius*,⁵ the first volume being dated April, 1933. The book has been produced by a duplicator, but the text is easily readable, and careful designing has ensured that any particular reference can be traced quickly. One section is devoted to abbreviations of the names of publications. This is followed by a classified alphabetical author-index and subject-index of signed articles, and a classified subject-index of anonymous articles. This arrangement should prove satisfactory in general use, especially as care has been taken to provide full cross-references, and instructions at the beginning of the volume show how to proceed in any particular inquiry. So painstaking an effort should need no special commendation to those concerned with diseases of animals who desire information about the literature relating to the subject.

³ *Archivos de Medicina legal e Identificação*. Rio de Janeiro: Imprensa Nacional, 1933. (Pp. 302.)

⁴ *The Conjoint Finals*. By G. N. Beeston, M.R.C.S., L.R.C.P. Second edition. London: John Bale, Sons and Danielsson, Ltd., 1933. (Pp. 158, 6s. net.)

⁵ *Index Veterinarius*. Vol. i. No. 1. 1933. Weybridge, Surrey: Imperial Bureau of Animal Health. (Pp. 303. Annual subscription, £4.)

New Preparations

DEKRYSL

Dekrysl (Crookes Laboratories) is a preparation of 4:6 dinitro-o-cresol. Attention was drawn to the powerful action possessed by dinitrophenol of raising basal metabolism by work in Heymann's laboratory in 1928, and the clinical application of this action has been investigated (Tainter et al., *Journ. Amer. Med. Assoc.*, 1933, ci, 1472). Dodds and Robertson (*Lancet*, 1933, ii, 1137, 1197) investigated dinitro-o-cresol, and found it to be approximately five times as active as dinitrophenol. The relation of these drugs to trinitrophenol has naturally suggested the possibility of their producing injury to the liver, but little direct evidence of this has been obtained.

Dodds and Robertson found that dinitro-o-cresol was extremely potent in raising basal metabolism, and suggested a dosage of from 0.5 to 1 mg. per kilo of body weight. They observed that the drug caused reduction in body weight but unfortunately did not produce any general relief of the symptoms of myxoedema. It is therefore suitable for the treatment of obesity, but does not relieve thyroid hypofunction. These authors found that toxic symptoms occurred when the basal metabolism was raised more than 50 per cent.

Dekrysl is put up in capsules containing 50 mg., and the makers wisely stress the fact that it is an extremely potent remedy, to be used with caution and respect. Dekrysl is obviously a very powerful drug with an extremely interesting pharmacological action. The manufacturers have taken the wise precaution of marking their bottles "To be administered only on medical prescription."

British Medical Journal

SATURDAY, JANUARY 20th, 1934

LONDON COUNCIL HOSPITAL SERVICES

Now that more than three years have elapsed since the "appointed day" under the Local Government Act, 1923, on which the hospital and allied medical services were transferred to the London County Council, the Central Public Health Committee of that body has prepared an account of the administrative progress made in the direction of co-ordination and satisfactory establishment of the services in question. The London County Council has now under its management seventy-four hospitals, in which all types of cases are treated. The annual cost of maintenance is not far short of four and a half million pounds, and the staff approaches a total of 18,500. The committee realizes that it is too soon to claim that the task of building up a satisfactory municipal hospital service for London on the basis of services formerly provided by twenty-six separate authorities is within sight of completion or is likely to be achieved for some years; but the transition from diversified control to central direction has taken place smoothly and successfully, and, administratively, the services have been placed on a basis which renders possible sound development in the future.

One new convalescent hospital of 500 beds (at Sidcup) has been acquired, and another of 320 beds (at Tooting) reopened. At about thirty hospitals major schemes of extension and enlargement have been carried out. Accommodation for maternity cases has been extended by 112 additional beds, and arrangements have been made for ante-natal attendances at all the general hospitals at which there are maternity wards. A comprehensive modern pathological laboratory service has been made available for all hospitals, and a consultant and specialist service has been established. The district medical service has been reorganized, subject to further review in two years' time, and greater use is being made of the voluntary district nursing services in London. The total bed accommodation in the hospitals and allocated institutions on transfer was 41,164, but this included 9,620 beds in institutions, the majority of which could not be regarded as suitable for the proper treatment of sick persons. When certain well-advanced structural works are completed the accommodation in the hospitals will show a net increase during the three years of more than 1,400 beds. There is an increasing demand on the Council's maternity accommodation. During 1932 more than one-sixth of the births in London occurred in the Council's institutions. Special arrangements have been made for women suffering from puerperal fever, and out of nearly 11,000 cases confined in the hospitals in 1932 there were only twelve deaths from puerperal infection. The ante-natal clinics were attended in 1932 by 9,448 expectant mothers, who made 48,618 attendances.

At very few of the general hospitals had the late boards of guardians granted facilities for medical education or research. Arrangements have now been made to afford facilities for clinical demonstrations to undergraduate and post-graduate students at a number of the Council's hospitals and to associate for the purpose each teaching hospital in London with one or more of the municipal institutions. This includes teaching in obstetrics at two of the Council's hospitals, and it is gratifying to learn that the facilities for this teaching will in course of time be extended to all the medical schools. Facilities are also afforded at the Council's pathological laboratories to post-graduate students in order that they may obtain experience in technical and administrative methods. Here we may recall that the British Post-Graduate Hospital and Medical School, in association with the Council's hospital at Hammersmith, will be ready for opening about November, 1934.

With regard to the medical staff, numbering about 300, it is mentioned in the Central Public Health Committee's report that scales and conditions have been approved and establishments fixed. A complete consultant and specialist service in all necessary branches has been organized on a sessional basis at groups of hospitals, and it is considered that a part-time consultant service is better than a whole-time service, but provision is made for the apportionment of the services of whole-time consultants when this is considered advisable. More than 200 appointments of part-time consultants have been made. "The Council's scales of remuneration approximate to those of the British Medical Association, except in the case of anaesthetists, where the existing scale for anaesthetists employed in the school medical service was taken. In selecting consultants and specialists to fill the positions the Council had the valuable assistance of many eminent members of the medical profession." The Council's female nursing staff, for which scales and conditions have also been approved, numbers about 9,000. It is added that since the transfer in 1930 meetings have taken place on five occasions between representatives of the London Voluntary Hospitals Committee set up for the purpose of consultations under Section 13 of the Local Government Act, 1929, and the Council's representatives, when matters of mutual interest have been discussed. More frequent conferences of this kind would be all to the good.

CONCERNING ATELECTASIS

American medical literature is full of references to the subject of atelectasis; we in England have not taken kindly to this name, preferring the description lobular, lobar, and massive collapse for the acquired forms and retaining "atelectasis" for those of congenital origin. Massive collapse occurring after operations on the thyroid, abdomen, and buttocks is by now a familiar condition, which Briscoe has ascribed in part to contraction of the crural portion of the diaphragm, leading to deflation of the lower lobe. This occurs in conditions of debility or toxæmia, and local inflammation or pleurisy may initiate or increase the process. With

regard to the less dramatic event in which smaller portions of the lung collapse we are only beginning to recognize and separate it from a welter of other conditions, such as chronic pneumonia, fibrosis, and the like. It is probably commoner in chronic pulmonary tuberculosis than has hitherto been thought, and it is likely to be the explanation of those sudden cures and alterations of extensive x-ray shadows for which an explanation has previously gone begging. But Rosenblatt¹ quotes a case following haemoptysis in which the severity of the condition was probably increased by the administration of large doses of morphine. This author follows ordinary opinion in reviewing possible factors, such as a plug of tenacious sputum and bronchial stenosis due to a lesion round the bronchus (in this case the collapse is likely to be permanent), concluding that it is reasonable to assume that in this patient the atelectasis was caused by a blood clot retained in a bronchus and plugging it for a sufficient length of time to allow the residual air to absorb and the lung to collapse. Ehrenburg² browses over the whole subject in a rather inconsequent way, but does produce evidence that this explanation is not borne out by the experimental work reported in the literature. In animals it is only with great difficulty that a bronchus can be blocked, since the threefold mechanism of cough, peristalsis of the bronchial muscle, and ciliary action forms a very effective protective contrivance. In particular the work of Van Allen and of Lee shows that it is usual to fail to produce atelectasis in dogs with all the more obvious methods. In man blood-stains have been observed, through the bronchoscope, to travel from the carina to the larynx in a few minutes in patients under general anaesthesia.

Experimental evidence goes to show that the usual theory that collapse is due to occlusion of a bronchus by mucus, inflammatory matter, or caseous masses may be incorrect. Two explanations remain: the first is that there is reflex contraction of the sphincter muscle of the respiratory bronchiole described by Miller; the second, which is Ehrenburg's own view, appears to be a development of the observation that at rest many alveoli are collapsed. We yawn or take a deep breath on waking up; we advise patients suffering from prolonged illnesses to shift their position to make them cough or breathe deeply. In the atelectasis of pulmonary tuberculosis there is, he says, "atrophy from inactivity of the lung parenchyma followed in long-standing cases by hyperplasia of the connective tissue." The difficulty of distinguishing, in the x-ray film, fibrosis from pulmonary collapse lies largely in the varying density of the shadow cast by the collapsed area. This depends entirely upon the degree of vascularization, as shown in observations during collapse therapy. Ehrenburg quotes the experiments of Andrews, who proved that the gradually collapsed lung continues for the first eight days to transmit 30 per cent. of the calculated cardiac output. Since the collapsed lung gradually becomes fibrotic its blood supply diminishes, and thirty

days later it transmits only 8 per cent. Of obvious assistance in diagnosis are the displacements of the mediastinum and the rise with peaking of the diaphragm on the corresponding side. Sometimes the condition can only be recognized by the sudden alteration in a subsequent x-ray photograph in which the shadow has apparently cleared. In Ehrenburg's second case the patient was suffering from urticaria at the time of his attack of lobar collapse, and as this could not be relieved by strict dietetic measures "it was evidently an allergic reaction to his bronchial secretion. Such an allergic reaction might occur during his relapse and might be responsible for the spasm of the bronchial muscles with occlusion of a middle-sized bronchus." The reasoning here is hardly convincing, and many observations will be necessary before this particular line of explanation will be generally adopted.

Various problems in connexion with the so-called pulmonary atelectasis in the newborn have never been altogether satisfactorily solved, and yet the subject is of great practical importance if a big group of cases of respiratory failure at this age is to receive proper treatment. In a recent valuable review³ of the disorder Drs. S. Farber and J. L. Wilson survey the somewhat controversial literature dealing with the problem, and produce useful new evidence of their own findings. One difficulty in investigating the subject has always been the histological similarity between a lung that has never expanded and a lung in which inadequate or enfeebled respiration has led to a secondary "resorption" of air and subsequent collapse. Some workers have expressed the view that all atelectasis in the newborn is of the latter type, but the present authors, from observations on human subjects and from experimental evidence, point out that once expansion of an alveolus has occurred the lining cells lose their foetal cuboidal shape, become flattened, and never again return to the original appearance. They further point out that the expansion of the lungs is not a sudden process, accomplished by the first breath, but that, even in the full-term infant who breathes well and suffers from no obvious interference with respiration, from two to four days are normally required for complete expansion of all portions of both lungs, microscopically as well as grossly. In the case of the premature infant a period of six weeks or longer may be required. It follows that the finding of a certain amount of unexpanded pulmonary tissue at necropsy in an infant dying in the first few days of life is to be regarded as a normal condition, and cannot be accepted in itself as a cause of death in the newborn. A further difficulty arises in premature infants, for solid areas of parenchyma superficially resembling atelectasis may be found which, on detailed study, according to the present workers, actually represent portions of incompletely developed pulmonary tissue which are quite incapable of expansion. In a further study⁴ Farber and Wilson attack the problem of the pathogenesis of atelectasis in the newborn. Asserting that the "resorption" type of

¹ *Brit. J. Tuberc.*, xvi, August, 1933.
² *Ibid.*, xvi, October, 1933.

³ *Amer. Jour. Dis. Child.*, 1933, xvi, 572.
⁴ *Ibid.*, 1933, xvi, 590.

atelectasis must be secondary, they proceed to analyse the causation of the primary type of collapse, believing that even in such cases there must be some primary cause preventing the expansion of normally developed lung. By measurement of the resistance to expansion of the lungs of dead infants and of dead and living animals they show that cohesion of the moist surfaces of the air passages in collapsed and airless lungs offers a considerable obstacle to the entrance of air, and that a relatively great force is required to separate the bronchial and alveolar walls during the initial expansion. The first breath of a newborn baby may thus be a most difficult one, and for a variable period after birth especially vigorous inspirations must be maintained. Other factors are often present besides this cohesion. For example, an imperfectly developed or damaged respiratory centre may fail to bring about vigorous enough respiratory movements; or an imperfectly developed thoracic mechanism, as is seen in premature infants, may fail to provide a satisfactory bellows action in conjunction with the diaphragm. Lastly, for practical purposes, and in the absence of conclusive proof to the contrary, we must agree to the possibility that bronchial obstruction due to the inspiration of the contents of the amniotic sac, mucus, or blood may cause extensive atelectasis, especially in full-term infants. There are many practical points for treatment arising out of the two papers here summarized: among others are the importance of clearing out the airways of the newborn infant, and the prompt use of carbon dioxide and oxygen mixtures (5 or 7 per cent. of the former) to promote big respiratory movements.

RADIUM IN OPHTHALMOLOGY

Of recent years a considerable amount of work has been done upon the general uses of radium in almost every department of medicine, and for a time it seemed that in ophthalmology much less progress was being made than in other branches. One of the reasons for this has been that, so far as the eye was concerned, radiation applied in any massive dose tends to cause a considerable immediate reaction in the eye and induces unfortunate sequels, such as the development of a radiation cataract. Largely owing to the ingenuity of Mr. Foster Moore, however, it now seems to be practicable to treat intraocular malignant tumours by the technique of inserting radon seeds into the eye; and, although the method has been applied to a few cases only, and the results in these are relatively recent and can show no long after-histories, the method seems to hold out considerable promise of usefulness. It must be insisted at the start that in no case is the new treatment by radiation as safe as excision, and that radical surgical procedures are by no means superseded; but it does occasionally happen that a sarcoma occurs in an only eye or in an eye whose fellow has no useful vision, and in infancy it happens too frequently that a glioma occurs in both eyes. In each of these cases, especially in the latter, radical treatment by the excision of both eyes is a very grave and distasteful course, and any alternative which does not involve frank

danger to life ought to be carefully considered. An extremely full and informative account of this recent advance in radiational treatment in ophthalmology has been written in monograph form by Mr. H. B. Stallard.¹ He himself has worked with Foster Moore, and speaks with first-hand knowledge of the technique of the insertion of a radon seed into the eye and the subsequent removal of the seed. So far as the technique is concerned the monograph itself should be consulted; but, although the cases reported are few, it can be safely deduced that gliomata of the retina and sarcoma of the uveal tract are radio-sensitive, and that the cells are destroyed by radium emanations, the zone of destruction varying with the strength of the seed. By far the best method seems to be the intraocular insertion of the seed, for it has been found that the application of the seed to the sclera by suturing is much less, if at all, effective, and is likely to produce considerable injury to the eye. The treatment of intraocular neoplasms constitutes much the most valuable part of the monograph, but there remain several other points of interest. Angiomatosis retinae (Lindau's disease) responded well to the superficial application of radon seeds to the sclera. With reference to the epibulbar tumours, it is recommended as the ideal method of treatment that excision by the diathermy knife should be followed by the application of radium to the affected site. Similarly, for a small localized rodent ulcer still movable over the deeper tissue radium is the treatment of choice; on the other hand, while the warty type of squamous-celled carcinoma of the lids responds well, the ulcerative form of the disease is resistant to radiotherapy. Another ocular affection in which good results are obtained is haemangioma of the lids and conjunctiva. With regard to the more chronic types of conjunctivitis, such as trachoma, vernal catarrh, pemphigus, and so on, the results reported in the literature are varied, and it seems probable that the conclusion reached in the monograph—that the treatment is unjustified considering the risks involved—is sound.

THE PITUITARY GLAND AND THE ACTION OF INSULIN

Recent work on the relation between the glands which appear to be mainly responsible for the control of carbohydrate metabolism has brought to light facts which complicate the problem to a very considerable extent. No simple or even approximately complete statement can be made of the complexities of carbohydrate metabolism. From a great mass of experimental evidence the conception of gluconeogenesis (endogenous formation of sugar) has been clearly justified, and the generally accepted view as to the group of disturbances in metabolism which is called diabetes is that this process of gluconeogenesis is exaggerated and to a greater or less extent out of control. In the early days of research into the action of insulin it was considered that this hormone was responsible for keeping gluconeogenesis within bounds, and when Dale and his co-workers demonstrated that insulin produces a great increase in carbohydrate oxidation and glycogen formation in the decapitated eviscerated perfused cat it

¹ Brit. Journ. Ophthalmol., Monograph Supplement vi, 1933.

seemed that the main features of the problem were clarified. The loss in weight, the ketosis, and the negative nitrogen balance in diabetes were all regarded as manifestations of an increased gluconeogenesis. In the diabetic patient or animal insulin restored the depleted glycogen reserves, restored the normal oxidation of carbohydrate, and led to the proper control of gluconeogenesis. In the meantime, Houssay and his collaborators in the Argentine had made the important observation that if the pituitary gland is removed from a dog after the pancreas had been removed then the principal signs of diabetes disappeared—that is, excessive gluconeogenesis was not in evidence. In such an animal without pancreas and pituitary the injection of certain extracts of the anterior lobe of the pituitary led to the establishment of a condition almost indistinguishable from diabetes. These workers naturally concluded that the processes of gluconeogenesis are under the control of the pituitary (anterior lobe). They also found that hypophysectomized dogs exhibited a very greatly increased sensitivity to insulin. In a recent contribution, Corkill, Marks, and White¹ have shown that the hypophysectomized rabbit tended to develop spontaneous hypoglycaemia, and was very sensitive to small doses of insulin. This hypersensitivity was observed even when the glycogen depots were well supplied by injection of glucose, and even severe insulin convulsions did not lead to removal of the liver glycogen. These workers also found that hypophysectomized animals developed a greatly increased glucose tolerance (cf. hypopituitary obesity) and that their liver glycogen was not readily mobilized by adrenaline or vasopressin, normally or during insulin hypoglycaemia. The tentative conclusion is drawn that the insulin hypersensitivity in the hypophysectomized animal is due to stabilization of the hepatic glycogen, which may be due to the secondary involvements of the thyroid or adrenal cortex which are known to result from the removal of the pituitary. No more can be said at this stage than that our conception of diabetes must be modified to include most of the endocrine glands, and that the pituitary gland has now to be considered as a fundamental factor in this disease.

ANTIMENINGOCOCCAL SERUM IN CEREBRO-SPINAL FEVER

A considerable number of individual records of cases of cerebro-spinal fever treated with antimeningococcus serum have now been collected at the Ministry of Health in consequence of the request addressed by the Ministry to medical officers of health, hospital medical officers, and medical practitioners, to which publicity was given in the medical press in January of last year. The request was made in order to obtain material to assess, in terms of case mortality and clinical course, the results obtained from the use of the several antimeningococcus sera employed in this country at the present time. It was based on a memorandum (*Administration of Antimeningococcus Serum in Cases of Cerebro-spinal Fever*, Ministry of Health, March, 1932) in which stress was laid upon the importance of the following considerations in serum treatment: (1) As soon as the

patient is suspected on clinical grounds to be suffering from cerebro-spinal fever, lumbar puncture should be performed; serum should be injected intrathecally without waiting for bacteriological confirmation. (2) The intrathecal doses given should ordinarily be in the region of 30 c.cm. (concentrated serum 10 c.cm.). (3) The injection should be repeated every twenty-four hours over at least three or four days or until convalescence is obviously established. The Ministry, in a statement issued last week, informs us that particulars have now been received of 811 cases treated in this way. Although this number is insufficient to justify a final conclusion, nevertheless, in view of the doubts sometimes expressed as to the utility of any kind of antimeningococcal serum, it is noteworthy that the case mortality in the 811 serum-treated cases is relatively low—26.9 per cent. at all ages—and to this extent is encouraging. The Ministry desires that it should be made known that the inquiry is still proceeding, and it is hoped that the medical officers and practitioners concerned will continue to aid the Department by completing the record forms which are sent out in respect of notified cases of this disease. It is only by the collection of sufficient numbers of cases in which serum treatment has been given on the lines above indicated that any satisfactory assessment of the effect of different sera can be made.

TREATMENT OF GASTRO-DUODENAL HAEMORRHAGE

The tendency to conservative methods in the treatment of severe gastro-duodenal haemorrhage has been based on the consideration that the immediate mortality from this complication is less than that which might be expected to follow radical surgical procedures undertaken at an unfavourable time, and the operative results would appear generally to support this view. On the other hand, it is urged that this high operative mortality necessarily follows the common practice of submitting patients to operation only as a last resort, and that on the basis of such results it is unfair to discredit operations which might have been successful at any earlier stage. Pauchet¹ discusses the whole subject with special reference to treatment. He gives no statistics, but his views embody the lessons of thirty years' experience of gastric surgery. He advocates operation as soon as the patient has recovered from the shock of the first haemorrhage if the diagnosis of bleeding ulcer is certain. Great stress is laid on the importance of this exact diagnosis before operation, since Pauchet ascribes the surprisingly high proportion of two-thirds of all cases of severe haemorrhage to diseases of the blood, liver, spleen, and other obscure "dyscrasias." He considers that it is not possible to secure haemostasis by operations such as gastro-enterostomy, jejunostomy, ligation of vessels at a distance, and cauterization: patients sometimes recover in spite of, and not because of, them. Pauchet recommends a limited partial gastrectomy and direct ligation of the vessels entering and leaving the ulcer, preceded by one or more blood transfusions and followed by a caecostomy and irrigation of the bowel—the latter on the grounds

¹ *Journ. Physiol.*, 1933, lxxx, 193

¹ *Bull. et Mem. Soc. Chir. de Paris*, 1933, xxv, 355.

that absorption of toxic albumin bodies from the decomposing blood is an important contributory cause of death. In an attempt to discover any factors affecting prognosis Allen and Benedict¹ have studied the records of cases treated in the Massachusetts General Hospital during the last twenty years. Out of a total number of 1,894 patients with duodenal ulcer, 628 had bleeding in amounts macroscopically recognizable, while 138 had severe haemorrhages producing collapse and acute anaemia. In this group there were twenty deaths; of these patients twelve bled to death without operation, and eight died following operations undertaken after all hope of spontaneous recovery had been abandoned. The average age of those who died was 56.3, and of those who recovered, 41.8. Below the age of 49 there were only two fatalities in the whole series. Contrary to general belief the number of previous attacks of haemorrhage had no prognostic value: 60 per cent. died during the first attack. The average time between the onset of haemorrhage and death was sixteen days. Allen and Benedict believe that some of these patients could have been saved by early operation. They suggest as a working rule that those who rapidly lose the benefits of transfusion after a second collapse should be given a large transfusion and immediately operated on, particularly if they are over middle age. They consider direct ligation of the bleeding vessels essential, and their operative technique in principle resembles that of Pauchet. The most notable facts that emerge from Allen and Benedict's analysis are the remarkably small mortality below the age of 50 and the hopelessness of operating on repeatedly bled patients. The subject is a debatable one, but in the absence of any really trustworthy guide to prognosis at an early stage (after which the information becomes less and less valuable) most surgeons are likely to maintain the attitude that it is not justifiable to endanger the safety of many in the hope of saving a few.

HISTORY OF DIETETICS

Recent discussions on dietetics add point to the saying—quite as true as the proverb it parodies—that what is sauce for the goose is not always sauce for the gander, and we are glad to be reminded by Dr. Robert Hutchison, in his stimulating article on the history of dietetics in this month's *Practitioner*, that "dietetics is really a very young branch of science." How young it is may be judged by the remark, quoted by Dr. Hutchison, of the Arabian Rhazes (850-932): "When you can heal by diet prescribe no other remedy." The wheel has come full circle, and modern dietists are now trying to work out the implications of the Arabian physician's saying. The nineteenth century, Dr. Hutchison writes, was the quantitative epoch of dietetics, but a quotation from Dr. James Hart of Northampton (κλινική, or *the Diet of the Diseases*, 1633) that the "outlandish root" potato was "Farre fetcht and deare bought and therefore good for Ladies" shows that even in the seventeenth century the cost of calories exercised the mind of the physician, though the word "calorie" was not coined until 200 years later. At the conclusion of his article Dr. Hutchison points out that, just as the importance of the calorie

was unduly stressed at the end of the nineteenth century, so is that of vitamins in danger of being overestimated to-day. This warning was also echoed in a letter to the *Times* of November 23rd, 1933, by Professor H. A. Harris, who said: "There is a danger lest we forget that all the substances so necessary to the animal economy, wonderful as is their separation in the laboratory, occur naturally in the fresh wholesome foods which constitute a balanced diet."

OBSTETRIC DIPLOMA FOR PRACTITIONERS

One of the main objects of the British College of Obstetricians and Gynaecologists has been, and is, to improve the standard of midwifery all over the country among general practitioners who wish to hold obstetric appointments in voluntary maternity hospitals and in those under public health authorities and to act as local obstetric consultants. After long consideration, and as the result of over three years' experience gained by its Examination Committee, the College, recognizing that the present training of students in obstetrics is insufficient to fit them for responsible work in maternity services, has decided to award a diploma (D.C.O.G.) to registered medical practitioners who have had special post-graduate training and experience in the subject and satisfy the examiners appointed by the College. The membership of the College, being intended for those aspiring to special practice in obstetrics and gynaecology, demands a larger and wider experience than is possible for those entering family practice. Many candidates for the membership have had to be rejected because they had insufficient training and experience, and for most of these candidates it is impossible, at the stage of their career which they have reached, to undergo further training and to hold further resident posts. Many of them will be suitable candidates for the diploma. A special regulation has been made for candidates whose names have been on the *Medical Register*, and who have been engaged in practice, for at least ten years. Copies of the prospectus and regulations may be obtained from the secretary of the College, 58, Queen Anne Street, W.1.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been printed; they will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who wishes to have one or all of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

The report of the Departmental Committee on Sterilization is being issued on Thursday, January 18th, after we have gone to press with this number of the *Journal*. Reference to it must therefore be deferred until next week.

¹ *Ann. of Surg.*, 1933, xcvi, 736.

THE CHILDHOOD OF HELEN KELLER

BY

JAMES KERR LOVE, LL.D., M.D.

"A deeper import lurks in the legend told my infant years
Than lies upon that truth we live to learn."

(Quiller-Couch, in the *Oxford Book of English Verse*.)

"There was a time when meadow, grove and stream,
The earth and every common sight
To me did seem
Apparell'd in celestial light
The glory and the freshness of a dream."

(William Wordsworth. Ode: *Intimations of Immortality*,
from *Recollections of Early Childhood*.)

The above quotations speak to the existence, and in the first quotation the permanence, of early impressions gathered in childhood. They are from the experience of gifted but otherwise normal people, and may be taken as representing the experience of the average adult, who, however, would not express his recollections in such poetic fashion. I have quoted them to introduce an equally gifted woman who, as a child, suddenly lost the two great avenues by which impressions reach the mind. It may be that the study of such a case will give some light on the value of early impressions. I refer to Helen Keller, who was made completely blind and deaf at the early age of 19 months. Much has been written about the early years of Helen Keller, but I have her own assurance, and that of Anne Sullivan, her teacher, that no exhaustive examination has been made of Helen's first nineteen months, when she saw and heard.

Lately, when the guest of these ladies in the Scottish Highlands, I raised a question which has often interested me—namely, "The Story of the Frost King." This story, spelled into Helen's hand at the age of 8 years, when she could not possibly understand it, was unwittingly reproduced by her as her own at the age of 11 years. It was called a plagiarism, but this it was not, for Helen was unconscious of ever having heard it. But it was so well reproduced that its source could not be denied. Miss Canby, its author, thought it in some respects better than the original. What happened in Helen's mind during the interval of those three years "in the underground laboratory of her thought"? I do not know, but the problem suggested an inquiry into the question. What became of the impressions gathered into Helen's mind, and stored away somewhere, during the nineteen months of seeing and hearing? Were they lost or had they merely lost their labels (for the time at least)?

There are two or three physiological and clinical facts which must be stated before entering on the case of Helen Keller.

1. There is a hereditary tendency to use language, although it be only a sign language, in all the higher animals, including man.
2. There is in man a hereditary tendency to speak—although not to use any particular form of spoken language—and the centre for the acquisition of speech is Broca's convolution, near the juncture of the lateral aspect and the base of the brain.
3. It is probable that objects have little definite form to the eye, or sound definite meaning to the ear, during the first three months of life. The next eighteen months are, however, very fruitful in the acquisition of impressions, both of sound and of sight, and through repetition by parent and nurse most common objects are recognized by their names. After the first year many of these names are not only recognized but by successful imitation are repeated by the normal child.
4. Sudden deafness, when complete and when occurring during the first three years of life, is followed in a short time by the loss of speech. This occurs in two or three months, unless means are at once taken to perpetuate the speech. The names of objects get wiped out or the labels are lost.
5. Such lost speech may be resurrected by the teacher. It is easier to recover speech in such a child than to create speech in a deaf-born child. Every teacher of the deaf knows

this. The extent of the acquired vocabulary at 18 months or 2 years varies with the rate of development of the child, but is always less than that understood by the child.

(Note.—Preyer gives figures for the number of words used at 2 years as 100 to 1,000—probably about 400 or 500. These words are a much more recent acquisition than the knowledge or recognition of the things and actions they denote, and are therefore more easily lost should sudden deafness occur.)

Believing that some parallel might exist between the "Frost King experience," on the one hand, and the gap in Helen Keller's life from 19 months, when she lost her sight and hearing, and the coming of Anne Sullivan, when Helen was 7 years of age, on the other, I began a cross-examination of both teacher and pupil. Whether the parallel could be sustained or not was not of the first importance. If it suggested a useful line of inquiry good might come of the effort.

I have intentionally left Wordsworth's verse at the head of this paper incomplete, for he finishes thus:

"The things which I have seen I now can see no more."

But Wordsworth had an unbroken series of subsequent impressions which obscured his earlier ones. Helen has none of this, except through the senses of touch and smell. Was this an advantage or not? It isolated or cut off her earlier experiences. It was a disaster to Helen. Had it any compensations for the student of child life? I hope to show that it had.

How far back does the adult memory go into the recollections of childhood? In my own case not earlier than the fifth year. In some of my friends it goes back to the fourth year, and in one or two to the third year.

In Helen Keller's case it certainly goes back to the second year. She is quite positive that she remembers a tremendous pain in her eyes and a fear of light. These, along with screaming and tossing about, were features of the illness which destroyed her sight and hearing. This evidence must be put in a class by itself. Helen remembers nothing more of this early seeing and hearing time. But the experience was a striking one, and may well stand out from all that went before or along with it. It needed no name or label. As we have seen, the names of things soon went—the writing was rubbed out—the label lost. But were the things the names stood for quite forgotten, quite lost? Because if not some light may be thrown on Helen's subsequent mental history. Even her present marvellous powers of description of nature may be in part accounted for. Given a skeleton of fact and a vivid imagination a blind-deaf person may become anything, even a poet, and Helen is essentially a poet. The best authority on this subject is, of course, Anne Sullivan, her teacher, who, along with Helen herself, brought out some interesting points, of which I quote the following.

Evidence of the Second Class

1. On Miss Sullivan's arrival, one of the first things Helen did was to take her teacher's hat, which lay on the bed of the room, and putting the hat on her own head went to the mirror and, preening herself, adjusted the hat to various positions. When Helen was a baby she was often put before a mirror to see herself and her blue eyes.
2. When Helen was given a pipe with which to produce soap bubbles, she, without any hint, put out her hand to feel for the bubbles—bubbles she could not see and had not been told about. It was known that during her seeing period she had, along with a little friend, produced such bubbles. Helen says that when she puts her hands into soap bubbles and the sun shines on them she feels them sparkle and quiver. Here is an association of touch with recollected sight.
3. Heat is always associated in Helen's mind with light. When she stands before a fire or radiator she always turns her face upwards as she did and does to the sun. This is an association in Helen's mind of heat with light or brightness.
4. When given a banjo, Helen at once began to twang the strings. Now in her father's house, which was a large one, an old nigger used a banjo much as a piper uses the bagpipes in Scotland. During her childhood this old nigger sat about the door and played the banjo and during her hearing period Helen heard the banjo and saw the playing of it.

5. Helen's father was a newspaper proprietor, but also a gentleman farmer who hunted and had dogs. Helen herself was attended by a black nurse. Helen's dreams, since she was able to express anything, have been visual. A common dream is of a person putting out her hand "to grasp me" showing evil intent, and this person is always black. As Anne Sullivan says, "Helen is not blind-minded."

In dreams, too, Helen is conscious of the eyes of other people and of animals. Fear, alarm, and astonishment are common in childhood. Here they are linked to a definite recollection. Helen Keller has discussed her dreams in *The World I Live In*. I quote the following apropos of what I have said above:

"In my dreams I have sensations, odours, tastes, and ideas which I do not remember to have had in reality. Perhaps they are the g'impes which my mind catches through the veil of sleep of my earliest childhood. I have heard 'the tramping of many waters.' Sometimes a wonderful light visits me in sleep. Such a flash and glory as it is! I gaze and gaze until it vanishes."

(Note.—It should be stated here that Helen Keller has no recollection of having used such childish words as mamma, dadda, tata, baba—the labial and dental words usually spoken by children in early childhood. Helen states that she thinks her dreams have perpetuated her memories of what she once saw and heard.)

With such a skeleton of nearly forgotten impressions, and with her remaining senses of touch, smell, and taste, Helen Keller, aged 7, met her teacher, Anne Sullivan, and then began the most remarkable educational triumph of which we have any record. Miss Sullivan had little to build on, for be it noted at once that Helen Keller's sense organs were not then, and are not now, more acute than the average. What takes place, then, in the blind or the blind-deaf is not a change in the terminal sense organs of the fingers or nose, but the better use of the impressions sent from the terminal organs to whatever exists inside the skull; call it mind, soul, or aggregation of grey matter with connecting fibres as you will. Dr. Tilney, in an exhaustive examination of Helen Keller's sense organs, has settled all doubt on that point as far as Helen is concerned.

The normal child goes on adding to his sense impressions after the age at which Helen had to stop. But he goes on with help other than his senses. His mother tells him fairy tales, he falls into the hands of a teacher who, in some sense, educates him: he reads books, and in a year or two his mind is so packed with information from various sources that it is not possible to say whether what he knows is from first-hand or second-hand, or from any further out source. Listen to Mark Twain on Helen Keller and the Frost King incident. "Substantially all ideas are second-hand, consciously and unconsciously drawn from a million outside sources and daily used by the garnerer with a pride and satisfaction born of the superstition that he originated them. Whereas there is not a rag of originality about them except the little discoloration they get from his mental and moral calibre and his temperament, which is revealed in characteristic phrasing." Even allowing that Mark Twain was in a temper and defending a heroine, what he says is substantially true. There is little originality in anything we either do or say.

Helen's perceptual world is very accurate for near objects. Take the case of a horse. She has passed her hand over its body, has fondled its nose and neck, and has had her affection returned. She knows the mould of its fetlock, the texture of its coat; in fact she knows all about it except its colour. She has ridden a horse, been thrown from it and got on its back again, and she is a poet; she might write a poem like Byron's *Mazeppa's Punishment* quite well. I do not think Byron tells us the colour of Mazeppa's horse. She has crawled into the newly excavated dwellings of the Picts in Orkney and Shetland, and come out with a better idea of bed and fireplace than those who saw the interiors. So much more accurate and memory-fixing is the sense of touch in the blind than that of sight, in most ordinary people.

For a general notion of the world beyond the reach of her fingers or her sense of smell, of course, Helen has to borrow, and she tells us how she gets the scaffolding of facts from her teacher and Miss Thomson. There is no hypocrisy about Helen Keller. It is here, however, that I believe Helen Keller resurrects the once vivid impressions of early childhood—those of colour and sound. Those impressions for a time have lost their names, but the percepts have not been lost. They have only faded and, with her imagination, she can paint a vivid picture. This world beyond the reach of her hand has been brought near her by Miss Sullivan. Her teacher has, on the banks of the Tennessee, made a toy world for Helen with sand mountains, and real water forming the associated rivers and lakes.

Helen is a good walker and climber, so she knows something about a mountain top, she is also a good swimmer and knows a great deal about the sea, and she has felt the rush of the air caused by the wings of a thousand birds at the Island of Nos in the Shetlands. Helen Keller therefore is not space-blind; she knew before her sight and hearing were lost all about a three-dimensional world, how things were either to one side or the other, above or below, and in front or behind one another. Guided by her sense of touch and that of smell her space-knowledge has been kept in operation. Then it must be granted that she had then, as she certainly has now, a wonderful memory—the Frost King incident proved that.

Lastly, she has had the whole attention, during nearly fifty years, of a fine teacher, who has devoted her life to a receptive pupil with this tenacious memory. Any teacher of the deaf or the blind will agree as to the advantage this confers. Indeed, every deaf child should have for some years a whole-time teacher. Unless Miss Sullivan had given her whole time to Helen we should never have had the educational result which continues to astonish the world.

Such are examples of the perceptual skeleton which Helen clothes with imagination and produces as a prose poem. One cannot live with her for an hour without the poet breaking out. Recently, on a motoring run in the Highlands, when the weather was changeable—the B.B.C. announcer would have called it "showers with bright intervals"—Helen said, "I feel the mist and the sunshine chasing each other on my face"; and again referring to the weather of the same day, "In Scotland one is always on the edge of the unexpected."

What I have written is not an attempt to explain the whole mind of Helen Keller; she has herself done this well in *The World I Live In*. I have tried to resurrect some impressions of her early childhood, which she could not recover alone because the names of such perceptions had been lost. But the impressions, the perceptions, were not lost, as she herself says:

"During the first nineteen months of my life I had caught glimpses of broad green fields, a luminous sky, trees and flowers which the darkness which followed could not wholly blot out. If we have once seen, the day is ours and what the day has shown."

The above quotation from Helen's book, *The Story of My Life*, is interesting. For two summers she lived in the brilliant sunshine of Alabama on her father's farm, where the main features of external nature were broad green fields, flowers, and a luminous sky, and where all the life of a farmyard completed her world. During those two summers she had her sight and hearing. There is no record that she was anything but a bright, ordinary child, and no first-hand reference can be got, for Helen's father died early, her mother has been dead some years, and Helen was the eldest child; but her subsequent development warrants the opinion that she was from the beginning an unusually bright child.

It is perhaps worth while emphasizing this point. In four months after Miss Sullivan's arrival Helen Keller writes letters which an ordinary seeing and hearing child cannot write after years of schooling. In seven months Mr. Anagnos of the Perkins Institution for the Blind wants a picture "of Helen and of her illustrious teacher

to grace the pages of the forthcoming annual report." In a paper like this I cannot quote those letters, but I pass on to one written to Oliver Wendell Holmes on March 1st, 1890, three years after Anne Sullivan's arrival, and beginning "Dear Kind Poet"; and this is Holmes's comment: "Anthropologist, metaphysician, and, most of all, theologian, here is a lesson which can teach you much that you will not find in your primers and catechisms. Why should I call her 'poor little Helen'? Where can you find a happier child?" Psychology was not so fashionable in Holmes's time as it is now, but I would add "psychologist" to his list. Clearly we are not dealing with an ordinary child in little Helen Keller.

REFERENCES

- ¹ Keller, Helen: *The Story of My Life*.
- ² *The World I Live In*, The Century Company, New York, 1908.
- ³ Keller, Helen: *Midstream: My Later Life*, Doubleday, Doran and Co., New York, 1929.
- ⁴ *Helen Keller in Scotland*. Edited by James Kerr Love. Methuen and Co., 1933.
- ⁵ Holmes, Oliver Wendell: *Over the Tea Cups*, Sampson Low, 1891.

SILICOSIS AND TUBERCULOSIS IN SOUTH AFRICA

REPORT OF THE MINERS' PHTHISIS BUREAU

A report on the work of the Miners' Phthisis Medical Bureau, covering three years, has been compiled by its chairman, Dr. L. G. Irvine, and is published by the Government of the Union of South Africa.¹ Since 1929 the number of routine examinations has grown rapidly. Assumption by the Bureau of direct responsibility for the periodical and initial examinations of non-European miners accounts for some of this increase, but the greater part is explained by the large number of examinations of European miners or of prospective recruits for mining. The Bureau is compelled to examine anyone who cares to apply for an initial examination before taking up mining work, and although the standard of health required is very strict the number of those approved is considerably above that which the industry can absorb at present; hence much of the work appears to be wasted. It is suggested that the present system will have to be modified if the industrial depression continues. At the request of the City Council of Johannesburg the Bureau undertook the routine examination of persons employed in rock drilling for sewer construction. Several well-marked cases of silicosis were discovered among these, and there were two deaths. Other municipalities have therefore been warned of the danger attaching to this kind of work, and of the need for rigorous control of such operations from the point of view of dust prevention.

INCIDENCE OF SILICOSIS

Whereas the average number of returns of compensation for this disease in the four years 1912 to 1916 was over 800, the combined number of all new cases of silicosis and tuberculosis with silicosis detected by the Medical Bureau during the three years 1929-32 among miners who had been at work since 1916 has averaged annually under 300. Since the number of miners employed underground was for both periods much the same—namely, about 11,000—these figures are fairly comparable, and indicate a decline in the incidence of about 60 per cent. It is pointed out, however, that the actual number of cases of silicosis in any year depends on factors which are variable. In the two three-year groups 1920-3 and 1928-31 the annual average was the same, namely about 251 cases, but between 1923 and 1927 there was a pronounced rise above this level. The most reliable measure of incidence is provided by the actual rates of liability to contract the disease shown by miners working in each successive year of underground service. These rates have undergone a marked, though not uninterrupted, decline during the past fourteen years. The general liability of the working

miner to contract silicosis was reduced between the triennium 1920-3 and 1931-2 by no less than 55 per cent. This Dr. Irvine regards as the true measure of the improvement. Yet the number of cases detected has shown no proportionate decrease, but rather an increase, which is attributed by him to two factors. A considerable proportion (but less than one-half) of the increase in cases in 1923-6 he attributes to changes in the standard of diagnosis and selection of early cases which were adopted by the Medical Bureau during that period as the outcome of improved radiological technique and accumulated experience. A still more important factor in this increase was the very marked rise since 1920-3 in the number of miners working in the later years of underground service, at which the incidence of silicosis is at a maximum. The actual figures are thus the net result of the operation of two conflicting influences: a decline in the liability to contract silicosis, and the progressive heaping up of miners in the later years of service. The first influence has now become dominant, and is of very encouraging import for the future. There has been much improvement in the environmental conditions and also a lessened liability of the individual to contract the disease.

PROGRESS OF THE SILICOTIC LESION

Returns are published in the report indicating the subsequent history of silicosis cases. The most serious feature of this condition is its progressive tendency. Three factors appear to be concerned in this. Even in the absence of infection or of further exposure to dust, a simple, uncomplicated silicosis often shows much advance, probably by reason of the amount of silica dust retained in the lungs. A final degree is reached, however, and the process is then arrested, unless an active tuberculous infection develops. Again, in the silicotic lung there exists a high potential predisposition to the ultimate development of active tuberculosis. This heightened susceptibility may be caused by reactivation of a pre-existing focus of tuberculous infection, or by a reinfection occurring simultaneously with, or subsequent to, the development of the silicotic lesions. Thirdly, in a lung significantly occupied by silica dust, a tuberculous infection commonly tends to develop atypically, with the production of chronic indurated lesions of mixed silicotic and infective origin. These are generally slowly progressive, and may become very extensive, but they also may, and often do, undergo long periods of virtual arrest. To these characteristic lesions the term "tuberculo-silicosis" has for many years been applied in South Africa. The excessive fibroid reaction which they present tends on the one hand to restrict and retard the spread of the tuberculous infection, both in the lung and to other organs, but, on the other hand, this reaction renders the infection less capable of an ultimate practical cure. Although, in consequence of this characteristic feature, the ultimate manifestation of active tuberculosis may be long delayed, the latter condition is by far the most common cause of death in cases of silicosis. The existence and the common concurrence of these factors explains the numerous variations in the development and character of individual cases. Those which are highly infective from the onset progress rapidly, some patients dying within a year. In others the disease may reach a condition of prolonged or virtually indefinite arrest. Nevertheless, the intrinsic tendency of silicosis to progress is on the average very pronounced and singularly uniform. It was hoped that with the introduction in 1919 of compensation for the ante-primary stage of silicosis, and with the removal from underground work of miners in the earliest detectable stage of the disease, the subsequent progression would be modified favourably and substantially. This expectation has not been realized. It would rather appear that the only definite advantage gained by the earlier diagnosis and removal of cases has been in the direction of slightly retarding, without in the long run substantially modifying, the intrinsic progressive tendency of the disease, at all events during the first five or six years of its course. The cases which progress to the secondary stage in the first few years after their detection are those in which an

¹ Government Printer, Pretoria. U.G. No. 22 1933 (35 61.)

infective element is present and pronounced from the onset, and these years accordingly show the highest mortality. In short, while the medical and technical measures of prevention adopted have brought about a very substantial, though by no means complete, degree of control over the production of the disease, no corresponding measure of control has been gained over its progression. Hence, Dr. Irvine urges even more concentration of effort on prophylaxis, and for this there still appears to be much scope.

TUBERCULOSIS WITH SILICOSIS

Though there has been in the last seven years a decided fall in the number of detected cases of tuberculosis with silicosis, there has been a concurrent rise in the number of cases returned as simple tuberculosis, and of the open type. Figures are given which indicate that the liability to death is directly connected with the relative prominence of the tuberculous factor in the mixed as well as in the simple cases. An early conjunction of silicosis with tuberculosis is shown to be more rapidly fatal than a simple tuberculosis. In native workers the prevalence rates for tuberculosis, after reaching a maximum in 1926-8, have shown since then a definitely lower trend. The rates for tuberculosis with silicosis, after an initial rise, declined sharply, and the combined rate for both of these was in the past year the lowest on record. The prevalence rates for silicosis alone in natives have been since 1924-5 more or less maintained at a new and higher level than before, and in 1930-1 took a further upward turn. It happened, however, that during that year a special extensive radiographic investigation was made of all natives who had a cumulative underground service of over five years. This was thought to be the cause of the higher rate, and in fact there ensued a sharp decline in 1931-2. The earlier detection of cases of silicosis should reduce the prevalence of the more serious cases in which that condition is complicated by active tuberculosis, and the returns indicate that this is taking place. Nevertheless, Dr. Irvine concludes, the great preponderance among native miners of active tuberculosis, singly or associated with silicosis, emphasizes the cardinal importance of all efforts being devoted to the elimination of cases of communicable tuberculosis among the mine natives, and of bringing under control every occupational or other condition that can be shown to foster this infection among them.

Scotland

The James Mackenzie Institute

Investigations conducted at the James Mackenzie Institute for Clinical Research, St. Andrews, during the year ending July 31st, 1933, related to the alternating pulse, the state of the teeth in various age groups of children, and the condition of children entering school life at present in comparison with the condition found before the establishment of the child welfare scheme. It is mentioned in the annual report that an attempt by the Institute to trace in adults the definite initial symptoms of later disease has been disappointing. All the medical practitioners of St. Andrews are on the staff of the Institute, and it is now suggested that a combined effort on their part to follow up the large number of children whose early histories are accurately known might lead to valuable results. The public health work of the Institute is in the hands of general practitioners, who, it is remarked, are alone in a position to keep the populace under observation in health and disease. Since its foundation in 1919 the James Mackenzie Institute has set itself to conduct investigations with a view to speeding up the process of diagnosis, as the result of the collection of clinical information, and collating it with other lines of research. Although restricted latterly by financial diffi-

culties—expenditure during the year under review exceeded income by £188—the main lines of work have been pushed, and a considerable amount of valuable information has been collected, largely in the form of accurate histories of children from birth until school life begins. The population of St. Andrews is of a size permitting a knowledge of the circumstances of each patient. Since many of the inhabitants do not leave the city, persons can be observed for many years and records be kept of the early stages and later development of their maladies. It has been found that at present 60 per cent. of these records at the Institute are complete, notes having been added in steady sequence. Two papers by members of the staff were published in the *British Medical Journal* last year.

Stirling Mental Hospital

The sixty-first annual report of Stirling District Mental Hospital, dealing with the year ending May 15th, 1933, shows that at the beginning of the year there were 1,037 certified patients on the hospital register, including 583 men and 454 women. The number admitted was 238, which, with 159 discharges and eighty-four deaths, left 1,032 patients on the register at the end of the year. The number of certified patients under treatment during the year was 1,275, as compared with 1,274 in the previous year, and the average number resident was 1,045. With regard to admissions, the ages varied from 16 to 84 years, twenty patients being over 70 and the average age on admission being 42 for both sexes. Only thirty-nine of the patients admitted were described as being in average health; 161 were in indifferent health, and thirty-eight were in feeble health or were suffering from serious bodily ailments. There was acute mental illness with reasonable prospect of improvement in 101 patients, while 137 were suffering from confirmed mental ailments with little hope of ultimate recovery. There were twenty-seven cases of senile insanity, sixteen of general paralysis, eighteen of insanity with epilepsy, and four of mental enfeeblement following encephalitis lethargica. In seventeen cases the mental breakdown had followed serious bodily illness, and in eighteen there was a history of alcoholic excess, senility was present in twenty-seven cases, syphilis in sixteen, and epilepsy in eighteen. In twelve cases an inherited predisposition was elicited, and sixty-four patients had suffered from previous mental breakdown. In forty-six cases the mental breakdown had occurred at the critical periods of life, and seven cases were attributed to pregnancy and childbirth. In addition to the certified patients, there were twenty-three voluntary ones at the beginning of the year; seventeen voluntary patients were admitted and seventeen discharged as cured during the year. Of the latter, twelve returned home after a residence of three months. With regard to Service patients, there were forty-two certified and one voluntary, as at the beginning of the year. Of the 159 patients discharged, 110 recovered, giving the satisfactory recovery rate, calculated on the number of admissions, of 46.3 per cent. for both sexes. Of these, seventy were discharged within six months of admission, eighteen after twelve months, and twenty-two after more than a year's residence. The patients discharged unrecovered, chiefly by transfer to other institutions, numbered forty-nine. There were eighty-four deaths during the year, giving a death rate, calculated on the average number resident, of 8.4 per cent.; of these, seven were over 80 years of age and thirty-four over 65. The average age at death was 58 for both sexes. Disease of the heart was present in eighteen cases, diseases of the brain and nervous system in nine, acute diseases of the lungs in nine, and pulmonary tuberculosis in five. The report states that satisfactory results continued to be obtained in the treatment of general paralysis, and during the year nine patients

suffering from this condition were able to return home greatly improved. A tubercle-free herd of cows, supplying over 50,000 gallons of milk during the year, was maintained on the farm of the institution.

Glasgow Royal Infirmary

At the annual New-Year's Day meeting of the managers and nursing staff of the Glasgow Royal Infirmary, with Lord Provost Swan presiding, Sir James Macfarlane, chairman of the managers, said that in the past year trade depression had caused considerable anxiety to the management. During the year 16,564 patients had been treated in the wards, and 118,666 as out-patients with 389,207 attendances. The work had involved additional expenditure, with the result that the income for the year from all sources, including legacies, had fallen short of the expenditure by £6,000, and he therefore appealed for increased support. During the year sixty candidates had passed the preliminary State examinations in all subjects, and sixty-six had passed the final examination.

England and Wales

Bath Child Guidance Clinic

The second annual report on the Bath Child Guidance Clinic indicates the possibilities of prophylaxis and treatment of functional mental disorders in children, although there is a commendable absence of any tendency to draw unwarranted conclusions. In a prefatory note Dr. J. F. Blackett, medical officer of health and school medical officer, refers to the closeness of contact between this institution and the public health authorities. He invited Dr. R. G. Gordon, who is acting as psychiatrist and director, to incorporate in the report a study of the first hundred consecutive cases. Dr. Blackett points out that these abnormalities of conduct in children must have some effect on the education and school life of a child, and the education committee must therefore be an interested party. He adds that the ability to escape mental breakdown in later life depends often on these emotional stresses being dealt with at an early stage in life. The clinic uses the premises of the school medical department, and receives help from the department's paid staff. Dr. Gordon's study contains short clinical notes and some conclusions which seem to be emerging. He believes that there is no evidence of any sex factor in the aetiology. He defines four classes of cases: children who might have come into the hands of the police, those whose conduct interfered with the general harmony at home or at school, a scholastic defects group, and cases in which there was inadequacy or pathological symptoms in the children. The best results were obtained in the first and last of these groups, indicating that the clinic seemed to have done something to save certain of these children from mental and nervous breakdowns on the one hand and from criminal acts on the other. The group of scholastic defects, comprising cases of mental deficiency, epilepsy, and insanity, was the least promising. In half the cases there was loss of one or other of the parents or breaking up of the home. One of the difficulties in diagnosis, it is added, is a just appraisal of the respective influences of individual innate peculiarities and of environmental influences. In many cases the treatment mainly involved dealing with the parents or the school authorities. In no case was any elaborate analytical technique undertaken, owing chiefly to lack of time. Only exceptional cases are, however, considered to be in need of this line of therapy. There was a definite preponderance of children aged 10 to 11. It is pointed out that such defects of character as

truancy or stealing may be due to any of a large number of different causes, and that the delinquent has to be treated, not the delinquency. The conclusion reached after two years of work is that there are definite grounds for anticipating satisfactory results, and that such a clinic adds to the knowledge of mental abnormalities in adults as well as in children, but it is far too early yet to make any striking claims as to what child guidance activities of this kind can achieve, and how much illness or crime they can prevent.

Central Midwives Board

At the January meeting of the Central Midwives Board for England and Wales letters from the medical officer of health for Rotherham were read: (a) Enclosing his comments on the resolution of the Board in December last, with regard to the method of summoning medical aid in cases of subinvolution of the uterus, occurring after the midwife had left the case, and asking for the Board's observations thereon. (b) Enclosing a draft of a letter which he proposed to address to midwives in Rotherham in cases in which a health visitor discovered a suspected case of subinvolution. It was decided to reply that the Board could not make rules governing every set of circumstances which might arise in various parts of the country, and that it could not make rules governing the co-operation of midwives and health visitors, as clearly such co-operation would vary according to local conditions and needs. Further, that local difficulties could only be overcome by local measures, which were outside the scope of the Board's authority—for example, the solution suggested in the last paragraph of the letter. It was agreed to send the following replies to a series of questions contained in a letter from the county medical officer for Essex.

1. That if a midwife proposes to practise in the area of more than one authority, she must give notice of her intention to practise to each of the authorities concerned. (See Section 10 of the Midwives Act, 1902.)
2. That the midwife should notify all the local supervising authorities in whose areas she practises (in the event of having to notify under Rule E, 6) of her liability to be a source of infection.
3. That the routine inspection shall be made according to mutual arrangement.
4. That the authority which first hears of the liability to be a source of infection should suspend the midwife, and inform the other authorities, if known.
5. That there is no necessity for more than one authority to suspend a midwife, as, so long as a midwife is suspended, she cannot practise anywhere. The question of the payment of compensation is not a matter for the Board to decide.

With reference to an inquiry from the county medical officer of health for Worcestershire as to whether the Board approves the administration of chloroform capsules by midwives in the Lucy Baldwin Maternity Home, Stourport, there being no resident medical practitioners in the hospital, the Board agreed that the following reply be sent:

"That as the rules stand at present, the administration of chloroform in any form by midwives, otherwise than under the direction and personal supervision of a duly qualified medical practitioner, is regarded as treatment outside their province. A wide and extended trial of these capsules, under medical supervision, must be carried out before sufficient evidence can be accumulated to convince the Board that the use of chloroform capsules by midwives can with safety be sanctioned."

A letter had been received from the Minister of Health approving the existing rules of the Board for a period of six months from December 31st, 1933. Approval as lecturer was granted to Mr. Harold Carter, F.R.C.S., Mill Road Infirmary, Liverpool. The Board adopted the report on Part 2 of the Midwife Teachers' Examination, 1933, and the recommendations contained therein.

Mental Observation Wards

In the mental observation wards at the hospitals and institutions under the London County Council the total number of admissions in 1932 was 5,852 (2,690 males and 3,162 females). The distribution of these wards is being gradually reorganized. Patients in South London will shortly be concentrated in three large units, at St. John's Hospital, Battersea (62 beds), Constance Road Institution, Dulwich (70 beds), and St. Alfege's Hospital, Greenwich (number of beds not stated, but apparently about the same). The small mental wards at Lambeth Hospital and Newington Institution are to be closed as soon as certain enlargements at Dulwich take place. North of the Thames a mental observation unit for thirty male and thirty female patients has been established at the City of London Institution, Bow, and there are about eight other small units in association with hospitals and institutions. Some of these are being reconstructed and extended, while others have been, or will be, closed as the larger units become available.

India

A Maternal Mortality Investigation

The report has been recently received of a special investigation conducted by Dr. A. L. Mudaliar, second obstetric physician and gynaecologist to the Madras Government Hospital for Women and Children, into the causes of maternal mortality in that city. The inquiry, which lasted twelve months, continued from 1930 to 1932, but there was a break in the middle of about eight months. The form used closely resembled that recommended by the Departmental Committee on Maternal Mortality and Morbidity appointed by the Minister of Health. During the period of the investigation there were 26,207 births, and there were 436 maternal deaths, the maternal mortality rate being thus 16.6 per 1,000. If this high figure prevails in cities like Madras, where prophylactic facilities are not lacking, the condition in the more rural areas must be very much worse. The maternal morbidity and mortality problem is certainly worse in Madras and Southern India generally than in any of the Western countries, and it is suggested that in the city of Madras, with its already well planned schemes of maternity relief and numerous institutions and other amenities, the chief drawback is probably lack of concentration of effort. Certain causes of maternal death seemed to be on the increase—namely, abortion, eclampsia, and anaemia, particularly the form consequent on hookworm infection. It is urged that the need for an ankylostomiasis survey is pressing, and that dietary deficiencies probably play a considerable part in much maternal ill-health and death. The Departmental Committee's "primary avoidable factor" in connexion with maternal deaths was found to be concerned in 53.44 per cent. There was a relatively heavy death rate in primiparae and elderly multiparae; insufficient spacing of births is incriminated as a very definite factor also. In the large majority of fatal cases ante-natal care was either lacking or inadequate, and the connexion of this with the death rate was apparent. It is urged, therefore, that maternity institutions should make much more adequate provision for ante-natal supervision, and a committee has been set up by the Corporation of Madras to overhaul and improve the existing centres. It is hoped also that in the future there will be much more provision of ante-natal ward accommodation, since many cases examined were found to require institutional treatment. The heavy incidence of puerperal sepsis, often in cases where the

labour had been normal, indicates that more rigorous care must be exercised in supervising the outfits of midwives and warning them of the risks of infection. In institutions also there is evidence that insufficient care has been taken to discriminate between the suspect and the frankly septic cases, both of which, moreover, are not infrequently dealt with in wards accommodating uninfected cases. More active steps, it is added, should be taken to ensure treatment in hospital for cases of early toxæmia, the early signs of which should be more swiftly recognized than is at present usual. A well-thought-out scheme is needed for housing the less affluent middle classes and also the poor, for in the older parts of the city there is already serious building congestion, interference with the free passage of air through the narrow streets, overcrowding, and bad sanitation. Dr. Mudaliar sketches the lines on which an efficient maternity service should be planned, involving the co-ordination of the various existing services. He pleads for more research into the causes of maternal morbidity, pointing out that these problems are very different in Southern India from those in Western countries, and that in Madras there is available an immense amount of clinical material.

Leprosy in Ceylon

At the invitation of the Government of Ceylon Dr. Robert Cochrane, medical secretary of the British Empire Relief Association, devoted six weeks last spring to a careful investigation of the present position as regards leprosy in the island, and a report of his findings and recommendations has now been issued. It is pointed out that in Ceylon only the more advanced cases are discovered; the progress of those with early lesions is unknown, and their liability to infect others is under no sort of control. The disease does not, on the whole, appear to be a serious menace to the community, but unless changes are effected in the present control measures no improvement is likely. The restrictions with regard to segregation are thought to be too rigid, and the regulations concerning home isolation, observation, and the supervision of patients discharged from treatment centres to be too lax. In the Eastern Province leprosy does not seem to be spreading. The asylum at Mantivu, in Dr. Cochrane's opinion, was doing good work in an almost ideal situation, and with ample scope for expansion; it was handicapped, however, by too rigid regulations as regards leave permits, which militated against its popularity becoming widespread. In the Colombo municipality a number of leprosy children were seen, and this leads Dr. Cochrane to urge that the presence of lesions should not always be regarded as necessitating treatment. He believes that, unless there are signs of multiple infection, or of definite activity, no suspected case needs treatment. Apart from examining the contacts, no mention of the suspicion need be made to the parents, and, provided such a child is adequately watched, it has probably an 80 per cent. chance of developing no further lesion, while the suspected lesion will become normal in a few years. It is thought that the disease may be spreading in certain areas in Colombo, and a systematic examination of school children is advised in order that a due measure of supervision may be rendered possible. The Hundala Settlement did not appear to be suitable for the treatment of early cases, and here, as at Mantivu, Dr. Cochrane regrets that no attempt is made to separate the early neural cases from the cutaneous ones. He remarks that there is some evidence that an early neural case, especially in children, can become further infected by a cutaneous case, and pass from the non-infective to the infective type as the result of close contact. He criticizes the Leprosy Ordinance on the grounds that neural cases have been admitted, or re-admitted, to the asylum, which, according to present

knowledge, do not need segregation; that the criteria for the discharge of a patient have generally not been strict enough, and that the granting of home isolation—a provision made to obviate segregation—has resulted in an unsatisfactory state of affairs. The setting up of a Leprosy Board is advised, with a view to its undertaking, among other responsibilities, to decide whether any given patient needed isolation or treatment, or both. Dr. Cochrane considers that more attention should be paid to the examination of contacts, that the specific treatment for leprosy should be made available at all hospitals in rural areas where the disease is prevalent, and that a special prevention centre should be organized for the Colombo municipality. Among other suggestions put forward is one proposing a voluntary institutional system along lines similar to those on which voluntary mental hospitals are conducted in Great Britain. Attention should also be paid to the instructing of medical students and graduates to view leprosy in the right perspective. Educational propaganda should be conducted, and the public should be led to view leprosy as a curable condition if early treatment is given, as not always infective, and in no way more unpleasant or disgraceful than other diseases. Survey officers should be charged to ascertain as accurately as possible the incidence of leprosy in Ceylon, and to organize protective measures in areas where there is evidence of the spread of the disease.

CORRESPONDENCE

Blindness due to Myopia

SIR,—The article on the control of school myopia, by Mr. Arnold Sorsby (*Journal*, October 21st, 1933, p. 730), indicates the varying points of view from which myopia can be surveyed. I venture to submit some facts which have come under my notice, and which are, indeed, difficult to explain by the conventional theories.

I have prepared an analysis of the causes of blindness, based on an examination of 192 persons admitted to the Royal Victorian Institute for the Blind from 1901 to 1923, and 226 persons admitted from 1923 to 1933. In the first series myopia accounted for one case of blindness. In the second series myopia headed the list with a total of thirty-one cases—that is, 13.5 per cent. But I am tempted to draw attention to some of the peculiar features of the second series. Children, whose ages are given, possessed myopia of high grade. For example:

Age	Degree of Myopia	
3	...	3 D
3½	...	15 D
6	...	10 D
7	...	13 D
10	...	15 D

It is obvious that the use of the eyes for near vision cannot be a factor in producing or increasing myopia in children of the lower ages. Why should a child 3½ years of age suffer from myopia of 15 D in both eyes? The prevention of myopia really involves the difficult question of eugenics. Mr. Lang and I, many years ago, found myopia in domesticated animals, but only twice in wild animals. Two monkeys were so affected, but we could not ascertain how long they had been in captivity. It is, of course, obvious that the use of the eyes for near vision cannot have produced myopia in domesticated animals. It is difficult to understand the theory of departure from the mean as an explanation of these conditions in very young children. In the older cases the maximum recorded was 31 D. In some cases there was evidence of the stigmata of degeneration of various kinds,

but sometimes without any evidence of malnutrition. Such cases of myopia really represent a malignant uncontrollable disease.—I am, etc.,

Melbourne, Australia, Dec. 1st, 1933. JAMES W. BARRETT.

Inheritance of Mental Deficiency

SIR,—In his interesting account of an incestuous family in which the parents were brother and sister, the father suffering from general paralysis and dementia, the mother from feeble-mindedness, Dr. L. S. Penrose (*Journal*, January 6th, p. 10) finds difficulty in explaining why two of the three children are apparently of normal mentality up to their present ages of 17 and 7 respectively.

If the father was able to drive a cab, join the Army, proceed to South Africa, and afterwards work his passage home, he can hardly be supposed to have been feeble-minded. As insanity appears to be inherited independently of feeble-mindedness, a mating between this brother and sister might be expected to produce some children of normal mentality, even although, as appears very probable, the brother was carrying a recessive gene for feeble-mindedness. On the simplest assumption one might expect half the children to be normal and half mentally defective (apart from the dementia, whose inheritance is unknown). Now two of the children appear to be mentally normal, but it is quite possible that the eldest, who died at the age of 2½ years, was a mental defective.

Dr. Penrose's final suggestion, that possibly the environment of these children was so much better than that of their parents as to account for the normal mentality of two of them, seems hardly worthy of serious consideration. At the same time, our debt to him is great for the careful way in which the facts have been investigated.—I am, etc.,

R. RUGGLES GATES, F.R.S.

King's College, Strand, W.C.2,
Jan 11th.

"Bornholm": An Alternative

SIR,—Undeserved harm, in the judgement of the population and Government of the island, was formerly done to Malta by the indiscriminate use of the term "Malta fever," and Mr. E. A. H. Jay should be supported in his plea (January 13th, p. 79) to spare the island of Bornholm, while there is yet time, from a similar fate. At the International Office of Public Health in Paris we learnt from Dr. Madsen in 1932 of the outbreak which had occurred in Bornholm in the summer of 1930, and had been carefully described by Dr. E. Sylvest, as well as of the parallel occurrence of the same disease in other parts of Denmark. Since that date we have had from the same authority regular information regarding its continuance and its characteristic seasonal prevalence (with maxima in the autumn) in the same country, and accounts also of its prevalence in Sweden. The identity of the Danish epidemics with earlier outbreaks, such as those noted in the references attached to Dr. Pickles's paper (*British Medical Journal*, November 4th, 1933, p. 818), has always seemed clear, while recent individual cases or small outbreaks elsewhere than in Denmark and Sweden have since been reported.

In dealing with the subject the Committee of the International Office of Public Health has frequently experienced the difficulty of name, but by general consent the disease now appears in its agenda as "epidemic myalgia." This has proved sufficiently convenient and distinctive—I am, etc.,

London, Jan 15th

G. S. BUCHANAN.

Bulletin Mensuel Office International d'Hygiene Publique, xiv, No. 9, September, 1932.

The Nutrition Report

SIR,—I thank you for the publication of my letter about the price of food and your comment thereon. So long as it is understood that the correction of the price of only one item—milk—to current prices would raise the cost of the diet for a man, wife, and three children (No. 14) by 1s. 6d., nothing remains to be said on this point.

The discussion has entered a new phase with the appearance of the Ministry of Health Circular 1370, which criticizes the allowance of 3,400 calories and 50 grams of first-class protein. The question immediately arises whether there is evidence that health can be maintained, under ordinary working conditions, on lower scales. It is true that the average intake of the working-class is about 3,000 calories per adult man. But it is also true that those who can afford it take more; also that the National Service Medical Boards found only one man in three perfectly fit and healthy, and that the tuberculosis death rate in working-class districts may be five or ten times as high as in well-to-do neighbourhoods. The committee appointed by the British Medical Association appears justified in regarding standards under which such results are possible as inadequate for maintaining health.

There is another point. The diets of which the estimated costs were published in the *Week-End Review* of April 1st, 1933, conformed to the standards laid down in Circular 1370. The results show that full unemployment benefit is insufficient to pay for adequate food for a family, together with the other necessities of life, even if the diet is calculated on this lower scale.—I am, etc.,

Sawbridgeworth, Herts, Jan. 14th.

JOHN MARRACK.

* We omitted to mention in our comment on Dr. Marrack's letter of January 6th (p. 36) that the price of milk given in the report of the Nutrition Committee was the price current at the time the investigation was carried out. The regulations laid down by the Milk Marketing Board have come into force (October 6th, 1933) since then.

The New Cancer Problem

SIR,—No one who has followed the history of cancer research with any attention but must have been struck with the contrast between the confidence which animated it at the beginning of this century and the state of depression into which it has now fallen. This depression was noticeable at the meetings of the International Cancer Congress in 1928, and was given expression to by Professor Ewing when he stated that "the history of this research might well suggest that the problem of the nature of the tumour process is at present unsolvable."¹ As a fact, words to this effect had already been used by Sir Lenthal Cheate,² and were afterwards repeated by Professor Nicholson,³ both of whom look upon the problem of the deeper causes and nature of cancer as comparable with that of the nature of life itself, or, in a word, as insoluble.

And so, after centuries of experience and of the recording of facts; after a century of close observation and investigation, culminating in a third of a century of intensive experimental research by all the great civilized nations, we are told by those best qualified to judge that there is no more prospect of clearing away the mystery of the origin of cancer than there is of answering the riddle of the origin of life, or indeed of perpetual motion, or of squaring the circle. So far from having solved the problem we are now suffering from the demoralizing effects of repeated defeats, and in addition are faced with

a new problem, the new problem being to find the reasons for these devastating failures. And here, Sir, I come to the object of this letter, which is to call attention to this new problem and to the necessity for dealing with it before we can regain our morale and continue our attacks on the main problem with reasonable prospects of success.

There is much to be said for the belief now held by many oncologists that the chief cause of this new obstacle to progress is the present dominance of experimental research over clinical and pathological investigation of cancers in man. Instead of being the servant research has become the master. The tail now wags the dog. The cart has been put before the horse. How obstructive this is to all progress may be gathered by noticing what happens when there is a conflict between evidence from clinical sources on the one hand and that of experiment on the other. Invariably the evidence from the mouse claims precedence over that from the man. And this dominance of research may be noticed even when the point at issue is of considerable importance and has passed the tests of many years of practical human experience. Thus the doctrines implied in Cohnheim's embryonic rests, the facilitating effects of age and degeneration, the increase of cancer with increasing civilization, are all now rejected by laboratory oncologists for no other reason than that they cannot be made to fit in with the "findings" picked up in the course of experiments with fowls and mice.

Such a smashing of cherished beliefs would not so much matter were they mere idols, serving no useful purpose, and were it not for the enormous prestige of research, now widely regarded as authoritative in all that concerns cancer in both mice and men. As a fact, the examples just mentioned are conspicuous, well-grounded landmarks, from which bearings can be taken for advancement into new territory in the science of human oncology. Without them the explorer is lost, and can only wander round in circles in a way often to be noticed in the records of laboratory research.

In these circumstances of defeatism and confusion surely the time has come when those interested in this terrible visitation of cancer should no longer be deterred by any consideration but that of humanity and public interests from asking for the credentials of those who are responsible for these autocratic decisions. On what ground is this authority based? Is it upon the reliability and success of experimental compared with clinical methods? Certainly not; for we all know that so far as human oncology—the only thing that counts—is concerned, the student of human cancer can point to great and solid achievements in matters of structure, of diagnosis, and of treatment; whereas oncologists of the fowl or mouse can claim nothing but a record of hard work, great ingenuity, and unbroken failure. In the words of Dr. Woglom,⁴ himself one of the greatest and most respected of researchers, "the study of cancer, instead of affording an understanding of the nature of the disease, has opened up new problems which before were not even conceived." When, therefore, the experimentalist comes forward as the supreme arbiter and authority on all that concerns the study of human cancer, he lays himself open to the retort that his claim is no better founded than is that of the washerwoman who claimed to be an authority on the upbringing of children on the ground that she had buried nine. We are left to presume that the immense influence of the research worker is based on his official position, his generous support by the public, the prestige conferred upon him by the previous successes of bacteriologists, and, above all, by the ability, high character, and devotion of those who tread the unprofitable mills of cancer research. The colossal amount of literary material thrown up by the laboratories is also very impressive.

¹ *Third Internat. Cancer Congress*, 1928.

² *Lancet*, 1924, i, 1182.

³ *Brit. J. Cancer*, 1932, i, 308.

⁴ *A Study of Experimental Cancer*, 1933, p. 273.

There seems to be a general impression that the special qualities which make a successful worker in mouse cancers—as this success is now estimated—are also those suitable for the adoption of large comprehensive views of cancer in man. Yet, so far from this being the case, both reason and experience suggest that the reverse is the truth: that close, painstaking, minute research in a laboratory is not conducive to the right understanding of large sociological problems involving questions of food or of civilization or race. Indeed, it would even appear that the more eminent a man in the little world of research the less is he fitted to give an unbiased or reliable opinion in matters concerning cancer of human beings. And there would be no difficulty in finding instances pointing to the truth of this statement.

The conclusion to which we appear to be driven is that, in order that this new problem of cancer should be solved, no more need be done than that the experimental oncologist should be asked to confine his attention to the work which he is now carrying out so brilliantly and so successfully among tumours of the lower animals, and should no longer concern himself with the tumours of man, a branch of oncology in which he has met with no success. And when the evidence from these two sources clashes, as it so often does, it seems nothing but just that the man should rank higher than and take precedence over the mouse, instead of the reverse, as is now the case. If this is done, may I venture to prophesy that the great central problem of cancer, no longer obscured or made difficult by the clouds and winds of useless controversy, will then not only be clearly seen, but will be attacked with far better prospects of success than has hitherto been the case.—I am, etc.,

Reading, Jan. 14th.

HASTINGS GILFORD.

Some Factors which Regulate the Uterus

SIR,—In an annotation on "Some Factors which Regulate the Uterus," in the *Journal* of January 6th (p. 38), mention is made of an article¹ of which I was a joint author. I would suggest that, on reading this commentary, it is difficult for anyone, other than those conversant with the original work, to separate the views there expressed from those put forward in the paper read at the ninth British Congress of Obstetrics and Gynaecology. It seems beyond question, however, that criticism of our work is implied, and I therefore feel impelled to correct any misunderstanding which may have arisen.

In spite of the statement to the contrary, it must be pointed out that, in the work in question, no assumptions were made on results obtained by *in vitro* experiments. Moreover, throughout the paper great emphasis was laid on responses which varied according to the different (that is, *in vitro* or *in vivo*) experimental methods employed. With regard to oestrin,² I was among the first to point out that this principle has no oxytocic action when tested on the isolated uterus, yet in the living animal it invariably produces, after a latent period, strong uterine contractions. This fact is now common knowledge, and is, moreover, emphasized in our latest work, so it is difficult to understand how anyone reading the article could accuse us of making assumptions on the results of *in vitro* experiments. This does not mean that such methods of investigation are valueless, but, rather, that such procedures must be carried out by those who have sufficient experience and knowledge of possible discrepancies to make them cautious as to the manner in which they interpret such experiments in terms of human physiology and pathology. It seems almost unnecessary to add that, although *in vitro* tests were made on many occasions, our work, for the most part, was carried out on living animals. Here again the same caution in interpreting results was exercised.

The annotation also infers that we are unfamiliar with the fact that impurities present in hormone preparations are a likely source of error. In reply to that may I refer to a paper read in 1931,³ in which it was shown that use of an impure oestrin preparation had led to erroneous results obtained by other workers? It is, of course, a well-established fact that, if both ovaries are removed from a pregnant woman, gestation continues without interruption, and is terminated by normal parturition. The annotation in the *Journal* quotes only one instance of this, and yet it is no exaggeration to say that most gynaecologists have encountered cases illustrating this phenomenon. The annotation appears to suggest that this undeniable fact makes it unlikely that oestrin, which is generally regarded as being a secretion of the ovary, can affect the course of pregnancy. It must be remembered, however, that it has not yet been proved that the large amount of this hormone found in the circulation during pregnancy has its origin in the ovary. On the other hand, it has been shown by several observers (Allan and Dodds,⁴ Szarka,⁴ Amati,⁵ Jeffcoate,² and others) that removal of the ovaries from a woman during pregnancy has no effect on the amount of oestrin found subsequently in the blood or urine of the patient. The explanation of this occurrence is a matter of dispute, but my personal view (this is not shared by my fellow authors of the paper under discussion) is that the oestrin is secreted by the placenta and not by the ovary during pregnancy. Nevertheless, evidence is accumulating to show that there may be more than one substance capable of producing oestrin in ovariectomized animals, so in the present state of our knowledge it is unwise to be too dogmatic on this point. Whatever may be the explanation, it is certain that an "oestrin-like substance" continues to be formed in, and excreted from, the body after both ovaries are removed from a pregnant patient, and that the occurrence of normal labour after bilateral oophorectomy in Man is no evidence that oestrin is not an important factor in determining the onset of labour and the nature of the ensuing uterine contractions of parturition. At this juncture a very interesting phenomenon may be mentioned. In animals such as the rabbit bilateral oophorectomy at any time during pregnancy is followed by abortion or premature labour. It is noticeable that such animals have no demonstrable amounts of anterior pituitary hormone(s) in the body fluids or placentas during pregnancy. This is in sharp contrast to the state of affairs found in the human being, and is additional evidence to suggest that, in Man, the anterior pituitary hormone(s) probably assist(s), or replace(s) the corpus luteum in inhibiting uterine contractions during gestation.

The final criticism put forward in the annotation is that, if the oxytocic principle of the posterior lobe of the pituitary is a factor in causing the onset of labour, why should the pituitary gland of the male contain as much of this hormone as does that of the female? This argument appears to be singularly illogical, and it is absurdly easy to ask any number of such questions. For instance, why does the anterior lobe of the pituitary of the male contain an active principle capable of producing lutein tissue? or, why is it possible to obtain substances indistinguishable in their action from oestrin, from the testis of the male or even from plants? Surely the fact that one can obtain an oestrogenic principle from certain flowers or trees does not prove that oestrin is not responsible for changing the human endometrium from the post-menstrual to the interval phase. Nor does the isolation of an oestrin-producing hormone from the testis exclude the possibility, or rather probability, that oestrin affects uterine contractions in the female. May I add that your annotation would have provided a question more difficult to answer if it had asked why pregnant

animals in whom the pituitary body has been removed experimentally have been shown to have normal confinements at term? In conclusion, I should like to point out that most of the arguments put forward here are clearly expressed in the original paper by Professor Blair-Bell, Dr. Datnow, and myself.—I am, etc.,

Liverpool, Jan. 8th.

T. N. A. JEFFCOATE.

REFERENCES

- ¹ Blair-Bell, W., Datnow, M. M., and Jeffcoate, T. N. A.: *Journ. Obstet. and Gynaecol. British Empire*, 1933, 18, 541.
- ² Jeffcoate, T. N. A.: *Ibid.*, 1932, XXXIX, 67.
- ³ Allan, A., and Dodds, E. C.: *Ibid.*, 1930, XXVII, 450.
- ⁴ Szarka, S.: *Zentralbl. f. Gynäk.*, 1930, LV, 2211.
- ⁵ Amati, G.: *Ibid.*, 1928, XLII, 2639.

Control of Metastases in Breast Cancer

SIR,—I am sure all those of your readers who have studied the reports available of the recent congress of the British Institute of Radiology will have noted the scanty reference made to the question of "metastases," and thanks are due to Dr. S. Gilbert Scott for drawing particular attention thereto by his letter published in your issue of January 6th. All experienced observers of cases of malignant disease, and not merely of cases of such disease of the breast only, will agree with him that "it is the want of control of metastases which is the cause of failure to cure cancer." Meyer, in his work on cancer, graphically describes the "far-distance effects," as he terms them, and indicates how great an effect these new foci have upon the prognosis of the particular case.

I think all will agree also with Dr. Scott in regard to the ideal to be arrived at, which ideal is also well described by Meyer as "a therapeutic plan worked out to destroy in the system of the patient in one procedure everything present therein that pertains to cancer—that is, predisposition, precancerous phenomena, tumour, disseminated cancer cells, and metastases." Up to this stage I think there will be universal agreement with Dr. Scott, but when he states that this cannot be accomplished, I think he is too readily belittling the value of the time, labour, and, especially, money which has been spent upon cancer research work under very distinguished auspices in this and other countries—with far too little result, I admit, for the expenditure incurred, but still surely with some.—I am, etc.,

London, W.I., Jan. 6th.

E. G. ANNIS.

The "Acute Ear" in General Practice

SIR,—It is only because the acute or subacute ear is primarily the concern of the general practitioner that I, as a G.P., venture to point out what I consider to be an important omission in my friend Mr. Guthrie's instructive paper on the acute ear in your issue of January 6th (p. 4).

A certain number of cases of "latent" otitis media present a varying degree of enlargement of the tonsillar group of lymphatic glands. This enlargement may be very marked indeed, and may or may not be associated with pyrexia or pronounced disturbance of the general health. Earache is often entirely absent. In the absence of tonsillitis, enlargement of the tonsillar glands should always lead one to examine the ear. As a rule there will be absence of the light reflex, mentioned by Mr. Guthrie, and alteration in the colour and appearance of the membrane, usually without actual bulging. Incision of such a drum will invariably result in a free discharge within twenty-four hours, the rapid subsidence of the lymphadenitis, and a return to normal health.

I do not doubt that this is a matter of common knowledge to ear specialists, but I have not seen it mentioned in textbooks or in the frequent papers on otitis media.

I have had to find it out for myself, and think that it is a point that should be placed prominently before students and practitioners.—I am, etc.,

A. G. COVILLIE, M.D., F.R.C.S. Ed.,

Lieut.-Colonel I.M.S. (ret.).

Cheadle, Staffordshire, Jan. 8th.

Pruritus Ani

SIR,—In your issue of December 30th, 1933 (*Epitome*, para. 478), there is an abstract of an article advocating and describing elaborate surgical treatment for pruritus ani. The reference to extensive hypertrophy and oedema of the skin can surely be appropriate only to a very late stage of the malady—one which should never be reached unless through some extraordinary failure on the part of the patient to seek appropriate advice.

It is now generally accepted that the great majority of cases of pruritus ani are readily curable by a few mild applications of x rays, combined with special attention to the cleanliness of the parts. The total dosage, applied over two or three weeks, need not as a rule be equal to that given in a single sitting in a case of ringworm. Consequently there is not the smallest risk of skin irritation. Cases associated with severe piles will, of course, require operation, and in some instances the condition is a manifestation of neurosis.

In the female, where the vulva may be involved, even to the point of a leucoplakia, more vigorous treatment may be necessary—that is, a hard, filtered radiation, both on the diseased parts and on the lumbar spine. Many such patients, though they are often elderly and depressed to the verge of suicide, nevertheless do very well under suitable x-ray treatment.—I am, etc.,

London, W.I., Jan. 11th.

F. HERNAMAN-JOHNSON.

Continuous Intravenous Saline

SIR,—I was glad to see the article by Mr. Hamilton Bailey and Dr. Carnow on continuous intravenous saline in the *Journal* of January 6th (p. 11). This method, which has been in almost constant use at the Northampton General Hospital since June, 1931, of giving saline to shocked patients deserves the widest publicity, as it constitutes an addition to our armamentarium of the very greatest value. Of course ordinary intravenous saline has been given to such patients for a great number of years, but the usual practice was to give one or two pints of saline by means of a needle, tube, and funnel, and when this had been run in, and the patient's pulse thereby greatly improved, the needle was withdrawn and the patient left in the hope that this illusive recovery would be maintained. Or, more often, reliance was then placed on some form of rectal saline. In too many cases the improvement was found to be only transient, and in about two hours the collapse had recurred, sometimes with a fatal result.

The results from continuous intravenous saline are entirely different: there is no secondary collapse and no risk of overloading the right side of the heart. It is the introduction of a Ryall's drop indicator that makes all the difference. The fluid is introduced so slowly that excretion can keep pace with the inflow once the circulation has recovered, and ten pints in twenty-four hours is a fair average of the amount of fluid that can be introduced. We have found that warm saline flows better than cold, and for this purpose an electrically heated irrigator, such as Paterson's, is invaluable. The effect on the body temperature of warm saline is, I agree, quite negligible, as the fluid goes in so slowly, but cold saline causes contraction of the vein and sometimes stops the flow.

In conclusion, may I refer to another invaluable weapon which can be used in cases of obstruction and peritonitis? I believe that it entirely obviates the necessity for a high jejunostomy for these cases. I refer to the continuous drainage of the stomach by means of a Ryle's tube, a Woulfe's bottle, and a suction apparatus, such as a Sprengel's pump. Post-mortem examination of patients who have died from obstruction or peritonitis often show a hugely dilated stomach, and it was this striking fact which induced me to use this method originally. I believe that by keeping the stomach constantly empty the upper part of the small intestine, if not the greater part, can be freed of stagnating contents, and the prospect of re-establishing normal peristalsis thereby greatly improved. Intelligent patients have told me that the relief is indescribable, and some of them have taken complete charge of the tube themselves, taking it out and replacing it according to their sensations of epigastric fullness or otherwise. Another advantage is that, once the stomach is empty, the patient can drink without danger, as any water that cannot be absorbed is removed by the Ryle's tube, and, in fact, helps to wash out any small intestine contents that may have regurgitated into the stomach.

By these two simple methods of treatment—the continuous saline infusion which prevents dehydration, and the continuous emptying of the stomach which prevents acute dilatation of the stomach and drains a considerable portion of the small intestine—we can, I believe, do something to lower the mortality, which has remained stationary since 1924, from obstruction and peritonitis.—I am, etc.,

London, W.1, Jan. 8th.

B. L. LAVER.

Painful Injections: An Avoidable Cause

SIR,—It is certainly valuable to be reminded by Dr. Bousfield (*Journal*, January 13th, p. 76) that spirit may cause pain, but sterilization by boiling leaves the syringe wet, and therefore unsuitable for the accurate measurement of insulin, etc. Sterile and completely dry instruments can easily be obtained if syringe and needle, which have been kept in spirit (industrial spirit with 1/4 volume distilled water), are rinsed with ether immediately before use. The ether is aspirated through the needle from a small bottle, and may be used repeatedly. The last traces of ether are quickly expelled by aspirating air. Immediately after use syringe and needle are rinsed with water, if possible directly from a hot-water tap.—I am, etc.,

London, W.1, Jan. 13th.

F. E. LOEWY.

Rest in the Treatment of Neuroses

SIR,—In reply to Dr. Kemp's kindly criticism (*Journal*, January 13th, p. 79) of my letter of December 30th, 1933, and his specific query: As regards the first I had in mind, at the time of writing, only that class of sufferer from mental illness who was able to afford or was given the time for treatment and, even though at times with difficulty, had the wherewithal to pay for it. To go fully into the question of the crying need for the provision of adequate treatment for the large number of sufferers from mental illness who are in the position of Dr. Kemp's patient—"a case of dyspepsia of emotional origin"—would, I fear, occupy more space than perhaps you, Sir, feel able to allow me. With regard to Dr. Kemp's query as to how I should treat this patient with "dyspepsia of emotional origin," who would certainly lose his job if he had "to go sick for a month," I am afraid I must confess that I should not be able to treat him at all. I am frequently asked by neighbouring practitioners to see "neurotic" panel patients or others in similar circumstances to Dr. Kemp's patient, and in far too many instances I have regretfully to report that, while much

might be done in more favourable economic conditions or where adequate treatment of this social class of patient was available—as it now is for similarly placed patients suffering from almost every other illness under the sun—in existing circumstances I can suggest nothing helpful.

The Mental Treatment Act, 1930, confers on local authorities the power to establish clinics for the treatment of mental illness. Over three years have now elapsed since the Act came into operation, but only one local authority here and there has made any attempt to make use of the powers conferred on them all. Cannot the general practitioner in his own interest, as well as that of his "neurotic" patients, either through the local Branches of the B.M.A. or by means of personal influence with individual members of his local authority, induce the latter "to get a move on"? So long as local authorities do not have the crying need for such clinics pointed out to them, and unless the medical profession makes the need known to them, there seems likely to be many more years of unnecessary suffering in store for patients with mental illnesses, while those suffering, in many cases, incomparably less pain and distress from almost every form of physical illness are provided with every known means of diagnosis and treatment free of cost. The best place for these clinics would seem to be in connexion with local hospitals or in separate buildings. I believe in a few cases they have been opened in connexion with mental hospitals. Till the public are sufficiently educated to realize that there is no disgrace in acknowledging a mental illness, this latter situation for a clinic seems apt to defeat its own object. The clinics should be provided with a few beds for such patients as in the first instance are not in a fit state of health to attend the clinic as out-patients. The great majority would be able so to attend, but without in-patient beds the clinic would lose a good deal of its usefulness.—I am, etc.,

J. W. ASTLEY COOPER.

Middleton St. George, Co. Durham, Jan. 15th.

Left-sided Stance for Urethral Instrumentation

SIR,—Your correspondent Mr. Alex. E. Roche says that he cannot understand what advantage is gained by a right-handed operator standing on the left of the patient. If a curved instrument is to be passed and the proper technique employed, a right-handed person, holding the instrument in his right hand, but standing on the right side of the patient, would of necessity cross his hands, and so assume an unnatural, therefore awkward, and uncomfortable position.—I am, etc.,

London, W.1, Jan. 13th.

M. W. BROWDY.

"Road Dangers"

SIR,—I have no wish to see this discussion, which was begun by Dr. G. Jones and not by myself, degenerating into the usual "pedestrian v. motorist" controversy, which would be out of place in your columns. May I, however, restate my opinion, which I hope I am not alone in holding, as follows:

If it is a fact that the work of many hospitals and of many medical men is being seriously hampered by their attention to the victims of road accidents, for which they receive an inadequate financial reward, then I consider it would be more in keeping with the functions and traditions of the medical profession for its members to try to obtain a diminution in the number of accidents rather than to agitate for more hospital accommodation, an enlarged ambulance service, and some financial machinery for payment.—I am, etc.,

London, N.W.8, Jan. 15th.

R. J. CLAUSEN.

Obituary

SIR DONALD MACALISTER, Br., K.C.B., M.D.,

D.C.L., LL.D., D.Sc., F.R.C.P.

Chancellor of the University of Glasgow; late President of the General Medical Council

With the death of Sir Donald MacAlister, on January 15th at Cambridge, in his eightieth year, there passes an outstanding figure from the world of medicine—a man who held many high offices and impressed his personality upon the public life of his time. In 1929 he retired from the Principalship and Vice-Chancellorship of Glasgow University, and in 1931 he resigned the Presidency of the General Medical Council after occupying that position for over twenty-seven years.

Donald MacAlister was born at Perth on May 17th, 1854, the eldest son of Donald MacAlister, of the ancient family who were keepers of Tarbert Castle, Argyllshire. His brother, J. Y. W. (afterwards Sir John) MacAlister, was secretary of the Royal Society of Medicine from the time of its formation, in which he played so large a part, until 1925. Donald's early education was at Aberdeen and at the Liverpool Institute, whence he passed to St. John's College, Cambridge, with a mathematical scholarship, having qualified also for scholarships at Balliol and Worcester, Oxford. At Cambridge he won the Herschel prize in 1876, and in the following year was Senior Wrangler and First Smith's Prizeman. Taking the B.Sc. (London), in his stride, he became mathematical master at Harrow, but not long afterwards entered as a medical student at St. Bartholomew's Hospital, where he was appointed lecturer in natural philosophy in 1879; two years later he graduated M.B. (Camb.), and obtained the M.R.C.P., proceeding M.D. in 1884. He was elected a Fellow of the Royal College of Physicians of London in 1886, and gave the Goulstonian and the Croonian lectures in the two following years. He returned to Cambridge as Fellow and lecturer of St. John's, and from 1889 to 1908 represented that university upon the General Medical Council, during which period he was senior tutor of his college and physician to Addenbrooke's Hospital. His services as an examiner were often called upon by universities and licensing bodies, and he acted on many occasions as visitor on behalf of the General Medical Council. In 1886 he was vice-president of the Mathematical and Physical Section of the British Association.

In 1907 another phase of his career opened, when he was appointed Principal and Vice-Chancellor of the Uni-

versity of Glasgow. He held this post with memorable dignity and efficiency for twenty-two years. Combined with eminence in arts and science and deep and varied scholarship, Donald MacAlister had great business aptitude and capacity for organization. During his tenure of office as Principal at Gilmorehill he saw the foundation of many new chairs and lectureships, among them being the professorships of obstetrics and gynaecology, surgery, medicine, and pathology at Glasgow Royal Infirmary; and at the University the chairs of Scottish history and literature, French, German, bacteriology, organic chemistry, mercantile law, and applied physics. Many new buildings also arose in the university quarter during his Principalship, notably the fine war memorial chapel. When he resigned

office in 1929 he was elected Chancellor of the University, a fitting recognition of fifty-five years' unbroken record of brilliant academic achievement. From 1908 until last year he continued to be a member of the General Medical Council, representing Glasgow University; in 1905 he had succeeded Sir William Turner of Edinburgh as President of that body. The whole period of his service on the Council thus extended over forty-four years.

Merely to enumerate the other public positions MacAlister held would prove wearisome, and a few only must suffice; thus, he had been at one time or another chairman of the Commission on Belfast University, member of the Royal Commission on the Civil Service, chairman of the Medical Consultative Council of the Scottish Board of Health, chairman of the British Pharmacopoeia Committee for many years, chairman of the Universities Bureau of the British Empire, honorary president of the International Congress of Hygiene at Madrid in 1898, and doyen of the

University Mission to France in 1919. He had been honoured by many universities: D.C.L. of Durham, LL.D. of Toronto, McGill, Aberdeen, Glasgow, St. Andrews, Liverpool, Belfast, Dublin, Wales, and Birmingham; D.Sc. of Bristol; and D.Phil. of Athens. He was also corresponding or honorary member of many learned societies at home and abroad, and an honorary Freeman of the City of Glasgow. In 1908 he was created K.C.B., and received a baronetcy in 1924; he was also a Commander of the Legion of Honour and a Cavalier of the Order of the Crown of Italy.

Sir Donald MacAlister had a long list of publications, medical and other, to his name, including a translation of Ziegler's *Pathological Anatomy*. A master of tongues, he spoke no fewer than fourteen languages with fluency;



[Russell, London]

Donald MacAlister

once at a Scottish dinner he replied to a toast in seven languages, including Japanese and a dialect of Chinese. His command of the Romany speech was recognized in 1915 by election as president of the Gipsy Lore Society. It was said that no distinguished foreign visitor ever went to Glasgow University but the Principal could speak to him in his mother tongue. Another literary interest was the translation of poetical works into different languages, and his volume of verse, *Echoes*, published first in 1907, went through three editions.

In former years Sir Donald MacAlister took an active part in the scientific work of the British Medical Association; he was vice-president of the Section of Pharmacology and Therapeutics at the Annual Meeting in London in 1895, and president of the Section of Therapeutics at the Toronto meeting in 1906. He was a prominent figure at the Annual Meeting in Glasgow in 1922, and, as Vice-Chancellor, presided with impressive eloquence at the honorary degree ceremony in the Bute Hall. Long before that he had served at headquarters on an Editorial Committee appointed to "co-operate with" the masterful Editor, Ernest Hart, in supervising the contents of the *British Medical Journal*. Occasionally the committee felt obliged to question or veto some of Mr. Hart's proposals, though not always with success. Sir Donald recalled in these columns many years later how "Dawson Williams as Assistant Editor attended our weekly meetings and took part in its proceedings tactfully, but always with effect. I learned then, what I realized more fully afterwards, how sure and wise was his handling of men and affairs."

He married in 1895 Edith, daughter of the late Professor Alexander Macalister, the Cambridge anatomist. They had no children, and with his death the baronetcy becomes extinct.

We are indebted to Sir NORMAN WALKER for the following appreciation of his predecessor in the presidential chair of the General Medical Council:

It is interesting to speculate on what would have been Donald MacAlister's career had he gone to Balliol, where he would have come under the influence of Jowett, and might have reached the Woolsack. We know that with the halo of the Senior Wranglership fast on his brow he came into contact with an eminent judge, who promised him his backing if he would apply himself to law. His brilliant undergraduate record in Cambridge seemed to mark him out for a mathematical career; he had serious thought of applying for the chair of mathematics in the university of which he later became Principal, and his first appointment was that of mathematical master at Harrow. This he only held for a year, for, unusual as was his approach to medicine, he always meant to be a doctor. The curriculum was shorter then, and his name appears on the *Medical Register* in April, 1881. His clinical work was done at St. Bartholomew's, and while a student there he held the post of lecturer on natural philosophy in the Medical School. He was an indefatigable worker, and he had to work. His father died in 1881, and he took on the responsibility of a widowed mother—a woman of strong character and intelligence, whose memory he ever held in reverence—and the education of his younger brothers and sisters. In the words of one of these latter, he was "a lovely big brother." After a period of post-graduate work in Leipzig he returned to Cambridge and put up his plate. His first published medical work was a translation of Ziegler's *Pathological Anatomy*, which went through three editions, and was one of the standard textbooks of the early 'eighties; but it was to pharmacology and therapeutics that he gave most attention, and the *British Pharmacopoeia* of 1898 and 1914 were largely his work. He was early on the staff of Addenbrooke's Hospital, was senior tutor at St. John's and Linacre Lecturer of Physic,

and practised as a consulting physician in Cambridge and the surrounding country.

But it was in "affairs" that he attained his highest distinction. He had a marvellous, almost uncanny, memory. He kept very few of the letters he received, and still fewer of the replies he wrote to them, always confident that he could remember both; he could tell in what volume and on what page any decision of the General Medical Council was recorded. Sir Donald's introduction to public affairs came in 1889, when, at the age of 35, having been eight years on the *Medical Register*, he stood for the representation of the University of Cambridge on the General Medical Council, the other candidate being the Regius Professor (Latham). The voting was 194 to 140. There are many different methods of election to membership of the Council; in Cambridge it was *more burgensium* by all the electors on the Roll, and in 1889 the number of doctors would not be great. It was to his zeal for university reform that Donald owed his election. He and Sir William Selby Church, representing Oxford, were introduced to the Council on the same day (November 26th, 1889) by Sir Dyce Duckworth. When he became Principal of the University of Glasgow in 1907 Cambridge invited him to complete the term for which he had been appointed as their representative. On the death of Sir Thomson McCall Anderson in 1908 Sir Donald was appointed representative of the University of Glasgow, and resigned his Cambridge seat.

What he did for the General Medical Council it would require a volume to tell. During his forty-four years of membership, of which twenty-seven were in the president's chair, he laboured unceasingly to make the Council a more and more efficient agency for carrying out the duties laid on it by the Medical Acts, and under his guidance the session grew more and more businesslike. He would have been the last to claim credit for it, but it is the fact that the financial stability of the Council markedly increased under his guidance. His capacity as chairman of a commission or committee is testified to by the number of such appointments he held. As a rule he occupied the chair in the sense conveyed by the name given to the chairman of the Ecclesiastical Court in Scotland—that of Moderator: one who reconciles the perhaps divergent views of a meeting. But when occasion arose he could be very stern, and had a disconcerting prescience of what some of the contestants were going to think ten minutes later. Though he lived for the greater part of his life in England his heart was rooted in the Highlands, and he was happiest when spending his vacation on the shores of Loch Fyne, surrounded like a Highland chief by members of his clan. His knowledge of languages was wonderful, but he used to say jocularly that the acquisition of any language was easy when one began with Gaelic. He was a devoted son of the Church of his fathers, and St. Columba's, Cambridge, abounds in records of the works of the MacAlisters. He married his "Highland" cousin, Edith, daughter of Alexander Macalister, professor of anatomy in Cambridge (formerly of Dublin), and to her, a real helpmate, the public is indebted more than it knows for the work Sir Donald, in spite of frail health, was able to do in the last twenty years.

An interesting account of the MacAlisters of Tarbert is appended to the full memoir published in the *Glasgow Herald* of January 16th, and in a tribute to Sir Donald MacAlister's notable services to the University and City of Glasgow our contemporary says:

It is, indeed, not as Chancellor but as Principal that he will be mourned to-day, for the unprecedented compliment of the higher dignity was conferred upon him, just over four years ago, as a token of the grateful regard in which his illustrious

services as executive head of the University were held by its graduates. In the twenty-two years during which he adorned that office the University went from strength to strength, and in that long record of development the personality of Sir Donald MacAlister was an important factor. The changes made in organization and curriculum bore the impress of the mind of a wise man, rich in experience and fertile in resources. The munificent benefactions made by Glasgow citizens towards the equipment of the University were an indication of general confidence in a leadership which would ensure that the best use would be made of these endowments. The reputation of the University in the outside world was enhanced by the circumstance that its presiding officer was a man of high and varied gifts, familiar with the conduct of affairs, who served the State in many capacities, and never without distinction and success.

JOHN BOWRING LAWFORD, M.D., C.M., LL.D., F.R.C.S.

Consulting Ophthalmic Surgeon to St. Thomas's Hospital

Through the death, on January 3rd at his home in Ashstead in his seventy-sixth year, of Mr. J. B. Lawford, ophthalmology has sustained a heavy loss. One of the few ophthalmologists with a personal recollection of Bowman, and an early pupil of Nettleship, he had during

many years of his long life occupied one of the foremost positions in British ophthalmology.

Born in Montreal in 1858, he was already a graduate of McGill University when, at the age of 21, he came to this country and joined St. Thomas's Hospital. To his university degrees he soon added the conjoint diplomas of this country, and in 1885 he became a Fellow of the Royal College of Surgeons. In these early years the attraction of ophthalmology was already evident; he



became the clinical assistant at St. Thomas's of Edward Nettleship, whose devoted admirer he remained throughout his life. After holding the posts of assistant house-physician at St. Thomas's and resident clinical assistant at Bethlem Royal Hospital, he was appointed house-surgeon at Moorfields Eye Hospital in 1883, and in the following year became curator and pathologist at the same institution. Here it was that he first found the opportunity for original observation and research, and began the task, carried on for so many years, of adding to ophthalmic knowledge and literature. In 1886 he was appointed assistant ophthalmic surgeon at St. Thomas's, and four years later became assistant surgeon at Moorfields, attaining the status of full surgeon at both hospitals in 1895. At Moorfields he was for many years senior surgeon, and subsequently consulting surgeon. At St. Thomas's from 1891 until the date of his retirement in 1915, when he became consulting ophthalmic surgeon, he was lecturer in ophthalmology.

Owing to Lawford's wide knowledge of ophthalmology and of men and affairs, his sound judgement, and transparent honesty, it was natural that his counsel should be in great demand as a consultant in his specialty, and in the guidance of all undertakings in any way connected with it. In addition to his hospital appointments he filled the office of honorary secretary and president of the Ophthalmological Society of the United Kingdom, vice-president of the Ophthalmological Section of the Royal Society of Medicine, editor of the *Ophthalmic Review*, chairman of the Editorial Committee, and later managing

director, of the *British Journal of Ophthalmology*, and president of the Council of British Ophthalmologists. At the time of his death he was ophthalmic surgeon on the Medical Appeal Board of the Royal Navy, a post he had held for many years, and a member of the Prevention of Blindness Committee, in the work of which he took a very active part.

Throughout his life he was an indefatigable contributor to ophthalmic literature. His work, published in the various ophthalmological periodicals, covers a wide range, the contributions to the *Transactions of the Ophthalmological Society* alone numbering not far short of a hundred, and dealing with a great variety of subjects. He was the author of articles in Tuke's *Dictionary of Psychological Medicine* on "Pupil Reactions" and "Eye Symptoms in Insanity"; "Diseases of the Orbit" in the *Encyclopaedia Medica*; and "Ocular Lesions in Disorders of Secretory and Excretory Organs" in Norris and Oliver's *System of Diseases of the Eye*. He also did an immense amount of work in reviewing foreign literature for the *British Journal of Ophthalmology*, work which was continued to within a few days of his death. The work of the British Council of Ophthalmologists during his presidency included the arrangements for a deputation to the Ministry of Health on the subject of institutional treatment for children suffering from eye diseases.

Lawford was imbued with an exceptionally strong sense of duty, which ensured a willing response to the many calls for his services in an official capacity, and was evident in the punctilious care given to every detail of any work for which he was responsible. Yet, in spite of the heavy demands on his time which this involved, there was never any appearance of hurry or loss of equanimity, and to patients and subordinates alike there was invariably accorded a kindly and courteous consideration and attention. In his hours of leisure he was a genial companion and host, and at such times occasional sallies of playful humour would endow his customarily rather sedate demeanour with a peculiar charm. He was a highly accomplished operator, using either hand with equal facility, and seldom failing to attain precisely his objective. Lawford's distinguished services to ophthalmology were recognized outside the British Isles by his being made the recipient of the honorary membership of the Société Française d'Ophthalmologie, honorary fellowship of the American Academy of Ophthalmology and Otolaryngology, and the degree of Hon. LL.D. of McGill University.

He never married, and for many years lived with his mother and sisters, two of whom survive him.

W. W. HERBERT, M.D., C.M. Llanollen, North Wales

We regret to announce the death on January 3rd of Dr. William Whittington Herbert, at his residence in Llanollen, at the age of 73. Dr. Herbert was trained in the University of Edinburgh, where he graduated M.B., C.M. in 1882, and proceeded M.D. in 1886. Psychiatry attracted him from the start of his medical career, and soon after graduation he was appointed medical officer to the North Wales Counties Asylum at Denbigh. For thirty years he continued to serve this institution, retiring in 1912. He had for some years been deputy superintendent, and had also held the post of medical superintendent of Fisherton House Asylum, Salisbury. He was medical officer in charge of prisoners of war at the Queensferry and Lancaster internment camps, and after the war was appointed neurological specialist to the Ministry of Pensions for the North Wales area. The latter part of

his life was devoted to public duties of different kinds. He was a member of the Denbighshire County Council, and as chairman of its mental deficiency committee was largely responsible for the acquisition of an institution for the care of mental defectives. He was also J.P. for the county, and a member of the Corwen board of guardians. He was a strong supporter of eugenics and an advocate of sterilization of the chronic mentally unfit. Dr. Herbert had been a member of the British Medical Association since 1886, and in 1894 contributed an article to the *British Medical Journal* on forced feeding of the insane. A genial companion, ardent sportsman, and a keen fighter for the ideals he held, he had many friends. The Archbishop of Wales officiated at his funeral on January 6th, which was attended by a large gathering.

C. H. writes: There is something rather tragic in the death of Dr. Herbert just at a moment when the report of the Departmental Committee of the Ministry of Health on sterilization is about to appear, for few people in the country worked more effectively and with greater enthusiasm in their own locality to secure recognition of the biological aspects underlying mental pathology. Exactly nine years ago Dr. Herbert, who had then already retired from the Denbigh County Hospital, began to correspond with eugenicists in London on the practical possibilities of offering some method for family limitation to patients leaving the asylum cured, whose disease was of a familial type. As a member of the Denbigh County Council and chairman for some time of the committee dealing with mental defectives for that area, he went on ceaselessly with education and persuasion, and had the satisfaction of securing results for his own county in 1931 in favour of birth control provision (for suitable cases) and of recommendation of sterilization to patients leaving the mental hospital.

WILLIAM J. MAGUIRE, M.D., F.R.C.P.I.

Late Medical Commissioner, National Health Commission,
Ireland

The death took place recently, at his residence at Ardeevin, Highfield Road, Dublin, of Dr. William J. Maguire. He was the second son of the late William Maguire of Tudor Park, Hollywood, County Down, and received his early education at St. Malachy's and Owen's Colleges, Belfast, and at St. Joseph's Seminary, Dublin. He took his B.A. at the Royal University in 1892, and his M.B., B.Ch., B.A.O. in 1894, proceeding M.D. in 1907. He became a Member of the Royal College of Physicians of Ireland in 1908, and was elected a Fellow in the same year. He practised in Belfast from the time he qualified in 1894 until 1912, when he was appointed medical commissioner of the National Health Insurance Commission, a post which he held until his retirement last year under the age regulation of 65. Before his appointment as medical commissioner he held the posts of senior visiting physician to the Mater Infirmorum Hospital, Belfast; clinical lecturer and examiner in medicine, Queen's University, Belfast; and extern examiner in the National University. Dr. Maguire was very popular with the medical profession, especially when matters settled down after the certification dispute, and he always took care that medical men received fair play from the approved societies. He contributed a paper on "Early Immunization as a Preventive Measure against Tuberculosis" at the Royal Institute of Public Health Congress, Dublin, 1928. Dr. Maguire is survived by his widow, his son, Dr. Joseph Ballantyne Maguire, who is medical officer on the White Star liner *Britannic*, and two daughters, one of whom is Dr. Wilhelmina Colquhoun Maguire, Camberwell House Mental Hospital, London.

JOHN STEWART AND IRVING CAMERON.

Dr. ALFRED COX writes:

I should be wanting in my duty if I did not pay a pious tribute to the memory of the two eminent Canadians whose obituaries you have recently published. The first time I was in Canada I did not meet John Stewart, but I heard of him all the way across from Quebec to Winnipeg, and what I heard made me very anxious to meet him. It was evident that he was to the Canadian profession an object of peculiar pride, affection, and almost reverence; he was the grand old man of the medical profession. It must be rare for a man in a remote corner of a vast country to have a national reputation of this kind. I met him at Edinburgh, and again at our Annual Meeting at Winnipeg, and then I understood. The natural dignity, unaffected kindness, and shining integrity of the man made him irresistible. One felt that he was fundamentally sincere and great—a feeling one gets but rarely in one's contacts with the world, but to be treasured when it is felt. His death leaves a blank in Canada which nobody can fill, and I can faintly realize what it must mean to the profession in his own Nova Scotia, where he was for so long the outstanding example of a good man and a good doctor.

As for Professor Irving Cameron, I should like to say, because I know he would have liked it to be said, how he enjoyed his annual visits to this country. He always paid an early visit to the B.M.A. "to pay his respects," as he said, "to the heads of the leading medical body of the leading country in the world," by which he meant the Editor and myself. I remember him on several occasions at 429, Strand. When we moved to Tavistock Square he always commenced by saying: "I'm a very old man, I've come annually for so many years, and I expect this will be my last visit." It was a standing joke between us that even when he had disappeared from this world the force of habit would impel his ghost to make the usual annual visit. He was, as Professor Grey Turner says, a tremendous loyalist to the Imperial idea, and loved to think himself, as indeed he was, an unofficial but none the less useful and appreciated link between the Canadian profession and the B.M.A.

With the death on December 31st, 1933, of Dr. ALEXANDER MCNEILL D'EVELYN of Ballymena there passed one who had achieved distinction in many spheres of life and had won a great respect and affection. His medical education had been received at Trinity College, Dublin, where he graduated M.B., B.Ch. in 1886, and obtained the diploma L.M. at the Rotunda Hospital. Four years later he proceeded M.D. At first he held an appointment as medical officer to a steamship company, and travelled much in the Far East. He settled in Ballymena forty-four years ago, and soon built up a large practice. He was for many years medical officer to the Braidwater Spinning Company. From the establishment of the Ballymena Cottage Hospital he devoted himself very actively to its interests, and for a long time was secretary of the medical staff. He invariably submitted the medical report of the institution at its annual meetings on December 11th, and this he did at its last meeting in 1933, twenty days before his unexpected death within its walls. He was a medical visitor in lunacy. Raised to the magisterial bench more than thirty years ago, he took great interest in petty sessions work, where his wide experience and humanity won him general esteem. Always a student of antiquarian research, he possessed a very fine collection of archaeological specimens. He was a fellow of the Royal Society of Antiquarians of Ireland and a member of the Belfast Naturalists' Field Club. A keen Mason, Dr. D'Evelyn held rank in the Provincial Grand Lodge of Antrim, was Past Master of his Lodge, a member of R.A.C. and Preceptory, and chairman of the local masonic hall committee. He was active in promoting the erection of the present fine masonic temple in Ballymena. One of his chief recreations was fishing, and he spent many holidays fishing the lakes and rivers of Western Ireland, combining

this with hunting for antiquities. He was chairman of the Mid-Antrim Anglers' Association, and did much for this society and its work of pisciculture. Dr. D'Evelyn was unmarried. He had been a member of the British Medical Association since 1888.

Dr. PERCY ROBERT MANDER, whose death at the age of 74 took place on January 8th, received his medical education at Westminster Hospital. He obtained an exhibition in anatomy and physiology in 1880, a scholarship in anatomy and physiology in 1881, a prize in clinical medicine in 1883, and was senior house-surgeon in 1886. He qualified L.S.A. Lond. in 1883, M.R.C.S. Eng. in 1884, and L.R.C.P. Lond. in 1886. In 1901 he took the M.D. degree of Durham University, and was a member of the British Medical Association for many years. Mander joined the Prison Service in 1892 and served for seven years at Dartmoor Prison, and later at Wandsworth, Stafford, Portland, Pentonville, and Parkhurst Prisons. He retired in 1923 to the Isle of Wight and later removed to Ealing. He was a man of high ideals, a staunch and loyal colleague, and combined firmness of purpose with modesty, moral courage, wide human sympathy, and understanding. During the thirty-one years in which he served the public as a prison medical officer he came into contact with a vast number of the criminal population, but his faith in human nature remained unshaken. The writer of these notes worked with him for a few weeks in the summer of 1899 at Dartmoor Prison and received at the time wise counsel which is still remembered. Mander was a particularly lovable man and was devoted to his prison work. His loss severs a link with past prison medical practice, but he will ever be remembered with affection by those with whom he worked.

W. N. E.

The following well-known foreign medical men have recently died: Dr. GIUSEPPE PORTIGLIOTTI, an eminent psychiatrist of Genoa; Dr. PAUL RICHER, member of the Institut de France and Académie de Médecine, founder of the Nouvelle Iconographie de la Salpêtrière and collaborator of Charcot, aged 84; Dr. JUSTE LUCAS-CHAMPIONNIÈRE, professor at the medical school at Hanoi, and director of the *Journal de Médecine et de Chirurgie Pratiques*; and Dr. JULIO IRIBARNE, formerly dean of the Buenos Aires Faculty of Medicine, from injuries received in a motor accident.

The Services

DEATHS IN THE SERVICES

Colonel Roger Kirkpatrick, C.B., C.M.G., late R.A.M.C., died at Knockhill, Ecclefechan, on December 20th, 1933, aged 74. He was born at Bangalore on June 19th, 1859, and was educated at Edinburgh University, where he graduated M.B., C.M., in 1881, and as M.D. in 1894, also taking the M.R.C.S. in 1881. Entering the Army as surgeon on July 29th, 1882, he became lieutenant-colonel after twenty years' service, and colonel on May 21st, 1912, retiring on December 26th, 1917. He had a long list of war service: Burma, 1886-8 (medal with two clasps); North-West Frontier of India, 1897-8, Buner campaign and attack and capture of the Tanga Pass, medal with clasp, and Tirah, 1897-8 (clasp); South Africa, 1899-1902, relief of Ladysmith, including actions of Colenso and Tugela Heights, operations in Natal, and afterwards as P.M.O. of a general hospital, mentioned in despatches in the *London Gazette* of February 8th and September 14th, 1901 (Queen's medal with four clasps, and King's medal with two clasps, and C.M.G.); war of 1914-18, as D.D.M.S. (mentioned in despatches in *London Gazette* of January 1st, 1916, and May 29th, 1917, and received the C.B. in 1917).

Lieut.-Colonel Nicholas Purcell O'Gorman Lalor, Madras Medical Service (ret.), died in London on December 26th, 1933, aged 63. He was born in Dublin on January 1st, 1869, the son of Nicholas James Lalor, merchant, Dublin, and graduated M.B., B.Ch., in the Royal University of Ireland in 1896. Entering the I.M.S. as surgeon lieutenant on January 29th, 1896, he became lieutenant colonel on July 29th, 1915, and retired on July 25th, 1918. He served on the North-West Frontier of India in the Mohmand campaign in

1897-8 (medal with clasp); and in China, 1900 (medal). He was the author of *Hospital and Dispensary Code for Sub-Assistant Surgeons*, 1911, and *The Campaign Against Malaria in Italy*, 1912.

Universities and Colleges

UNIVERSITY OF OXFORD

The electors to Dr. Lee's Professorship of Human Anatomy have appointed to the chair Mr. Wilfrid E. Le Gros Clark, D.Sc., F.R.C.S., now Professor of Anatomy at St. Thomas's Hospital Medical School (University of London), and formerly Professor of Anatomy at St. Bartholomew's.

UNIVERSITY OF LONDON

The following have been recognized as teachers in the subjects indicated. *St. Bartholomew's Hospital Medical School*: Dr. W. M. Levitt (radiology). *London Hospital Medical College*: Mr. C. Donald (surgery). *Dr. Horace Evans (medicine)*. *Charing Cross Hospital Medical School*: Mr. R. A. Fitzsimons (surgery). *St. Mary's Hospital Medical School*: Dr. G. R. Phillips (anaesthetics). *Royal Dental Hospital of London*: Mr. L. E. Claremont, Mr. C. Bowdler Henry, Mr. S. A. Riddett, and Mr. H. Stobie (dental surgery).

The regulations relating to exemptions in respect of the course for the first examination for medical degrees for internal students (*Red Book*, 1933 4, pp. 200-1) have been amended as follows:

- By the deletion of the following words from Section 2 (v) provided that they have completed the required courses of study.
- By the addition of the following section. (vi) Candidates who have passed the higher school examination of the University of London in accordance with the prescribed conditions for exemption may be exempted from the first examination for medical degrees in whole or in part.

The Senate offer seven post-graduate studentships of the value of £150 per annum open to internal and external graduates of the University in any Faculty. A graduate who has completed his twenty-fifth year on or before June 1st in the year of award will not be eligible. The studentships will be tenable for one year only in the first instance, but may be renewed for a second year at the discretion of the Scholarships Committee. Applications for renewal will be considered by the Scholarships Committee simultaneously with applications for first awards. Applications must be made on a prescribed form, which may be obtained from the Principal, and must be accompanied by two testimonials and the names of not more than two persons to whom reference may be made. Selected candidates will be required to attend for an interview with the committee. Candidates must submit a scheme of work for approval. The awards will be made in June, and applications must reach the Principal not later than May 1st.

Two University post-graduate travelling studentships, each of the value of £275 for one year, will be awarded annually if candidates of sufficient merit shall present themselves. The studentships are open to internal and external graduates of the University in any Faculty. A graduate who has completed his twenty-eighth year on or before June 1st in the year of award will not be eligible. If a studentship is not awarded in any year, an additional studentship may be awarded in a subsequent year. Candidates will be required, if elected, to spend the year of tenure abroad, and must submit a scheme of work for approval. Applications must be made on a prescribed form, which may be obtained from the Principal, and must be accompanied by two testimonials and the names of two persons to whom reference may be made; selected candidates will be required to attend for an interview with the committee. The awards will be made in June, and applications must reach the Principal not later than May 1st.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

Professor W. W. Jameson, dean of the London School of Hygiene and Tropical Medicine, arrived in Colombo on January 9th. He is touring Ceylon and India with representatives of the Rockefeller Foundation. In view of the amalgamation of the Ross Institute with the London School of Hygiene and Tropical Medicine, Professor Jameson will, before returning home, visit some of the Ross Institute research centres in Assam and Bengal, and afterwards proceed to Malaya. During his absence Professor R. T. Leiper, F.R.S., has been appointed acting dean of the London School. Professor Jameson is expected back in London in April.

Professor J. Gordon Thomson, director of the department of protozoology, is leaving London on January 31st, and will travel by air to South Africa. He will proceed to East

Africa, where he will spend six months doing special research work on malaria and sleeping sickness, with special reference to immunity.

UNIVERSITY OF LEEDS

On January 12th Sir Frederick Gowland Hopkins, President of the Royal Society, opened the new building of the department of chemistry. Professor R. W. Whytlaw Gray, who is head of the whole department, will be in charge of the inorganic section, Professor H. M. Dawson of the physical chemistry section, and Professor F. Challenger of the organic floor.

NATIONAL UNIVERSITY OF IRELAND

At a meeting of the Senate on January 11th, with the provice-chancellor, Dr. Denis J. Coffey, in the chair, the reports of the examiners upon the medical and dental examinations, December, 1933, were considered, and passes, honours, etc., awarded. It was decided that a supplemental first university examination in medicine should be held in the three constituent colleges during the spring, the latest date for entry thereto to be February 1st.

The Senate appointed the following representatives: Professor T. Walsh, M.D., Royal Sanitary Institute Congress, Bristol; Professor W. D. O'Kelly, M.D., National Association for Prevention of Tuberculosis Conference, London.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A quarterly Council meeting was held on January 11th, when the President, Sir Holburt Waring, was in the chair.

Dr. John Beattie was admitted to office as conservator of the museum and director of research.

A diploma of Fellowship was granted to T. T. Stamm of Guy's Hospital.

The Hallett Prize for Anatomy and Physiology was awarded to Ananda Nimalasuria of Ceylon Medical College and King's College, London.

The following diplomas in special subjects were granted jointly with the Royal College of Physicians:

TROPICAL MEDICINE AND HYGIENE.—G. H. Cooray, P. W. Godfrey, G. M. Raby, B. H. Rassam, R. du T. van der Merwe.

PSYCHOLOGICAL MEDICINE.—J. S. Allen, C. C. Beresford, P. M. Crowe, Cicely L. Hingston, J. H. R. Laptain, J. K. Marshall, T. C. St. C. Morton, W. C. M. Scott, J. A. Shaby, E. T. O. Slater.

LARYNGOLOGY AND OTOLARYNGOLOGY.—W. G. Bridgman, I. C. Fraser, K. George, T. P. Gill, A. C. Goodwin, M. Gordon, H. G. Grieve, A. D. Minhas, P. L. O'Neill, I. M. Kutherford, I. B. Senjit, R. H. Smith.

MEDICAL RADIOLOGY.—J. B. Douglas, R. S. Harrison, J. E. Wilson Lee.

Medical News

The annual dinner of the Hunterian Society of London will be held at the May Fair Hotel, Berkeley Street, W., on Thursday, February 8th.

The thirteenth annual dinner of the Society of Radiographers will be held at the Restaurant Frascati, Oxford Street, on Saturday, February 10th, at 7.30 p.m., with the president, Dr. L. A. Rowden, in the chair.

On Friday, January 26th, at 8.45 p.m., at the Princess Elizabeth of York Children's Hospital, Glamis Road, Shadwell, E., Mrs. Lilian Lindsay, L.D.S., will give a lantern lecture on "The Influence of the Sun upon the Teeth—Ancient and Modern." Sir Frank Colyer will preside.

Meetings of the Fever Hospital Medical Service Group and the Maternity and Child Welfare Group will be held at the house of the Society of Medical Officers of Health, 1, Upper Montague Street, W.C., on Friday, January 26th. At the first meeting, at 4.30 p.m., Dr. W. Mair will read a paper on "Varieties of *Corynebacterium diphtheriae*," and at the second meeting, at 8.30 p.m., there will be a discussion on "Diet for the Pre-school Child, to be opened by Professor V. H. Motttram.

All communications for the Ross Institute and Hospital for Tropical Diseases, Putney Heath, S.W.15, should now be addressed to the Ross Institute of Tropical Hygiene, Kippel Street, Gower Street, W.C.1.

The Minister of Health announces that, under arrangements consequent upon the retirement from the public service of Dame Janet Campbell, D.B.E., M.D., M.S., as from December 31st last, and of Sir George Buchanan, C.B., M.D., F.R.C.P., as from February 18th, 1934, Dr. Jane H. Turnbull, C.B.E., will be in charge of the Maternity and Child Welfare Division of the Medical Staff of the Ministry, and Dr. J. M. Hamill, O.B.E., will act as senior medical officer in charge of the Foods Division of that staff.

The fifty-first post-graduate course of the medical faculty of Vienna will be held during the fortnight February 12th to 25th, the subject being diseases of the intestines and metabolism, with reference also to the related pathological and surgical aspects. It will be followed by a week of group instruction devoted to clinical study. Further information may be obtained from Dr. A. Kronfeld, Porzellangasse 22, Vienna IX.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the second lecture-demonstration by Dr. Clark-Kennedy will take place at 11, Chandos Street, W., on January 23rd, at 2.30 p.m.; subject, "Nervous Dyspepsia." The third will be on January 30th; subject, "Organic Dyspepsia." There will be a course in dermatology at St. John's Hospital, Leicester Square, from January 29th to February 24th. A week's course in neurology, especially suitable for the general practitioner, will be given at the West End Hospital for Nervous Diseases, February 5th to 10th, and will occupy the whole of each day. A course in gynaecology, occupying mornings and/or afternoons, will be given at the Chelsea Hospital for Women, from February 5th to 17th. Six demonstrations on the interpretation of pyelograms will be given by Dr. Mather Cordiner at 8 p.m. on Tuesdays and Fridays from February 13th to March 2nd; they will include radiographic technique, radiological anatomy and physiology of urinary tract, obstructive conditions and inflammatory lesions, renal and uterine stones, renal tumours, etc.

The December issue of *The Human Factor*, the monthly organ of the National Institute of Industrial Psychology, is devoted to the annual report and statement of accounts for the period from January 1st to September 30th, 1933. The report is the thirteenth issued by the council of the Institute, and on this occasion a change has been made, the year for review terminating henceforth on September 30th instead of on December 31st. There has been a considerable extension of the work in connexion with vocational guidance cases, and school teachers in Birmingham and Willesden have received instruction in vocational examination. This training has also been imparted to foreign psychologists, and courses of lectures have been delivered in London and elsewhere. Investigations have continued on an undiminished scale at factories and offices with a view to improving their efficiency. Research work is being pushed, but the main endowment for this—namely, the Rockefeller annual grant, is diminishing in amount, and will terminate in 1936. Included in this research work last year were investigations of rhythm in occupational movements, the nature and measurement of the mental abilities involved in factory assembly operations, tests for motor drivers, a study of colour discrimination, and improvement of the intelligence tests.

A new volume in the Cambridge Comparative Physiology Series, entitled *The Elements of Experimental Embryology*, by Professor J. S. Huxley and Dr. C. R. de Beer, will be published by the Cambridge University Press in February.

The issue of *Nederlandsch Tijdschrift voor Geneeskunde* for January 6th contains an instructive article by Professor J. A. J. Barge of Leyden on medical education at the University of Leyden in the eighteenth century, illustrated by portraits of the leading professors.

A new chair for racial hygiene has been founded in Berlin, with Professor Fritz Lenz of Munich as its first occupant. Professor Lenz has also been appointed departmental director for racial hygiene and eugenics at the Kaiser Wilhelm Institute for Anthropology in Berlin.

The forthcoming number of the *Journal of Neurology and Psychopathology* will include a full report of a conference of the programme-executive committee for the second International Neurological Congress. The conference, held in London last autumn, was attended by delegates from fourteen countries, who nominated officers for the congress as follows: honorary president, Dr. B. Sachs (New York); president, Sir Charles Sherrington (Oxford); deputy-president, Dr. Gordon M. Holmes (London), together with sixteen vice-presidents. Dr. S. A. Kinnier Wilson (14, Harley Street, W.1) was appointed secretary-general, Dr. M. Critchley and Dr. E. A. Carmichael, assistant secretaries, Dr. Anthony Feiling, treasurer, and Dr. Gordon Holmes, editor of transactions. It was decided that the congress should take place in London from Monday, July 29th, to Friday, August 2nd, 1935. The following four subjects were chosen for discussion at the morning sessions: (1) the epilepsies—their aetiology, pathogenesis, and treatment; (2) physiology and pathology of the cerebro-spinal fluid; (3) functions of the frontal lobe; and (4) the hypothalamus and the central representation of the autonomic system.

The Departmental Committee on the Composition and Description of Food, which is considering whether it is desirable that the law should be altered so as to enable definitions or standards to be prescribed, held meetings last week. Evidence was given on behalf of the Society of Chemical Industry by Dr. L. H. Lampitt, chairman of the Food Group of the Society, Dr. H. E. Cox, and Professor Raistrick, and by witnesses appearing for various trade associations. Evidence was also given by Mr. T. Macara regarding infants' and invalids' foods on behalf of the Food Manufacturers' Federation, and by the town clerk of Chester for the Association of Municipal Corporations. The meetings were presided over by Sir Frederick Munn, the secretary of the committee is Mr. W. J. Peete, of the Ministry of Health, to whom any communication should be addressed.

E. P. Poulton of London, Hernando of Madrid, Drs. J. of Bern, Sanarelli of Rome, Pende of Genoa, J. J. Abiel of Baltimore, Glaesner of Vienna, and Vogeliuss of Copenhagen were recently elected honorary members of the Société de Thérapie de Paris.

Dr. Gilbert Orme has been awarded the Order of Mercy for special services rendered to the League of Mercy.

The following medical promotions in, and appointments to, the Venerable Order of the Hospital of St. John of Jerusalem are announced in the *London Gazette* of January 2nd: as Commanders, Dr. W. H. Carse, Major F. Howard Humphris, and Colonel Sir Richard A. Needham, C.I.E., D.S.O.; as Officers, Lieut.-Colonel A. D. Stewart, I.M.S., Mr. J. Johnston Abraham, C.B.E., D.S.O., Major H. A. Sandiford, M.C., R.A.M.C., and Dr. W. H. Kauntze, M.B.E.; as Serving Brothers, Dr. H. G. Hankins, Mr. C. A. Parker, Dr. F. H. Flack, Dr. J. W. Graham, Dr. J. M. Postlethwaite, Dr. P. McRitchie, Dr. F. E. Bendix, Dr. H. F. Percival, O.B.E., Dr. W. E. Fairweather, and Lieut.-Colonel C. H. James, C.I.E.

Mr. T. H. Bickerton, F.R.C.S., of Liverpool, who died on November 23rd, 1933, aged 76, left estate of the gross value of £435,529.

Professor Rille, director of the clinic for skin diseases at Leipzig, has been elected an honorary member of the Turkish Dermatological Society, and Dr. Robert Rösle, professor of pathology at Berlin, an honorary member of the Medical Society of Vienna.

Dr. von Deschwaden of Lucerne has been elected president of the International Hospital Association in place of Dr. René Sand, who has resigned. The presidency of honour has been offered to Prince Charles of Sweden.

Dr. Jose Maria Gutierrez Barrat has been appointed Director-General of Public Health in Spain.

Mr. Henry Thomas Baker of Bournemouth has given £10,000 and the income from shares valued at £15,000 to the extension fund of the King George Hospital, Ilford.

A modern leprosy hospital has recently been opened at Genoa.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, Athology Westcent, London

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Medisera Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: Baillus, Dublin; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshough Gardens, Edinburgh (telegrams: Associate, Edinburgh; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Diabetic Paying Guest

Dr. G. E. CLAXTON (Radnor Park Road, Folkestone) would be glad to hear from a London doctor who could recommend a family willing to take a diabetic lady, engaged in secretarial work in London, as a paying guest. It would be preferable if one of the members of the family is a diabetic, so that the difficulties of diet would be obviated.

Oysters, Calories, and Food Prices

Dr. EDWARD J. CROSS (St. Neots) writes: In the *Times* of October 4th, 1933, Professor E. C. Dodds is reported to have stated in his address at the Queen's Hall that a dozen oysters would yield 88 calories of energy. In the *British Medical Journal* of January 6th Professor J. A. Nixon states that half a dozen oysters contain 24 grams protein, 10 grams fat, and 12 grams carbohydrate. Surely this means that six oysters yield 234 calories. Can you please explain this to me, as I am very perplexed. Also Professor Nixon says that 1s. will buy 1 lb. of beef. I have to pay 1s. 6d. for 1 lb. of steak without bone or gristle. Five pints of milk in this vicinity cost 1s. 5½d.

Chlorophyll and Crème de Menthe

Dr. G. M. FLEMING (Long Sutton, Lincs) writes. I cannot answer directly the query by Rear-Admiral Beadnell, and await with interest the replies of other readers. As a contribution towards the nature of green dyes in use, however, I tender my own researches. I recently received a sample of a green tonic which, I am satisfied, is a very effective preparation—so much so that I now use it regularly. As I wandered round Woolworth's the other day, speculating idly as to whether the green dye or the glycerophosphates were the more active ingredient, I perceived a bottle of green dye ostensibly purveyed for pigmenting puddings. The Woolworth liquid showed the following bands in moderate dilution: I, 6,500 to 7,000, strong. II, 5,900; weak. III, 3,900 to 4,800, very strong. Band III has a sharp cut-off. The width of Band II varies with the concentration. The bands shown by the green tonic are identical. On hydrolysing, Bands I and II disappear, but Band III remains very strong. The dye in both cases is probably the anhydride of the zinc salt of tetra-methyl-di-amido-triphenyl-carbinol. The absorption bands of chlorophyll are entirely different, and I doubt if this substance would withstand the ageing which we hope crème de menthe undergoes. I should be glad of an opinion as to the toxicity, if any, of the dye mentioned.

Income Tax

Tax on Interest Received

"Tintax" is a married man with an income of £700—all "unearned"—in 1932-3, of which £275 was war loan interest and £10 from deposit interest. His daughter is being educated at a university—her own income is under

£20—and there is a dependent relative who "receives relief of £10." What should the assessment be for 1933-4?

* The war loan interest can be taken at the actual 3½ per cent. rate received in 1933-4, and the position is as follows:

Assessable interest, £192 + £10	...	...	...	...	£202
Allowances: (1) Personal, £150					
(2) "Child," £50	...	...	...	...	£200
					£2

Tax payable at 2s. 6d. in the £ = 5s.

"Tintax" is entitled to have £175 of his income taxed at 2s. 6d., and, as the rest of his total income has presumably paid tax at 5s., he is entitled to a refund of £175 at 2s. 6d. = £21 17s. 6d., less the 5s. due—that is, £21 12s. 6d. net. The claim to dependent relative allowance will probably be refused, as £10 is presumably not sufficient to maintain the relative.

LETTERS, NOTES, ETC.

Meta Fuel Poisoning

ELMESAN (LONDON) LIMITED, referring to two instances of poisoning from taking "meta" fuel—metaldehyde—(CH₃COH)—by mouth, write: We feel that it is in the interests of all doctors, chemists, nurses, etc., that we should make known a little more about the treatment which should be administered in such cases. We therefore give details of the procedure recommended by Dr. Laszlo Wamoscher, associate professor at the Hygiene Institute, University of Berlin: (1) Immediate wash-outs of the stomach with large quantities of sodium bicarbonate solution. These should be repeated frequently and performed slowly for the first time, on account of the development of CO₂. (2) High colon wash-outs of the bowels with alkaline solutions. (3) Purgatives after washing out: Glauber's salts or castor-oil. No phenolphthalein or acids. (4) Large quantities of charcoal, preferably wood charcoal. (5) For the heart: caffeine, and, if necessary, strophanthin intravenously. (6) No narcotics, if possible. Against the cramps becoming too intensive: the sodium salt of veronal. (7) Intravenous injections of calcium (Sandoz) and, by all means, repeated intravenous injections of 30 to 40 per cent. glucose.

Eugenics and the Doctor

Mr. RONALD PRIME, M.R.C.V.S. (London, S.E.19), writes: I read with the greatest interest Lord Horder's address on the question of eugenics and the doctor in your issue of December 9th, 1933. In the veterinary profession, more than in any other, one has the opportunity of observing the signal success which has attended the adoption of strict scientific principles in the breeding of the domesticated animals. That similar results would follow if more careful consideration and scientific attention were given to human sexual selection and mating is indubitable. I do not, however, quite agree with Lord Horder when he states that in the minds of the great majority of people there is no reaction at all towards the practice of eugenics. This certainly does not seem to be the case with the younger generation to-day. As lecturer to large numbers of young men of all classes engaged in one of the chief industries of this country, I have been amazed by the sincere and eager desire of nearly all of them for knowledge of genetics and eugenics. The tragedy at present is that far too little is definitely known of these problems, and hence much earnest inquiry has to remain unanswered or be answered unsatisfactorily. Far more research into animal and human genetics is needed, followed by careful dissemination, by medical men and educationists, of the more salient results among the general public.

Air Ambulances

Group Captain W. TYRRELL, R.A.F.M.S., writes from Cairo: I was interested to read in the *Journal* of December 23rd, 1933 (p. 1171), your account of the meeting of the Royal Society of Medicine (United Services Section), when a paper on air ambulances, by Colonel E. M. Cowell, was read and discussed. As a matter of historical interest and accuracy I think it should be noted that the first occasion on which a British aircraft was specially designed and officially delegated to carry sick and wounded was during the first Royal Air Force punitive expedition in Somaliland, 1919-20, when a De Havilland 9, with a fuselage modified to carry one stretcher and attendant, was used, under desert warfare conditions, to evacuate cases from advanced aerodromes and aid posts to the base hospital. (Vide Report on the Health of the Royal Air Force for the year, 1920, vol. i, p. 56.)

James Bryce

Mr. CYRIL C. BARNARD, librarian, London School of Hygiene and Tropical Medicine, writes: A footnote to your Nova et Vetera item on page 1180 of the issue of December 23rd, 1933, states that "This *Lexikon* [namely, *Biographisches Lexikon der hervorragenden Ärzte aller Zeiten und Völker*] calls him 'James B. Bryce,' but in his writings Bryce always calls himself 'James Bryce.'" The writer of the note and others may like to know that it is the irritating practice throughout the aforesaid *Lexikon* to insert after the Christian names the first letter of the surname, so that "James B." in this instance merely means James Bryce.

Members of the Royal College of Surgeons

Mr. JOHN GRIFFITH, M.R.C.S. (London, W.), writes: Again this year comes to pass the perennial refusal to allow Members on the executive board of the Royal College of Surgeons of England. Why put up with it? May I be allowed to point out a certain remedy? Let young Englishmen and South Welshmen cease to sit for the examinations of the Conjoint Board, which in my opinion will effectively take the starch out of the collars of these autocratic Fellows. There remain the provincial universities, with their degrees and superior status. The examinations of this board to the ordinary individual appear incomprehensible. Personally, I had worked too hard for its final examination; I was referred twice. The impression left on my mind is that the examination is like the curate's hair—patchy in places.

A Treatment of Cancer

Dr. MAX HONIGSBERGER (Stechford, Birmingham) writes: In your annotation (January 13th) on the cancer treatment originated by Professor Fichera of Milan one important point is not mentioned—namely, the relief of pain obtained by the treatment. In a recent case of inoperable carcinoma of the stomach, where pain was not allayed by the usual doses of morphine, the fourth injection of Fichera 365 (Bayer) gave almost complete relief, and this state was continued until death supervened some time later.

Insulin Prices

Burroughs Wellcome and Co. announce a reduction of 13th to 14th to of "Wellcome" brand insulin, which are now as follows: "Wellcome" brand insulin, 20 units per c.c.m., 5 c.c.m. phials, 1s. 10d. each; 20 units per c.c.m., 10 c.c.m. phial, 3s. 6d. each; 40 units per c.c.m., 5 c.c.m. phials, 3s. 6d. each; 80 units per c.c.m., 5 c.c.m. phials, 6s. 9d. each. The price of "tabloid" hypodermic insulin hydrochloride (10 units) has also been reduced. Cartons containing ten products in one tube are quoted at 1s. 10d. per tube. These are London prices to the medical profession.

Wanted: A Skeleton

Miss M. FORRESTER-BROWN, M.S., M.D., visiting surgeon, Bath and Wessex Orthopaedic Hospital, writes. Would you accord me the courtesy of your columns to inquire whether any practitioner has a spare articulated skeleton which he would be willing to pass on to this hospital for the use of the nurses in their studies of anatomy and of bone and joint diseases. The institution is still an adolescent one, and its finances do not for some time permit of purchasing one at the ordinary market price; but yet it is a very desirable piece of equipment in an institution of this nature, as I realize when I have to lecture to the nurses on orthopaedics.

The Food Education Society (29, Gordon Square, W.C.1) has issued a little pamphlet, *Vegetable and Salad Dishes*, post free, 3d., which gives hints on how to lay out the money to the best advantage, and simple yet dainty and nourishing recipes. Quantities of twenty-five and upwards may be had at reduced rates.

Harrogate Corporation has just been granted a patent for enabling the "Nauheim" CO₂ bath treatment to be given more efficiently than hitherto at the bathing establishment.

Vacancies

Notifications of officers vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 48, 49, 50, 51, 54, and 55 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 23.

A Paper

ON

BODILY DISEASES IN MENTAL DISORDERS

BY

ARTHUR J. HALL, M.A., M.D., D.Sc., F.R.C.P.

EMERITUS PROFESSOR OF MEDICINE, UNIVERSITY OF SHEFFIELD;
CONSULTING PHYSICIAN, SHEFFIELD LOYAL HOSPITAL; VISITING
PHYSICIAN, SOUTH YORKSHIRE MENTAL HOSPITAL, AND
THE STATE INSTITUTION, RAMPTON, NOTS

Although for the sake of convenience it is customary to make a distinction between mental and bodily disorders, such separation of the two is physiologically unsound. Every disorder, however slight or localized, must give rise to reactions in every part of the organism. Sometimes the local reactions are manifest while the distal are too slight to produce recognizable effects. At other times the reverse is the case: the local reactions are so slight as to be overlooked, while the distal are manifest and predominate. Thus in one group of cases, although the primary site is in the higher nervous centres, yet the predominant effects show themselves as some bodily disorder. Many cases belong to this group. In the second and smaller group the primary site is a bodily lesion, but its chief effects take the form of mental disorder. A proof that these two groups exist is to be found in the fact that recovery takes place in each when—and not until—the primary seat is made right.

It is assumed here that one is dealing with a single physiological process acting upon an otherwise normal te, of m. There is, however, another aspect of the icator. Disease may arise in an organism which is rs. eady abnormal. Such dual pathology may be viewed si. om more than one angle. Thus it is well known that various fevers which make a normal person delirious may make mental patients, for the time being, less insane than before. The mental change in general paralysis during malarial infection is a striking example of this.

There is, however, still another point of view from which the interactions of the disordered mind and diseased body may be regarded—namely, that of the general physician. To what extent, and in what way, if at all, are the ordinary bodily diseases modified when they occur in persons already suffering from mental disorders? That is the question which this paper attempts to consider.

It is well known that in persons suffering from various mental disorders pain is often absent in the course of those bodily ailments which are usually very painful. This is not due to any self-control on the part of the patients, many of whom give vent to their troubles, real or imagined, with freedom and vigour. Actual bodily pain, due to some local disease, is, however, in my experience, rarely one of them. The result is that in many cases of mental disorder the standards of disease—that is, the particular combination and relative proportion of symptoms and signs—differ so widely from those seen in ordinary practice that the "clinical picture" is, at times, difficult or even impossible to recognize. This is familiar to those who work in a mental hospital, but to those of us who are accustomed to the standards of disease as met with in ordinary practice it causes surprise to see an intracranial tumour without headache, or a pneumonia without pain, cough, or loss of sleep. During recent years, as visiting physician to a large mental hospital, I have seen these anomalous "clinical pictures" repeatedly and in widely different conditions. They may be seen in diseases arising in any part of the body, but they have in common the absence, complete or partial, of important symptoms.

INTRACRANIAL LESIONS

In cases of intracranial tumour the absence of indicative symptoms is a noticeable feature. In the post-mortem room of a general hospital it is unusual to find an intracranial tumour the existence of which has never been suspected during life. At a mental hospital this is by no means so rare. To suppose that this is due to any lack of observation or care on the part of those in charge of the patient would be unfair and unwarranted. The real explanation is that there has been a complete absence of characteristic symptoms and signs. It is difficult to make bricks without straw, and it is impossible for any but a charlatan to make a diagnosis without symptoms or signs. The following are typical cases.

Case 1.—A single woman, aged 35, epileptic and demented, had been an inmate of the institution for several years; she had always been very resistive and difficult. Pulmonary tuberculosis had been suspected, but none had been found. There had never been any change in her mental symptoms, and she had never at any time complained of headache. She began with symptoms of intestinal obstruction on May 31st, 1932, and died suddenly on June 2nd. At necropsy an obstruction by band was found, due to old caseous abdominal glands, and a tumour as big as a walnut in the left temporo-sphenoidal lobe.

Case 2.—A man, aged 63, was admitted on February 9th, 1932; there was no previous history. He was confused, and his gait was a little unsteady, but there was nothing definite about it. Hearing and sight were good and the pupils normal; the blood pressure was raised. The nineteen months that he was an inmate he was practically bed-ridden. No fresh symptoms developed, and there was no headache or vomiting throughout. At necropsy both lateral ventricles were found to be equally and greatly distended, due to an obstruction of the iter by a small angioma arising from its walls. In the absence of any history of this man's illness before admission it is not possible to form an opinion as to when and how the trouble began. It is well recognized, however, that these intraventricular obstructive growths usually give rise to paroxysms of severe headache. The fact that he had none for more than one and a half years before death is noteworthy.

Case 3.—A man, aged 59, was admitted on September 13th, 1933, with a history of confusion for six weeks. His gait was somewhat unsteady and he was shaky, but his speech was clear. There was no paralysis. The pupils were rather small, but equal. Reaction was sluggish. He had no headache and no vomiting throughout. He got up each day and sat about in the sick-room. On October 18th he collapsed suddenly in the afternoon, became more stuporose, and died on October 19th. At the post-mortem examination a tumour of the left frontal pole was found.

Case 4.—A man, aged 58, was admitted on June 26th, 1928, with the history that for three or four months he had had delusions of great wealth, and had had suspicions of his relatives. There was a strong family history of insanity on the father's side. His mental condition remained unchanged during the four years he was an inmate. In July, 1930, his gait became unsteady, and later he had some kind of seizure, in which the right side was affected, and a right hemiparesis resulted. There was no record of headache or vomiting while he was an inmate, and no visual disturbance or cranial nerve palsies. At necropsy, on June 12th, 1932, there was a large tumour at the base of the brain, compressing the right side of the pons. It was so firmly adherent to the base of the skull that its exact relation to the hypophysis could not be made out. In this case such signs as there were would have been of no value in locating the tumour had its existence been suspected.

INTRATHORACIC LESIONS

The clinical picture of intrathoracic lesions in cases of mental disorder is often different from that seen in normal patients. It is a general experience that the duration of pulmonary new growths, reckoned from the first appearance of pulmonary symptoms, is rather long; in other

words, they appear to give rise to symptoms from the first. In the following case no symptoms of illness of any kind occurred until four days before death, and there was no cough throughout.

The patient, a man, aged 68, with senile dementia, had been an inmate since 1925. He had old mitral disease well compensated. There was no change whatever in his mental condition or behaviour until March 14th, 1931, when he was noticed to be short of breath; there was no cough. He was removed to the sick-room and died on March 18th. The post-mortem examination revealed, in addition to the old mitral trouble, a new growth arising in the bronchus and involving the upper lobe of the right lung.

LOBAR PNEUMONIA

It is in lobar pneumonia that the absence of the familiar symptomatology makes such a change in the clinical picture. The signs in the chest, the course of the pyrexia, the P-R. ratio, and the occasional herpes febrilis are all there, but the pain, the cough, the general distress, and, most of all, the restless, sleepless nights, may be entirely absent. Standing at the bedside of such a patient it is often difficult to believe that he is undergoing an attack of lobar pneumonia. In all of the following cases the patient recovered.

Case 1.—A man, aged 62, who had been an inmate for thirty years, suffering from chronic dementia, was noticed by the attendant to refuse his dinner on February 27th, 1932. He did not complain of anything, but his temperature was found to be raised, and he was removed to the sick-room. Consolidation was found at the right base. The temperature (102° - 105°) during the seven days' illness, with a pseudo-crisis on the fifth and a crisis on the seventh day, were typical. Respirations ranged from 24 to 40, and the pulse from 84 to 112. Leucocytes, 12,000 per c.mm. He had no pain, dyspnoea, cough, sputum, or delirium, and he slept for seven hours every night.

Case 2.—A man, aged 72, with secondary dementia, had slight pain in the left side, slight cough, and a little blood-stained sputum at the onset, but slept five or six hours every night during the one week's fever; he had no delirium.

Case 3.—A man, aged 34, suffering from insanity with epilepsy, had slight headache at the onset, also a little cough, and some rusty sputum, but no dyspnoea. There was no pain in the chest at any time. The fever lasted twelve days, ending by lysis during the last five days. The patient's hours of sleep during the first ten days were: seven, seven, seven, seven, four, six, six, five, six, and six respectively.

Case 4.—A man, aged 59, was admitted in December, 1930, with secondary dementia, following alcoholic mania. In April, 1933, he had lobar pneumonia, right base. He had slight pain on the right side and a slight cough. The crisis occurred on the sixth day. The patient's hours of sleep on the first five nights were: seven, five, six, six, and five respectively. During the pyrexial period he was mentally brighter than usual.

Case 5.—A male, educable imbecile, aged 46, began vomiting on May 1st, 1932. There was no pain or cough, but he was found to be feverish, and he later developed lobar pneumonia. Throughout there was no cough, only slight pain on the right side, and some slight delirium in the early mornings. The fever lasted fourteen days, ending by lysis. His hours of sleep during the fever were: six, six, four, six, six, six, six, six, six, two, four, five, and six.

Case 6.—A male inmate, aged 29, with dementia praecox, usually very deluded, hallucinated, and impulsive, was found to have a temperature of 103° on May 22nd. He had a slight cough with bloody sputa on the fourth day, but no pain. He slept on an average five and a half hours each night of seven days' fever.

Case 7.—A man, aged 36, suffering from general paralysis of the insane (treated with malaria without permanent improvement) developed pneumonia on June 27th. The crisis occurred on July 5th. He had no distress at all, and no cough, sputa, or pain. He slept on an average six hours each night.

In pneumonia, as seen in daily practice, the combination of fever, pain, cough, and loss of sleep usually makes even the most amiable persons fretful and distressed. Indeed, the presence of euphoria is usually of ill omen. The old clinical aphorism "Beware of a pneumonia that smiles at you" contains more than a grain of truth. In these mental cases, however, the absence of distress is not due to poisoning of the higher centres, but apparently to their failure to register and respond to disturbing stimuli from the periphery. The pathological changes in the lung and pleura are the same in character and extent, but they call forth no obvious reaction on the part of the nervous system. The almost complete absence of cough is rather difficult to understand. In ordinary cases it is so frequent, violent, and often painful, that one looks upon it as the imperative reply to an urgent stimulus from within the respiratory tract; in other words, that it belongs to the late F. J. Smith's category "cough useful." Its absence in these cases without detriment to the course of the disease suggests that it is mere waste of energy, and must, however reluctantly, be relegated to his other class "the cough ornamental." The absence of cough and pain no doubt contributes largely to the long, sound sleep, but other psychical factors are probably also concerned. At any rate this steady succession of restful nights must play an important part in preventing exhaustion, and suggests that a free use of effective sedatives may do more good than harm.

In recording these atypical cases of pneumonia it must be understood that from time to time more typical cases occur in persons of unsound mind. In these, cough, pain, and restless insomnia are present. Much depends on the nature of the mental disorder, and the amount of possible reaction of the higher centres. It must also be added that in a certain number of cases of pneumonia diagnosis during life is out of the question. Such cases are those in which the patient presents no symptoms, and is in such a condition of resistive excitement that it is impossible to investigate physical "signs."

Of the other two common thoracic conditions—namely, tuberculosis and cardiovascular disease—I have not, as yet, collected sufficient information to give details. Considering the large number of necropsies in which gross cardiovascular changes are found, the rarity of anginal pain among the inmates is surprising, while in the tuberculosis annexe the comparative absence of coughing is very noticeable.

ABDOMEN

Organic lesions in the abdomen may not give rise to any pain or digestive disturbance. Thus in cases of serious, and even fatal, organic disease of the stomach there may be no discomfort, no vomiting, no tenderness on pressure, no local signs, and, most surprising of all, no loss of appetite.

Case 1.—A male, aged 54, suffering from delusional insanity, was noticed to be getting pale in May, 1933. Secondary anaemia was found. There was no pain after food, no vomiting, and no gastric symptoms. There was nothing palpable in the abdomen. Carcinoma of the stomach was diagnosed from the secondary anaemia. The patient took his food exceedingly well up to his death on September 18th, 1933. The post-mortem examination revealed a cauliflower carcinoma of the stomach with secondary nodules in the liver, left sub-phrenic abscess, and left empyema.

Case 2.—This man, aged 62, had been an inmate since 1906; he was suffering from secondary dementia following chronic mania. The only gastric symptoms at any time were a slight vomiting of dark fluid on June 26th, 1932, also slight vomiting on July 10th. He took his food well up to the time of his death on July 13th. He denied having any pain throughout his illness, and there was no tenderness or resistance on palpation. At necropsy there was a large malignant mass surrounding and constricting the pyloric opening, with secondary nodules in the liver.

Sometimes there is more definite, though slight, indication of the seat of the trouble; even then the absence of other symptoms may cause hesitation in diagnosis. In each of the following two cases a single slight haematemesis, occurring a week or two before death, was the only diagnostic clue to the seat of the lesion.

Case 1—A man, aged 61, had been an inmate since 1914, suffering from chronic alcoholic dementia. He had been in bed for the last twelve months. Two weeks before he died there was a slight haematemesis, but he never vomited before or after this. There was no pain after food, and nothing abnormal was to be felt in the abdomen. He died on May 4th, 1933, and at necropsy an ulcerating mass the size of an orange was found on the lesser curvature of the stomach, with a secondary growth in the liver.

Case 2—A male, aged 67, suffering from general paresis of the insane, extremely aggressive, and demented, in whom malaria treatment had been necessary, was put to bed on March 6th, 1933, on account of weakness. There were no other symptoms of any kind until a first haematemesis occurred two months later, on May 2nd. There was no pain, no tenderness on pressure, and nothing abnormal on palpation. The patient's spirits were up to his death on June 1st, 1933. The post mortem examination revealed an ulcerating growth on the lesser curvature of the stomach 3 inches in diameter. The stomach was full of blood; there were also collections and epiploic arteries, with infarcts in the spleen.

ULCER OF THE STOMACH

In cases of ulcer of the stomach or duodenum the absence of pain is very misleading.

Case 1—A man, aged 52, was admitted in May, 1928, suffering from melancholia with auditory hallucinations. He was excited, and stated that he was being tortured with pains all over. The mental condition persisted without any change to the end. On September 3rd, 1931, he was moved to the asylum life about the face, ears, neck, and feet, and was removed to the sick ward. On September 8th he was taking no food better. I was asked to examine him on September 10th. He had a double aortic murmur and a much hyper-trophied left ventricle; otherwise I could find no abnormal physical sign; there was nothing to be felt in the abdomen. He was excited and restless, and kept shouting out about being tortured by pains all over, but there was no particular localization of these to the abdomen, and he had been complaining in exactly the same way for three years. He died suddenly on September 14th. At necropsy there was a dilated aortic valve and a very large heart. The stomach antrum was much constricted. There was one rounded ulcer in the stomach and two in the duodenum, one of which had perforated. There was brown fluid in the inflamed peritoneum.

Case 2—A female, aged 73, who was suffering from senile dementia and chronic alcoholism; she had always been childish, chattering, and restless. No change was noticed in her appetite or general condition until the day before she died, when she seemed out of sorts and was put to bed. She was extremely restless to examination of any kind. She collapsed on the bed-pan after a simple enema, and died rather suddenly. At necropsy a perforated duodenal ulcer was found. There was no history of abdominal pain, loss of appetite, or vomiting.

As in the case of carcinoma a haematemesis may prove a valuable clue, but even then the absence of the usual accompanying symptoms makes diagnosis difficult.

Case 3—A man, aged 52, with recurrent melancholia, had no symptoms until December 26th, 1932, when he had a slight haematemesis and complained of a little abdominal pain. He was put to bed. The next day he vomited half a pint of blood, and on the 28th about 8 ounces. He died on January 1st, 1933. The post mortem examination showed an ulcer the size of a sixpence near the pylorus. In this case a correct diagnosis was made, and suitable medical treatment carried out. The point is, however, that except for the single occasion mentioned on December 26th, he had no pain throughout.

Case 4—The patient, a man aged 58, had been an inmate for ten years, and had delusional insanity with auditory

hallucinations. The first sign of illness was on October 24th, 1931, when he vomited and collapsed. In his case a swelling was felt in the left hypochondrium. There is a note that on October 29th his diet was increased, and that there was no vomiting. On November 1st he vomited a little yellow fluid. He died suddenly the following day. At necropsy there was an ulcer on the anterior wall of the stomach the size of a florin, which had perforated. The patient had no pain throughout his illness, and had taken his food as usual up to a week before his death.

Unfortunately, in cases of gastric ulcer in which symptoms are so few, little or no diagnostic help can be obtained from the various aids to diagnosis available in ordinary practice. Many of these require the co-operation of the patient to an extent rarely possible in mental cases. The passing of an ordinary stomach tube is too great a risk to be undertaken, except when necessary for feeding purposes, while a fractional test meal is in most cases out of the question. Similar difficulties attend the giving of an opaque meal for radiological purposes. Examination of the faeces for occult blood presents no such difficulties, but in the very cases in which it would be of value—namely, those of suspected ulcer—the only symptom which, as a rule, arouses suspicion is a haematemesis, and under such circumstances the finding of blood in the faeces does not add to our knowledge. Should an abdominal growth obstruct the bile passages pancreas may atrophy, and is a valuable diagnostic sign. If it does not, in the absence of all pain and tenderness in the liver region, there may be no suspicion of the presence of a growth.

Case 5—A female, aged 76, an inmate since 1908 with melancholia, had been bed-ridden since 1927 with pulmonary tuberculosis. For the last two or three months of life she became gradually more feeble, and took less food, but she had no complaint at any time pointing to liver trouble. There was no pain and no pain throughout. At necropsy, on April 2nd, 1931, there was a primary carcinoma of the liver.

The symptom most commonly absent is thus seen to be pain. No doubt the reason for this varies in different forms of mental disorder. In some it may be that there is actual deficiency of available receptive material, somewhat comparable to the temporary effect of narcotic drugs. In others it may be that the receptive material is there, but that it is fully occupied in dealing with other and stronger stimuli. There is also the possibility of a painful stimulus being converted into something not painful, as in Pavlov's experimental dog, in which a painful electric stimulus, when made part of a conditioned reflex for feeding, causes no signs of pain, but merely those of anticipatory pleasure. Whatever the explanation, the question arises: How far does the individual mental patient gain or lose by this absence of symptoms?

To be spared pain in a hopeless, fatal disease is a great boon. When, however, the condition is one in which recovery, either with or without operation, is possible, the absence of pain is a serious loss, because it makes early diagnosis and appropriate treatment impossible. On the other hand, in such a condition as lobar pneumonia the mental patient seems to gain in every way. Whether the mortality of pneumonia is less in mental hospitals than elsewhere I have no data on which to form an opinion. If it is less the gain is considerable; even if it is greater, at least those affected have a smoother crossing.

The frequent absence in these patients of reflex actions, such as coughing and vomiting, when one would expect them to be present, suggest that they are not such simple affairs as they would seem, and that even when their occurrence might reasonably be attributed solely to the lower reflex mechanism concerned with the particular area affected, centres at a higher physiological level play a larger part in the act than is usually supposed.

In conclusion, I would call attention to the work of the nurses and attendants at our large mental institutions. I have been impressed by the quickness and the sureness with which they detect the onset of bodily illness in the inmates under their charge. Usually it is by some very slight change in behaviour or appearance, either not eating their dinner or being less irritable, or perhaps some change in their colour. This is noted and reported at once. Their duties are often exceedingly trying, and if anything goes wrong public sympathy is not usually on their side. It is therefore a pleasure to take this opportunity of stating that those with whom I have come in contact have shown a care and interest in the patients under their charge which is in every way worthy of praise. I am much indebted to members of the medical staff of the South Yorkshire Mental Hospital for help in preparing this paper, especially to Drs. Gillespie and Mathieson for clinical records, and to Dr. Thorpe for pathological notes. For permission to make use of the material and for every assistance in so doing, my thanks are due to Dr. W. J. Vincent, medical superintendent of that institution at the time.

SOME OBSERVATIONS ON ACHLORHYDRIA AND ANAEMIA *

BY

STANLEY J. HARTFALL, B.Sc., M.D., M.R.C.P.

HONORARY PHYSICIAN, LEEDS PUBLIC DISPENSARY AND HOSPITAL;
LEVERHULME RESEARCH SCHOLAR, ROYAL COLLEGE OF
PHYSICIANS OF LONDON

We define achlorhydria as the condition in which there is an absence of free hydrochloric acid in the gastric juice. Actually we do not often test directly for this acid. Knowing that a certain degree of acidity ($pH\ 3$) can, in practice, only be due to hydrochloric acid, the direct chemical test becomes unnecessary. If no portion of the gastric juice is acid to a certain indicator (that is, red to Töpfer's reagent) no free acid can be titrated: this is achlorhydria in the usually accepted sense, and in this sense is employed here.

TESTING FOR ACHLORHYDRIA

We have at once to recognize that failure to secrete acid on carrying out a test upon the stomach may vary to some extent in the same individual and also with the stimulus to secretion which is employed. By applying a powerful stimulus to gastric secretion we may call forth acid which a milder stimulus may fail to provoke.

An ordinary meal is presumably the most natural physiological stimulus to the secretion of gastric juice, and the earlier tests of gastric secretion made use of 2 oz. of dry toast and 8 oz. of unflavoured tea (Ewald), or 1/2 oz. of boiled rolled oats reduced to a pint (Ewald-Boas). This material, after remaining in the stomach for three-quarters of an hour, was withdrawn and tested. This form of test is still in vogue on the Continent, and many of the older statistics relating to achlorhydria, both here and in America, are based upon it. The principal objection to this test is that all the stomach contents are withdrawn after they have remained in the stomach for, say, three-quarters of an hour, and we learn nothing about secretion after this. In some persons there may be a considerable delay in the production of acid, and it is easily possible that a case which is achlorhydric according to the Ewald test, may not actually be so. The incidence of achlorhydria, using this test, therefore tends to be high.

The fractional test meal, popularized by Rehfuess in America and Bennett and Ryle in this country, and used in this hospital, consists in withdrawing samples of the gruel meal, administered after the fasting juice has been withdrawn, at quarter-hour intervals for three hours. Each sample may be analysed, and a dynamic picture of the fluctuations of gastric

secretion during digestion is obtained. Delayed acid secretion will usually be revealed, and statistics demonstrating the incidence of achlorhydria based on this test show that it is rather less common than the Ewald test would suggest.

Recently the introduction of a powerful stimulant to gastric secretion which can be administered subcutaneously has given considerable impetus to further studies. This drug—histamine—administered in suitable dosage, according to body weight of the individual, causes, within a very few minutes, a copious flow of gastric juice unaccompanied by any other disturbance. The gastric juice so obtained is pure and uncontaminated by food, and is eminently suitable for analysis. Histamine is probably the most powerful stimulant to acid secretion we possess, and when a case fails to secrete acid following the appropriate dose of histamine, it is truly achlorhydric. A proportion of cases achlorhydric in the fractional test meal do produce acid on histamine stimulation.

ITS DISTRIBUTION

The incidence of achlorhydria as shown by these various tests by different workers, for all age periods, is probably about 14 per cent. My own series, collected from patients under Dr. A. F. Hurst at the New Lodge Clinic, is comfortably average (13.7 per cent.).⁶ I think the inference we can draw is that about 14 per cent. of the average population of all ages is achlorhydric. Nearly all observers have found that achlorhydria is commoner in females than in males. This was so in my series for all age periods, except between 20 and 40 years. This higher incidence among healthy females is disclosed also when histamine is used. The influence of age has become of considerable importance because of its bearing upon the hereditary, constitutional, and acquired factors which predispose or actually induce achlorhydria and related disturbances in gastric secretion. All types of tests of gastric secretion (including the most recent ones with histamine) show that the incidence of achlorhydria increases with age. This was especially noteworthy in my own series among females beyond the age of 40. Information about achlorhydria in infants is a little uncertain, but beyond the age of infancy we know that the incidence slowly and surely increases. When large series of investigations are put together this increase occurs with a regularity and smoothness which suggests that a true biological fact is revealed.

ITS PATHOLOGY AND SIGNIFICANCE

We have next to consider how, or by what mechanism, achlorhydria develops, and what is its significance. Complete proof does not exist that changes in the mucous membrane of the stomach always and necessarily accompany achlorhydria. The necessary correlations between impaired gastric secretions and the histology of the cells of the mucous membrane of the stomach at all ages have not yet been made. The association of achlorhydria with so many diseases, however, strongly suggests that in a large majority of cases it must have a very definite pathological significance. At the same time we must recognize that its presence may be compatible with apparent normal health, although there are many who believe that achlorhydria always has a serious significance, if not at the moment, then certainly in the future. We cannot ignore the nervous factor. We know that nervous influences, emotional upsets, and psychological factors may play a part in inhibiting gastric secretion. The very emotional upset which may accompany the passing of the stomach tube in a nervous subject may be sufficient to inhibit the acid secretion for a time. In such a patient, employing the older methods, achlorhydria might result according to the first test, and free acid would be obtained

* A lecture delivered to the Leeds and West Riding Medical-Chirurgical Society, November, 1933.

when the test was repeated. Acid secretion can also be suppressed by suggestion, as, for example, fear suggested under hypnosis. If such are the effects of transient emotional stimuli, it is possible that more permanent changes may be induced through the visceral nervous system by prolonged emotional stimuli, such as the fear element which is associated with psychoneurotic states. For many years it has been maintained that constitutional factors play an important part in the aetiology of achlorhydria. The evidence afforded by test meals carried out on newborn or very young babies is at present equivocal. On the whole, the incidence of achlorhydria is sufficiently high to suggest that some (genotypical) inherited factor is at work. Further support for this view, however, is found by the tendency of achlorhydria to occur in many members and several generations of one family. Thus Conner found 25.9 per cent. achlorhydria among 154 blood relatives of patients suffering from pernicious anaemia. This constitutional factor becomes of importance when we consider those instances of familial pernicious anaemia, simple achlorhydric anaemia, and families which show both these diseases and symptomless achlorhydria (Gram,⁵ Witts,¹⁶ Heath,¹¹ Witts and Hartfall⁷).

ACHLORHYDRIA AND CHRONIC GASTRITIS

Having considered achlorhydria from the point of view of heredity, the next point is to consider the definite underlying pathology of the gastric mucosa which most commonly accompanies achlorhydria—namely, chronic gastritis. The view that chronic gastritis accounts for the development and persistence of achlorhydria was first put forward by Hayem and Faber,⁴ and has many supporters. It is well established that all stages of chronic gastritis, even to complete atrophy of the gastric glands, may be found in the gastritis of pernicious anaemia, and to a less extent in simple achlorhydric anaemia, Graves's disease, etc. It is possible that alterations in the functional secretory capacity of the stomach may precede demonstrable chronic gastritis. Inspection of the gastric mucous membrane in cases of achlorhydria during life by means of the gastroscope, however, frequently reveals a changed appearance of the mucous membrane which is interpreted as chronic gastritis. There is one other aspect of the aetiology of achlorhydria which must be mentioned. Vanzant and Alvarez,¹² and also Pollard,¹ have shown that the average acidity for healthy individuals is higher in males than in females. In both sexes, as age advances, this average or mean acidity is progressively lowered. Finally, achlorhydria is reached, and among females it is reached, on an average, earlier. The higher incidence among women is accounted for by the above findings carried to their logical conclusion. If gastritis cannot account for these phenomena the alternative is to regard them as "involutional changes," the secreting mechanism becoming "played out" upon slight provocation, or spontaneously (Bloomfield and Pollard¹).

My own belief, which I find most useful in understanding this difficult problem, is as follows. I believe that there exists a hereditary predisposition to the cessation of normal gastric secretion, the basis of which is a gastric mucous membrane of functionally subnormal type. This subnormal mucosa may easily be disturbed by various factors. Many of these injurious agencies are exactly those which cause gastritis, and, in this particular inherited hyposecretory type, achlorhydria quickly results. The multiplication of these injurious factors as age advances accounts for the increasing incidence with age. The higher incidence in females can only be accounted for by the strain which the reproductive functions—menstruation, pregnancy, and lactation—throw on the economy of the female organism.

ITS CLINICAL APPLICATIONS.

What, then, is the clinical importance of this condition of achlorhydria? The best evidence of its importance is obtained by a consideration of those diseases with which it is associated and especially those which it precedes, where it is regarded as an essential predisposing condition to the disease in question.

1. It almost invariably precedes and accompanies true Addisonian pernicious anaemia and subacute combined degeneration, and it persists after the cure of the blood and nervous condition.

2. It precedes, accompanies, and persists after the cure of the simple achlorhydric anaemia—the most important member of the chronic microcytic group of anaemias.

3. It precedes and accompanies the commonest type of carcinoma of the stomach—that is, carcinoma *ex gastritis*.

4. It is present in an ill-defined group of conditions of ill-health where chronic gastritis often exists; it accompanies frequently the asthenic neurotic diathesis, conditions of gastro-intestinal irregularity and upset, debility, and, often, soreness of the mouth and tongue. It is also present in a significant proportion of cases of rheumatoid arthritis, asthma, and allergic diseases, Graves's disease, diabetes, etc., where its exact significance is disputed.

5. It may result from a variety of gastric operations (to be considered later), and in a proportion of them seems to account for certain post-operative conditions of chronic ill-health.

6. It may be encountered in normal health; when its prognostic significance is disputed.

It is important to realize that the suggestion is not made that mere lack of hydrochloric acid secreted in the stomach is directly responsible for every symptom associated with these various disorders; sometimes this may be the case, but more often the achlorhydria is simply an indication that something is wrong with the secretory apparatus, and that combined with this defect in acid secretion are other defects which are more directly concerned with the particular pattern of ill-health which may be present. So far as the blood is concerned with these gastric secretory changes, the loss of acid is not always the most important thing.

CLASSIFICATION OF ANAEMIAS

A simple classification of anaemia based on modern work is given in Table I. It shows us that the two forms of anaemia in which achlorhydria is commonly found are closely related from the aetiological standpoint. Both are examples of failure of proper maturation or development of red cells, due to the lack of some agent or principle necessary for their complete development. This incomplete development has been called by Witts "anhaemopoiesis," and the whole group of anaemias, the "anhaemopoietic anaemias."¹³

TABLE I.—Classification of Anaemia

Blood Loss :	Blood Destruction :
Acute.	Haemolytic anaemias
Chronic.	Acute (Lederer), poisons, of pregnancy, etc.
	Chronic—acquired, acholuric jaundice, etc.

Inhibition of Blood Formation :

Anhaemopoiesis: Complete—aplastic anaemia.

Incomplete—arrested maturation of red blood cells due to deficiencies. (A) Megalocytic anaemia—for example, Addisonian pernicious anaemia (due to deficiency of anti-pernicious anaemia factor). (B) Microcytic anaemia—for example, simple achlorhydric anaemia (due to failure of absorption or utilization of iron).

Anhaemopoiesis

Group A.—Classical Addisonian pernicious anaemia is characterized by a tendency for the majority of the circulating cells to be larger in size, and often carrying more haemoglobin per cell. The bone marrow shows megaloblastic degeneration. The colour index is high. The anaemia is therefore megalocytic, and is also called hyperchromic, though the latter is a bad name. The anaemia develops when the anti-anaemic principle, as found in the liver, is deficient. This principle, in turn, depends upon the presence of an active ferment-like substance in the gastric juice, called haemopoietin,¹⁴ and its interaction with certain extrinsic substances associated with the proteins of the diet. The product must be satisfactorily absorbed through the gastro-intestinal mucous membrane, stored in the tissues (especially the liver), and utilized according to the demands on the bone marrow. It is possible that an anaemia of pernicious type may develop when any of the phases in the formation and absorption of the anti-anaemic principle fails. Thus, in Addisonian pernicious anaemia the intrinsic factor of Castle (haemopoietin) is absent; in tropical megalocytic anaemia the extrinsic factor is absent. In the megalocytic anaemia of sprue, fatty diarrhoea, multiple stenoses and strictures, and intestinal parasites, either the gastric digestion or the absorption of the factor fails. In gastric carcinoma and in Graves's disease the intrinsic factor occasionally disappears and a megalocytic anaemia develops, and similar changes may occasionally be encountered after severe gastric operations. To recapitulate: broadly speaking, in the Addisonian-pernicious-anaemia-subacute-combined-degeneration syndrome the most important and fundamental defect is a gastric one—the loss of the intrinsic factor of Castle (haemopoietin), which is a product of the normal gastric mucous membrane.

Group B.—The second, or microcytic, type of anaemia contrasts in many respects with pernicious anaemia; for the majority of the circulating red cells tend to be slightly smaller than normal, and their haemoglobin content per cell is reduced in much greater proportion. The colour index is low. The bone marrow shows normoblastic reaction. The anaemia is therefore microcytic and hypochromic. It does not respond to liver or stomach preparations, but, being due to a deficiency in iron, it responds to treatment with certain iron preparations, though they must be given in large doses. Achlorhydia is very common in this anaemia, which is largely confined to women. It includes simple achlorhydic anaemia and the Plummer-Vinson syndrome; the microcytic anaemias secondary to pregnancy, Graves's disease, etc.; the anaemia of cancer of the stomach; and that following gastric operations.

Comparison of Two Groups

The next problem is to consider how far the defects in gastric secretion are comparable, and whether they have an equal significance in this second microcytic form of anaemia, as they appear to have in pernicious anaemia. It was with this aspect of the problem that Dr. Witts and I were chiefly concerned.^{15,16} It soon became apparent that for practical purposes achlorhydia (with gruel test meal and histamine) occurred in 100 per cent. of cases of true Addisonian pernicious anaemia; in chronic microcytic anaemia, although more than 80 per cent. were achlorhydic in the gruel fractional test meal, a proportion of cases could be made to secrete small quantities of acid with histamine, and thus were really hypochlorhydic. The cases investigated were therefore subdivided into true simple achlorhydic anaemia, and a small group of chronic microcytic anaemia with hypochlorhydia.

Our principal findings in the gastric secretion of these groups of cases are shown in a summarized form in Table II. Briefly, it will be seen that there is a striking

TABLE II.—*Histamine Secretion in Anaemia with Achlorhydia*

	Normal		Addisonian Pernicious Anaemia (25 Cases)		Chronic Microcytic Anaemia			
	Average	Range	Average	Range	Simple Achlorhydic Anaemia (35 Cases)	Hypochlorhydic Group (12 Cases)		
	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.
10-minute volume ...	35	1-50	19.5	2-23	12.3	2-42		19
Free acid (N/10 NaOH per 100 c.cm.)	100	—	—	—	—	0-75		16
Total acid (N/10 NaOH per 100 c.cm.)	110	0-10	5	2-14	5.6	17-50		30.5
Chloride (N/10 HCl per 100 c.cm.)	135	18-28	38	20-71	48	28-5		64
Pepsin (Grosse units) ...	40	0-15	1.75	0-15	2.4	5-40		20
Insol. mucus (mg. N) ...	9%	26%		19%		3%		
per 10-minute vol. ...	2.4		1.6		1.4			0.3
Soluble mucoprotein (mg. N) ...	26%	56%		48%		40%		
per 10-minute vol. ...	7		3.5		3.6			4.5
Intrinsic Castle factor	Present		Absent		Traces?		Reduced	

gradation in the severity of the gastric defect in all three groups of cases as shown by examination of the histamine gastric juice. This is seen to affect all the elements of gastric juice investigated—the ten-minute volume secretion, the hydrochloric acid, total chloride, pepsin, insoluble mucus, and soluble mucoprotein. It was noteworthy that sometimes the gastric secretion of simple achlorhydic anaemia might be indistinguishable from pernicious anaemia, but whereas the defects in pernicious anaemia were constantly found to be most severe, occasionally in simple achlorhydic anaemia the changes would be less severe. In the hypochlorhydic group the changes were found to be least severe, although deviating widely from the normal.

If, then, the gastric secretions in these anaemias in so many respects closely resemble one another, in what respects do they differ? Experiments were carried out to demonstrate the presence or absence of the intrinsic factor in the gastric juice of patients suffering from simple achlorhydic anaemia. Witts and I were able first to confirm the absence of the intrinsic factor in the gastric juice of pernicious anaemia as first shown by Castle, but in the case of simple achlorhydic anaemia our results were not entirely in conformity with the original Castle hypothesis. Briefly, we found that the factor was present, but much reduced—sometimes to the point of absence. When we considered the details of the analysis of the gastric juice of those cases of simple achlorhydic anaemia which apparently possessed practically no intrinsic factor, we were impressed by the fact that they were always those cases in which gastric secretion was most impoverished, and they usually secreted no pepsin. When we repeated the experiments, using selected cases which secreted no pepsin, the result was negative. We therefore suggested that the reduction of the intrinsic Castle factor is parallel with that of other gastric ferments, but it was evident that, in general, there must be sufficient intrinsic factor secreted somewhere in the economy of these patients to hold off the development of megaloblastic degeneration of the marrow, and to prevent pernicious anaemia. If this were not so, the transformation of simple achlorhydic anaemia into pernicious anaemia would be commonly observed. Although occasionally recorded, the transformation of one type of anaemia into another in its clinical and haematological entirety is not common.

What relation, then, has the defect in gastric secretion to the anaemia of this chronic microcytic type, and why is it almost exclusively confined to women? The achlorhydria can best be considered, as Davidson¹ suggests, as one of several grave disabilities which predispose to its development. The other disabilities are conditions which strain, as it were, the internal mechanism of blood formation by an excessive demand. They are conditions of chronic blood loss, and especially of excessive menstruation, repeated pregnancies and parturition, and the drain of lactation. If such disabilities operate together, and especially if the diet is only of minimum iron content (but adequate in the absence of these disabilities), then this microcytic hypochromic anaemia results.

To summarize this view. In a mixed population on an iron minimal diet the high incidence of achlorhydria and the drain of the reproductive functions accounts for the incidence of this anaemia in women. When we can reproduce such factors in men a similar type of anaemia develops.

As to the exact mechanism by which the achlorhydria interferes with the iron absorption, it has been shown by Mettler and Minot that iron is not easily absorbed from the upper gut in the absence of hydrochloric acid and pepsin. The question of the alteration of the pH of the duodenum by the iron salts employed may also be of importance (Langmead). I personally believe that other dietetic factors play a part, but this is not the place to discuss my results.

OTHER EXAMPLES OF ANHAEMOPOIESIS

The anaemias of carcinoma of the stomach and Graves's disease, and that following certain gastric operations, also provide examples of anaemia of anhaemopoietic type, and they may be megalocytic or microcytic.

Anaemia of Carcinoma Ventriculi

Cases of carcinoma of the stomach which present as examples of severe anaemia, often like pernicious anaemia, are familiar to all of us. These patients are not anaemic because of a large haemorrhage, for most surgeons will agree that such a catastrophe is a rare incident in cancer of the stomach. At the same time it is quite certain that continuous oozing of blood from the ulcerated growth surface commences at an early stage in its development, and is responsible for that valuable diagnostic finding—a positive occult blood test. This type of patient will not admit to a long dyspeptic history, and often the dyspepsia is minimal, the impairment of appetite being all that is complained of. The test meal examination of the stomach shows achlorhydria. Here, then, we have exactly those factors called "disabilities" which in women predispose to the development of chronic microcytic anaemia. The commonest type of anaemia associated with cancer of the stomach is of this type, and really is a simple achlorhydric anaemia. This is the type of cancer which develops on the basis of an unhealthy gastric mucous membrane—a gastritis, in fact—the gastritis and achlorhydria preceding the development of the carcinoma. If the anaemia in cancer is of gastrogenous origin it might be expected that anaemia of pernicious type would occasionally be associated with cancer of the stomach, and such cases have been recorded (Wilkinson has recorded two, and collected twenty-five others). In these individuals, irrespective of the presence of the growth, the intrinsic factor is lost, and the megalocytic pernicious anaemia develops. The importance of this is that both anaemias may for a time respond to their respective remedies, and the growth may be unsuspected. The pernicious type responds to liver for a time, and the microcytic type to large doses of iron. I have reported several such cases.^{1a}

Anaemia associated with Graves's Disease

Anaemia associated with Graves's disease is not rare. It is usually of the secondary microcytic type. Occasionally Graves's disease and pernicious anaemia are associated. I believe the achlorhydria and the associated defects in gastric secretion, which are common in cases of prolonged thyrotoxicosis, play an important part in the production of the anaemia. Among ten cases of pernicious anaemia associated with Graves's disease, and mentioned in a paper with Dr. Meulengracht of Copenhagen,¹² all were achlorhydric, and all were females.

Anaemia associated with Stomach Operations

Lord Moynihan's case of complete gastrectomy, ultimately resulting in death from severe anaemia, thought to be pernicious, was one of the first recorded examples of anaemia due to operative interference with the stomach. Since that time a number of similar cases have been reported, and it is now known that frequently such patients do develop anaemia, and that in complete gastrectomy its onset may not be long delayed. In partial gastrectomy, in proportion to the extent of the removal of the acid-secreting area of the stomach, so will achlorhydria result. The development of anaemia may be long delayed. After gastro-enterostomy achlorhydria does not as a rule follow, though the abnormal conditions present in the stomach frequently result in gastritis, which may ultimately cause the cessation of acid secretion. The free regurgitation of duodenal contents, and rapid neutralization of small quantities of acid, makes the certain demonstration of achlorhydria difficult in many of these cases. I have twice found achlorhydria after a faulty gastro-enterostomy has been undone, although free acid was present in normal quantities before the original operation. The type of anaemia which occurs after these operations again belongs to the anhaemopoietic group, and is frequently of the chronic microcytic type. Occasionally a case of partial gastrectomy pernicious anaemia is encountered.

Anaemia after gastric operations seems to occur most frequently among those unfortunate individuals who are suffering from what may be called the ill results of gastro-enterostomy. If such a group of individuals be investigated, in addition to their innumerable abdominal discomforts, a proportion of them will be found to be definitely anaemic.

In a small group of twenty patients (ten male and ten female) investigated by me, who had become chronic abdominal invalids following operation upon the stomach, seven females had anaemia of secondary type, and five of these had developed gastro-intestinal hurry, as shown by x-ray examination. It is possible that the disturbed physiology of the gastro-intestinal tract had so interfered with digestion and absorption of iron that adequate quantities could not be absorbed and utilized for the manufacture of haemoglobin. In only one case had traces of occult blood, due to gastro-jejunal ulceration, been found.

Among 112 traced cases of gastrectomy for ulcer there were twenty-one deaths and, thirty-six patients who complained of some degree of unfitness, and whose blood was examined. Among the thirty-six, twenty-two had some microcytic anaemia, and one was a case, since dead, of ? pernicious anaemia.

Of thirty traced cases of gastrectomy for cancer, twenty-one patients were dead, and of the nine alive and seen, six made some complaint of unfitness, and their blood was examined. Two of them, both females, had chronic microcytic anaemia.

Putting all these cases together as examples of individuals unfit after gastric operations, there were sixty-two unfit persons among 163 cases of gastric operations. Of this number (sixty-two), thirty-one were anaemic—that is, 50 per cent. of the unfit patients were anaemic. When the sex of the affected patients was considered

80 per cent. were found to be females. Here again there seems to be evidence that when the female organism is subject to the added disability of disturbed gastric physiology consequent upon unsatisfactory gastric operations, anaemia of the anhaemopoietic type develops.

TREATMENT OF ACHLORHYDRIA AND RELATED ANAEMIAS

I cannot hope to deal with every aspect of treatment which concerns achlorhydria and the related anaemic states which have been mentioned. With regard to achlorhydria much depends upon the view we take of its aetiology and the part we believe it to play in producing the associated condition. While the associated disease is obvious and urgent we treat it—for example, the anaemia—and we are well content to cure it. But we may well question whether this is sufficient, for our patients are left with the achlorhydria and the pathological condition of the stomach which underlies the achlorhydria. How far does this predispose to further complications or even new diseases? What will be the incidence of carcinoma of the stomach among patients cured of pernicious anaemia, in ten or twenty years' time? How many of them will develop biliary infections if the achlorhydria is ignored? Hurst suggests that we must always consider the treatment of achlorhydria as well as the associated disease, and also we must try to prevent these diseases by early treatment of the achlorhydria. This implies the prevention of gastritis by the elimination of all preventable forms of gastric irritation, a complete overhaul for all sources of open or focal sepsis, especially in the mouth, pharynx, and accessory sinuses. The restoration of gastric acidity may often be brought about by the old treatment of gastric lavage. Thus among thirty-four cases of achlorhydria at New Lodge Clinic⁵ treated by daily gastric lavage (one ounce of hydrogen peroxide to the pint) acid returned in 82 per cent. of cases.

Hydrochloric Acid

In those cases where general slackness and debility with gastro-intestinal symptoms accompany the achlorhydria, astonishing results may sometimes be brought about by the substitution of hydrochloric acid. The remarkable fact is that the dose of hydrochloric acid given is often quite insufficient materially to affect the reaction of the achlorhydric stomach, yet the abrupt cessation of gastro-genous diarrhoea, perhaps of years' duration, seems little short of miraculous. Larger doses, well diluted, and flavoured suitably with the addition of pepsin, are often useful where dyspepsia and gastro-intestinal upsets are present. In the treatment of the anaemias associated with achlorhydria, as in the case of pernicious anaemia, the problem is to select from the innumerable preparations offered to us the most economical remedies consistent with full activity and convenience in administration.

Liver

Emergency treatment practically only exists in the case of pernicious anaemia, and the introduction of safe intravenous liver preparations has, for practical purposes, rendered transfusion unnecessary. Transfusion is now only needed when severe infection inhibits the effect of the active preparation. The dose of these intravenous liver products in an emergency is 5 c.cm., and this calls forth a reticulocyte response within twenty-four hours as a rule. From 2 to 4 c.cm. may be given the next day, followed by intramuscular preparations, 2 c.cm., according to the magnitude of the blood response and the clinical progress of the case. Within a week or ten days these patients can be given preparations by mouth, and finally, by trial, the maintenance dose determined. For less acute cases treatment can be started with intramuscular preparations

which cost only half the amount of the intravenous ones, and then preparations by mouth. It is most important that patients should be made to understand the necessity of continuing with the adequate amount of active preparation. Nothing can be more deplorable than the case which is allowed to drift on with haemoglobin below 80 per cent. and red corpuscles below 4,000,000. The risk of development of nervous symptoms, and the chance of curing them if present, depend upon the maintenance of the blood at the level of health. For maintenance treatment it is necessary for the medical man to be able to recommend active preparations in which he has absolute confidence, and at the same time to save his patient unnecessary expense—for many of the most expensive products are in no way superior to certain much cheaper and reliable preparations on the market.

Stomach Preparations

Providing the patient is on ordinary mixed diet, there is no special virtue in whole liver that is not possessed by active liver extracts and stomach preparations. Few patients will continue to take whole liver for two meals a day for the rest of their lives. The dry extract is very expensive and unpalatable; the liquid extract is not pleasant, but is less expensive. On the whole, I believe that stomach preparations are best adopted as a routine, on grounds of economy, convenience in administration, and effectiveness; there are very few cases that cannot be kept with haemoglobin between 95 and 105 per cent. upon one ounce of stomach preparation a day. They are also helpful in controlling associated dyspepsia and improving the nervous symptoms of subacute combined degeneration. The price of stomach preparations is very variable, and much money can be needlessly expended. The more elegant preparations are expensive because of the cost of removing fatty matter, which gives the cheaper preparations their unpleasant odour. Very few patients in my experience are unable, after two or three days, to tolerate even the cheap fat-containing preparations, the cost of which is even less than that of 1/2 lb. of whole liver per day. Purely from the cost point of view, at the present time, treatment by intramuscular preparations given twice weekly would be only half that of treatment by mouth preparations. Large doses of the intramuscular preparations have been injected to form depots without ill result. These depots are slowly used up, and need replenishing at longer intervals of time.

Infection and septic foci retard the effect of treatment. I have seen a case fail to respond while an infected antrum was untreated. In females I would stress the frequency of *B. coli* pyelitis as a cause of unsatisfactory progress. This was the commonest infective complication interfering with treatment among 400 cases reviewed at Copenhagen in Meulengracht's Clinic. Pregnancy and lactation are indications to increase the maintenance dose of the active preparation.

Iron

The treatment of chronic microcytic anaemia, depending as it does chiefly on large doses of iron, is fortunately cheaper than that of pernicious anaemia. Here, too, the necessity for very prolonged treatment must be emphasized, otherwise these women relapse into a miserable state of chronic ill-health. It is now common experience that ferrous salts of iron are most rapidly and uniformly successful. The cheapness of these salts makes the large dose of no account. Successful treatment may usually be achieved by the following:

Bland's pill, fresh (ferrous carbonate), 60 grains daily.
Feronyl (ferrous chloride), 6 to 9 tablets daily.

Ferr et ammon. cit. { mixed ferrous and }
 { ferric in colloidal } 45 grains daily.
Ferri et quin. cit. { state

Tab ferri carb. sac. (ferrous carbonate), 45 grains daily.

These doses of iron preparations are the *minimal* effective doses, and in resistant cases it may be necessary to double the dose here indicated. Colloidal and organic iron compounds are much less effective.

Vitamins

I usually augment this massive treatment with certain vitamin preparations such as *bemax* or *marmite* 1/2 ounce daily, or yeast compressed into 5-grain tablets. Some of these patients are almost certainly suffering from vitamin B deficiency, and I have had several cases which have improved upon these vitamin B containing preparations without any iron whatever. Infection, sepsis, pregnancy, and lactation all inhibit the response of these patients to iron, and in selected cases, where menorrhagia is present, artificial induction of the menopause may be necessary before improvement will take place.

REFERENCES

- ¹ Bloomfield, A. L., and Pollard, W. S.: *Gastric Anacidity*, Macmillan, New York, 1933, p. 76.
- ² Burger, G. N., Hartfall, S. J., and Witts, L. J.: *Guy's Hospital Reports*, 1933, lxxxiii, 497.
- ³ Davidson, L. S. P., et al.: *British Medical Journal*, 1933, i, 685.
- ⁴ Faber, K.: *Berl. klin. Woch.*, 1913, i, 958.
- ⁵ Gram, H. C.: *Folia Haematologica*, 1930, xxxix, 461.
- ⁶ Hartfall, S. J.: *Guy's Hospital Reports*, 1932, lxxxii, 13.
- ⁷ Hartfall, S. J., and Witts, L. J.: *Ibid*, 1933, lxxxiii, 3.
- ⁸ *Ibid*: *Ibid*, 1933, lxxxiii, 24.
- ⁹ Hartfall, S. J.: *Ibid*, 1933, lxxxiii, 37.
- ¹⁰ *Ibid*: *Lancet*, 1933, i, 74.
- ¹¹ Heath, C. W.: *Journ. Clin. Invest.*, 1932, ii, 808.
- ¹² Meulengracht, E., and Hartfall, S. J.: *In the press*.
- ¹³ Vanzant, F. R., Alvarez, W. C., et al.: *Arch. Int. Med.*, 1932, xlix, 345.
- ¹⁴ Wilkinson, J. F.: *Proc. Roy. Soc. Med.*, 1933, xxvi, 1341.
- ¹⁵ Witts, L. J.: *Lancet*, 1932, i, 495, 549, 653.
- ¹⁶ *Ibid*: *Guy's Hospital Reports*, 1930, lxxx, 253.
- ¹⁷ *Ibid*: *Proc. Roy. Soc. Med.*, 1931, xxiv, 7.

THE HAEMATOPOIETIC RESPONSE TO INTRAMUSCULAR INJECTIONS OF CONCENTRATED HUMAN GASTRIC JUICE

BY

PAUL J. FOUTS, M.D., O. M. HELMER, PH.D.,

AND

L. G. ZERFAS, M.D.

(From the Lilly Laboratory for Clinical Research, Indianapolis City Hospital, and the Department of Medicine, Indiana University School of Medicine)

Morris and his associates¹ recently reported that although small amounts of normal human gastric juice were ineffective when injected intramuscularly, large amounts of normal human gastric juice or hog gastric contents after concentration *in vacuo* produced maximal reticulocyte responses when injected into patients with pernicious anaemia. They described the substance in the concentrated gastric juice as being thermolabile, dialysable, and exhaustible, and therefore concluded that it was probably a hormone. Conner² reported similar results in one case of pernicious anaemia, following the injection of normal human gastric juice after concentration by vacuum distillation. Wilkinson³ was unable to confirm the findings of Morris and his associates when he injected human gastric juice that had been brought to pH 7.5 previous to its concentration *in vacuo*.

The observations here recorded were carried out in order to determine whether it was possible to separate the "active principle" in the gastric juice from the known enzymes (pepsin and rennin) by the process of ultrafiltration. This process not only offered a means of determining the relative size of the various constituents of the gastric juice, but also a possible method of concentrating the gastric juice at ice-box temperatures.

METHODS

The patients, clinically and haematologically typical of pernicious anaemia, received the concentrated gastric juice intramuscularly after preliminary control periods (average seven days). Red blood counts, haemoglobin determinations (Newcomer), and reticulocyte counts were made daily during the control and test periods. The human gastric juice used was obtained from young healthy adults following the injection of 0.5 mg. of histamine subcutaneously. It was filtered immediately after collection through a No. 1117½ Faltenfilter (Carl Schleicher and Schüll). The enzymatic content of the gastric juice to be concentrated was determined by methods detailed previously.⁴

The Bechold type of ultrafilters described by Bronfenbrenner⁵ was used in the experiments. The gastric juice (285 to 630 c.cm.) was concentrated by these ultrafilters, and twice diluted with distilled water or 0.3 per cent. hydrochloric acid, and reconstituted before being brought to the final volume of 13 to 15 c.cm. This procedure was carried on in the ice-box. Since only negligible amounts of pepsin and rennin passed through these filters, each new filter could be tested for possible defects in the construction by determining the amounts of these known enzymes in the ultrafiltrate.

In a preliminary study it was found that the "active principle" in liver extract No. 343 passed through the ultrafilters. One patient (Case 9) had a reticulocyte peak of 25.6 per cent. (absolute reticulocyte count 620,000 per c.mm.) following the intravenous injection of the amount of liver extract derived from 100 grams of whole liver, after the extract had been passed through the ultrafilter.

In the experiments in which concentration by vacuum distillation was employed the procedure was as follows. The distilling flask (fitted with the usual capillary tube to prevent bumping) was immersed in a constant temperature bath maintained at 40° C. The vacuum was produced by a water pump. The gastric juice (500 to 600 c.cm.) was concentrated to 10 to 15 c.cm. in a period of three to five hours. The gastric juice concentrated by either or both of the above methods was sterilized by passing through an N Berkefeld filter, or by the addition of a few drops of tricresol, and was adjusted to a pH 7 (at ice-box temperature) by the addition of strong NaOH before being injected into the patients.

RESULTS

In the first group of observations (Group 1) the gastric juice used had been filtered through paper and then stored in the ice-box for approximately two months before being subjected to ultrafiltration. The effect of the two injections of the concentrated juice (that held back by the ultrafilters) is shown in Chart I, Case 1. The clinical response in the patient was only slight, and the increases in the red blood count were not sustained. A further rise in reticulocytes and a satisfactory rise in red blood cells followed the administration of extralin* by the mouth. The ultrafiltrate (the portion passing through the ultrafilters) of this juice was concentrated by vacuum distillation and injected into Case 2a. No response of the blood occurred during the following twelve days.

These reticulocyte responses were not maximal; therefore it was decided that fresh gastric juice should be used in the next group of tests (Group 2), as the storage in the ice-box might have destroyed some of the active material. However, when the fresh gastric juice was used, no reticulocyte responses followed the injection on three occasions of the portion of the fresh gastric juice held back by the ultrafilters, and on one occasion

* A potent preparation obtained by the interaction of liver or liver extract with hog gastric tissue.

the ultrafiltrate after it was concentrated by vacuum distillation. Chart II (Case 4) is an example of the results in this group.

Morris and his associates reported maximal responses of the reticulocytes following the injection of similar amounts of gastric juice after concentration by vacuum distillation, and yet we obtained only slight responses

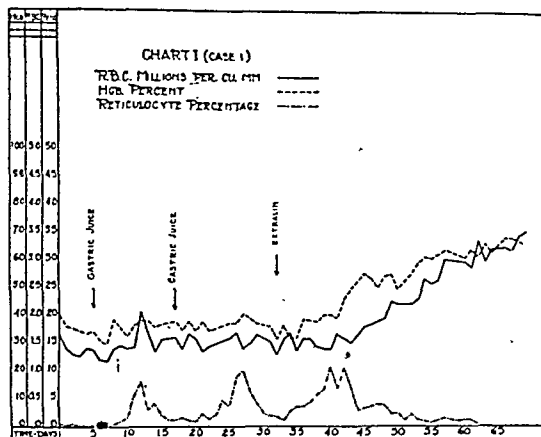


CHART I.—The response of the blood of Case 1 to two intramuscular injections of human gastric juice that had been stored in the ice-box for two months before being concentrated by ultrafiltration, and to the oral administration of extralin capsules 4, three times a day.

when the gastric juice which had been stored in the ice-box for two months was concentrated by ultrafiltration and injected, and no responses when the fresh gastric juice was concentrated by ultrafiltration and injected. To test whether the concentration by vacuum distillation

had caused some change in the fresh gastric juice, it was decided to subject the latter to concentration by vacuum distillation before using the ultrafilters (Group 3). Case 6 was injected with gastric juice concentrated by vacuum distillation only. A maximum reticulocyte response (11.2 per cent. at a red blood cell level of 1.82 millions), and a satisfactory rise in red blood cells followed. No further reticulocyte rise followed extralin therapy. Four patients received injections of gastric juice first concentrated by vacuum distillation, then diluted with distilled water, and re-concentrated by ultrafiltration. Definite reticulocyte rises followed all of these injections. The reticulocyte rises were 9.8, 8.7, 8.2, and 2.8 per cent. when the red blood cell levels were 0.7, 3.25, 1.91, and 2.7 millions, respectively. The reticulocyte peak of 8.7 per cent. in Case 8 was apparently maximal, as no further rise in reticulocytes followed the injection of liver extract intramuscularly.

Case 11 had previously responded to the concentrated ultrafiltrate, and the 2.8 per cent. response, followed by a rise in red blood cells, was considered quite satisfactory. The two other responses were not maximal, as subsequent treatment produced additional reticulocytoses.

Case 11 received intramuscularly the portion of the gastric juice concentrated by vacuum distillation that

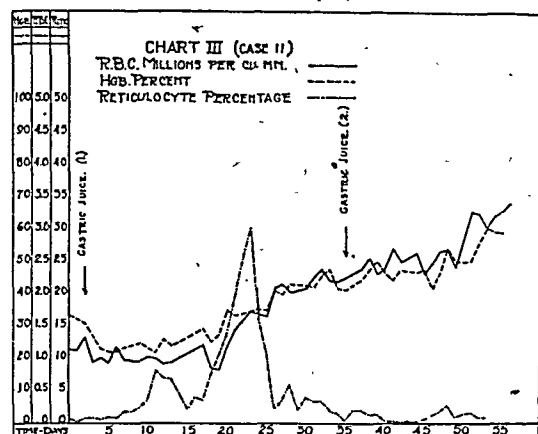


CHART III.—This shows the response of the blood of Case 11 to the intramuscular injection of the portion of the fresh human gastric juice concentrated by vacuum distillation that passed through the ultrafilter (1), and to the portion of the fresh human gastric juice concentrated by vacuum distillation and then re-concentrated by ultrafiltration (2).

passed through the ultrafilters. This ultrafiltrate was concentrated by vacuum distillation before injection. Chart III shows the marked and prolonged reticulocytosis. Evidence of bone marrow stimulation (many nucleated

red blood cells, myelocytes, and nuclear particles) appeared at the onset of the greatest rise in reticulocytes. Case 7, in which there had been nine previous responses to liver extract, received a similar preparation. The patient was in cardiac failure when injected. By the seventh day the reticulocytes had started to increase, but the cardiac failure had not responded to medication, and the patient developed bronchopneumonia and died. After each injection in this group there was some type of reaction, the severest

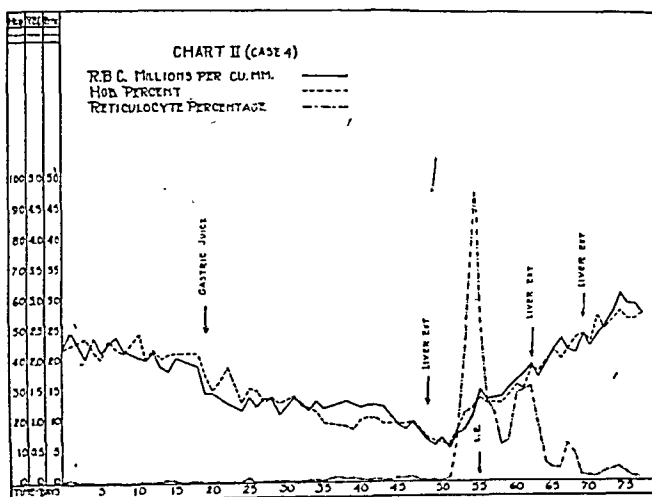


CHART II.—The response of the blood of Case 4 to the intramuscular injection of fresh human gastric juice concentrated by ultrafiltration only, and to the weekly intravenous injection of the amount of liver extract derived from 100 grams of whole liver.

following the injection (Case 11, first injection) which caused the greatest reticulocytosis. The clinical response of each patient was proportionate to the height of the reticulocyte responses.

The results in the three groups of observations indicated clearly that some change in the gastric juice had taken place during the process of vacuum distillation. However, in Group 2 the ultrafiltrate of fresh gastric juice had been

concentrated by vacuum distillation, and no haematopoietic activity had been demonstrated. It was therefore assumed that the material in the gastric juice that could be made active by vacuum distillation was held back by the ultrafilters. To test this, Case 12 was injected with fresh gastric juice first concentrated by ultrafiltration, then diluted with 0.3 per cent. hydrochloric acid, and re-concentrated by vacuum distillation. The patient had a severe reaction, a decrease in red blood cells, and an increase in icterus following the injection. Chart IV

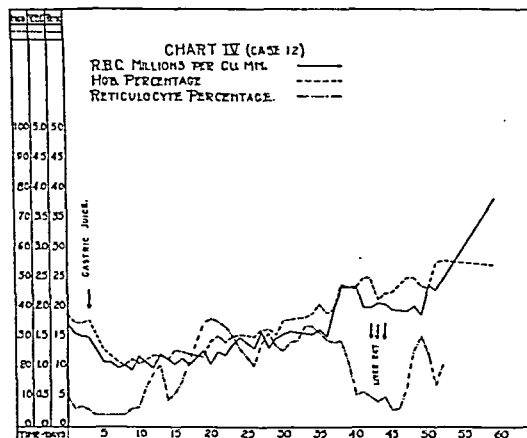


CHART IV.—This shows the prolonged reticulocyte response of Case 12 following the intramuscular injection of normal human gastric juice first concentrated by ultrafiltration, then diluted and re-concentrated by vacuum distillation, and the response of the blood to three intramuscular injections of the amount of concentrated liver extract (3 c.cm.) derived from 100 grams of whole liver.

shows the prolonged reticulocytosis, the peak (345,000 per c.mm.) being reached on the thirty-fifth day after the injection. A definite clinical response and rise in red blood cells had occurred by then, although the rise in red blood cells was markedly delayed. There was a subsequent increase in reticulocytes following the intramuscular injection of liver extract.

This showed conclusively that the material in the gastric juice which could be made active was held back by the ultrafilters used. It also demonstrated that the gastric juice concentrated by ultrafiltration and re-concentrated by vacuum distillation was haematopoietically active, whereas on three occasions (Group 2) the gastric juice concentrated by ultrafiltration only had been inactive. The results obtained in Group 3 and in Case 12 indicated that after concentration by vacuum distillation a goodly percentage of the activity passed through the ultrafilters, although practically all of the material that could be released or made active by concentration by vacuum distillation was held back by the ultrafilters. It would seem, therefore, that during the process of vacuum distillation a haematopoietically active substance was obtained that was smaller in size than the material from which it was formed or released.

SUMMARY

The results of these studies indicate that some change in fresh human gastric juice must take place before a haematopoietically active material can be demonstrated by the intramuscular injection into patients with pernicious anaemia. At the present time the actual mechanism of this change is not known. Any of at least three explanations might account for this change. The first is that, during the process of vacuum distillation the intrinsic factor acts upon an extrinsic factor present

in the gastric juice in too small amounts to be active when fed by the mouth. The intrinsic factor is known to be present in fresh human gastric juice, and has been demonstrated by us in another group of experiments to be present at the onset of the vacuum distillation in all the preparations which were made active by this procedure, and in none of those that were not so made active. The second is that during the process of concentration by vacuum distillation, a material irritating or toxic to the haematopoietic system is produced. The prolonged and delayed reticulocyte response, marked bone marrow irritation, the delayed rise in red blood cells, and the fact that each patient who responded to the injection of the concentrated gastric juice had a more or less severe reaction, suggest this possibility. Case 12 is of especial interest in this connexion. After the injection the temperature rose to 106° F., the red blood cell count decreased 0.55 million, and there was an increase in icterus. There was no rise in red blood cells until after a prolonged reticulocytosis. The third possibility is that during the concentration by vacuum distillation a hormone is released or activated.

In our opinion the haematopoietically active substance must be formed by the action of the intrinsic factor on an extrinsic factor in the gastric juice, or by the production of a substance irritating or toxic to the haematopoietic system.

REFERENCES

- *Morris, R. S., Schiff, L., Burger, G., and Sherman, J. E.: *Journ. Amer. Med. Assoc.*, 1932, xcvi, 1080; *ibid.*, 1932, clxxxiv, 778.
- *Conner, H. M.: *Proc. Staff Meetings Mayo Clinic*, 1932, vii, 213.
- *Wilkinson, J. F.: *British Medical Journal*, 1932, ii, 1163.
- *Helmer, O. M., Fouts, P. J., and Zerfas, L. G.: *Journ. Clin. Invest.*, 1932, xi, 1129.
- *Broasfenbrenner, J. J.: *Journ. General Physiol.*, 1926, x, 23.

* A communication by these authors on the same subject was printed in the *British Medical Journal*, 1932, ii, 1050.

ADDITIONAL SYMPTOMATOLOGY IN SIMPLE ACHLORHYDRIC ANAEMIA

BY

A. W. VAISEY, M.B., B.CHIR.CANTAB.

LATE HOUSE-PHYSICIAN, ST. THOMAS'S HOSPITAL MEDICAL UNIT

Although its recognition has been slow, its nomenclature varied, and its features diverse, unequal, and inconstant, a type of non-haemolytic primary anaemia, associated with a relative gastric achlorhydria, has of recent years been admitted a separate clinical entity since its distinctive pathology was made clear by Witts¹ in the Goulstonian Lectures of 1932. The object of this communication is to indicate two additional features of the symptomatology, believed not to have been hitherto recorded, which occurred in patients admitted to St. Thomas's Hospital Medical Unit during 1932. These are: (1) acne rosacea, and (2) thinning of the hair. It must be admitted in each case that a single example of such a symptom might appear at first sight to have occurred fortuitously, in spite of the diversity of symptoms—more especially abdominal—which are known to occur; but it is considered justifiable to record them, if only because they might be expected on pathological grounds.

ACNE ROSACEA

The skin condition was observed in a woman with most of the usual features of simple achlorhydric anaemia.

Mrs. G., aged 60, complained of palpitations and shortness of breath for six months, accompanied by pain in the epigastrium, chiefly post-prandial. She had long come to

recognize that meat in any form particularly aggravated the pain, and for some weeks she had been subsisting mainly upon carbohydrates. On examination there was slight oedema of the ankles and moderate enlargement of the spleen. The blood contained 4.3 million red cells per c.mm., but only 32 per cent. haemoglobin, and the stained films showed poikilocytes and occasional pessary forms. Gastric content analysis revealed no free HCl to histamine stimulation in half-hourly specimens up to two and a half hours. Considered together, the symptoms gave no doubt as to the clinical condition. But in marked contrast to the considerable pallor of the rest of the skin, that of the nose and cheeks was blotchy and hyperaemic, with a downward spread also on to the lower lip. This blotchy area consisted of confluent papules, which were not, however, surmounted with comedones, and even a casual inspection made it certain that the condition was typical acne rosacea.

The interest of this case lies in the fact that acne rosacea has long been known to be associated with some form of alimentary disturbance. As long ago as 1920 Ryle and Barber² made gastric analyses in a series of twelve cases, in five of which there was complete achlorhydria throughout the period of the meal, while in two of the others there was marked hypochlorhydria. Although, it is believed, this observation has not been repeated, a degree of hydrochloric acid deficiency is now assumed by most dermatologists in the treatment of acne rosacea. The case recorded above at least indicates a common aetiological factor, since in one and the same patient there occurred two conditions—an anaemia and acne rosacea—both known to be associated with gastric hypochlorhydria, yet hitherto only separately encountered. A common factor is further suggested by the fact that the cutaneous and anaemic states improved *pari passu* under treatment. If, moreover, in apparently uncomplicated acne rosacea, blood counts revealed some degree of diminished red cell haemoglobin content, this common aetiological factor might be proved.

ALOPECIA

The case notes of the patient who complained of thinning of the hair were as follows.

Mrs. B., aged 45, had had flatulence and fullness after food for ten months, and latterly had noticed difficulty in swallowing. Most of the typical signs were present, including, incidentally, well-marked atrophy of the buccal and pharyngeal mucous membrane, on account of which difficulty was found in passing the stomach tube. On inquiry she stated that her finger-nails were very brittle and liable to longitudinal splitting: they were flat, short, and diamond-shaped, the pulp of the fingers projecting almost as far beyond each nail-tip as the total length of the nail itself. Finally, she volunteered that her hair had been "coming out" to a very considerable degree in the past six months. The diagnosis of simple achlorhydric anaemia was made, but as her hair was certainly thin and brittle it was at once recognized that a determination of the basal metabolic rate was indicated in view of the possibility of a superimposed early myxoedema. This, however, was found to be within normal limits.

Nail changes, well exemplified in the case above, are fairly common in this type of anaemia, but the pathology is obscure, since they are not found in other anaemic states, primary or secondary. No mention, however, is made in the literature of thinning of the hair. But as hair resembles nail substance, in consisting essentially of modified horn cells, it is suggested that the same unknown factor is responsible for both nail and hair dysfunction in the simple achlorhydric type of anaemia, presumably depending on iron deficiency.

I am indebted to Professor O. L. V. de Wesselow, under whose care they were admitted, for permission to publish these cases.

REFERENCES

- ¹ Witts, L. J.: *Lancet*, 1932, i, 485.
- ² Ryle, J. A., and Barber, H. W.: *ibid.*, 1920, ii, 1195.

CIRCUMCISION AND SYPHILIS

BY

V. E. LLOYD, M.B., B.S.

DIRECTOR, VENEREAL DISEASES DEPARTMENT, GUY'S HOSPITAL
AND

N. L. LLOYD, M.B., M.R.C.P.

LATE MEDICAL OFFICER, VENEREAL DISEASES DEPARTMENT,
GUY'S HOSPITAL

The hygienic value of circumcision in the male infant has been generally acknowledged over a very long period. All will agree that such conditions as acute balanoposthitis and carcinoma penis are seldom, if ever, seen in the circumcised. It is also commonly believed that the incidence of syphilis is considerably lower in circumcised persons. In view of this widespread belief it is somewhat surprising that so few statistical reports bearing on the incidence of acquired syphilis in circumcised and non-circumcised males should be available.

There appears to be little information on this subject, particularly since the introduction of the more accurate methods in the diagnosis of syphilis following upon the discovery of *Spirochaeta pallida* and the utilization of the Wassermann test.

Jonathan Hutchinson,¹ on reviewing his cases for the year 1854, stated:

"Notwithstanding a gross proportion of nearly one-third to others the cases of syphilis presented by Jews are only as one to fifteen. That this difference is not to be accounted for by their superior chastity or their unwillingness to seek medical aid is conclusively proved by the fact that they furnish very nearly half the cases of gonorrhoea. The circumcised Jew is, then, very much less likely to contract syphilis than an uncircumcised person."

Hutchinson's figures are shown in Table I.

TABLE I—Venereal Cases (1854)

Total Venereal Cases	Gonorrhoea	Syphilis	Proportion of Gonorrhoea to Syphilis
Non-Jews, 272	167	165	0.6 to 1
Jews, 58	47	11	4.3 to 1

Feldman² refers to the male venereal out-patients at the Metropolitan Hospital during the year 1882-3, among whom syphilis was present in 17.8 per cent. of the Jews and 62 per cent. of the non-Jews. Assuming that the remaining patients were suffering from gonorrhoea, these figures give the proportion of gonorrhoea to syphilis in Jews as 4.5 to 1 and in non-Jews as 0.6 to 1. These proportions are almost identical with those found by Hutchinson (Table I) at the same hospital some thirty years earlier.

Breitenstein³ reported in 1902 observations on 15,000 native circumcised soldiers and 18,000 European soldiers in the Dutch Indies. He noted a greater proportion of venereal infections in the non-circumcised, and that syphilis in particular was much more frequent in the non-circumcised troops.

Wolbarst⁴ has reported upon venereal diseases in the circumcised and non-circumcised, utilizing 800 cases under his care. He found that in 400 circumcised patients the proportion of syphilis and soft chancre combined was 22 per cent., whereas in 400 uncircumcised patients the proportion of syphilis and soft chancre was 41 per cent. Unfortunately this author does not give the separate figures for syphilis and for soft chancre.

More recent figures were given in 1928 by Berkowitsch,⁵ who recorded the incidence of venereal diseases in Jews

and non-Jews. He found that, while the incidence of gonorrhoea was much the same in the two groups, syphilis was twice as frequent among the non-Jews, and soft chancre was six times as common. The total number of cases of syphilis observed was small. (See Table II.)

TABLE II.—Venereal Diseases in Jews and Non-Jews

Total Questioned	Syphilis		Gonorrhoea		Soft Chancre	
	No.	Per cent.	No.	Per cent.	No.	Per cent.
Jews, 1,323	15	1.13	175	13.2	6	0.45
Non-Jews, 1,434	31	2.5	222	15.4	39	2.7

The deductions concerning the frequency of syphilis by several of the authors quoted were based on the proportion of Jews and non-Jews, and not directly on the circumcision or non-circumcision of the individual. No consideration appears to have been given to the possible inclusion of circumcised individuals in the non-Jewish group. As is well known, circumcision is not uncommon among non-Jewish races. The probable inclusion of a certain and by no means negligible number of circumcised persons in the non-Jewish group detracts somewhat from the accuracy of these analyses. Wolbarst,⁴ whose analysis is one of the few based on circumcision and non-circumcision, and not upon racial differences, unfortunately includes syphilis and soft chancre in the same group, and the actual number or proportion of cases of syphilis is not ascertainable from his figures.

In view of these deficiencies it is considered that some information on this subject from present-day material in this country will be of some interest.

PERSONAL OBSERVATIONS

This analysis concerns observations made upon new male cases attending the department for venereal diseases at Guy's Hospital from January to June, 1932. These patients were, in the majority of cases, suffering from venereal disease, but a proportion were not so suffering, and it has appeared to us to serve a useful purpose to consider these additional cases. All cases of congenital syphilis and of extragenital syphilitic infection have been excluded from this series.

The records of 499 patients who attended during the period stated are available for the purpose of these observations. These patients have been considered not only as regards the present venereal condition, but also as regards previous venereal disease when the history appeared accurate. For example, a patient who had acquired syphilis ten years ago and who now has gonorrhoea is considered under the heading of both diseases, a patient giving a history of gonorrhoea five years ago in which the diagnosis was subjected to microscopical control is considered under the heading of gonorrhoea.

Under the heading of two venereal diseases twenty-nine patients are included, while one patient suffered from soft chancre in addition to gonorrhoea and syphilis; 130 patients were not suffering from, and gave no history of previously suffering from, any venereal disease. Of those with an active venereal condition or a reliable history of previous venereal disease there were 369 cases. Some of these, as already stated, were suffering from more than one venereal disease, and the total number of infections for inquiry amounts to 400. Including those free from venereal infection the total is 530. These 530 conditions occurred in the following proportions:

Syphilis	...	...	...	112
Gonorrhoea	...	...	...	278
Soft chancre	...	...	...	10
Non-venereal disease	...	...	...	130

The totals of these various groups are in the same proportions as have existed among patients attending this department during the last few years. The 499 patients who are considered here fall into the following groups: circumcised, 118; non-circumcised, 381. In any large group of uncircumcised men a small proportion will be found in whom the prepuce is in a condition of phimosis. A small proportion will also be found in whom the prepuce is naturally short and is normally retracted, so that the glans penis is habitually exposed; in others there is a well-marked but short fold of skin around the corona glandis (in some of these the prepuce is almost rudimentary). It is suspected that some of these patients had undergone an incomplete circumcision in infancy.

These departures from the average anatomical condition of the prepuce seem to warrant a separate category in the present analysis. In the following tables the term "short prepuce" includes those cases where the prepuce appears rudimentary and where there exists a short prepuce with a permanently exposed glans penis. The anatomical condition of the prepuce in the 499 patients was as follows:

Circumcised	...	...	118 or 23.6 per cent.
"Short prepuce"	...	...	61 or 12.0 "
Average prepuce	...	...	300 or 60.0 "
Phimosis	...	...	20 or 4.0 "

The diseases associated with these preputial states are shown in Table III.

TABLE III.—Anatomical State of the Prepuce in Relation to Venereal Diseases

	Syphilis	Soft Chancre	Gonorrhoea	Non-venereal Conditions
Circumcised	25	1	75	24
"Short prepuce"	15	0	30	17
Average prepuce	68	8	155	77
Phimosis	3	1	7	12

The number of cases of phimosis is too small to provide information of value. It is, however, noteworthy that of the twenty cases a little less than one-half were suffering from venereal disease, a proportion that is considerably lower than that for the remaining anatomical groups. The high proportion of non-venereal conditions in this group was due to the occurrence of acute balanitis in many of the cases.

The number of cases of soft chancre is also too small to be subjected to analysis; this condition was present in only one of the circumcised patients, and in no case in the smaller group with a "short prepuce." Soft chancre occurred once in the 179 patients who had been circumcised or with a "short prepuce," and nine times in the 320 patients (1 in 35) with a prepuce of average extent or with phimosis. This is in keeping with the usual teaching on the relation of circumcision to soft chancre. Disregarding the cases of soft chancre for the reason given, the preputial states found in the various diseases have been analysed and compared, and are shown in Tables IV, V, and VI.

TABLE IV.—Anatomical State of the Prepuce of 112 Patients with Syphilis

	No. of Cases of Syphilis	Per cent.
Circumcised	25	22.3
"Short prepuce"	15	14.3
Average prepuce	63	60.7
Phimosis	3	2.7

TABLE V.—*Anatomical State of the Prepuce of 278 Patients with Gonorrhoea*

	No. of Cases of Gonorrhoea	Per cent.
Circumcised	75	27
"Short prepuce"	30	10.5
Average prepuce	166	60
Phimosis	7	2.5

TABLE VI.—*Anatomical State of the Prepuce of 130 Patients with no Venereal Disease*

	No. of Patients	Per cent.
Circumcised	24	18.4
"Short prepuce"	17	13.0
Average prepuce	77	59.2
Phimosis	12	9.2

So far there appears to be no striking difference in the relative proportions of the various anatomical divisions of the prepuce in the three groups. Circumcision is noted a little more frequently in the cases of gonorrhoea than in those of syphilis and a little less frequently in the non-venereal group.

A comparison of the distribution of the various classifications of the prepuce in the syphilis group with that of the whole group of the 499 patients under observation reveals an extremely close similarity. (See Table VII.)

TABLE VII.—*Anatomical State of the Prepuce of the Syphilis Group Compared with the Whole Group*

	Syphilis Cases, Total 112	Whole Group, Total 499
Circumcised	22.3 per cent.	23.6 per cent.
"Short prepuce"	14.3 "	12 "
Average prepuce	60.7 "	60 "
Phimosis	2.7 "	4 "

When we compare the syphilis rate in the 118 circumcised patients with that of the non-circumcised group of 381, we again find that there is no difference of any significance—namely, 20.2 per cent. in the circumcised group compared with 21.9 per cent. in the non-circumcised group.

We have already indicated that a prepuce that is very short or is rudimentary in extent is by no means uncommon among these patients. If the number of such patients is included among the circumcised, we have a composite group of patients in whom the prepuce has either been removed or is naturally extremely deficient, and in whom the glans penis is permanently exposed. The syphilis rate of this composite group compared with that for the remaining patients in whom the prepuce is of average extent or phimotic is shown in Table VIII; the figures indicating the syphilis rate are almost identical.

TABLE VIII.—*Syphilis Rate in (A) Circumcised Patients and others with Permanently Exposed Glans, compared with (B) Patients with an average Prepuce or Phimosis*

	Total Number of Patients	No. of Cases of Syphilis	Percentage of Cases of Syphilis
Number circumcised or with "short prepuce"	179	41	22.9
Number with average prepuce or phimosis	320	71	22.2

CONCLUSION

The total number of cases in this series is small in comparison with the large groups reported by others—for example, Breitenstein.³ Attempts have been made to make up for this deficiency in numbers by greater accuracy in recording the anatomical condition of the prepuce and not relying upon racial classifications. It is probable that any large group of non-Jewish men will contain some who have been circumcised. A considerable number of men in the circumcised group of our series were not of Jewish faith. Also it appeared to us that the inclusion of a separate group for cases with a deficient prepuce is productive of some interest and value.

From the results of analysis of our cases it appears that the absence of the prepuce is not the important preventive factor in the acquisition of syphilis that is commonly believed.

REFERENCES

- ¹ Hutchinson, J.: *Med. Times and Gaz.*, 1855, xi, 542.
- ² Feldman, W. M.: *The Jewish Child*, 1917, p. 213.
- ³ Breitenstein, quoted by Bloch, I.: *The Sexual Life of our Time*, 1909, p. 376.
- ⁴ Wolbarst, A. L.: *Journ. Amer. Med. Assoc.*, 1914, lxii, 92.
- ⁵ Berkowitsch, M. E.: *Ose-Rundschau*, 1928, iii, 19.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

TRAUMATIC DETACHMENT OF RETINA:
OPERATION: RECOVERY

In view of the great interest aroused during recent years in the operative treatment of this condition the following case appears worthy of record.

F. C., male, aged 42, attended the casualty department of the Princess Beatrice Hospital on March 3rd, 1932.

History and State.—While he was chopping wood a piece flew up and struck him a violent blow on the right eye. He complained of misty vision and seeing double with the injured eye. He was given local treatment. When referred to me a few days later the affected eye was found to be bandaged and the pupil dilated with atropine. The margin of the pupil was dentated, showing that some fibres of the ciliary muscle were ruptured. At the time of my examination there was no hyphaema. Vision of the injured eye was 5/24, not improved. Vision of the left eye with -4 D sph. = 5/5. He had never worn glasses, and told me that the injured eye was always his good one, and that he relied on it chiefly for his work as a skilled repairer of antiques. On ophthalmoscopic examination he was found to have a detachment of the retina in the upper and outer quadrant. No tear of the retina could be seen. Local treatment—that is, atropine with bandage—was continued pending his admission to hospital. He was admitted as an in-patient on March 21st, 1932. By this time, however, it was noted that the detachment had definitely become more extensive, and had gravitated into the lower and outer quadrant. In hospital he was kept flat in bed, with both eyes bandaged, the use of atropine in the injured eye being continued. He was examined again after three days, but as the detached retina appeared to be losing transparency and showed no signs of spontaneous improvement from recurrent treatment it was decided to operate forthwith.

Operation (March 24th, 1932).—The patient was placed on the table and the eye cocaine'd. With the speculum introduced, the conjunctiva and Tenon's capsule were dissected back from the globe between the inferior and external recti and held back with a retractor by my assistant. The meridian of maximum detachment appearing to be at "8 o'clock," a point was stained with methylene-blue 7 mm. from the corneal limbus to mark the approximate position of the ora serrata, and another point selected on the same meridian 4 to 5 mm. further back. At this spot a hole was made through the sclerotic and choroid with a pointed electro-cautery heated to a bright red. The subretinal fluid oozed out with a speck of vitreous. When the flow had ceased, after a minute or two the cautery was again heated to whiteness and pushed

through the hole to a depth of 2 mm., but only for a moment. No surface cauterization of the sclera in the vicinity of the puncture was done. The conjunctival stitches were inserted, atropine instilled, and both eyes bandaged. The patient remained in bed for only five days, when the stitches were removed and he was discharged from hospital (April 1st). Just previous to his leaving hospital the eye was quickly looked at and the retina noted to have regained attachment, but no prolonged examination was made. The patient stated, however, that the sight of the eye had much improved. He was given atropine, and advised to keep the eye bandaged.

Progress.—A week later he came to the out-patient department, when the vision of the injured eye was found to be 5/6, partly, and the field, charted on the perimeter, full. He attended once a week for a month, the eye still under atropine, but after the first fortnight the bandage was replaced by a shade. As he was anxious to return to work the atropine and shade were now discontinued and permission given to resume his employment. At my request he came to see me at the hospital on September 26th—that is, over six months after the accident—when the sight of the operated eye was found to have improved to nearly 5/5. With a correction of slight myopic astigmatism in this eye he got full normal vision. The field was again charted, and noted to be full. With the ophthalmoscope the site of the cautery puncture was easily seen as a circular area about a disk-breadth diameter in the "8 o'clock" meridian, dead white, and having a margin of pigment. No creasing of the retina or vitreous opacities were detected. The patient volunteered the statement that the operated eye had become, as formerly, his better eye, and that he could see with it as well as ever. Seen again as recently as May 23rd of this year, when he was shown at a Kensington Branch meeting of the British Medical Association, held at the Princess Beatrice Hospital, the vision and field of vision of the operated eye were found to have remained normal. The cure may therefore be regarded as permanent.

The procedure adopted was on the lines advocated by Gonin, and the aim underlying this and other diathermic methods is to produce, after evacuation of the subretinal fluid, an area, or areas, of agglutinative inflammation which will tack down the detached retina to the subjacent choroid and sclerotic. A very good account of Gonin's work—and indeed of the whole subject—with bibliography, is available to the practitioner in Anderson's *Detachment of the Retina*.

The excellent result obtained in this case points to the desirability of early operation as opposed to expectant treatment of this condition, since, as is well known, the prognosis becomes progressively less favourable with the lapse of time. When, indeed, the detachment becomes total—as partial detachments ultimately tend to—no operative procedure is likely to be of any avail.

A. S. WORTON, M.D., F.R.C.S.,
Ophthalmic Surgeon, Princess
Beatrice Hospital.

CIRROID ANEURYSM OF THE SCALP

The interesting account of a case of cirroid aneurysm of the scalp, which Mr. R. A. Kerr contributed to the *British Medical Journal* of September 23rd, 1933 (p. 566), prompts me to record my experiences with such a case with which I was closely associated some twelve years ago, while acting as house-surgeon to Mr. Donald D. Day at the Norfolk and Norwich Hospital, Norwich.

Our patient was a man of about 45, who had had the tumour on his scalp for as long as he could remember; he sought medical aid on account of the fact that during the previous two years the "lump" had more than doubled its size.

On examination he presented a smooth tumour, about 4 by 2 inches, with the long axis directed antero-posteriorly, which was situated about 3 inches above the base of the right mastoid process. It presented all the signs of a typical cirroid aneurysm, and was fed by numerous strongly pulsating

vessels all round its periphery. Operation was decided upon, and with Mr. Day's assistance I ligated both occipital and both superficial temporal arteries, exposing each through a small incision, ligating in two places, and cutting between. All the obvious feeding vessels around the circumference of the tumour were similarly dealt with. This procedure, however, had little apparent immediate effect on the aneurysm, so the patient was returned to bed with a firm pad compressing the tumour, with the hope that the combined effect of partially cutting off the blood supply and of pressure would cause thrombosis. In this we were disappointed, for our activities had little or no effect; the tumour was as large, and the pulsation as active, as ever.

A fortnight later Mr. Day adopted another procedure. A thin skewer was inserted through the scalp some distance from the margin of the tumour, and at right angles to its long axis; the skewer was passed down to the pericranium, and was then pushed along the surface of the skull below the aneurysm, and made to emerge through the scalp some distance on the other side of the pulsating mass. Two other skewers were inserted in the same manner, parallel to the first, with about one inch between each. A double silkworm-gut ligature was then passed with very firm tension in figure-of-eight fashion over the projecting end of a skewer, in such a way as to indent deeply the surface of the aneurysm, and similar strands were passed round the other skewers. The aneurysm now presented a markedly lobulated surface, with a deep depression corresponding to the position of a ligature over each skewer. A sterile dressing was applied and the patient returned to bed.

Four days later the area was dressed, and in about ten days the silkworm-gut strands were cut off and the skewers extracted. The result was surprising: the aneurysm was now replaced by a hard, non-pulsating, lobulated mass, and the numerous feeding vessels round about had entirely disappeared.

The patient was discharged, and, being highly delighted with the result, co-operated with us to the extent of reporting every month; in this way I was able to witness the gradual disappearance of the tumour, and when I last saw him, nine months after the second operation, the aneurysmal mass was represented by a hard nodule about the size of a hazel nut, and the scalp surrounding it was normal. It was a striking example of the originality of thought, simplicity of technique, and satisfactory result which characterized the work of that fine old surgeon.

Norwich.

A. G. SMITH, M.D., F.R.C.S.

Reports of Societies

TREATMENT OF MUCOUS COLITIS

A meeting of the Section of Physical Medicine of the Royal Society of Medicine was held on January 19th, when the subject for discussion was the treatment of mucous colitis. Dr. M. B. RAY presided.

Dr. A. F. HURST said that specialism in therapeutics had dangers perhaps even greater than specialism in other branches of medicine, and this was illustrated by the condition of what was commonly called mucous colitis. Such a case might for months be treated with vaccines, or intestinal lavage, or possibly diathermy, when all the time the so-called mucous colitis was nothing else than achlorhydric gastritis, which could be cured with a few doses of hydrochloric acid; or, alternatively, it was something much more serious, a carcinoma of the colon, which during the time of treatment had passed from the stage of safe operation to that of complete inoperability. In his own view there was no such thing as mucous colitis. The colon, like every other mucous membrane, had as one of its important functions the secretion of mucus in order to protect itself from injury. The injury might be either mechanical or chemical irritation. Mechanical irritation occurred in inefficient defaecation, when impaction of faeces irritated the mucous

membrane, and the colon, to protect itself, secreted an excess of mucus. If the mucus were examined in a case of that kind it would be found to contain no leucocytes, no red corpuscles, and no abnormal bacteria, and examination by the sigmoidoscope would reveal no inflammation of the mucous membrane. As for chemical irritation, this was most commonly caused by aperients. It was caused also by almost every form of enema, especially soap enema. The only fluid which produced no secretion at all was normal saline. In many cases spa treatment, when carefully given and when the water was isotonic, produced little or no irritation, and there was no excessive secretion of mucus. The discovery of mucus in a patient who had had a douche or enema of any kind was no evidence of colitis; it was simply the response of the normal mucous membrane to the action of the enema. Another cause of chemical irritation, too little realized, was found in patients with achlorhydria which resulted from chronic gastritis. Here the food passed too rapidly through the small intestine and reached the colon in a chemically and mechanically irritating form, undergoing bacterial decomposition there. If all these causes were excluded the number of patients who passed mucus was extremely small; it was a very unusual condition. Mucous-membranous colitis, formerly very common, had become more and more rare; he did not know why it had almost completely disappeared. A better name for true mucous-membranous colitis would be mucous-membranous colic. The condition of colon spasm with or without mucus was a reaction to an abnormally irritable sympathetic nervous system; it was a neurosis in the sense that it had no organic basis. He had known mucous colitis diagnosed because a patient was suffering from so-called intestinal auto-intoxication. He did not believe there was such a thing as auto-intoxication from the colon; at least it was very rare. The vast majority of patients who were suffering from true intestinal auto-intoxication were suffering from treatment for constipation—that is to say, they were taking purgatives. Under normal conditions hardly any decomposition went on in the colon at all; on the other hand, if purgatives were taken, both protein and carbohydrate food was rushed through the small intestine and reached the caecum in an undigested condition, and there the toxins were absorbed. As for conditions of the colon which were really amenable to physical treatment, what he had already described as colon spasm very often benefited, particularly if there was no organic condition such as a diverticulitis; and another large group of patients who benefited by physical treatment were those who came back from the Tropics having had some intestinal infection which had completely died out but had left them with uncomfortable and abnormally irritable colons. One special form of physical treatment which he had himself found of particular value was the treatment of the anal canal by means of local diathermy, using a conical electrode.

Dr. GEOFFREY HOLMES said that mucous colitis, termed "mucous colic" by some American writers, was generally thought to be a secretory neurosis. Few necropsies on this condition were recorded, but where there was simply hypersecretion of mucus no inflammatory condition was found in the colon. More frequently it was associated with a catarrhal condition, the site of which varied, and to indicate this Dieulafoy used the phrase "mucous, membranous, and sabulous entero-typhlo-colitis." The acute and chronic stages called for different treatment. In the early acute stage, warmth, rest, and bland diet, with the administration of bismuth and bromide or salol and belladonna, were often effective. In the chronic forms intestinal lavage would often hasten a cure. It had been said that intestinal lavage was more likely to cause than cure colitis; whilst this might be true when irritating substances, such as soap and turpentine, were used in enemata, or when the technique of administration was faulty, intestinal lavage carefully given with warm isotonic natural waters and followed by immersion baths with hyperthermal undercurrent douching was most beneficial. He proceeded to describe the use of Harrogate waters in mucous colitis. At Harrogate the great majority of the cases were treated with the spa waters. Abdominal packs were also employed, and almost any pack was a remedy

for relief of abdominal pain and spasm. Harrogate sulphur water had a helpful aperient action. It was for intestinal lavage that the Harrogate waters were most useful. His own experience did not bear out Dr. Hurst's view that the condition was becoming rarer.

Dr. JULIUS BURNFORD said that whether or not mucous colitis was becoming rarer, other varieties of inflammation of the colon seemed to him to be more and more frequent. These could be summed up in the term "ulcerative colitis." Was mucous colitis a preceding stage of catarrhal, granular, or more definitely ulcerative colitis? Experience rather suggested that it was in no way allied to the inflammatory group. Anatomical factors were lacking, and those who were concerned with mucous colitis had not the opportunity of the pathologist or of the surgeon to lay down any anatomical basis for the condition that they tried to define as mucous colitis or mucous colic. They were compelled, therefore, to argue from symptoms, and deal empirically with them. The first duty was to relieve symptoms and then to question the aetiology. The spasm he had never found to disappear under belladonna; nothing short of morphine had any effect. For the constipation he had always preferred to fall back on the old-fashioned treatment of castor oil, with laudanum to relieve the spasm. But the crux of the whole problem was the abuse of the bowel by purgatives. With regard to enemata, he expressed very strong views against colon lavage. He had had patients return to him after months of colon lavage, with no permanent benefit whatever, only some temporary comfort at the time the lavage was applied. What treatment, then, should be recommended for the relief of the patient? In the first place he thought that the question of diet needed careful investigation. His own experience was that the faulty article in the diet primarily was the starch. The diet must be bulky, and hence one would prefer to obtain the proteins in a diluted form, preferably from vegetables, and at the same time to give the colon what it was demanding—namely, the necessary bulk. He had not hesitated in his own cases of ulcerative colitis to give from the first highly vegetarian and roughage diet. Of secondary importance to the diet was physical treatment in the shape of abdominal exercises directed to the development of the musculature of the body and the repair particularly of the abdominal muscles.

Dr. E. I. SRRIGGS said that mucous colitis—and he believed it to be at all events a clinical entity—was due to two things—namely, constipation, and the regular use of aperients to cure that constipation; and the second was a more frequent cause than the first. He gave some figures showing that the incidence of mucous colitis among the people who had constipation and took aperients was more than twice as great as it was among those who had severe constipation without taking aperients. With regard to the importance of diagnosis, mentioned by Dr. Hurst, he pointed out that a reflex mucous colitis could be obtained from conditions arising somewhere else in the abdomen. Most cases of mucous colitis would bear fairly well a rough diet—that is, salads and fruits. If they would not bear it, they must be given a bland diet. Dr. KERR RUSSELL said that in mucous-membranous colic there was definitely a spasm of the bowel musculature, and it was well known that spasm could be relieved by heat. He thought, therefore, that irrigation with a hot solution was likely to give relief to the spasm as well as to assist mechanically the clearing out of the bowel. Dr. Hurst had mentioned the value of diathermy in rectal conditions, and in diathermy again the essential factor was the production of heat. Dr. G. B. BATTEN recalled the fact that about thirty-five years ago he and others were asked by Dr. (now Sir) William Hale-White to make an investigation of the treatment of what was still called mucous-membranous colitis, and to try high-frequency among other treatments. He himself had been carrying out high-frequency treatment since 1896, partly by long sparks on the abdomen and partly by the rectal application of a glass electrode, and was gratified to find that not only was it useful for the treatment of haemorrhoids, but it also relieved constipation and the insomnia associated with it. Since diathermy had been available he had frequently employed this method, with very beneficial results.

DIFFERENTIAL DIAGNOSIS OF PREGNANCY

At a meeting of the Liverpool Medical Institution on January 11th, with the president, Dr. H. R. HURTER, in the chair, Professor A. LEYLAND ROBINSON and Mr. M. DATNOW presented a paper on "The Differential Diagnosis of Pregnancy."

The personal, social, and legal reasons for which the recognition of pregnancy might become a matter of urgency were described and discussed. The scope of the differential diagnosis was indicated and the value of the available clinical methods considered. It was shown that all the physical signs and symptoms might be obscured by disease or simulated by non-pregnant states, and that in all complicated cases clinical methods alone might be unable to determine the issue even in late pregnancy. Radiology was a decisive method from the fourth month onwards, but could afford no help before the sixteenth week of gestation. In the early weeks of pregnancy there was great need for a method by which the presence or absence of pregnancy could be decided with absolute certainty. A number of the oldest tests devised for this purpose were described, and attention was drawn to the fact that many of them were dependent upon reactions obtained from the urine of pregnant women. The history of the modern biological tests was related, and the modified Aschheim-Zondek test which was being carried out at the Pregnancy Diagnosis Station in the University of Liverpool, was described. The results obtained were discussed. Out of a total of 706 tests 373 had been positive and 333 negative. There were three wrong results in the positive group and ten in the negative. Modified reactions were obtained with 170 specimens of urine obtained from patients at the menopause, from women after castration, and from others who were in process of abortion. These results were correlated with the changes in the type and concentration of the hormones present in the specimen, and they afforded valuable help in the differentiation of certain clinical conditions that were liable to be confused with pregnancy. Lastly, the authors described the hormones responsible for the test, and illustrated their biological action by means of lantern slides and specimens.

Dr. J. W. BURNS said that the value of the Aschheim-Zondek test depended largely upon the individual who carried it out, the methods which he adopted, and the standard to which he worked. There was no doubt that the test had been made more valuable by the way in which it was carried out in the Liverpool Pregnancy Diagnosis Station. The test was by no means infallible, and should only be used as an aid to diagnosis. It was at its best when used to corroborate or otherwise the diagnosis made on the clinical evidence.

Dr. T. N. A. JEFFCOATE said that the occurrence of doubtful or incorrect Aschheim-Zondek reactions was not always the fault of either the test, the technique, or the technician. Urines for examination were frequently collected at midday; at that time the concentration of the hormones was much less than in an early morning specimen. Moreover, it was quite possible that when such a large number of tests were under consideration one or two errors might be due to faulty labelling of specimens or confusion of test animals.

Dr. J. H. WILLETT said that the test was proving a valuable aid to diagnosis in such conditions as chorion epithelioma and intrauterine death of the foetus, and he thought that continued research would lead to a further reduction in the admitted, if small, percentage of errors. The test was not intended to take the place of clinical diagnosis of ordinary pregnancy.

HOARSENESS AS A SYMPTOM

At the last meeting of the Section of Laryngology and Otology of the Royal Academy of Medicine in Ireland, with the president, Dr. P. J. DEMPSEY, in the chair, Dr. O. T. GRAHAM read a communication on "Hoarseness as a Symptom of Disease."

Dr. Graham stressed the fact that hoarseness or huskiness was merely a symptom of disease not necessarily

situated in the larynx itself but in parts so remote as the brain or aortic arch. It was a symptom that always called for prompt and thorough investigation. It might be acute or chronic, intermittent or persistent. For clear phonation the vocal cords must be able to approximate, to draw tense, and to vibrate. Approximation might be interfered with by a tumour between the cords, feebleness of the muscular action, paralysis, or fixation; and tension by paralysis, feebleness, or fixation. Vibration might be affected by thickening of the vocal cords by inflammation, infiltration, or neoplasms; or by growth causing fixation of the vocal cord. Sometimes a functional or hysterical aphonia occurred, particularly in young female adults, where no evidence of disease was present; but here one must be on one's guard in giving a prognosis, owing to the fact that what appeared to be a functional aphonia, occurring intermittently, might be the precursor of tuberculous laryngitis.

A list of fifty possible causes of hoarseness extracted from the literature was demonstrated on the epidiascope and commented upon by Dr. Graham. As in other situations, he said, so in the larynx one of the crucial problems was whether a swelling or ulcer was due to a tumour (benign or malignant), syphilis, or tuberculosis; indeed, the patient might be suffering from all three simultaneously. In arriving at a correct diagnosis it might be necessary to go through the following steps: (1) A complete history. (2) Indirect laryngoscopy. (3) Bronchoscopy and oesophagoscopy. (4) General examination—heart, lungs, kidneys, and central nervous system. (5) X-ray—skull, neck, and chest. (6) Wassermann blood test. (7) Bacteriological examination. (8) Microscopical examination of piece of growth. An account was given of many illustrative cases of acute and chronic laryngitis, oedema of glottis, diphtheria, syphilis, tuberculosis and tumours of the larynx, and haemorrhage into the vocal cords, nervous affections of the larynx, including recurrent paralysis from aneurysm of the aortic arch, mediastinal growths, and bulbar paralysis. Some interesting cases of hoarseness due to foreign bodies in the larynx and in the oesophagus, which compressed the larynx and trachea, were illustrated by x-ray photographs, and some of the foreign bodies removed were exhibited.

Evipan in Oto-rhino-laryngology

Dr. P. J. KEOGH read a paper entitled "Some Experiences of Evipan in Oto-rhino-laryngology." He said that from a personal experience of this drug, both as a pre-anaesthetic medication and as an anaesthetic, he had come to the conclusion that in both spheres it is pleasant, rapid, and reliable. Dr. Keogh gave particulars of the dosage and technique of administration. He said that the cough reflex was present throughout anaesthesia in all his throat cases. In intranasal work a troublesome point was the preservation of a very vigorous sneeze-reflex, which could, however, be eliminated by cocaine-zation. Comparing evipan anaesthesia with inhalatory methods, he said that in two cases he had observed a well-marked resistance to the drug, which came on after about seven to ten days, and might persist for over two months.

Dr. G. P. MELDON said that in a large experience of evipan he had come to similar conclusions to those formed by Dr. Keogh, and had observed the "sneezing reflex."

At a clinical meeting of the Ilford Medical Society, held at King George Hospital, Ilford, on January 9th, Dr. A. C. HAMPTON gave an address on the diagnosis and treatment of certain disorders of the blood. Dr. Hampton emphasized the necessity of the early and correct diagnosis of anaemias, especially in the newborn and in the pregnant mother, and stressed the grave results of an inaccurate diagnosis. He brought to the notice of the members the therapeutic value of inorganic copper and manganese salts and vitamins in the treatment of anaemias, and showed the excellent results obtained by the giving of yeast extract (vitamin B) and orange juice (vitamin C) in combination with inorganic iron. The address was followed by a discussion in which many members took part, particularly Dr. A. Piney, who advanced his own experiences and theories.

Reviews

RADIOGRAPHY OF THE URINARY SYSTEM

The advance of radiology has been the most important single factor in the development of the diagnostic accuracy which characterizes modern urology, an advance which was equalled only in importance by the introduction of the cystoscope. In their volume entitled *Roentgenographic Studies of the Urinary System*,¹ Drs. LOWER and NICHOLS have presented what is largely an atlas of the radiological aspects of urology. The volume is large, running into 800 pages, and giving the radiological findings in 443 cases, together with brief clinical notes. The first impression one has in reading the book is one of amazement and envy at the wealth of first-class material which the authors have at their disposal; the second is that a great deal more could have been made of it had it been presented in a more scholarly and more careful fashion.

The introductory chapters are devoted to a consideration of radiological technique as applied to diseases of the urinary tract and to a brief outline of the commoner pathological conditions met with. The former of these sections is done almost entirely from the point of view of the radiologist, while that devoted to pathology is far too elementary for a volume such as this sets out to be. For example—in the account of hydronephrosis no adequate conception of the pathological basis in relation to radiological diagnosis is put forward. In connexion with the subject of pyelography in renal tuberculosis the authors begin by saying that they consider the advantages to be gained by this method far outweigh the danger encountered (presumably therefore referring to the instrumental method), since in such cases the pyelogram is practically diagnostic; they then go on to say that pyelography is indicated on the side opposite the diseased one, and conclude in a sentence of great obscurity that intravenous pyelography is the method of choice.

Radiographic studies form the bulk of the book. These are admirably produced, and include illustrations of normal and abnormal conditions in the urethra, bladder, ureters, and kidneys. The general level of the reproductions of the skiagrams is extremely high, and in this respect all concerned in the production are to be congratulated. Particularly good are those dealing with congenital malformations of the upper urinary tract. There are places where repetition and duplication of material occur, and here the sections dealing with the vesical and renal calculi may be quoted. In a book of this type there should be no place for mere repetition, and comparable skiagrams should only be included if they illustrate some point not seen in others. The section devoted to intravenous urography is very short, and the illustrations here do not come up to the level of those in the rest of the book. While the skiagrams may satisfy the most exacting radiologist, the brief notes included will not appeal to the expert urologist, for they are only too often sketchy, inaccurate, or misleading. In case 315, for example, a renal calculus is referred to in the note on the pyelogram as being in the caudal calyx, whilst actually the skiagram shows it in the renal pelvis, and the operation note describes it as being removed from that situation. Again, in a case of hydronephrosis and nephrop-tosis (No. 213), to describe the urine as containing "many red cells and a few large bacilli" is, to say the least of it, inadequate. Under the physical findings in the same case "slight rigidity of the upper part of the right ureter" is reported; this is presumably a misprint. Many other equally careless mistakes are present in the commentaries scattered through the volume.

¹ *Roentgenographic Studies of the Urinary System*. By W. E. Lower, M.D., F.A.C.S., and B. H. Nichols, M.D., F.A.C.R. London: H. Kimpton, 1933. (Pp. xviii + 812; 812 illustrations. 5s. net.)

"Size," writes one of our outstanding critics, "is an uninteresting kind of variation, to which, if the spirit is not actually insensible, it does not care to respond." Such a criticism is not without application to a book of this kind, the more so when the text needs revision, the clinical comments correction, and the total material some pruning. It is to be hoped that these defects will be remedied in any future editions in order that the really excellent skiagrams may have a more worthy setting.

MEDICAL GYMNASTICS AND MASSAGE IN GENERAL PRACTICE

Dr. Mina Dobbie, to whom we are indebted for English editions of Dr. ARVEDSON's earlier books, has now translated and edited the fourth edition of his *Medical Gymnastics and Massage in General Practice*.² This book is intended to provide the medical gymnast with information about medical and surgical disorders in such detail as will enable him to treat them with intelligence and understanding. It does not concern itself with descriptions of remedial exercises with which the gymnast at this stage is already familiar.

The opening chapter on general pathology, methods of examination, and principles of treatment is excellent, and when assimilated by the student should form a good foundation for a rational conception of disease processes and the place of massage and medical gymnastics in their treatment. That only a page should have been given to the actual treatment of fractures seems a pity when one considers that the immediate treatment of fractures by massage is increasingly practised, and the importance of good functional results is realized more than ever before.

Considerable space is devoted to diseases of the nervous system, and the information given should be particularly helpful, since massage books hitherto have tended to deal somewhat meagrely with nervous disorders. As might be expected in a book such as this, the subject of deformities is treated with competence, and the brief sections on examination and on testing mobility are singularly clear and practical. It is disappointing to find such scant reference to pregnancy and the puerperium, as in these conditions so much can be done by a wise and skilled gymnast. Instances are only too numerous where neglect of lax abdominal muscles and pelvic floor has resulted in the chronic ill-health concomitant with faulty posture and visceroptosis. When the ideal national maternity scheme is evolved, the inclusion of physical treatment to prevent and correct these maladjustments will be of inestimable value towards the ultimate well-being of the mothers. In the next edition of Dr. Arvedson's book we hope that this chapter, and that on fractures, will be brought into line with modern teaching and practice, thus giving completeness to a work regarded for over twenty years as the standard textbook in Scandinavia, and with claims for wider recognition in other countries.

HOW TUMOURS SPREAD

Up to the present there appears to have been no systematic work in existence on the *Spread of Tumours in the Human Body*. The subject is important, and Dr. RUPERT A. WILLIS's book³ bearing that title will be welcomed, the more so as he has based his work on very extensive material, and his conclusions, many of which are not in accordance with current opinions, are therefore well

² *Medical Gymnastics and Massage in General Practice*. By Dr. J. Arvedson. Translated and edited by M. L. Dobbie, M.D. Fourth edition. London: J. and A. Churchill, 1933. (Pp. 296, 8s. 6d.)

³ *The Spread of Tumours in the Human Body*. By R. A. Willis, M.D. Monographs of the Baker Institute of Medical Research, No. 2. London: J. and A. Churchill, 1934. (Pp. 340; 103 figures. 25s.)

grounded. He has summarized our present knowledge of the modes of spread of tumours, after making a critical review of the literature contained in about two thousand articles and the results of his own experience in three hundred and twenty-three cases of malignant disease. His book is divided into two sections—general and special. The former treats of the various modes of spread, the structure of metastatic growths and their modes of extension, the stroma of metastases, the relationship between tumours and nerves, the latency of primary growths, the bearing of animal experimentation, and the susceptibility of tissues to metastases. The second part treats of the secondary tumours occurring in the individual organs of the body.

Dr. Willis is extremely critical in interpreting the observations of authors, and is prepared to be regarded as iconoclastic in places; but his criticisms have a good backing of reason, and he perceives that in dealing with the subject of metastases it is needful to define our unassailable knowledge amidst a chaos of conjecture. Instances of his rejection of current views and recorded opinions are too numerous to mention, but his comments on the alleged primary endotheliomas of bone may be noticed. The classical example of multiple primary endothelioma of bone is Marckwald's case, in which almost all the bones were affected, but no primary visceral tumour was found. The diagnosis is rejected by Willis on the sufficient ground that the prostate and thyroid were enlarged, but no microscopical examination of the organs is mentioned. A similar objection is raised in regard to several other recorded cases of alleged primary endothelioma. Most of the cases may be better interpreted as metastases from undiscovered primary growths. With regard to the diffuse endothelioma of bone (Ewing's tumour) Dr. Willis, while not denying the possible existence of a primary skeletal tumour presenting the Ewing clinical syndrome, believes that further study will reveal that most of the tumours with this syndrome are metastatic in character, and he suspects that neuroblastomas will prove to be the responsible primary growths in many of the cases. He notes that of fifty-two cases classed as Ewing's tumour in the Registry of Bone Sarcoma and discussed by Connor, necropsies were done in less than one-third of the cases, and no indications are given as to how complete these necropsies were. It is interesting to note how comparatively recent is our knowledge of the true nature of metastasis. The author states that Jenner, discussing, in 1874, the conception of the embolic carriage of tumour cells, likened this to the legendary journeys of the Wandering Jew: "Many persons believe in his existence, but I have never known anyone who has seen him." A remark of Moxon's, however, at the same meeting of the Pathological Society, proves that he was already conscious of the truth: "I have repeatedly seen rectum in the liver."

DENTAL HISTOPATHOLOGY

In the preface to *Histopathology of the Teeth and their Surrounding Structures* Dr. R. KRONFELD reminds us that till but recently extracted human teeth, animal jaws, and dried human bones have formed the staple of dental research. The purpose of this book has been "to illustrate by means of human specimens the actual tissue changes that correspond to certain well-defined clinical conditions." Animal tissues have been used only to illustrate changes experimentally produced.

A short opening chapter deals with the normal dental histology, and it is interesting to note that Dieck and

Toyoc'a's account of the innervation of dentine is unreservedly accepted. The author strongly dissents from the idea that calcium can be withdrawn from the teeth to supply a general deficiency, basing his opinion on Gies's experiments in intra vitam staining of forming enamel of dogs. The rest of the book, except for short chapters on the histology of the edentulous jaw and on laboratory technique, is devoted to pathological conditions, and the author fully justifies his prefatory plea for the use of human material. Recourse has been had to animal tissues only to illustrate the effects of pressure (employed in orthodontic treatment or incidental to traumatic occlusion) on bone and soft tissues—and here human material can scarcely be expected. All else is human—many a dental pathologist will envy the author his wonderful facilities for getting human material—with a complete clinical history of the specimen. The findings in sections of root-filled teeth are of especial interest. The apical foramen of an aseptically filled root is found by the author to be entirely obliterated by new-formed cementum, and he thinks there is reasonable ground for attempting to save infected pulpless teeth. The illustrations showing epithelial attachment of a dental granuloma to a root apex, and those of a dermoid cyst in the naso-palatine canal, are striking examples of pathological research. In dealing with "pyorrhoea" the author notes that 90 per cent. of the cases are "dirt pyorrhoea," but does not explain why only the remaining 10 per cent. should be entitled to the name "pyorrhoea." Perhaps we may ask what evidence the author has of the transformation of a mesenchyme cell to a blood cell, or that "impacted teeth move with considerable force in the direction of eruption."

The book is a very valuable contribution to dental knowledge and practice, and should find a place in the library of every dental school.

GUIDES TO OPHTHALMOLOGY

Mayou's Diseases of the Eye now appears in a fourth edition, revised and largely rewritten by Messrs. FREDERICK RIDLEY and ARNOLD SORSBY. The new authors have done their work well. The 250 pages of the book present a useful summary of ocular conditions and their treatment, such as will serve the purposes of the student for qualification, and it will also be of service to some general practitioners. Methods of examination and elementary optics and refraction receive, as they should, considerable attention, and these two sections comprise one-fifth of the whole. Thereafter follow descriptions of the common disorders of the eye and their treatment in the usual order. There are short but useful chapters devoted to the eye in general disease, and to heredity in ophthalmology. In the chapter on glaucoma that part which deals with pathology is likely to prove rather difficult of appreciation to the average student. It is strong meat, and in somewhat tough condition. One paragraph is positively misleading: "Drainage—the key to the problem of glaucoma—takes place through the cornea, which is freely permeable to water and dissolved substances, especially at the filtration angle." It is true that there follows on the next page a saving clause: "The drainage is not direct, but the aqueous must pass through the endothelium lining the anterior chamber, and is therefore directly proportional to the intraocular pressure." Nevertheless, we fear the first phrase is likely to lead the student to think that the cornea sweats aqueous like a porous pot its fluid contents. The book is well printed, on good paper, and it is well bound. There

* *Histopathology of the Teeth and their Surrounding Structures*. By Professor R. Kronfeld, M.D. Philadelphia: Lea and Febiger, 1933. (11p. xii + 479; 385 engravings. 7 dollars net.)

* *Mayou's Diseases of the Eye*. By F. Ridley, B.Sc., F.R.C.S., and A. Sorsby, M.D., F.R.C.S. Fourth edition. London: H. Milford. Oxford University Press. 1933. (Pp. 250; 38 figures, 6s. net.)

are thirty-eight illustrations—no very liberal allowance for a student's book.

Companion with this is a *Student's Guide to Fundus Appearances*.⁶ This is an atlas of a dozen drawings of fundus conditions. There are sixteen pages of text describing the pictures. These pictures are printed upon a strip of stiff paper, which can be spread out so as to display the whole set side by side, with the descriptions to the left hand—a most convenient arrangement. The selection of drawings is good and the reproduction excellent. Picture No. 9 is composite, the upper half showing primary optic atrophy, the lower secondary atrophy. This close comparison would be good were the separation sufficiently marked; and it appears a mistake to have illustrated primary optic atrophy in an albino fundus. If the contrasted atrophy had been shown in fundi of average colour the lessons drawn in the text would have been more readily grasped. The atlas serves as a useful companion to the handbook.

Notes on Books

The third edition of Dr. AITCHISON ROBERTSON'S *Aids to Public Health*⁷ is designed to keep abreast of recent progress in the subject. Though the work contains much information compressed into small compass, the scope of the knowledge which it conveys is not up to the requirements of the student of medicine or of candidates for the diploma in public health. The book, however, is one of the best of its class. It may be cordially recommended to social workers, school teachers, and all other lay persons interested or practically concerned in hygiene or its applications.

A very good book of its kind is *Plants and Human Economics*,⁸ by RONALD GOOD, head of the department of botany in University College, Hull. It is full of important matter, reliable, comprehensive, well arranged, and written in an agreeable style. Its purpose is educational, not medical. It is an attempt to direct the teaching of botany to that aspect of the subject which has been largely neglected—its application to human affairs and activities. The facts bearing upon agriculture, forestry, industry—coal, petroleum, rubber, balsams, dyes, fibres—are mainly stressed; but indirectly the chapters on the nature and sources of food, and on alcohol and drugs, may be found of interest and value in relation to some aspects of medical science and practice.

The first issue of the new German annual entitled *Post-Graduate Clinical Medicine*,⁹ edited by Professor GEORG KLEMPERER, contains the following articles by leading German writers: diseases of the blood, by Professor Paul Morawitz and Dr. Heinrich Brugsch of Leipzig; vitamins, by Professor W. Stepp and Dr. J. Kühnau of Breslau; pellagra, by Professor Stepp and Dr. K. Voit of Breslau; vegetable diet, by Dr. M. Bircher-Benner of Zürich; treatment of diabetes in children, by Professor K. Stoltz of Breslau; special forms of angina (agranulocytic, lymphocytic, and Vincent's angina), by Professor Werner Schultz of Berlin; progress in treatment by artificial pneumothorax, by Professor W. Unverricht of Berlin; sequels of persistent vomiting, by Professor H. Strauss of Berlin; pink disease, by Professor Erwin Schiff of Berlin; internal treatment of syphilis with spirocid and similar arsenical compounds, by Dr. Alfred Joseph of Berlin; vascular diseases, by Professor Morawitz

and Dr. Brugsch; disorders of glycogen storage, by Professor H. Beumer; undulant fever in man, by Professor C. Hegler of Hamburg; tularaemia, by Professor C. Sonnenschein of Hamburg; eugenics, with special reference to sterilization, by Dr. A. Fischer of Karlsruhe; puberty and its diseases, by Dr. E. Haase of Berlin; clinical use of electric ultra-short waves, by Dr. E. Schliephake of Giessen; acute pulmonary oedema, by Professor Leo Hess of Vienna; erysipeloid, by Professor C. Sonnenschein; the problem of sleep, by Dr. H. Regelsberger of Erlangen; the effect of surgical and conservative treatment on senile manifestations, by Dr. Robert Lichtenstern of Vienna; the parathyroids, by Professor Georg Peritz of Berlin; metabolism and nutrition in tuberculosis, by Dr. Georg Schröder of Schomberg; cardiac and vascular hormones, by Dr. Karl Posener of Berlin; malaria therapy of tabes, by Dr. Paul Uhlenbruck of Cologne; diuresis, by Professor W. Nonnenbruch of Prague; and the pathology and treatment of detachment of the retina, by Professor G. Abelsdorff of Berlin.

FINDLAY'S *Physical Chemistry*¹⁰ is prepared with a view to securing for the student a broad foundation in the subject, so that it may serve either as an introduction to the general study or for the further pursuit of a more specialized section of it in any desired direction. It offers no short cut to the vocational training of any particular class of student, and is therefore perhaps the best kind of book for every beginner. It is exceedingly well written—so well as to be almost sufficient for instruction without the aid of lectures, which are usually regarded as indispensable. The subject is treated with special attention to the historical development of modern theories, a method which adds much to the interest as well as to the educational value of the work.

A second edition has been published of Professor MAX LEVINE'S introduction to *Laboratory Technique in Bacteriology*.¹¹ It consists of a series of more than a hundred short exercises designed for students commencing the study of bacteriology, and is intended to be, and is, a handbook for practical work. Instruction is given in the public health and agricultural aspects of bacteriological work as well as in the medical aspect. No doubt the book is much appreciated by Dr. Levine's pupils. Teachers also on both sides of the Atlantic might get some fresh ideas for "brighter bacteriology" by working through the table of contents.

¹⁰ *Introduction to Physical Chemistry*. By Professor Alexander Findlay. London: Longmans, Green and Co. 1933. (Pp. 492; 124 figures. 7s. 6d.)

¹¹ *Laboratory Technique in Bacteriology*. By Max Levine, Ph.D. Revised edition. London: Macmillan and Co., Ltd. 1933. (Pp. 289. 8s.)

Preparations and Appliances

LONDON HOSPITAL CATGUT

The special catgut prepared by the London Hospital Ligature Department (Whitechapel Road, E.) is the subject of an excellently produced and illustrated pamphlet and price list, which details the methods of manufacture from the pasture where the lambs are fed to the final sterilization of the finished gut. The antiseptic preparation begins immediately the animal is killed and the intestines removed. The intestines are thoroughly cleansed and frozen before dispatch to the ligature laboratories, where, after thawing, they are split longitudinally into ribbons, fat, muscle, and mucous coats are removed under spray, the ribbons being then immersed in alkali baths, measured into lengths, and fixed to loops for antiseptic treatment before spinning into ligatures while saturated with an inhibiting agent. The illustrations in the pamphlet show that throughout the work the most hygienic conditions obtain, and every stage of the process is checked by many bacteriological tests. The utmost degree of sterility, a capacity for absorption in the muscle within approximately the times specified on the label, and highly satisfactory properties as regards tensile strength and elasticity are claimed for this product. Particulars are also given of Souttar eyeless needles, with which London Hospital catgut may be used.

⁶ *Student's Guide to Fundus Appearances*. By F. Ridley and A. Sorsby. London: H. Milford. Oxford University Press. 1933. (Pp. 16; coloured plates. 2s. 6d. net.)

⁷ *Aids to Public Health*. By W. G. Aitchison Robertson, M.D. D.Sc. Third edition. London: Baillière, Tindall and Cox. 1933. (Pp. 208. 3s. 6d.)

⁸ *Plants and Human Economics*. By R. Good, M.A. London: Cambridge University Press. 1933. (Pp. 202; 8 maps. 5s.)

⁹ *Klinische Fortbildung*. Edited by Professor Dr. Georg Klemperer. I. Jahrgang. Berlin: Urban und Schwarzenberg. 1933. (Pp. 784; 105 figures, 7 coloured plates. Paper, RM 30; bound, RM 35.)

NITROUS OXIDE: HISTORY AND DEVELOPMENT*

BY

H. EDMUND G. BOYLE, O.B.E., M.R.C.S.,
I.R.C.P.

SENIOR ANAESTHETIST TO ST. BARTHOLOMEW'S HOSPITAL

The discovery of nitrous oxide by Joseph Priestley in 1776 may justly be described as the dawn of anaesthesia. In 1798 the Pneumatic Institute was founded by Dr. Beddoes at Clifton; Bristol, for the treatment of phthisis and other lung conditions by inhalation of gases. Humphry Davy was an assistant at the Institute, and in 1800 he published a book on nitrous oxide, in which this passage occurs:

"As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations where too great an effusion of blood does not take place."

Here we have the first clear and definite mention of the use of nitrous oxide as a general anaesthetic, but it was not until nearly half a century later that this suggestion was actually put into practice. This brings us to one of the saddest periods in anaesthetic history, for by ignoring the work of one of its greatest sons this country lost the proud distinction of giving general anaesthesia to the world a quarter of a century before Wells and Morton. I refer to Henry Hill Hickman, who was born in 1800, the very year in which Davy made his observation. At the age of 20 he obtained the M.R.C.S., and practised at Ludlow in Shropshire. Impressed by the sufferings of those upon whom he was called to operate, he resolved to seek some method of alleviating their pain by rendering them unconscious before operation. He experimented on animals by asphyxia, nitrous oxide, and carbon dioxide. He then operated on animals, and met with considerable success. He decided that if his methods were applied to the human subject they would become of the greatest value to mankind in making painless the performance of major surgical operations. The profession in England derided this work, and condemned it as dangerous and useless. Disheartened, he resolved to lay the matter before the Royal Academy of Medicine in Paris; little was done, only Larry (Napoleon's surgeon) showing any belief in the work. The young surgeon, disappointed and hopeless, returned to England to die at the early age of 29. In 1930 a deputation from the Anaesthetic Section of the Royal Society of Medicine, mainly at the instigation of Dr. Hughes, visited Ludlow, and attended a religious service and the unveiling of a tablet to commemorate this early pioneer's work.

The discovery of ether about 1830 rather ousted nitrous oxide, and it was not until 1844 that H. Q. Colton, who is described by a writer as an itinerant lecturer, gave an entertainment at Hartford, Connecticut, where people in the audience inhaled nitrous oxide for its exhilarating effect. Horace Wells, a dentist of that city, who was present, noticed the freedom from pain that attended the accidental injury of one of the subjects. He was greatly impressed, and persuaded Dr. Colton to give him gas on the following day, while Dr. John M. Riggs, another dentist, was invited to extract a tooth. The experiment was a complete success, and on recovering Wells declared that he had had no pain whatever. He then, in conjunction with Riggs, began to use the gas freely in his practice. Later on he gave a demonstration at Massachusetts General Hospital, but the facepiece was removed too soon, and the patient gave a yell, whereupon Wells was hissed out of the theatre as an impostor. This is quite easy to understand when one reflects that the method of administration at that time was to fill a bladder with the gas, which was inhaled by means of a pipe through the mouth, while someone held the nose. Wells died in 1848, having severed a vessel in his arm and taken ether to render death painless.

Bigelow states that in 1848 a patient had her breast removed under nitrous oxide gas, which was given through a valve mouthpiece and a flexible tube leading through a

bladder to two large copper reservoirs filled with gas. He states:

"After several inspirations the patient's lips and the most vascular part of the tumour began to assume a purple colour. She remained quiet, however, and in a short time was evidently insensible."

In 1875 Dr. C. A. Brackett kept a patient under nitrous oxide for about thirty minutes while Dr. Squier removed a cancer of the breast. Dr. Brackett describes it as a "grand success." The patient was not conscious of the operation, and he adds, "I believe this is the first achievement of the kind in New England." (He obviously was not aware of Bigelow's experiment in 1848.)

MANUFACTURE AND CONTAINERS

During all this time nitrous oxide had to be prepared just before the operation, and was kept in a sort of gasometer, but I have obtained a short description of what happened in those days from Mr. H. S. Coxeter, a great-grandson of the original Coxeter. He says:

For some of the earliest cases of nitrous oxide anaesthesia, both in the laboratory and in private dental practice, the gas was supplied in ox bladders, the patient inhaling the gas through the outlet tap, while his nose was pinched by one assistant and the bladder was squeezed by another. It is true that these early cases were mostly of an experimental nature, although slight operations were often performed under a sufficiently deep, but sometimes unexpectedly short anaesthesia. These bladders of nitrous oxide were regularly supplied by J. Coxeter and Son for use at the old University College Hospital opposite their premises. The gas was made by heating ammonium nitrate in glass laboratory retorts over a Bunsen burner and collecting it under water, no further washing being then considered necessary. The interest taken by the surgeons in the new anaesthesia, and its immense popularity among the students, due largely to the amusement caused by the hilarious excitement exhibited by the patient under this crude method of administration, pointed to a great future for "laughing gas."

Delivery by messengers carrying bundles of bladders like a toy balloon seller was obviously impracticable, and Mr. Coxeter quickly had some cylinders made of wrought iron tubes with welded tops, bottoms, and seams. Into these the gas was pumped by hand, with a great expenditure of time and energy, and the gas sold according to the varying amount it had been reasonably possible to pump in. As the demand increased it became obvious that a more rapid method of manufacture and filling was necessary, and a factory was started in a covered yard, in which a gas-engine-driven compressor was installed. The heating of the ammonium nitrate was now done in cast iron retorts, into which melted ammonium nitrate was poured through a funnel and the orifice plugged securely. The retort was then heated over a gas ring, and the nitrous oxide bubbled through into Woulfe's bottles containing a solution of caustic potash, entering a small gasometer, from which it was pumped into the cylinders.

For a time there was a state of considerable tension in the workshop, as no one quite knew what might or might not happen either during the manufacture of the gas or the filling of the cylinders; the latter, although extremely heavy, had a nasty habit of developing a sudden and alarming leak at one of the seams. Also the ammonium nitrate, not having the high degree of purity obtained later, was somewhat erratic in its behaviour, and upon the appearance of white fumes in the Woulfe's bottles, hose pipes were turned on to the retort with all speed. Sometimes even this was ineffective, and as the gas came off with ever-increasing force and fury, it was left in sole possession of the workshop, and the workmen anxiously awaited events outside. Improved methods of manufacture have been in use for some years, and the gas is now delivered in a very pure state. The unsatisfactory iron bottles were replaced by drawn steel seamless cylinders. Cast brass valves were replaced by those of a tougher alloy, stamped or drop-forged.

The steel cylinders were very heavy, and after the war I endeavoured to get permission to use some cylinders, made, I believe, of aluminium, which had been used by the Air Force to carry oxygen, and were very light. There were several objections, the chief being third-party risks (injury to the workmen when filling them), and we were

*A paper read before the North Staffordshire Medical Society.

not allowed to use them. Now, however, new steel has been evolved known as vibrac steel. This is a nickel, chromium, molybdenum, and manganese alloy; it is light and strong, and apparently conforms to all the tests that are required by the Government.

GAS AND OXYGEN IN PROLONGED ANAESTHESIA

Colton revived nitrous oxide in 1863, and in 1867 was able to give a record of 20,000 cases. In 1868 a demonstration was given at the Dental Hospital in London by Dr. Evans, a dentist from Paris, and after this the use of the gas spread enormously. In 1868 Andrews published accounts of a number of cases in which he had obtained a non-asphyxial form of anaesthetic by using oxygen with nitrous oxide.

In a little manual on nitrous oxide, or "laughing gas," by F. R. Thomas, published in 1870, we find some diverting reading. Among other things we are reminded that Faraday liquefied gas in 1822. The manufacture of nitrous oxide before the operation is described in very great detail. The author says that in purifying the gas it is unnecessary to use anything but a solution of the sulphate of iron in one bottle and fresh water in the other two. Some chemists recommend the use of caustic potash in addition, for the purpose of neutralizing any chlorine gas that may be present.

"In my judgement, however," says F. R. Thomas, "the use of these chemicals is superfluous, as I have found by experience that the action of the gas is precisely the same, whether it is washed through those solutions or whether it is washed through fresh water and allowed to stand a sufficient length of time (about 5 or 6 hours) for the water in the gasometer to absorb any impurities that may have passed over with the gas."

How different that is from present-day conditions, when the gas is most carefully washed and presented to anaesthetists free of water and, as is described by the suppliers, as non-freezing gas! In another place Thomas says:

"I am therefore confirmed in the opinion that after nitrous oxide has been kept over four or five days it becomes very much deteriorated by the absorption and loss of oxygen."

It would appear, therefore, that this Dr. Thomas had very definite ideas on the subject of nitrous oxide, and it is interesting to see how in the course of time the opinions that he then expressed have been considerably altered.

Clover and Coleman first gave continuous nitrous oxide through the nose, but it was not used for prolonged cases until somewhere about 1895, when Herbert Paterson began giving nitrous oxide through the nose for prolonged dental cases. Bellamy Gardiner, working quite independently of Paterson, produced papers shortly afterwards showing that nitrous oxide and oxygen could be given for lengthy periods. Paterson used to go round the country giving demonstrations of prolonged nasal gas for dental work, and he has himself told me that on several occasions he gave these dental gases for well over an hour. Paterson soon took up surgery, and the administration of prolonged gas and oxygen was carried on mainly by Bellamy Gardiner. Just previously Sir Frederick Hewitt had produced his gas and oxygen machine, and it was with this machine, or an adaptation thereof, that Bellamy Gardiner worked. Hewitt's machine did not permit of rebreathing, and so it missed one of the essential points of gas-oxygen anaesthesia. Later on Harvey Hilliard introduced a method of passing a catheter through the nose into the post-nasal space, through which he delivered gas, and obtained a prolonged anaesthesia for dental work.

Up to this time gas and oxygen had not been used extensively in this country, and it was the advent of Teter and Gwathmey to an international conference in 1912 that gave a much-needed impetus to and interest in the method. Teter gave a demonstration at Guy's in 1912, and after that Chaldicott and Page tried to popularize gas and oxygen, but interest in the anaesthetic was very lukewarm. Soon after the beginning of the war I obtained from Dr. Gwathmey one of his machines, and began to use the method. In October, 1917, I read a paper before the Medical Society of London on "Experiences of the Use of Nitrous Oxide and Oxygen with

Rebreathing in Military Surgery." It is interesting in the light of subsequent development to read the criticisms that were levelled at it, but that is past history, and nowadays most anaesthetists give gas-oxygen-ether.

It may be of interest to note here that very soon after the publication of this paper the War Office demanded several machines—machines which were being made by Coxeters and sold as Boyle's gas-oxygen-ether apparatus. Coxeters were unable to supply these needs, most of their staff having been called up, and so the War Office had the machines made by Siebe Gorman and Co., and I well remember being sent there to pass them as fit for use at the front. Machines as made then were very crude compared with the finished article to-day, but on some occasions I had to pass as many as three dozen.

The main points which came out during the discussion of my paper before the Medical Society of London were:

(a) that there was hardly any rise of temperature after an operation under gas-oxygen with a little ether, as compared with ether or chloroform alone. Moreover, as the patients were conscious very soon after the operation had finished, it was obvious that the work of the nursing staff was greatly lessened; (b) that severely wounded and septic men did much better under gas and oxygen than under ether or chloroform.

After the war the development of gas-oxygen-ether for civil practice became essential. The endotracheal administration of ether had been in vogue since 1912, and it now appeared that we thought it advisable to try the endotracheal administration of gas-oxygen-ether. This met with great success, and to-day the endotracheal administration of gas-oxygen-ether is my routine for abdominal operations. My reason for this is that a very quiet abdominal wall is obtained, and indeed in a good gas the relaxation of the abdominal wall is almost, if not quite, equal to that obtained by a spinal anaesthetic.

Many alterations and improvements have been made in the endotracheal method. The most important is perhaps the one advised by Dr. Magill, who passes a soft rubber tube, about the size of one's finger, down the nose and into the trachea. Then, if necessary, he can pack the fauces, and so prevent any blood from being inhaled. When this tube is in position gas and oxygen alone will suffice for most operations. There have, of course, been other alterations, but this is probably the most important. Another method, and one which is required by some throat surgeons, is to introduce two catheters into the trachea, the idea being that if the fauces are then packed the anaesthetic can be given by one tube while the other tube takes off the expired air.

No paper on nitrous oxide would be complete without the mention of E. I. McKesson of Toledo, Ohio, who has produced more apparatus and has probably done more work on nitrous oxide than almost anyone in the United States of America. McKesson, on occasions, practises what he calls "secondary saturation" with gas to produce relaxation. When I saw him do this it was an alarming sight. It consisted of giving gas until the pupils were widely dilated, the colour was grey, and the patient looked like death. Then the lungs were distended with oxygen, and gradually the colour returned to pink. "That is primary saturation," said McKesson, and then he proceeded to do it all over again—a method I am glad to have seen, but not one that I am prepared to teach to students. McKesson is a very able anaesthetist, and has certainly produced a most excellent machine.

The next development in gas-oxygen-ether anaesthesia was its use in midwifery. In 1921, when I was in America as the representative of the Royal Society of Medicine, I found that they were giving gas-oxygen for childbirth. On my return to this country I endeavoured to follow their example, but for some time obstetricians were rather shy of it. At last one of them took the plunge, and since then he and others have been using it. The method is to administer gas with each pain, and, briefly, only to use ether at the end of labour, just before the child is born. The addition of a little carbon dioxide used with discretion and care enables one, to some extent, to shorten the labour, to produce the child a rosy pink, and, I think, to shorten the time for the delivery of the

afterbirth. This method is useful in hospitals, but it is not suitable in general practice in outlying districts of the country. Should the time ever come when all the women of this country are confined in institutions, it will then become possible to use this method on a large scale. At the moment, however, although we are supplied with comparatively light cylinders, the method is impracticable for country districts because there must be one person to give the anaesthetic and another to deliver the child.

In the new surgical block at St. Bartholomew's Hospital there has been installed, at my suggestion, an equipment by which gas-oxygen and carbon dioxide is stored in the basement, and is then taken by a series of pipes to the five anaesthetizing rooms and to the five theatres; it is thus perfectly easy to give gas-oxygen or carbon dioxide by simply turning a tap, and we have no cumbersome cylinders about the theatre.

In conclusion, I should like to thank my friend Dr. Eric Worsley Gandy for the loan of the valuable collection of books on the early days of nitrous oxide, and also Mr. H. J. Bennett of Coxeter & Son for his very interesting information.

FORMATION OF A VOLUNTARY HOSPITALS' COUNCIL FOR LEEDS

For a good many years negotiations have been carried on between the Boards of the General Infirmary at Leeds, the Hospital for Women at Leeds, and the Leeds Maternity Hospital, with a view to promoting co-operation between the three institutions. As a result of these a Voluntary Hospitals' Council has been formed, some details of which are given below.

First, however, something must be said concerning the separate development of the three hospitals, and the scope of their work at the date when the newly constituted council became operative on January 1st of this year. Those who are responsible for the administration of the medical charities of Leeds, and certainly those who are concerned in medical education and in research, have always regarded it as a fortunate thing that, apart from certain special departments, most of the work has been concentrated in that institution the correct name of which is the "General Infirmary at Leeds," not the "Leeds General Infirmary," and this is indeed right when one considers the large area from which the hospital draws its patients. Founded in the year 1767 by the first William Hey, it carried on its work in a succession of centres until the present building—one of the first in the country to be erected on the pavilion system—was opened in the year 1868. In 1894, under the chairmanship of Mr. Benson Jowitt, the building was considerably enlarged, and after the war the extensive additions and alterations, which arose from the inspiration of Mr. Charles Lupton, were completed. Many years ago there used to be an eye institution in Leeds, but this was taken over by the Infirmary, with some necessary adjustment of the staff. For some time the dual posts of ophthalmic and aural surgeon were held by the same honorary officers, of whom there were two. These departments, however, were separated about twenty-three years ago, and there are now two ophthalmic surgeons and two surgeons in charge of the ear, nose, and throat department.

Until 1885 students of medicine in Leeds were dependent on their association with private practitioners for experience in midwifery. At this time a new honorary post was instituted, and the gynaecological and obstetric department came into existence. A certain number of beds was allotted to the gynaecological work, and this also had an out-patient department, which rapidly increased in size. The work of organizing the new extern maternity department was most ably carried out by the newly appointed resident obstetric officer, the late Dr. O. Croft, to whose work the School of Medicine owes a great debt. There was no accommodation for in-patient obstetric work; it was very exceptional for a woman to be delivered within the walls of the Infirmary. The relation of the Infirmary to the Hospital for Women and Children deserves notice. The latter institution had been in existence for many years, and was not associated with

the School of Medicine. Under the chairmanship of the late Mr. Fred. Spark a new hospital was erected, and some beds were set aside for the delivery of women who required hospital treatment. The accommodation in the General Infirmary for children, and especially for those suffering from medical as contrasted with surgical ailments, had been ridiculously inadequate for many years. The writer of these paragraphs recalls that the sole accommodation for this class of patient in 1883 constituted three cots in the female medical ward. By an arrangement with the Hospital for Women and Children it was agreed that its title should be changed to the Hospital for Women, that it should cease to admit children, and that it should undertake both the extern and the limited in-patient maternity work, while the increase in the available beds at the Infirmary would make it possible greatly to extend the accommodation for medical children. The Leeds Maternity Hospital has had a wonderful development, both in respect of rapidity and efficiency, and some time ago it was deemed right that it should take over all the work in connexion with the extern and intern maternity departments. The University interested itself in the matter, and now students have considerable facilities for gaining experience in maternity work.

These details have been given to make clear the state of affairs which has happily developed in Leeds, and which has made it possible, without friction, to arrange for intimate co-operation between, and for a partial fusion of, these three institutions, while leaving to each a large degree of autonomy. There came into operation on January 1st of this year the Leeds Voluntary Hospitals' Council. This is composed of six representatives of the Board of the General Infirmary, and three each of the Hospital for Women and of the Maternity Hospital, and it also includes every member of the honorary staff of the three institutions, together with the warden of the dental department and two other representatives of the honorary dental staff. Thus there is perpetuated the happy state of affairs which has always prevailed at Leeds: that the honorary staffs are fully represented on the Boards of all the institutions, though with some restriction as to voting powers. The duties of the council will be concerned with questions of policy, such as those dealing with extraordinary capital expenditure, alterations in the relative proportion or character of the work to be undertaken by the three component institutions, and generally any questions which may be referred to it by any of the three Boards concerned. At present it is arranged that all the gynaecological work shall be done at the Hospital for Women, all the maternity work at the Maternity Hospital, and everything else at the General Infirmary. The honorary staffs of the three hospitals are combined to form one "Faculty." The honorary staff of the Infirmary has always had this title, and it is one which is jealously held. When it was suggested a good many years ago that the term should be limited to the Faculty of Medicine of the University this was not agreed to. The "Faculty of the Infirmary" was sacrosanct! Among other duties this joint Faculty will have the election of all the members of the resident staff in its hands, and in the future a great many matters will be referred to it by the three Boards concerned.

Perhaps one of the most important considerations in connexion with the formation of the council is the method of election of the members of the honorary staffs. This is to be in the hands of the lay representatives of the council—twelve in number, it will be remembered—together with six others who are not members of the Boards of any of the hospitals, and one-third of whom shall retire annually, and two medical members appointed annually by the council of the University of Leeds. Uniformity as to the qualifications necessary for all candidates for honorary posts has also been secured, and the conditions which have for long prevailed at the Infirmary will apply in future to all the three hospitals. These are that assistant physicians and physicians must be graduates in medicine of a university of the United Kingdom and Members or Fellows of the Royal College of Physicians of London; and that all assistant surgeons and surgeons must be Fellows of the Royal College of Surgeons of England.

It is confidently expected that this scheme of co-ordination will be attended with increased efficiency in the working of the three hospitals, and will enhance the reputation of Leeds as a teaching centre.

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STERILIZATION

In June, 1932, the Board of Control, following a deputation to the Minister of Health from the County Councils Association, the Association of Municipal Corporations, and the Mental Hospitals Association, and with the approval of the Minister, appointed a Departmental Committee on Sterilization. The "sterilization of the unfit" has been for so long before the public in the shape of letters to the Press from high, though not always instructed, authorities, memorials from public bodies, and even grave warnings from the Bench, and is at once so vital and so controversial a topic, that the report of the committee has been awaited with intense interest not untinged with anxiety. The report, an account of which in some detail will be found in another column, was presented to Parliament on January 18th. The committee of eight members, appropriately presided over by Mr. L. G. Brock, chairman of the Board of Control, sat on thirty-six occasions and took evidence from sixty witnesses, whose names are given in an appendix to the report. The terms of reference, set out in full in our descriptive article, were so wide, embracing questions medical, biological, economic, and social, that the witnesses were necessarily chosen from many fields of work and authoritatively represented separate though complementary interests and different disciplines.

The committee's first task, admittedly impossible within the limits of its report, was "to examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency." Deciding, therefore, to confine its inquiry to those aspects of causation which had the most direct bearing on the question of sterilization, it considered the evidence as to the relative importance of "heredity" and "environment." On this point, which is a problem in eugenics that lies at the root of the whole matter, the committee has to admit that the witnesses who gave evidence were not in agreement as to the mode of transmission of mental defect and disorder, though all recognized heredity as an important factor in the causation of these conditions. The biologists, in fact, were at variance; and, as the committee rightly says, "much research will be necessary before a conclusive decision can be reached, and it may be possible that in the light of future knowledge prevention will in some cases be effected by a modification of the environment." Turning away, however, from conflicting theories about the mode of transmission—the solution of which, it may be maintained, can alone prove beyond question the place and importance of heredity in the causation of mental disorders and defects—the committee, keeping in mind the practical

aim of its deliberations, states the argument for the acceptance of heredity as an important factor of causation as follows: "A substantial, if not indeed a high, proportion of patients in mental hospitals and institutions for the mentally defective have one, two, or more relatives who also have suffered from some form of mental disease or defect. If the incidence of mental abnormalities in these families prevailed in all other families of the general community the numbers of mental patients would be considerably larger than the most reliable statistics indicate." This is the "familial concentration" on which most psychiatrists are said to base their belief that mental disorder and defect are to a great extent inherited conditions, or, as Lord Horder said a short time ago, "Like tends to breed like."

Before passing from this part of the report an investigation to which the committee attaches considerable importance should be mentioned. It is an inquiry, clinical and psychological, still incomplete, by Drs. L. S. Penrose and Douglas Turner at the Royal Eastern Counties' Institution for Defectives at Colchester. Among the first 513 patients examined the proportion of cases in which the amentia was thought to be due entirely to hereditary causes was 29 per cent., and the proportion of cases entirely due to environmental conditions was put at 9 per cent. The committee says that it is necessary to regard the remaining 62 per cent. as suffering from mental deficiency conditioned by both heredity and environment; for, however logically convenient the antithesis between heredity and environment may be, there are genetic characters which will produce a given character whatever the environment, and others which only produce a given character in an environment favourable to its production. Thus hereditary factors were found, or inferred, in 91 per cent. and environmental factors in 71 per cent. The committee refers to "abnormal conditions of the pregnant mother, hitherto unrecognized, which may interfere with development to such an extent as to cause mental defect." Doubtless in saying this the committee had in mind the intensive research, itself in its infancy, now being conducted into the physiology of reproduction and the effects of internal gland secretions upon the development of the embryo, with, as a corollary to the growth of this science, an augmentation of the role of environmental and possibly remediable factors.

The committee was asked "to consider the value of sterilization as a preventive measure, having regard to its physical, psychological, and social effects, and to the experience of legislation in other countries permitting it." In dealing with the social effects it takes occasion to deplore the fact that many advocates of sterilization in the past have supported this in the belief that it will serve as a substitute for the provision of institutional accommodation. This belief, it says, is illusory. Sterilization "does nothing to improve the mental condition and it does not lessen sexual activity. The unstable and antisocial defective remains unstable and antisocial. The thief remains a thief. The erotic girl or youth will still need institutional

care. The impossibility of procreation will not save them from being a social menace." Nor, it points out, will sterilization reduce to any appreciable extent the present wide disparity between the number of institutional beds available and the estimated number of beds needed. Actually the proportion of patients now in institutions who if sterilized could be released to the outer world is exiguous.

The case for sterilization of the subjects of mental disorder and defect, as a social measure, hinges virtually on two points: (1) the fact that approximately two-thirds of all defectives are capable of community life; and (2) that defectives make inefficient parents. It is true that owing to shortage of accommodation the proportion of all defectives living in the community is nearer to five-sixths; and it may be true that here and there there are defectives, able to run a household with a fair measure of success and wishful to marry, who, if sterilized, could do so without ill effect. As against this there is the risk of increased sexual promiscuity, which the committee, though it has failed to find any evidence of this after painstaking inquiry, does not dismiss as imaginary. It would be in the highest degree unwise, it declares, to assume that sterilization will in any way lessen, still less obviate, the need for supervision and after-care. Before coming to a conclusion as to the justification for sterilization the committee considered first the question of compulsion. Interpreting its reference as asking it whether there was on scientific grounds an unassailable case for compulsory sterilization it came to the conclusion that in the present state of knowledge the case for compulsory sterilization could not be established. There were other arguments against compulsion, but the sufficient reason clearly was that the committee assumed "the legislature would not feel justified in compelling any persons to submit to sterilization unless it could be shown beyond reasonable doubt that some at least of their offspring would either be mentally defective or would develop mental disorder," and of this no proof could be produced. With regard to voluntary sterilization the committee did not entertain the same doubts, and unanimously recommended that voluntary sterilization be sanctioned, on the grounds that enough is known "to be sure that inheritance plays an important part in the causation of mental defects and disorders . . . and that mentally defective and mentally disordered parents are, as a class, unable to discharge their social and economic liabilities or create an environment favourable to the upbringing of children," with the rider that there is reason to believe that the opportunity for sterilization would be welcomed in some cases by the patients themselves.

The committee argues forcibly that the case for legalizing sterilization rests upon the broad principle that no person, unless conscience bids, ought to be forced to choose between the alternative of complete abstinence from sexual activity or of risking bringing into the world children whose disabilities will make them a burden to themselves and society. This necessarily introduces the subjects, or the "carriers," of grave physical disabilities shown to be transmissible,

and such persons are therefore included within the committee's recommendations. Unfortunately the "carriers" of mental disabilities, though estimated as ten times more numerous than the affected persons themselves, cannot be identified with the same certainty as can the "carriers" of, say, haemophilia or hereditary blindness, whose mode of transmission is known. "The carrier," says the committee, "is the crux of the problem." From the point of view of eugenics the carrier may prove the stumbling-block also. Though there are many other points deserving notice—and particularly the part to be played by medical men, on whose shoulders the real responsibility will fall should the committee's recommendations become translated into law—it would be ungracious to conclude without paying tribute to the report as a model of arrangement of subject-matter and treatment.

CONTINUITY IN THE CURRICULUM

In recent years the unsatisfactory state of the medical curriculum has been a topical subject of wide popularity both in the medical and in the lay press. There is universal agreement on certain points. No one denies that the curriculum is overcrowded; everyone agrees that the knowledge retained by the student at the end of his course appears to be a meagre result after five or six years of intensive and expensive training for a special purpose; and the teachers in every year of the course complain that students, before coming under their care, have learnt a vast amount of detail but have failed to acquire any real grasp of essential principles. The natural consequence of this latter belief is to concentrate criticism upon the first years of the medical curriculum, for the teachers of these preliminary subjects are in the unfortunate position of having no one to whom they can readily pass back the criticisms levelled at themselves. The practical value of the agreement existing in regard to these general principles is lessened, however, by the fact that agreement automatically comes to an end as soon as the details of reform are considered.

Many competent critics are of the opinion that the most difficult problem in any reform of the medical curriculum is the transition from laboratory to clinical teaching. At its worst this transition may result in a very large part of the training in anatomy and physiology being wasted. The student acquires a systematic knowledge of these subjects, passes an examination, then forgets nearly all the knowledge he has gained, and later re-learns certain details of immediate clinical importance without attempting to correlate these with any general principles. This disharmony is probably at its worst in the relation between physiology and clinical medicine, and there is a general agreement that every effort ought to be made to achieve more continuity in the teaching of these subjects. One of the simplest methods of attaining this is for the students in their later years to receive instruction in the application of physiological principles to clinical problems,

but there is considerable difficulty in finding teachers who have an adequate knowledge both of the science of physiology and of the practice of clinical medicine.

An interesting attempt along these lines has been made at Strasbourg. This enterprising school of medicine is fortunate in the possession of a number of distinguished workers in the province that may be termed either "experimental medicine" or "functional pathology," and a group of these have collaborated to provide a course of lectures.¹ The scope of the lectures and the extent of the collaboration attained is best indicated by mentioning a few of their titles: renal physiology, by L. Ambard (clinical medicine); mineral metabolism, by Schaeffer (physiology); cerebral localization, by C. Pfersdorff (psychiatry); physiology of capillaries, by A. Schwartz (pharmacology). The lectures give a clear and accurate account of modern knowledge in the important fields they cover, while the collaboration of workers in a wide range of subjects provides a stimulating variety of outlook. A similar series of lectures in medical pathology was published in 1931 and a second series in that subject is also appearing. The courses are intended for final-year students and graduates. This method of instruction that is being worked out on practical lines at Strasbourg seems to us a very interesting and promising attempt to strengthen one of the weakest links in a medical education. In its interim report published last summer² the special committee set up by the British Medical Association laid stress upon the need for a "co-ordinated course of study," and every means to that end is worthy of notice.

METHYLENE-BLUE AS AN ANTIDOTE

Methylene-blue has long been used by biochemists on account of its power to promote the oxygen uptake of isolated tissues, and in 1926 Sahlin³ showed that it could act as an antidote to cyanide poisoning in laboratory animals. These experimental results were confirmed by Eddy⁴ and Brooks,⁵ while Geiger⁶ successfully applied the drug in the treatment of patients suffering from cyanide poisoning. He treated the cases by injecting intravenously 100 c.cm. of 1 per cent. solution of methylene-blue. Hug⁷ concluded that the good effect was attributable to the action of methylene-blue in transforming haemoglobin to methaemoglobin, because the latter substance forms a very stable compound with cyanide, and for this reason he investigated the use of sodium nitrite as an antidote to cyanide poisoning and found it more effective than methylene-blue. Wendel⁸ obtained similar results. Hug also carried out research into the action of other drugs which form methaemoglobin, such as pyrogallol

and sodium thiosulphate. Some of these experimental results have been confirmed by other workers. Chen, Rose, and Clowes⁹ measured the number of minimum lethal doses of NaCN that could be detoxified in dogs by various antidotes, and obtained the following results: methylene-blue, 2; $\text{Na}_2\text{S}_2\text{O}_3$, 3; NaNO_2 , 4; NaNO_3 and $\text{Na}_2\text{S}_2\text{O}_3$, 13. A combination of nitrite and thio-sulphate is therefore about six times as potent an antidote to cyanide poisoning as is methylene-blue, and doubtless this advance will before long be applied in therapeutics. These findings are of considerable practical value, but their theoretical basis seems somewhat uncertain, since Haggard and Greenberg¹⁰ observed that large doses of the dye transformed only about 10 per cent. of dog's haemoglobin to methaemoglobin, and Geiger found no measurable quantity of methaemoglobin in a case of cyanide poisoning which he treated with methylene-blue. The theoretical aspect of the problem has been further complicated by the results of Geiger, who claimed that methylene-blue injections acted as an antidote to carbon monoxide poisoning. Nass¹¹ and Christopherson¹² also reported the successful treatment of cases of carbon monoxide poisoning with this dye. This is the commonest form of poisoning that occurs, and hence the claim is of great practical importance. Hanzlik¹³ pointed out that the result was incomprehensible on theoretical grounds, because the essential trouble in carbon monoxide poisoning is the inactivation of haemoglobin, and this was not affected by methylene-blue. Haggard and Greenberg reviewed the theoretical aspects of the problem, and showed experimentally that in dogs poisoned with carbon monoxide methylene-blue produced no benefit, but rather injury, in that it further reduced the oxygen-carrying power of the blood, by transforming some of the haemoglobin to methaemoglobin. A result obtained by Williams and Challis¹⁴ makes it even more difficult to understand the action of methylene-blue, for they successfully treated a case of aniline dye poisoning by injections of the dye, and found that the treatment brought about a rapid conversion of methaemoglobin to normal oxyhaemoglobin; they confirmed this observation by experiments on rabbits. The results reported from methylene-blue therapy appear, therefore, to be extremely contradictory. In some cases administration of the dye was accompanied by the formation of methaemoglobin, and in other cases it caused methaemoglobin to be removed. Furthermore, methylene-blue injections were attended by benefit both in cases in which the production of methaemoglobin might have been beneficial and in cases in which such a change would certainly have been deleterious. Haggard and Greenberg pointed out that injections of methylene-blue were associated with marked stimulation of the central nervous system. This effect has been described by previous authors (Heffter¹⁵). It would appear from the evidence that methylene-blue injections exert two actions: first, a stimulant effect on the central nervous system that is of transient value in a wide variety of cases of poisoning; and, secondly, some peripheral action that is of specific value in cyanide poisoning.

¹ *Conférences de Physiologie Médicale sur des Sujets d'Actualité* Par MM. Ambard, Fontana, Schaeffer, Kayser, Kreis, Pfersdorff, Aron, Schwartz. Paris: Masson et Cie, 1933. (29 fr.)

² Interim Report of Medical Education Committee, *British Medical Journal Supplement*, June 24th, 1933, pp. 286-8.

³ *Scand. Arch. Physiol.*, 1926, xlvii, 284.

⁴ *Journ. Pharmacol. and Exper. Therap.*, 1931, xii, 449.

⁵ *Ann. Journ. Physiol.*, 1932, cii, 145.

⁶ *Journ. Amer. Med. Assoc.*, 1932, xcix, 1944; *ibid.*, 1933, c, 1103, and c, 269.

⁷ *C. R. Soc. de Biol.*, 1933, cxvi, 511; *Prensa Med. Argent.*, 1933, x.

⁸ *Journ. Amer. Med. Assoc.*, 1933, c, 1654.

⁹ *Proc. Soc. Exper. Biol. Med.*, 1933, xxxi, 250.

¹⁰ *Journ. Amer. Med. Assoc.*, 1933, c, 2601.

¹¹ *ibid.*, 1933, c, 1562.

¹² *ibid.*, 1933, c, 2708.

¹³ *ibid.*, 1933, c, 357.

¹⁴ *Journ. Lab. and Clin. Med.*, 1933, xix, 168.

¹⁵ *Handb. d. exper. Pharm.*, 1923, i, 12-8.

PROPHYLAXIS OF MEASLES

Tracing the history of active immunization against measles J. Comin¹ states that in 1758 Home of Edinburgh tried inoculation by scarifications into which blood and mucus from patients acutely ill of measles was rubbed. Cock carried out similar experiments with the lachrymal secretion. In 1801 Rasori of Parma used a needle, and in 1822 Speranza of Mantua a lancet, dipped in the blood of measles patients; the latter method was adopted by Mihaly in Hungary with success in 1,122 cases. In 1850 MacGillivray was severely criticized for attempting immunization by injection of blood taken from acute cases, and no further work on these lines was carried out until Hectoen, in 1905, employed blood from acute cases diluted with ascitic fluid. Stimulated by Hectoen's results, Kamoto tackled the problem of finding the dose of antigen devoid of danger which would produce immunization. He began by diluting the antigen with 10 per cent. of sodium nitrate. In 1926 Degkwitz injected diluted blood (1 in 6, or 1 in 8), which he set aside for two weeks, and then administered in doses of from 0.1 to 0.4 mg. Saoni employed a 0.5 per cent. solution of carbolized blood, but Debré was the first to use the serum of convalescents, which he gave in doses of 1 c.cm. of a 1 in 400 to 1 in 800 solution. Immediate leucopenia, followed later by a leucocytosis, was noted in these experiments of Debré. In 1927 Degkwitz, with a 7 per cent. dilution of blood from acute cases, produced in the monkey a catarrhal measles, devoid of exanthem, but immunizing the animal from a second attack. Treatment with the serum of convalescents had been also instituted by Weisbecker in 1896, Blumenthal in 1897, and Ribadeau Dumas in 1918, but became of great interest after the work of Nicolle in 1916 and Pacheco in 1920, in which year Degkwitz declared the minimal active dose to be 3 c.cm. if employed within three days of exposure to the infection. Comin advises that the blood should be taken from a healthy convalescent seven or eight days after the temperature has fallen to normal, and recommends, if obtainable, a mixture of the blood of three such donors, all of whom have been shown to be exempt from tuberculosis and syphilis. To this he adds 0.5 per cent. phenol, storing each unit in an ampoule and injecting up to and including the sixth day after exposure. Lereboullet states that the period of incubation in measles is from nine to eleven days, and is characterized by a subfebrile temperature, loss of weight, and polynucleosis, which Pirquet ascribed to the development of antibodies. Teunier states that the daily loss of weight is 70 grams; while Combe avers that the polynucleosis, which appears six days before the rash, is neutrophile, and with the rash changes to a mononucleosis in all uncomplicated cases. Comin gives a dose of 4 c.cm. to children under 4 years and of up to 8 c.cm. to a child over 5. After the seventh day following exposure he advises doses of from 15 to 20 c.cm. When this convalescent serum cannot be procured he suggests the trial of serum or blood of healthy adults who have had measles, in doses of from 25 to 50 c.cm. of serum, or of blood from 60 to 150 c.cm. Knefelmacher of Vienna reports great success following injection of blood from adults who have had measles and who have been made still

more immune by injections on three successive days of 10 c.cm. of blood from acute cases. Salazar de Souza of Lisbon had 78.7 per cent. of successes following the injection of healthy placental blood.

CONTROL OF INDOOR ATMOSPHERE

During the last few years much industrial research has been carried out on the control of air conditions indoors. It is not difficult to imagine the benefit to comfort, efficiency, and health of working and playing in an atmosphere neither too hot nor too cold, neither too dry nor too damp, from which all soot and dust and other impurities have been removed, and which is kept in steady circulation without draughts. Rooms would need less "dusting" and cleaning; pianos would keep their tune; furniture and hangings would last much longer. Properly air-conditioned restaurants and theatres are cool and fresh, with favourable effects on the appetite and interest respectively, and it scarcely needs proof that disease of the upper respiratory tract should be harder to transmit in an ideal atmosphere than in an unhealthy one. The field for air-conditioning in commerce and industry is almost infinitely varied. All food keeps better under ideal air conditions; cotton manufacture, brewing, and many other industries need special conditions of temperature and humidity; much photographic and other process work requires a controlled atmosphere. The innovation has not yet been tested in English hospitals, but has given good results in America. It will be interesting to know what practical advantages it offers in the nursing of respiratory disease and in operating theatres and laboratories. Speaking of the scope of air-conditioning at a conference of distributors held recently at the factory of Frigidaire Ltd., Mr. D. W. Drucquer explained that its extreme application—that of maintaining constant temperature and humidity regardless of outside conditions—was only suitable to industrial process work and was not desirable for living rooms and workrooms, because exposure to the outside air after some hours under rigidly fixed conditions throws too great a strain on the organism for comfort. Ordinary "conditioning for comfort" aims at the maintenance of a certain relation between outside and inside, so as to get a healthy variation within a comfortable range. Some rooms call only for cooling and drying in summer, some only for heating and moistening in winter, some for careful air filtration, and some for conditioning of all kinds. Large industrial and commercial installations have to be carefully thought out and the apparatus chosen by experts in consultation with architects and managers, but the less ambitious "comfort" equipment can be bought as a unit, housed in a casing which can be finished to harmonize with the surroundings. It can stand in a corner out of the way, taking up little more space than a radiator, or it can be suspended from the ceiling. It has to be connected with a water supply, a water outlet, and an electric main, for the principal components are an electric motor and an air compressor. These sets run very silently and cause no disturbance. Air is drawn in by a fan through an oil filter; it then passes over a cooling coil and a heating coil, the activity of which is regulated by a thermostat. Moisture is removed by a drying coil or applied by a spray over the heating coil, both being also under automatic control.

¹ *Crónica Médica*, October, 1933, p. 782.

OVARIAN DYSFUNCTION

It is not so many years ago that the pioneers in the study of the influence of the ductless glands on reproduction asserted that the ovary was woman and woman was the ovary. In spite of recent advances in our knowledge of the other ductless glands certain clinical conditions, grouped under the heading of ovarian dysfunction, still account for a high proportion of gynaecological patients. Professor J. P. D. Goodall,¹ in a paper on some aspects of ovarian dysfunction, accentuates four principles. The first is that each patient must be most thoroughly examined, under an anaesthetic if necessary, and that the complete examination should include not only biochemical and pathological tests, but an x-ray photograph of the pituitary fossa. The second is that deficiency of the anterior pituitary reproductive activity during youth leads to failure of development of the uterus and ovaries, whereas in later years it leads to their dysfunction. His third principle is that deficiency in one endocrine gland adversely affects all the other endocrine glands. Fourthly, he states that in the early stages the symptoms of hypofunction of any gland are often indistinguishable from those of hyperfunction. He also stresses the fact that, while emotions are dependent on the secretions of the ductless glands, the glands themselves are largely affected by the emotions, and suggests that in many instances in which endocrine therapy is unsuccessful the reason may be sought in domestic infelicity. In the treatment of amenorrhoea, irregularities of menstruation, ovarian sterility, and certain forms of dysmenorrhoea, menorrhagia, and metrorrhagia Professor Goodall advocates the use of some anterior pituitary preparation. The introductory discussion, however, leads one to wonder whether the improvement noted after the administration of such preparations as emmenin and antuitrin might not have been due to other factors, and whether the time is not ripe for a very carefully controlled investigation, on truly scientific lines, of the effects on human beings of these expensive preparations. In the past similar claims have been widely made for preparations which are now known to be inert. There would appear to be at the moment a risk of the disinterested work of the laboratories and their tentative results being commercially exploited to the great disservice of medicine.

BLOOD GROUPING IN PATERNITY CASES

The four blood groups of Landsteiner enable paternity to be disproved in about one case in six. This average has been doubled by his discovery, with Levine, of the agglutinogens M and N. These authors consider that the heredity of M and N depends upon a single pair of allelomorphous genes. As every blood must contain at least one of this pair there are only three possible phenotypes: any given person's blood can be represented by one of the formulae $M+N-$, $M+N+$, and $M-N+$. The formula $M-N-$ is never found; in almost 20,000 specimens which have been examined by various investigators not one has lacked both M and N. The heredity of these agglutinogens is simply deduced: a child can only possess agglutinogens possessed by one or other parent. If both parents are $M+N-$ their children's blood may correspond to

any of the three formulae. The combinations $M+N-$ parent with $M-N+$ child, and $M-N+$ parent with $M+N-$ child are impossible. Dr. A. S. Wiener,¹ summarizing the results up to date, points out that in 3,487 mother-child relationships no exception has been found to this law. Investigations on 674 families with 1,899 children have presented eight apparent exceptions concerning the father, which must clearly be due to illegitimacy, for the heredity of M and N is independent of sex, and what holds good for the mother must also hold good for the father. Dr. Wiener relates his experience in six cases before the courts. In the first of these a lover was proved not to be the father of a child; in the second, third, and fourth the tests were inconclusive. In the fifth a married woman bore three children during the time she was having relations with a lover; the tests showed that the paternity of the first child was indeterminate, that the lover could not be the father of the second child, and that the husband could not be the father of the third. In the sixth case a putative Group A father, who was alleged to have begotten a Group B child from a Group O mother, was cleared without the evidence of the MN tests. The paternity of five out of the eight children was therefore negatively established—a very useful record. The American courts have been reluctant to use the method, but it is making slow progress. In England it is still practically untried. It must be carried out by an expert, but if it is capable of clearing one man in three who is unjustly accused of paternity it is obviously a valuable form of evidence. It is too much to expect any change in the law by which blood tests might be applied against the will of a defendant, but when lawyers realize that nothing can be proved to a defendant's disadvantage such tests should take their place along with other methods of scientific proof.

THE GRENFELL ASSOCIATION

The recently issued seventh annual report of the Grenfell Association of Great Britain and Ireland has a special interest in view of the presence in this country of Sir Wilfred Grenfell, M.D., F.R.C.S., and of the political and economic situation of Newfoundland. It contains a general survey of the medical work which is being carried on in Labrador and Northern Newfoundland, extracts from the reports of the several centres, and short articles illustrating various emergencies and achievements. The material known as "Grenfell cloth" is becoming a regular source of income to the Mission. Designed originally for the cold climate of Labrador, it is a light, strong fabric, which will keep out wind, snow, and water, and will resist strain and friction. It was proved to be satisfactory in the Mount Everest Expedition last year. It has been found to be of equal value in very hot climates, such as that of Abyssinia, and also by the Mollisons on their transatlantic flight. A new society, the North-West River and District Farming Association, has come into being recently to promote agriculture, to ensure an adequate supply of seed and of vermin killers, and to establish and maintain a wholesome spirit of competition in production. The records of travels in different parts of the territory reveal the immense amount of help that is being given to a most deserving section of British pioneer settlers, whose needs are very great.

¹ *J. Obstet. and Gynaecol. British Empire*, 1933, vi, 649¹ *Amer. Journ. Med. Sci.*, 1933, clxxvi, 257.

but whose spirit is indomitable. The number of volunteers from Great Britain is increasing. The International Grenfell Association, the governing body of the various Grenfell Associations, links together the allied societies in Canada, the United States, Newfoundland, and Great Britain; the actual work is spread over 1,500 miles of coastline, mostly populated by Anglo-Saxons.

AUSTRALASIAN MEDICAL CONGRESS

The fourth session of the Australasian Medical Congress (British Medical Association) has just been held at Hobart, Tasmania, from January 15th to 20th, under the presidency of Dr. D. H. E. Lines. The scientific discussions were comprised in eleven Sections—namely: Anaesthetics; Medicine; Naval, Military, and Air Force Medicine and Surgery; Obstetrics and Gynaecology; Ophthalmology; Oto-rhino-laryngology; Paediatrics; Pathology, Bacteriology, and Cancer Research; Public Health, Preventive Medicine, and Tropical Hygiene; Surgery; and X-Ray and Electrical Therapy. In addition to the sectional meetings, full sessions of the congress were devoted to the consideration of cancer research and of hospital problems in Australasia. The *Transactions* are to be published in book form. A great variety of entertainments and excursions was arranged.

FOOD OF THE GROWING CHILD

The sixth of the series of Sir Charles Hastings Lectures, inaugurated by the British Medical Association for the purpose of offering to the public information by the highest authorities on matters of general public health interest, will be delivered in the Great Hall of the Association's House in London on Wednesday evening, March 7th. This year's lecturer is Dr. Robert Hutchison, physician to the London Hospital and to the Hospital for Sick Children, Great Ormond Street, and his subject will be "The Food of the Growing Child." The chair will be taken at 8 o'clock by Lord Horder, and after the lecture relevant questions, in writing, are invited. Admission is free, by tickets obtainable on application to the Financial Secretary, B.M.A. House, Tavistock Square, W.C.1. Seats not occupied by ticket holders by 7.50 p.m. will be available for other members of the public.

NUTRITION

The Secretary to the Minister of Health announces that Professor Sir F. Gowland Hopkins, Professor E. P. Cathcart, and Professor Edward Mellanby, as physiologists representing the Minister's Advisory Committee on Nutrition, will confer with Professor V. H. Mottram, Professor S. J. Cowell, and Dr. G. P. Crowden, as physiologists representing the British Medical Association Committee on Nutrition, in regard to the differences which appear to exist between the two committees on the question of the amount of calories and first-class protein appropriate as a basis for suitable diets.

Sir Cuthbert Wallace will deliver the Hunterian Oration before the Royal College of Surgeons of England, at Lincoln's Inn Fields, on Tuesday, February 13th, at 4 p.m.

STERILIZATION OF DEFECTIVES

DEPARTMENTAL COMMITTEE'S REPORT

In June, 1932, following a deputation to the Minister of Health from the County Councils Association, the Association of Municipal Corporations, and the Mental Hospitals Association, Mr. L. G. Brock, chairman of the Board of Control, with the approval of the Minister of Health, appointed a Departmental Committee with the following terms of reference:

"To examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency; to consider the value of sterilization as a preventive measure having regard to its physical, psychological, and social effects and to the experience of legislation in other countries permitting it; and to suggest what further inquiries might usefully be undertaken in this connexion."

The committee was presided over by Mr. Brock, and included Mr. Wilfred Trotter, F.R.S., Sergeant Surgeon to the King; Dr. A. F. Tredgold; Professor R. A. Fisher, F.R.S.; Miss Ruth Darwin, a Senior Commissioner of the Board of Control; Dr. R. H. Crowley, Senior Medical Officer of the Board of Education; Dr. E. O. Lewis, a Commissioner of the Board of Control; and Dr. E. W. Adams from the Ministry of Health. Mr. F. Chanter of the Board of Control was appointed secretary of the committee. In the course of its thirty-six meetings the committee took evidence from sixty witnesses, who included representatives of the Royal Colleges of Physicians and Surgeons, biologists, geneticists, psychiatrists, and medical superintendents of mental hospitals and institutions for the mentally defective; the Chairman of Council and the Medical Secretary of the British Medical Association; and representatives of the British Social Hygiene Council and other social workers.

The report, which is unanimous, was presented to Parliament at the close of last week.¹

PRELIMINARY GENERAL CONSIDERATIONS

The highly important matter of the legal position in regard to sterilization, the committee says, is not free from doubt, and in setting out the view which is generally accepted adds the caution that it does not depend on decided cases. It appears to be agreed, however, that while the legality of a sterilizing operation which is necessary for the patient's treatment ("therapeutic" sterilization) is not disputed, operations which are not necessary for the patient's health, but are intended to prevent the propagation of unsound offspring ("eugenic" sterilization), are illegal, whether applied to mental defectives or persons suffering from mental disorder. The legal position in regard to the eugenic sterilization of persons of normal mentality, it says, is less certain, but most authorities take the view that it is illegal.

Another general consideration was the concept of "mental defect," commonly described in terms statutory in origin, and resting upon an administrative rather than upon a scientific basis. The definition in the Mental Deficiency Act, for example, is based upon social adaptability, and the definition in the Education Acts upon educability, and therefore, though the two legal definitions are largely coincident in practice, an appreciable number fall within one definition and not within the other. The committee therefore emphasizes the fact that in this report the term "mentally defective" is used to mean a mentally defective individual within the meaning of Section 1 of the Mental Deficiency Act, 1927, unless otherwise stated.

Turning to the extent of the problem, the committee refers to the Wood Committee's estimate (in 1929) of 300,000 as the number of defectives in England and Wales, and says that it is clear that any calculation based on an examination of sample areas, however carefully those areas are selected, is liable to error. Where ascer-

¹ London: H.M. Stationery Office, 1934. Cmd. 4485. (2s. net.)

tainment has been actively carried out the results approximate to the Wood Committee's figure, thus furnishing strong presumptive evidence that the total has not been overestimated. Of this total the Wood Committee calculated that not more than one-third would require segregation in institutes. The number of available beds in the country is still far short of the estimated need, and it may therefore be safely assumed, the committee says, that the number of defectives living in the community—that is, not under custodial care or otherwise segregated—is in round figures a quarter of a million.

Whether the number is increasing, the committee, like the Wood Committee, finds it difficult to say, though the statistics before it left an impression that the incidence of mental defect is on the increase, though not at any rapid rate. But whether the proportion of children born who are or become defective is increasing or not the proportion of defectives alive to-day is larger than it was a generation ago.

PRESENT KNOWLEDGE OF THE CAUSATION OF MENTAL DEFECT

The terms of reference were wide, and the committee wisely decided to restrict its inquiry to those aspects of causation which, in its opinion, had the most direct bearing upon the question of sterilization.

First, as to the evidence concerning the relative importance of heredity and environment. The witnesses who gave evidence all recognized "heredity" as an important factor in the causation of mental defect and disorder. This conclusion, the report says, was based upon the data obtained by the study of family histories of mental patients.

"A substantial, if not indeed a high, proportion of the patients in mental hospitals and in institutions for the mentally defective have one, two, or more relatives who also have suffered from some form of mental disease or defect. If the incidence of mental abnormalities in these families prevailed in all other families of the general community the numbers of mental patients would be considerably larger than the most reliable statistics indicate. This 'familial concentration' is the ground upon which psychologists base their belief that mental disorder and defect are to a great extent inherited conditions."

The mode of transmission of these conditions the committee found to be a more contentious subject, some experts maintaining that several forms of mental disease are transmitted in accordance with Mendelian principles; others, recognizing that the Mendelian theory may explain the transmission of certain specific types, do not think it can account for the mode of transmission of all, and cite the fact that in the same family divergence from the normal appears in different forms; while still others held that familial concentration alone should not be regarded as adequate proof that mental disease or defect has been transmitted by inheritance.

The committee did not feel called upon to decide between the relative merits of these theories. Much research, it says, will be necessary before a conclusive decision can be reached. For the purpose of this inquiry it was enough to have established that there are many families in which there is an exceptionally high incidence of mental disease and defect, and that in many of these families those conditions are undoubtedly inherited.

"Abstinence from parenthood is the only immediately practicable method of prevention, whether this be obtained by sterilization or by any other means, and in assessing the value of this abstinence the extent to which the disease is familial is of primary importance."

The committee found that investigators of families in which mental defectives occur gave widely varying estimates of the incidence of mental abnormalities in these families. In one respect, however, considerable agreement emerged. The incidence of abnormal mental conditions is definitely greater in the families of the higher-grade defectives than in the families of the lower-grade defectives. Another finding is that families in which there are mentally defective children have other members who,

though not mentally defective, are persons of low intelligence. These findings, it says, suggest that milder grades of mental defect may be regarded as simply poor endowment of intelligence, and, if so, the problem of the inheritance of mental defect is part of the larger problem of inheritance of intelligence. "Highly gifted parents tend to have highly gifted children; dull parents tend to have dull children."

The committee refers to the researches of Dr. Torsten Sjögren into amaurotic idiocy, and also into a special type of defect with well-marked physical signs found to exist in an isolated Swedish valley.

"Sjögren's investigations seem to us to establish that these particular types of defect are inherited, and that amaurotic idiocy of both kinds exhibits the ordinary character of a Mendelian recessive; or, in other words, it may be transmitted by 'carriers' who do not themselves exhibit the defect."

The weight of evidence appeared, however, to be strongly against most defect being of an uncomplicated recessive type. Checking this by what is known of the parentage of recognized defectives, the committee says that the evidence indicates that the proportion of defectives now in institutions, one or both of whose parents can be shown to be defective, is small. This finding, in its view, proves little except that had sterilization been in force for a generation the reduction in the number now requiring institutional accommodation would not have been substantial.

Approach to this problem from another angle caused an inquiry to be made, not into the parentage, but into the children, of defectives. A circular was issued to all mental deficiency authorities calling for information as to physical defects and also to mental age by recognized intelligence tests.

In all 3,733 children were thus examined, the mother being defective in 2,247 and the father in 486 cases. These defectives produced 8,841 children, of whom 2,001, or 22.5 per cent., have died—an abnormally high death rate, too great, the committee thinks, to be due entirely to bad environment and parental inefficiency. As to mental grouping, excluding cases about whom no definite information was available, there were 1,082 children between 7 and 13 years of age, of whom 305, or 16.9 per cent., were classified as defective, and 423, or 23.5 per cent., as retarded. Only twenty-one, or 1.2 per cent., were "superior." In the children over 13, out of a total of 1,848, the number of defectives was 599, or 32.4 per cent., and of retarded 240, or 13 per cent. Taking the two classes together in the first group 40.4 per cent., and in the over 13 group 45.4 per cent., were mentally subnormal.

"When it is remembered that 22.5 per cent. of the children had died, and that these percentages apply only to the survivors, the figures indicate that here we have a social problem calling urgently for some practical preventive measure."

Two more points elicited in this inquiry are noteworthy. One is that neither group indicated an abnormally high incidence of defect or retardation among the firstborn; the other is with regard to the widespread belief in the abnormal fertility of defectives. The inquiry made by the committee and other statistics examined by it completely explode that myth, even though distressing exceptions to the general rule find their way into the Press.

With regard to environment—using the term as covering the period from the fertilization of the ovum up to the time at which mental development is complete—the committee regards it as clearly established that a proportion of cases of mental deficiency is due entirely to environmental factors—for example, injury to brain during birth, inflammation of brain or its membranes after birth, etc.—but that this proportion is comparatively small. On the whole, the committee thinks that between 9 and 20 per cent. of defectives owe their condition solely to adverse factors of the environment. The group of cases in which both morbid hereditary and environmental conditions are present is a much larger one. Lastly, the committee considered in this relation "slum" surroundings; but it could find no evidence that slum conditions in themselves are responsible for causing mental deficiency.

The general conclusions on the causation of mental defect from a committee so authoritative require quotation in full:

1. In many cases of mental defect there exists in the family some form of mental abnormality—that is, insanity, psychoneurosis, epilepsy, defect, or dullness. In the majority of such cases there is evidence of heredity, but the mode of transmission is at present unknown.

2. In the case of certain rare forms of defect, not only is the fact of hereditary transmission known, but the method of transmission has been demonstrated.

3. It is probable that some mental defect is determined by a combination of genetic and environmental factors.

4. Some mental defect is not inherited—that is, the defect is acquired after conception as a result of environmental causes. There is no evidence that such defect is transmissible to subsequent generations.

5. Low-grade mental defect is more frequently associated than is high-grade defect with environmental factors, and it appears to be fairly equally distributed among all classes of society.

6. There is some evidence that conditions operating during the intrauterine period may produce mental defect, but very little is at present known on this point.

7. High-grade mental defect occurs proportionately more frequently in the lowest social stratum than in the rest of the population. In this stratum there appears to be an unduly high incidence of mental defect, insanity, intellectual dullness, epilepsy, as well as tuberculosis and other physical defects. Cause and effect of the conditions found in the social problem group are debatable, but it is possible that selective mating may to a large extent account for this concentration of physical defects and mental defects and disorders. There is evidence that in the poorest districts neighbour marries neighbour, and like marries like.

8. There is no evidence that parental alcoholism is responsible for any appreciable amount of mental defect. Recent research on this matter casts doubt on some of the earlier conclusions based on animal experiments.

9. Our evidence does not indicate any causal connexion between tuberculosis and mental defect.

10. Syphilis is responsible for some, though an undetermined amount of, mental defect.

11. It is impossible in the present state of our knowledge about the causation of mental defect to forecast with certainty whether a child of any given union will exhibit mental abnormalities. It can, however, be shown that, whether the cause be bad heredity or adverse environmental conditions, or both, the children of parents one or both of whom are mentally defective are, on the average, below the normal, and our inquiry shows that nearly one-third of such children as survive are likely to be defective, and more than two-fifths must be expected to exhibit some degree of mental abnormality.

PRESENT KNOWLEDGE OF CAUSATION OF MENTAL DISORDERS

In considering the causation of mental disorders the committee first sets out the difficulties with which it was faced, such as the wide range of mental disorders; the absence of a general agreement as to classification or grouping of mental disorders even within Europe; and the lack of sufficient data or of enough systematic and intensive inquiry into the hereditary and environmental factors which may operate in the production, not of mental disorder in the mass, but of each distinctive clinical type and the need for checking the results against a control group of the mentally sound. There is, however, a considerable body of evidence, mostly derived from foreign sources, relative to certain particular types of mental disorder. These, in the opinion of the committee, justify the following general conclusions.

1. Heredity plays a large part in the causation of mental disorders, though except in the case of Huntington's chorea and myoclonus epilepsy, which are both rare types, there is no conclusive evidence that the transmission follows Mendelian ratios.

2. In many mental disorders other than Huntington's chorea and myoclonus epilepsy the part played by heredity varies widely between different types.

3. Manic-depressive insanity and schizophrenia appear to show a markedly higher familial incidence than other types of mental disorder which are of frequent occurrence.

4. While psychopathic parents tend to have psychopathic children, the view that familial mental instability is usually progressive and tends to become more severe in each succeeding generation is not established. The familial incidence in such cases is not necessarily entirely genetic in origin, since the environmental conditions in which children of psychopathic parents are brought up may tend to aggravate any inherited instability.

5. Familial mental disorder is not necessarily transmitted in the same form, and in many cases what appears to be transmitted is not a specific character, but a generalized predisposition.

6. Where such a predisposition exists the immediate or exciting cause of the breakdown may be of an apparently trivial nature.

7. In a proportion of cases of mental disorder an environmental factor, such as a toxic condition, syphilis, or arteriosclerosis, is the immediate cause and often the only discoverable cause. In some of these cases there is evidence that these environmental factors are associated with an inherited predisposition.

8. There is little evidence that alcoholism is a frequent cause of mental disorder, and in many cases which at present are classed as alcoholic the alcoholism appears to be a symptom of mental abnormality rather than its cause.

RESULTS OF STERILIZATION

The results of sterilization are considered under (a) physiological and psychological, and (b) social results. With regard to the former the committee has been unable to find evidence that in the case of either normal or defective persons any harmful results, either physiological or psychological, ensue upon the operations of vasectomy or salpingectomy. The position in regard to persons who suffer, or have suffered, from mental disorder is more difficult, but the committee accepts the view that the psychological advantages of voluntary sterilization to patients suffering from mental illness would outweigh any injurious results. In such case, however, it considers that sterilization should not be allowed without a recommendation from a competent psychiatrist, who should be required to examine the patient and to certify that in his opinion no injurious results would be likely to follow.

Among (b) the social results expected to follow the adoption of "sterilization of the unfit" and its substitution for the provision of institutional accommodation a considerable monetary saving has held a prominent place.

"This belief, we are convinced, is illusory. Sterilization will not in our opinion reduce to any appreciable extent the present wide disparity between the number of institutional beds available and the best estimate of the number needed. We will go further and say that until sufficient accommodation is provided and ascertainment and community care are better organized, proper use cannot be made of sterilization as a supplementary measure of care for the mentally defective and the protection of the community."

On the other hand, the members of the committee, with one exception, agreed as to the disastrous social and economic results of ignoring defect and of allowing defectives to undertake the ordinary responsibilities of citizenship. "Defectives make inefficient parents. If only for social reasons they should not have children." As regards defectives in institutions, the committee holds that the question of their sterilization only arises when they are considered fit for discharge to some form of care in the community. As to the proportion of patients now in institutions who could be safely released if they were sterilized, experienced superintendents gave estimates ranging from 3 to 5 per cent. The committee thinks it doubtful whether institutional beds will ever be provided or, if efficient community care is organized, will ever be needed for more than a third of the total defective population. If, therefore, there is a case for sterilization it is on numerical grounds more important in relation to the larger number of non-institutional cases.

Among social risks of sterilization which have been suggested is the danger of increased promiscuity and the greater spread of venereal diseases. The committee took pains to ascertain whether in those American States

in which sterilization has mainly been practised any such consequences have ensued. So far as it has been able to ascertain there is no evidence of such happenings. Nevertheless it desires to record with all possible emphasis that:

"The discharge of sterilized defectives, particularly women, may have most unfortunate social results, unless the greatest care is taken to ensure that they receive the constant and vigilant supervision which their mental condition requires. It would be in the highest degree unwise, indeed it might be disastrous, to assume that sterilization will in any way lessen, still less that it will obviate, the need for supervision and after-care."

After a short chapter on Dominion and foreign legislation, the experience of which—with the exception of Alberta, where the results are stated to be "satisfactory" and California, where no evidence was found "that the results of sterilization have not on the whole been good"—is described as "mainly negative," the committee formulates its findings under the heads of general conclusions and recommendations, procedure and safeguards, and operations advised.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The committee considered compulsory sterilization first, for the obvious reason that if the case for compulsion could be made out there was no need to discuss the less drastic alternative. Assuming that the legislature would not feel justified in compelling any persons to submit to sterilization unless it could be shown beyond reasonable doubt that some, at least, of their offspring would either be mentally defective or would develop mental disorder, it records its deliberate opinion in the following words: "In the present state of knowledge no such proof can be produced." To the question whether there is on scientific grounds an unassailable case for compulsory sterilization it affirms there can be only one answer: "If the test is to be the certainty with which the result of procreation can be predicted in individual cases, the case for compulsion cannot be established."

Further, as a practical measure, the committee doubts the wisdom of compulsion. In the United States of America sterilization has been most practised where it has been administered on a voluntary basis, and general compulsion becomes ineffective without the support of public opinion, while with the support of public opinion it is unnecessary: also any association in the popular mind between mental deficiency institutions and compulsory sterilization might have unfortunate effects both in regard to the admission of children to institutions and to the work of ascertainment. But the real argument against compulsory sterilization is contained in the words quoted above.

Turning to voluntary sterilization, the committee, recognizing the gravity of the case involved, records its view that there are adequate grounds for sanctioning sterilization in the case of defectives and the mentally disordered.

"We know enough to be sure that inheritance plays an important part in the causation of mental defects and disorders . . . and we know also that mentally defective and mentally disordered parents are, as a class, unable to discharge their social and economic liabilities or create an environment favourable to the upbringing of children, and there is reason to believe that sterilization would, in some cases, be welcomed by the patients themselves."

Out of sixty witnesses there was much difference of opinion as to the results which would be attained by sterilization as a measure of social hygiene; but only three witnesses were definitely opposed to it in principle.

At the risk of going beyond the terms of reference the committee, because it felt that it would be both anti-social and inequitable that persons who have good reason to fear that they may transmit to their offspring grave physical difficulties should be left without any remedy except the harassing uncertainty of contraceptive devices, found itself unable to recommend any sterilization scheme limited solely to the mentally unfit, as appears later.

The transmissible physical defects which are sufficiently grave to justify sterilization are easily identifiable, and in certain cases—for example, haemophilia, hereditary blindness, deaf-mutism—the mode of transmission is known. But this is not so in many cases of mental defect and disorder, and the transmission is indirect or through "carriers." The proportion of such carriers the committee thinks it is not far wrong in estimating at ten times greater than are affected persons. The question of carriers thus becomes the crux of the problem, unfortunately as yet not solved. Nevertheless, the committee recommends that the right to sterilization should be extended to all persons "whose family history gives reasonable ground for belief that they may transmit mental disorder or defect."

Then after discussing very briefly some of the objections to sterilization the report passes to the highly important matter of procedure and safeguards.

PROCEDURE AND SAFEGUARDS

The committee considers that the acceptance of a single medical recommendation for eugenic sterilization would put an undue responsibility on the doctor, and therefore proposes two medical recommendations, one from the patient's family doctor and the other from a doctor on a list to be approved by the Minister of Health. If the committee's recommendation to extend voluntary sterilization so as to include also transmissible physical diseases, or carriers of the same, is approved, the list might be divided into two parts, one part containing the names of psychiatrists and the other of general physicians of good standing. The committee is definitely against leaving the approval of practitioners in the hands of the local authorities; such recommendations should be submitted to the Minister of Health, who would, in mental cases, exercise his functions after consulting the Board of Control, who may in certain cases cause the patient to be specially examined.

In order to meet the difficulty of deciding whether or not a particular case comes within the terms of the definition, so justifying sterilization—a difficulty likely to arise in connexion with persons believed to be carriers—the Departmental Committee recommends the appointment of a small advisory committee of doctors and geneticists to whom doubtful cases could be submitted. It stresses the point that the real responsibility must fall upon the doctors who sign the prescribed recommendation, and that no subsequent departmental or Ministerial action can relieve him of responsibility for the consequences of his action. If the doctors are reluctant to accept this responsibility, it declares, the whole system inevitably breaks down. Clearly, it says, Parliament cannot be asked to grant immunity from legal proceedings to the doctor who acts negligently or in bad faith; but the doctors should have the same claim to protection as they have in respect of certificates under the Lunacy and Mental Treatment Acts.

The sterilizing operations advised by the committee are vasectomy for males and salpingectomy for females. As to where the operations should be performed, it sets out reasons why this should not take place at mental deficiency institutions or at mental hospitals.

In a further chapter immediately preceding its conclusions and main recommendations, a summary of which appears below, the committee suggests various fields of research which may throw valuable light upon the problems of inheritance in a wide sense; but this does not lend itself to presentation in abstract.

SUMMARY OF PRINCIPAL CONCLUSIONS

1. Subject to the safeguards proposed, voluntary sterilization should be legalized in the case of: a person who is mentally defective or who has suffered from mental disorder; a person who suffers from, or is believed to be a carrier of, a grave physical disability which has been shown to be transmissible; and a person who is believed to be likely to transmit mental disorder or defect.

2. Before sterilization is sanctioned in the case of a mental defective care should be taken to test his or her fitness for community care.

3. Mental defectives who have been sterilized should receive the supervision which their mental condition requires.

4. The operation of sterilization should only be performed under the written authorization of the Minister of Health, in regard to which the following procedure should apply:

(a) Application for the authorization should be supported by recommendations in a prescribed form signed by two medical practitioners, one of whom should, if possible, be the patient's family doctor and the other a practitioner on a list approved by the Minister. No medical practitioner should sign a recommendation unless he has examined the patient.

(b) The Minister, on receipt of the recommendations, should be empowered to require any necessary amendment of the forms and to cause the patient to be specially examined if it is considered advisable.

(c) In order to deal with difficulties that may arise in connexion with applications on behalf of persons suffering from, or believed to be carriers of, inherited disease or disability, the Minister should be empowered to appoint a small advisory committee, consisting partly of medical practitioners and partly of geneticists, to whom doubtful cases could be referred.

(d) The hospital authorities or (in the case of operations performed elsewhere) the operating surgeon should be required to notify the Minister when the operation has been performed.

(e) In all cases in which the patient is capable of giving consent he should sign a declaration of willingness to be sterilized, and one of the two medical recommendations should include a statement that the effect of the operation has been explained to the patient and that in the medical practitioner's opinion he is capable of understanding it. If the practitioner is not satisfied that the patient is competent to give a reasonable consent, the full consent and understanding of the parent or guardian should be obtained. If the applicant is married he or she should be required to notify the spouse of the application.

(f) In the case of persons who have suffered from mental disorder, sterilization should not be permitted without a recommendation from a competent psychiatrist, who should be required to certify, after examining the patient, that, in his opinion, no injurious results are likely to follow.

(g) In dealing with cases of mental defect and of mental disorder the Minister of Health should exercise his functions after consulting the Board of Control.

(h) The procedure should at all stages be treated as strictly confidential.

5. Medical practitioners, in making recommendations for sterilization, should have protection similar to that accorded to them in respect of certificates given under the Lunacy and Mental Treatment Acts.

6. The operations for sterilization which are recommended are vasectomy in the case of males and salpingectomy in the case of females. The latter operation should only be performed by a surgeon competent to deal with any morbid condition which he may find.

7. The operation of vasectomy should not be authorized in the case of any person who has not reached physical maturity, pending the results of the further research recommended in this connexion.

8. The operation for sterilization should not be performed in a mental hospital or mental deficiency institution.

9. In the case of persons unable to pay the full cost of the operation, the cost (including the expense of the medical recommendations) should be borne by the Mental Deficiency Authority in the case of mental defectives, by the Visiting Committee in the case of persons suffering from mental disorder, and by the Public Health Committee in the case of persons suffering from transmissible physical disorders, subject to the right of the authority to recover from the patients or relatives so much of the cost as is reasonable. In all cases, however, where the cost falls upon local funds, the local authority should have the right to require the patient to enter a municipal hospital or any voluntary hospital with which they may have made arrangements for such cases.

PRACTICE OF EUGENIC STERILIZATION

SAFEGUARDS AND INDICATIONS

A meeting of the Eugenics Society was held in London on January 16th, Sir HUMPHRY ROLLESTON presiding, for the discussion of safeguards in eugenic sterilization.

Dr. R. LANGDON-DOWN said that when the meeting was arranged it was expected that the report of the Departmental Committee of the Ministry of Health would be available, but it was now announced that the report would be published three days later.¹ The Brock Committee, as it was called, was appointed, he thought, because of the movement of public opinion which arose partly as a result of the propaganda of the Eugenics Society, but particularly as a result of the report of the Wood Committee, another Departmental Committee, which had surveyed the problems connected with mental deficiency. The Wood Committee was very half-hearted in any recommendation as to how the evil arising from the propagation of mental defect might be diminished or prevented. The principal opposition to the proposals for sterilization had come from a body specially interested in the welfare of mental defectives; its hostility dated from early days, when the proposals were very different from those now current. In order to sidetrack eugenic propaganda this body adopted the policy that further inquiry as to the cause of mental deficiency was necessary, and the Government thereafter set up the Brock Committee, on which was included one representative of the Eugenics Society, Dr. R. A. FISHER. Dr. Langdon-Down briefly described the nature of the evidence which the Eugenics Society had brought before the Departmental Committee, in particular its citation of German and other foreign experience, which differed from such meagre statistics as had been collected by British workers. This difference appeared on investigation to be due to the fact that in Germany a standard of mental deficiency was taken which was of wider range than was usual in this country. Here we were rather bound by the criteria set up by the Mental

Deficiency Act, which was based on administrative needs, not on biological principles, and in Germany they were rather more free in this respect.

NEED FOR SAFEGUARDS

Dr. C. P. BLACKER said that the question of safeguards, which was the one under consideration that evening, inevitably presented itself when anybody got down to the actual practice of sterilization. It soon became obvious in the course of the society's propaganda that it had to steer an intermediate course between two sets of enemies: on the one flank the apostles of individual liberty, who said that it was entirely a person's private affair whether he was sterilized or not; and on the other those whose attitude was well represented by Dr. Hyacinth Morgan, who, when Major Church introduced the society's Bill into the last Parliament, pictured a self-constituted body of eugenicists sitting on the apex of the social pyramid and dictating to the working woman how many children she might have. By these opponents sterilization was viewed as a potential means of class or racial tyranny. At an early stage the society decided that it would be incompatible with what it took to be British psychology to advocate a compulsory measure. This was not wholly a question of tactics, but those concerned were influenced in that direction by the fact that in those American States which had compulsory and voluntary clauses to their sterilization measures it had become clear that the compulsory clauses were used less and less and the voluntary clauses more and more. If there did not exist in a State a sufficiently strong eugenic or social conscience, the application of compulsion to refractory subjects would lead to appalling difficulties. In the Bill which the society had promoted it was laid down that, in the case of a mentally defective person, the consent of the parent or guardian should be required if the person was unmarried, or, if married, the consent of the spouse, and also the consent in all cases of the Board of Control. A good deal of emphasis was placed upon that last safeguard, for it was felt that, in view of the acknowledged scepticism of the Board of Control with regard to sterilization, one could count on the fact that the Board would not give

¹ See page 161.

its authorization in the case of an individual without excellent reasons for sterilization being done. It was also felt advisable to add the additional safeguard that the operation should be sanctioned by a judicial authority. There was a profound mistrust among the general public of any sort of specialist, and particularly of any board which could be accused of bureaucratic behaviour, so that it was deemed advisable to have, in addition to the consent of the Board of Control, the further sanction of a judicial authority. On grounds of strategy or tactics the Bill was confined to mental defectives, and that was the thin end of the wedge. The thick end of the wedge was not the subsequent surreptitious introduction of compulsory sterilization, but the extension of the voluntary principle to mental convalescents, by which was meant people who had recovered from some recoverable form of insanity, and those who exhibited other transmissible diseases and defects. The words were carefully chosen to cover the social problem group, and it was desired to make the provision such that it would become applicable to the subnormal carrier.

INDICATIONS FOR STERILIZATION

Dr. E. MAPOTHER, medical superintendent of Maudsley Hospital, said that the chief need of the eugenic movement at present was patience. Care had to be taken not to arrest progress and provoke reaction by attempting to replace the present general vetoes by compulsions based on what might be called half-baked science. He confined his remarks to mental disorder, the forms usually called the psychoses. It was only in connexion with the liability to really severe mental disorder or to transmitting such that at present one should advocate the legalization of sterilization. In many instances, he was quite aware, people suffering from neuroses and minor grades of mental inefficiency which quite disqualified them for employment showed an incapacity to limit their families to a size which would be to the interests of the parents, the children, and the State. But the dividing line between minor grades of mental inefficiency on the one hand and normality on the other was almost indefinable, and restriction would be unworkable if the presence of something called a neurosis or a liability to such could be taken as an adequate ground. The first ground for applying sterilization might be called therapeutic, and that included cases in which not only brief periods of strain such as childbirth were apt to produce a breakdown, but also cases in which psychosis arose from severe and prolonged stress, such as fear of pregnancy or the strain of bringing up a family. It was to be hoped that legislation would not interfere with any existing rights to sterilize for therapeutic purposes. The two main grounds for sterilization in connexion with severe mental disorder which really needed discussion had in common the liability of the offspring themselves to be affected with mental disorder. One could be called the truly eugenic ground—that is to say, the tendency to a true inheritance of the psychosis; and there was another possible ground, which consisted in the liability of the offspring to become psychotic rather in virtue of their contact with the psychopathic parent and other stresses occurring during childhood. If one took the evidence for sterilization on these two grounds it rendered the present wholesale veto quite unjustifiable, but the evidence also failed to prove that any form of compulsion would at present be justifiable, and made it plain that voluntary sterilization should be legalized with safeguards. If it was granted that some form of birth control was to be permitted or even encouraged, though not enforced, it would be asked, Why would not contraception suffice for this purpose? The answer was that contraceptive measures to be taken at the time were distasteful to many people, and those who felt in this way, if the permanent sterility of their marriage was desirable, were entitled to have their preferences considered. Moreover, there was no form of contraception which did not at times fail, and the fear of such failure might be prejudicial. Again, contraception was useless in the case of irresponsible persons.

The alleged dangers in connexion with sterilization against which safeguards might have to be provided

were the following: (1) the danger that the application might not be truly voluntary, or thought not to be so; (2) surgical dangers; (3) the danger that one or both of a couple might be sterilized in haste and repent at leisure; (4) the fear that even collaboration between the operator and another doctor, such as was customary in connexion with therapeutic abortion, might not guarantee sufficiently expert opinion as to the chance of psychopathic inheritance; and (5) the danger that if sterilization were legalized in connexion with the liability to the occurrence of severe mental disorder in the offspring this permission might be misused for reasons not within the meaning of the Act. It seemed to him that all these dangers would be met if certain principles were observed. In the first place, the sterilization of one or other party to an actual or intended marriage should be permitted upon the written application of both parties to it, and this on two conditions: the first, that two medical certificates were obtained vouching for the fact that the mating of the two parties was in the light of the best scientific evidence at the time available likely to result in an exceptional proportion of mentally disordered offspring; and the second, that such medical certificates were submitted to an established authority, such as a department of the Ministry of Health or the Board of Control. He believed that in order to ensure that the application was voluntary it should not be permitted in the case of patients under any order sanctioning detention, nor on premises where other certified patients were detained. Not only compulsion, but pressure and the very suspicion of pressure, should be avoided. On the other hand, it should be permitted to those who were carriers of psychopathic inheritance, even though they had never manifested it. The surgical risk could be almost eliminated by giving the central authority power to insist on the operation by a recognized surgeon and in suitable premises. He thought that the operation should be performed on either party to the mating, regardless of which was likely to transmit the tendency. It might be open to the man to be sterilized—the operation being simpler and less dangerous in the case of the man—even though the transmission was through the woman. The danger of frivolous sterilization could be met by the requirement that medical certificates must be submitted to a central authority.

As to the danger that the medical evidence might not adequately guarantee the necessity of sterilization, one certificate might be required from the usual medical attendant of the probable transmitter and the other from a psychiatrist of recognized standing—probably one who held a diploma in psychological medicine. Dr. Mapother did not think that any explicit definition as to what constituted an adequate ground for promoting voluntary sterilization should be attempted. The criteria should be elastic, so that the practice might be progressively adapted to increasing knowledge rather than stereotyped to present knowledge. Only voluntary sterilization in the fullest sense should be undertaken, and that not merely for tactical reasons. Voluntary sterilization was the basis of the practice in Switzerland, where sterilization had been taking place for half a century, and represented almost a model of the way in which it should be done. He thought that the way it was carried out in Nazi Germany illustrated how not to do it. The conditions which in Germany were regarded as permitting compulsory sterilization were mental deficiency, schizophrenia, manic-depressive psychoses, epilepsy, severe alcoholism, and a number of others. His own view about the schizophrenia and manic-depressive psychoses groups was that each was a heterogeneous group, and there were cases which were in a high degree hereditary, and others which were in large measure environmental, for which compulsory sterilization would be totally inapplicable, while the question of voluntary sterilization did not really arise. He understood that the results already seen in Germany, even in anticipation of the recent law, which became effective on January 1st, were disastrous. It rendered liable to sterilization, if not segregated, cases of dementia, schizophrenia, manic-depressive psychoses, and other conditions. It made it obligatory on any doctor diagnosing one of these conditions, even in consultation outside an institu-

tion, to notify the case in the way in which an infectious disease was notified in this country, and such notification, if the patient was not segregated, had to be followed by examination by the court with a view to sterilization. At the same time there had been legalized the castration of criminal sexual perverts, with the result that the two things were being confused and sterilization was being regarded as a punishment, so that diagnosis in private practice was being falsified, and cases of mental disorder were being frightened away from recognized institutions and treated in secret wherever possible. All genuine inquiry as to heredity and accurate information of the sort upon which scientific practice might really be based was becoming quite unobtainable.

In the course of some further discussion, Professor RUGGLES GATES expressed the hope that there would not be an over-elaboration of safeguards such as might unduly diminish the value resulting from any legislative measure in the direction of sterilization. Mrs. C. B. S. HONSON, a member of the Committee for Legalizing Eugenic Sterilization—a committee set up by the Eugenics Society—gave some account of the practice in Switzerland, where, she said, for fifty years sterilization had been steadily and regularly carried on. There was no legislation except in one canton (the Canton de Vaud), but a considerable amount of social pressure was applied, without legal compulsion, on persons whom the health authority thought required sterilization. In Zürich, out of a population of 400,000, some 400 or 500 women came forward annually for sterilization. Sterilization, whether therapeutic or eugenic, was always undertaken only by a surgeon if two other specialists, one of whom was the recognized chief of psychiatry for the canton, both gave written advices that sterilization was advisable in the particular case. Miss HILDA POCKOCK, a member of the same committee, said that a growing number of people in this country were in favour of a voluntary Bill, especially working-class people who were constantly rubbing shoulders with families of the social problem group. It was unjust, in their opinion, that they should be handicapped by the support of the very large families of the unemployable, and the conviction was growing that the solution was the voluntary sterilization of certain types of people.

England and Wales

Robert Jones Memorial

The *Western Mail* and *South Wales News* of January 16th contained an eloquent message from Sir John Lynn-Thomas in support of the appeal for a national memorial to commemorate the work of the late Sir Robert Jones. In our issue of October 21st, 1933, we recorded the progress that had been made up to that time with the appeal, and announced that the funds would be devoted to the establishment of a Robert Jones lectureship in the Royal College of Surgeons of England, and the institution of a travelling research Fellowship in orthopaedics, to be awarded alternately by the Royal College of Surgeons of England and by the University of Liverpool. "The memorial we want to raise is to the man," writes Sir John Lynn-Thomas. "It was my proud privilege to know him intimately for thirty years, and it is a great joy to realize that Wales is moving to raise a memorial worthy of a noble son." Donations may be forwarded to the honorary treasurers, the Robert Jones National Memorial, Quadrant House, 55, Pall Mall, S.W.1.

Vital Statistics for 1932

Part II of the Registrar-General's Statistical Review of England and Wales for 1932 (Tables, Civil) may be obtained from H.M. Stationery Office (price 2s.). The chief subjects are: population, births, marriages and divorces, migration, registers of electors in England and

Wales; and vital statistics of the British Dominions. A table is given showing the populations of England and Wales, Scotland, and Ireland, as enumerated at each census from 1821 to 1931, and as estimated for each year from 1893 to 1932 inclusive. The population of England and Wales is now estimated to have passed the 40,000,000 mark, having advanced to 40,201,000 as at the middle of 1932, from the 1931 Census figure of 39,952,377. The number of marriages in England and Wales during 1932 was 307,184, against 311,847 in the previous year. Sixteen males and 758 females married at 16, the lowest legal age at which marriages may be solemnized, but in only four cases were the bride and bridegroom both 16 years of age. The number of decrees nisi made absolute in respect of dissolution or annulment of marriage was 3,894, an increase of 130 over the number for 1931. The births registered during the year numbered 613,972, a decrease of 18,109. The consequent birth rate of 15.3 per 1,000 population is the lowest recorded for England and Wales, being 0.5 below that for 1931, the previous lowest, and 1.0 below that for 1930. The only countries showing a lower rate in 1932 were Sweden (14.5), Germany (15.1), and Austria (15.2). The proportion of the sexes in the births registered during the year was 1,050 males to 1,000 females. The statistics relating to Parliamentary electors give the figures for the 1932 Register for England and Wales as 12,440,109 males and 13,999,604 females.

Medical Society of Individual Psychology

The annual dinner of this society was held in London at the Florence Restaurant on January 11th, with Dr. J. C. Young, M.C., in the chair. In proposing the toast of the society the chairman gave a gratifying account of progress, there being now 117 members and associates. Professor Langdon Brown, in proposing the health of the guests, mentioned particularly Mr. McAdam Eccles, Dr. Emanuel Miller, and Mr. Daniel. He paid tribute to Dr. Miller's distinguished work for psychological medicine, but bantered him with being the "mysterious censor" who decided the fate of psychological papers presented to the medical journals. Mr. Daniel's unselfish support of the cause of individual psychology was acknowledged with much cordiality. Mr. McAdam Eccles responded in a humorous speech which drew analogies even from the Loch Ness monster. Dr. Miller spoke of the value of the individual psychology method to medicine and particularly to the general practitioner. Mr. Daniel reported increased sales of the pamphlets, and expressed great faith in their usefulness and further success. Mr. Symons, chairman of the Individual Psychology Club, claimed that it was doing very useful work ancillary to, though distinct from, the Medical Society. Dr. A. Baldie, in proposing the toast of "The Chairman," stated that he and others in general practice were finding their usefulness much increased by the knowledge of the methods of individual psychology.

New Westminster Mortuary

An important public health service has been rendered by the City of Westminster, which has transformed and reorganized its forty-year-old mortuary building at a cost of under £1,500, the design for the conversion having been worked out by the medical officer of health, Dr. A. J. Shinnie. In addition to the improvement of the coroner's court and offices, the largest of the four previously existing rooms has been remodelled as a viewing room and contains the preservation chamber. This refrigerating chamber, of the Kelvinator type, contains nine compartments for bodies. When the doors are closed extracting fans are at once set in motion so that the air is not allowed to stagnate—a very necessary provision in the

case of such decomposed corpses as are recovered from the Thames many weeks after drowning. In one section of the chamber a much lower temperature can be obtained; this has special value in cases of death from certain infectious diseases, and when putrefaction has advanced very far. To the old post-mortem room has been added another of equal size, lit by large lantern lights, but without any louvres, thus obviating the constant down-falling of dust. Ventilation is effected by extracting fans, and good modern equipment for the ample supply of hot and cold water has been installed. In an adjoining small room has been fitted up a pathological laboratory specially designed for facilitating the rapid examination of specimens and their preservation. With this extended accommodation it is now possible to perform four post-mortem examinations simultaneously. Care has been taken also to protect those concerned with viewing bodies from unnecessary distress and unpleasantness, and a specially designed chamber has been introduced for the reception of bodies awaiting burial. Heating throughout the new building is provided by electric tubes.

Ireland

Local Services (Temporary Economies) Bill

This Bill was introduced into the Dail more than four months ago, but its text was only circulated on January 19th. The Bill seriously affects medical officers under local authorities. Section 4, provides that the minimum deduction shall not be less than the minimum deduction under the schedules applicable to civil servants. The section contains the very objectionable provision that the local authority shall consider each case individually instead of in groups, and that it is empowered to make any deduction it thinks proper in excess of the minimum.

Public Health in Westmeath

Dr. Hugh O'Neill, medical officer of health for County Westmeath, in his last annual report states that there has been no change in the sanitary personnel during the year, nor has any advance been made in regard to the attendance of sanitary sub-officers at training courses. Increased pressure of work under the school medical service scheme, involving considerable travelling, has resulted in less time being available for the ordinary public health duties of the county medical officer and for the proper supervision of sanitary sub-officers. It is generally the task at hand, the report continues, which receives attention to the exclusion of other, perhaps equally important, matters, and it is necessary to reaffirm formally the conviction that the appointment of an assistant medical officer will be required, not so much to increase the quantity as to improve the quality of the work which is being carried out. There must be time for organization, for the working out of ways and means, and for the study of various incidental problems which arise if a chief medical officer is to cope in a broad and efficient way with his manifold duties. If this matter has not been emphasized much and often, it is because of recognition of the fact that the present time is not opportune for making a new appointment. In the meantime, the feeling is unavoidable that much remains undone, and that it rests with the future to provide means of reaching a more satisfying and satisfactory standard of public health work in the county. Reference was made in the last report to improvements carried out in the Mullingar water supply in the provision of filtration of the town water. This scheme, which was completed during 1932, also

included the laying of a new main from the intake to the pumping station and the installation of new electric pumps to replace the worn-out oil engines. Filtration, when properly supervised, provides a reasonable guarantee of the purity of a water supply, and samples taken of the filtered and unfiltered water disclosed, on analysis, a very considerable improvement. Housing schemes undertaken by the various local authorities in the county have been adopted with a unanimity which points to the general appreciation of the housing necessities of the people, and to a determination to deal with the problem in a resolute and practical manner. Encouraged by a large grant from the Sweepstakes Fund, the building of a new county hospital at Mullingar was decided upon during 1932. A welcome feature of the new hospital scheme will be the provision of an office for the county medical officer. This will be housed in a separate building, which will also include dental and oculist clinics for the Mullingar area.

Medical Inspection of School Children in Dublin

In a recent annual report on the school medical services for the county borough of Dublin Dr. Mary M. O'Leary, medical officer, states that 140 cases of ringworm of the scalp were found during the year, and the treatment of 112 of these was completed. Of eighteen cases of scabies the treatment of fifteen was carried out. The hospital treatment of ringworm by x rays and thallium is so much quicker than other forms of treatment that school medical officers refer the children to hospitals whenever possible. One case of lupus was found and received violet rays; alopecia, the aetiology of which is still uncertain, was found in fifty-two cases. Children with defective vision numbered 2,952; it is gratifying to note that, of 2,568 cases of defective vision and squint referred for treatment, 2,001 attended eye departments and had treatment completed. In 1,682 cases glasses were supplied, inquiries being made first into the financial position of the parents, most of whom were unemployed. There were twenty-two operations for squint, one for cataract, one for tumour of the eye, and one for cyst on the eyelid; eight artificial eyes were supplied to children who had lost their eyes as the result of accidents. In April a new contract was entered into for the supply of spectacles to school children. Under former contracts the glasses were supplied at a flat rate for spheres, plano-cylinders, and spherocylinders; now the cost of the glasses is calculated on the power of each lens. Some improvements were noted in the hygienic conditions prevalent in certain schools—for example, the installation of electric light and the distemping of walls in light-reflecting colours; the erection of wash-basins; the replacement with bubble fountains of the old-fashioned drinking fountains with metal cup, etc. When referring in other annual reports to the subject of school meals for necessitous children, Dr. O'Leary has stressed the fact that the food given in the homes consists almost solely of carbohydrates, and that the meal provided in the schools should contain such essential food constituents as protein, fat, and vitamin. It has been noted in some, but not in all, of the schools in which free meals are given that these requirements have been fulfilled. In Dr. O'Leary's opinion a hot midday meal is essential for all growing children, as their digestions are impaired by long intervals between meals. A number of children other than those of the necessitous poor have been found on inspection to be suffering from malnutrition. This is not due to lack of food, but is often due to lack of the power of assimilation. The children are too tired in the late afternoon to digest and assimilate food which if given at 12 o'clock or 1 p.m. would benefit them. Also many of the schools are

inadequately heated, and there is no provision for drying clothes in wet weather. A hot midday meal would do much to counteract the effect of this on the children's vitality, and would increase their resistance to infectious and other diseases.

Scotland

Health of Glasgow

In a summary of Glasgow's health statistics for 1933, Dr. A. S. M. Macgregor, the city's medical officer of health, states that deaths during the year numbered 14,748, or 1,320 fewer than in 1932; the death rates for the two years were 13.4 and 14.7 respectively. During the past ten years the death rates have been uniformly low, with the exception of 1929, when there was a serious outbreak of influenzal pneumonia, but the rate for 1933 is the lowest on record, being 0.4 below that for 1923, the vital statistics for which year had hitherto been the most favourable. This low rate, Dr. Macgregor states, may be attributed to the favourable conditions prevailing during the greater part of the year, which resulted in a lower mortality from many causes, especially from respiratory disease. The weather conditions in 1933 were exceptionally favourable from a health point of view, for the rainfall of 29.17 inches was the lowest recorded for over a quarter of a century. The previous lowest rainfall in the returns from Springburn Park was 28.7 inches in 1905; while the lowest since recording was begun there in 1897 was 25.13 in 1902. The hours of bright sunshine numbered 1,255, which is the highest figure since 1919, when 1,341 hours were registered. The mean temperature—48.4° F.—was almost two degrees above the average. Although these favourable climatic conditions, Dr. Macgregor continues, do not influence to any great extent the incidence of infectious diseases, with the possible exception of pneumonia, the year 1933 was marked by reduced prevalence of most diseases except scarlet fever, the incidence of which continued at the same high level as that of 1932. The mortality from scarlet fever, however, was lower, the rate being 76 per million of the population, compared with 93 for the preceding year. Measles was much less prevalent, and indeed was more or less absent during the latter half of the year. This is indicated by a mortality of only 4 per million of the population, compared with 171 in 1932 and 382 in 1931. The death rate from measles has only once before been below 100, and that was in 1929. Whooping-cough, on the other hand, was more prevalent during last winter, and the higher mortality of 204 for 1933 was caused by the incidence of that disease in the early months of the year, into which the epidemic extended. It was not one of the major prevalences, however, for the mortality was less than half that of 1931. The mortality from diphtheria was lower—the rate being 82 as against 109 for 1932—as also was the mortality from cerebro-spinal fever, the rate for which was 72. Only once has the mortality from pulmonary tuberculosis been less than it was last year, and that was in 1930, when the rate was 805; the rate for 1933 was 890. The mortality from non-pulmonary forms of the disease was a record, the rate being 246, as against 269 for the preceding year. Since 1930 there has been a reduction of almost 30 per cent. in the number of deaths from these forms of tuberculosis. Although there was a certain prevalence of influenza in January, it was not one of the major outbreaks of that disease, and the mortality for the year was only 220, compared with 415 for 1932 and 190 for 1931. The mortality from diabetes, nervous and digestive diseases, and nephritis was lower, while the death rate from

senility was only 295, compared with 401 in 1932. On the other hand, the death rate from cancer, heart disease, and arteriosclerosis was higher. Despite the warm spells during the summer and early autumn, the mortality from diarrhoea under 2 years of age was only 319, as against 385 for 1932. Deaths of infants under 1 year numbered 2,062, equivalent to a rate of 97 per 1,000 births; this rate has only been lower on one occasion—1923—when it was 89. The number of births totalled 21,345, giving a birth rate of 19.3 per 1,000 of the population, as against 20.8 and 20.1 for 1932 and 1931 respectively; this low birth rate is also a record for the city.

Edinburgh Dental Hospital

At a dinner held on January 15th, in the Royal College of Surgeons, Edinburgh, Dr. William Guy, who recently retired from the post of dean of the Edinburgh Dental Hospital, was entertained by his colleagues and friends in the dental profession. Mr. A. Ernest Miller, who presided, said that Dr. Guy had been dean of the Dental Hospital and School from 1899 to 1933, and had given evidence of great personality, singular individuality, and competence. The work he had done for dental education was known to most of them. He had banned chloroform, which was the general dental anaesthetic when he first became dean, and he had also banned the great array of dental forceps; nowadays most people extracted with the two pairs of forceps which he had devised. By his foresight, organizing ability, and administrative power the hospital had risen from insignificance to an institution worthy of the profession and of the city. In reply to the toast of his health, Dr. Guy outlined the history of the Edinburgh Dental Hospital. The institution, he said, began in January, 1860, as the Edinburgh Dental Dispensary, and was known by that name until 1878, when the present name was adopted. At that time the hospital moved to No. 18, Brown Square, and the equipment then consisted of three Fox chairs with three spittoons and brackets. In 1899, when he was appointed to the vacant office of dean, he found the premises to be inadequate and the equipment deplorable; also there was no money to spare. Now the hospital had buildings, equipment, and funds to the value of between £30,000 and £40,000, and there were more than one hundred pupils in the work-room. The Scottish Branch of the British Dental Association, Dr. Guy stated, began and maintained the agitation which resulted in the Dentists Act, 1921, and which, in turn, established the Dental Board.

East Fortune Sanatorium Extension

It was stated at a meeting of the East Fortune Public Health Committee on January 16th that an extension of East Fortune Sanatorium was required, and that it was proposed to make an addition sufficient for the accommodation of twelve patients and four extra nurses at a cost of £10,760. At present there was accommodation for 200 patients, the sanatorium serving the needs of seven counties. As patients from East Lothian occupied fifty beds, the cost to this county of the addition would be one-quarter of £10,760. It was mentioned that it might be necessary to appoint an extra assistant medical officer.

As a memorial to his cousin the late Dr. Alfred Eichholz, chief inspector under the Board of Education, Mr. William Eichholz has offered to equip a new massage clinic in London. The offer was made to and has been accepted by the National Institute for the Blind. The new clinic will be established near the headquarters of the Institute in Great Portland Street, W. Dr. Eichholz devoted his leisure to the care of the blind and deaf. He was a member of the council of the National Institute for the Blind, and served as chairman of its education and research committee.

CORRESPONDENCE

The Report on Sterilization

SIR,—It appears that there are a number of persons, even some within the profession, who, probably quite unwisely, attach importance to my opinions with regard to the report of the Departmental Committee on Sterilization. As some of those opinions, reported at second hand, have not been recorded with strict accuracy, perhaps you will allow me space to state them—but not on this occasion to argue about them—more carefully.

In the first place, and in general, the report seems to me to be an admirable and valuable document. While it should not, of course, be regarded as an authoritative statement on all aspects of its subject, it is undoubtedly an excellent and impartial summary of "the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency," the primary business with which the Committee was charged. It is gratifying to find close agreement in this respect with the British Medical Association's Report on Mental Deficiency.

In particular, the report contains certain observations and pronouncements which strike me as specially opportune and important in a document intended for wide publicity. Such are: (1) that there is no ground for alarmist views with regard to racial deterioration (p. 9); (2) that there is no definite line separating mental defect from dullness (p. 12); (3) that "the dismal chronicles of the Kallikaks, the Jukes, and the Nams" are of no scientific value (p. 13); (4) that the proportion of defectives with certifiably defective parents is small, and that therefore had compulsory sterilization of defectives been in force for a generation the reduction in number would not have been substantial (p. 14); (5) that the majority of the surviving offspring of parents one at least of whom is mentally defective are not subnormal (p. 17); (6) that there is no evidence of excessive fertility among defectives (p. 18); (7) that it is impossible in the present state of knowledge to forecast with any certainty whether a child of any given union will exhibit mental abnormalities (p. 21); (8) that the belief that sterilization will serve as a substitute for institutional provision is illusory (p. 30); but that approximately two-thirds of all defectives are capable of life in the general community (p. 32).

I find myself in complete agreement with the Committee in regarding the objections to a general policy of compulsory sterilization as conclusive, and also in its opinion that the case for legalization of voluntary sterilization in some classes of case, and with proper safeguards, has been made out. One is particularly grateful to the Committee for stating so emphatically that any legal provisions should not be restricted to mental defect and disorder, but should extend to certain grave physical disabilities, and that the operation should never be performed within an institution for mental defectives.

I differ, however, from the conclusions and recommendations of the Committee, of course with great respect and with a mind still open to argument, in two matters of major importance. First, I regard the field which it thinks appropriate for voluntary sterilization as in several respects too wide. Secondly, I have no sympathy, either logically or sociologically, with the contention that sterilization should be adopted, or more readily acceded to, in the case of mentally defective persons on the ground that they might or would perform the duties of parenthood imperfectly. Both these points need discussion. With regard to the former I will only say here that, whereas the Committee would include (1) all persons suffering from the defect, and (2) all persons who believe themselves to be carriers of the defect though not manifesting it, I would

include only (1) persons suffering from the defect in whose case it was proved (or at least highly probable) that the cause was inherited and transmissible, and (2) carriers of a defect known to be transmissible and of which the mode of transmission was likewise reasonably certain. The difficulties and risks of certification and sanction in many cases in the more restricted field would be formidable: in the wider field large numbers of cases would, I believe, in the present state of knowledge, be impossible of determination and sociologically and eugenically questionable. The very recommendations of the Committee for further research prove this. With regard to the second point of difference, there are many persons other than mental defectives who make imperfect or undesirable parents, to an extent fully as injurious to the children, and it would be wholly unjust and impolitic to single out defectives even for voluntary sterilization on this ground.

I should like to add, as is obvious, that I have confined myself in this letter to those parts of the report which relate to mental deficiency and not to mental disorder; and that the profession will note with satisfaction that the suggestions made by witnesses from the British Medical Association for the safeguarding of medical practitioners in relation to certificates have been recommended for acceptance by the Departmental Committee.—I am, etc.,

London, N.W., Jan. 20th.

HENRY B. BRACKENBURY.

Inheritance of Mental Deficiency

SIR,—Professor Ruggles Gates's letter (*Journal*, January 20th, p. 129) takes it for granted that "insanity" is inherited by organic channels. As I pointed out some weeks ago in the *Journal* there is no unequivocal evidence that this is so. On the contrary, the advocates of the "inheritance theory" have given their view the benefit of every doubt, and have even, on one memorable occasion, twisted mathematical reasoning to suit their purpose.

Professor Gates supposes that a feeble-minded man could not join the Army, get a job on a boat, or drive a cab. I have known quite low-grade feeble minds do more than this. He finds it "quite possible" that the child who died at 24 "was a mental defective"! If another child had been born also mentally defective, then the fifty-fifty ratio between defective and normal (which accords with the "simplest assumption" of the eugenisists) would have existed. But should such a child have been born, and, unfortunately, have turned out to be normal, the resources of eugenisist advocacy would still not be exhausted. We should then have a clear case of the twenty-five/seventy-five ratio of Mendelian recessiveness, and it would still be evident that the condition vaguely labelled "mental defect" is germinally inherited! A simple supposition may elucidate eugenisist logic in this matter. Suppose the incestuous couple had had sixteen children (and, after all, defectives are notoriously prolific), then the evidence for Mendelian inheritance would depend upon how closely the ratio between affected and normal children conformed to one of the known Mendelian ratios. But which of the arithmetically possible ratios is not "Mendelian"? What possibility is there that the facts, whatever they may be, could not be made to fit the eugenisists' contentions? None.

The "probable error" in the assessment of the incidence of qualities so indefinite as mental defect or insanity might be as high as 25 per cent. As this also is tendentiously manipulated, we can easily see how the advocates of genetic interpretations find the environmental factors "hardly worthy of serious consideration."

—I am, etc.,

London, W.C.1, Jan. 19th.

IAN D. SUTTIE.

Hereditary Blindness and Other Defects

SIR.—One reads Mr. Myles Bickerton's mass of scientific material relating to blindness with some respect, only to find the cure-all remedies open to question. The efficacy of certain fashionable panaceas put forth by our profession is rapidly exceeding that of the better-known patent medicines. I submit that the animal-herd attitude towards our fellow beings, be they afflicted or well, is not common to the whole profession. I submit, further, that it is possible that gonococcal ophthalmia may be as effectively wiped out by the elimination of unsuitable gonococci as by the prevention of unsuitable births.

Mr. Bickerton finds myopia a subject of some import, one forming a considerable proportion of blind days lived. Setting aside the myopic parents, who may be put in the category of spilt milk, being already productive and therefore beyond redemption, we find that, of a given total of 850 children, 300 were myopics. Of these, 200, coming from tainted stock, are better eliminated. Taking only the progeny of ninety-one non-myopic matings, there are but 25 per cent. of myopic children. Since each type is myopic, and therefore a potential breeder of a myopic brood, we may assume that what is good for the one is also good for the other. We are supplied with constructive measures by which myopia may be eliminated. Applying these, only so far as the problem concerns the progeny of ninety-one non-myopic control families, we may ask which of the following measures is to be adopted: constructive birth control, sterilization, abortion, euthanasia, segregation, control of marriage, Wassermann reaction, or deportation to Vera Cruz for the opinion of an enlightened Government? However, the matter is of little moment, affecting but 25 per cent. of the children of the non-myopic breeders (ignoring the percentage of potential grandbreeders of myopes).

Listening to the buzzing of a personal bee, I now turn to my own corner of medicine. Various authorities tell me that familial, congenital, and hereditary influences are bound up with most of my everyday problems—to mention but a few: deaf-mutism, progressive deafness, cholesteatoma, atresias, cleft palate, nasal "catarrh," ozaena, and so on. We otologists must claim to add our quota to the Vera Cruz cargo. The psychiatrist—if not obsessed by other notions—will naturally expect a goodly share of human fodder. Again, can we justly withhold a modicum from the physician, the orthopaedist, the tuberculosis officer, the dermatologist, even the gynaecologist? Any residuum will doubtless be claimed by the toxicologist and the balneologist. My apologies to any 'ologists who may feel neglected. The surgeon will be too busy tying ligatures round the vas to bother about his due share of the queue outside.

A little care is necessary, for Bennett of Nebraska tells us that migraine is first cousin to epilepsy. I and a proportion of my colleagues will doubtless consume our fifteen grains of aspirin in manner covert, lest we be led to the theatre for a bilateral dose of catgut instead. Yet may we fail to escape the flood of progress, despite all care, and some day an endless stream of jobless guardian angels, queued outside the Celestial Unemployment Bureau, will look down to see the chairman of the World Sterilizing Committee ligaturing the only other occupant of Earth—that is, the chairman of the World Birth Control League. The hydrocephalic dictator of Vera Cruz has by this time been birth-controlled before conception, the Supreme Arch-abortionist having died prematurely from unsuspected dysgenic causes. From this time onward the *Micrococcus catarrhalis* reigns supreme, as yet uncontrolled by the birth control of omniscient man. Truly is *Alice in Wonderland* considered a great classic!—I am, etc.,

Newcastle-on-Tyne, Jan. 27th.

F. MCGUCKIN.

The New Cancer Problem

SIR.—Please allow me to comment on Mr. Hastings Gilford's letter and his courteous allusion to a statement I made. In dealing with a subject so vast and complex, it would be wise to state to which particular part or parts of it reference is being made. Perhaps I should have been more specific in this respect.

The "cancer problem" is encyclopaedical, and includes primary themes and thoughts, some of which are within and others appear beyond the reaches of our souls. Some observers might consider the problem a solved one when the prevention, cure, and inducing agent have been discovered; whilst others might reflect that there are factors that still remain untouched.—I am, etc.,

London, W., Jan. 22nd.

G. LENTHAL CHEATLE.

Continuous Intravenous Saline

SIR.—The valuable article by Messrs. Bailey and Carnow on the above subject, and subsequent correspondence, are full of interest. I should not join in, except that Dr. Herbert Spencer's letter brought back to my mind that large intravenous injections for combating the effects of severe haemorrhage were used prior to the publication of his cases in the *Lancet* of 1892. Reference to the *Lancet* of December 30th, 1882, will disclose a record of two very interesting cases, published by me at that date, which occurred during my tour as resident accoucheur at the London Hospital. From time to time I have employed similar methods since.

These were by no means the first cases in which the practice of treating post-partum haemorrhage by the instillation of saline fluid had been employed. The publication of these cases elicited a very interesting commentary by the late Dr. Robert Barnes, then obstetric physician at St. George's Hospital (see *Lancet*, January 7th, 1883, p. 137). The perusal of these reports, which give an idea of some of the orthodox methods in vogue fifty years ago in the treatment of post-partum haemorrhage, makes one shudder.

What marvellous advances have been made during the last half-century! None more notable than the many uses now made of intravenous medication, of which salvarsan and its substitutes provide a striking example.—I am, etc.,

Manchester, Jan. 16th.

WILLIAM COATES.

Surgeons' Certificates after Abdominal Operations

SIR.—It seems rather surprising that many people, after having undergone an abdominal operation or operations, should be so ignorant or forgetful of what has been done by the surgeon. It is a common experience to meet patients uncertain whether their appendix or gall-bladder has been removed, or, in the case of women, oblivious as to how much of their generative organs they still possess. One can hardly expect patients to make a written note of what they may have been told by the surgeon, and probably the majority are quite content to let their surgical adventure sink into the mists of reminiscence.

It may be difficult to obtain the information from other sources, for surgeons and physicians retire or die, case notes disappear, and even hospitals—more especially the smaller ones—cannot always supply it. As such information may be of great importance not only to the patient but to some physician or surgeon under whose care he has come at a later date, it seems reasonable that a more accessible source of information should, if possible, be available, and to meet this the following suggestion is

put forward. Surgeons, after performing an abdominal operation, should give to the patient or other responsible party a brief written statement of what has been removed, what anastomosis has been made, or anything else they think might be useful for future reference. The actual condition found need not be specified, and in the case of operations at hospital, the surgeon might be relieved of this extra work by one of his qualified subordinates.

It is because cases do occur where it is difficult or even impossible to ascertain, except perhaps by some further examination, what has been done surgically that the suggestion is made—though not without some hesitation, as we are already overburdened by an increasing number of compulsory certificates. Possibly some surgeons do this already as a matter of routine, while others may consider it undesirable for various reasons, but it is difficult to see how patients, who, after all, are chiefly concerned, would be other than benefited if such a course were adopted or, at any rate, adopted more generally.—*I am, etc.,*

London, W 1, Jan. 19th.

R. W. A. SALMOND.

Painful Injections

SIR,—Dr. Bousfield's letter in your issue of January 13th (p. 76) raises an interesting point, for with a really sharp needle subcutaneous or intravenous injections should be almost painless if the fluid injected is non-irritating. I have noticed, however, that even with the most meticulous care over the needle-point patients sometimes complain of the injection hurting, and have come to the same conclusion—namely, that an infinitesimal amount of spirit in or on the needle was the cause of the pain.

The boiling of needles and syringes easily obviates this difficulty, but is open to the following objections: (1) The needles very soon cease to be really sharp. (2) Repeated heating and cooling of syringes causes a warping of the glass, so that the smooth and air-tight action that is so delightful, and in intravenous therapy so necessary, is lost. This is less manifest with all-glass syringes, but very common with the metal-and-glass variety of the Record type, and I suspect that the reason why hospital syringes are usually so appalling to use is that they are subjected to repeated and prolonged boiling. (3) Spirit cases, for the carrying of hypodermic syringes, etc., are deservedly too useful in private practice to be abandoned.

My present practice is as follows: All needles, syringes, lumbar puncture instruments, and cutting instruments which cannot be boiled are either kept or immersed for twenty minutes before use in the following solution: lysol max, ether 5ij, sp. vini indust. to 1 pint—in which they do not rust, and which, with the exception of the aromatic odour, is, I suspect, of similar composition to "surgical spirit." This solution is very irritating, and care is taken to wash the instruments thoroughly in sterile water before use—in the case of syringes the water being drawn up and expelled through the needle two or three times. Should boiled water not be available, filling the syringe through the needle two or three times with ether will wash out all spirit. A few strokes of the piston will then evaporate the ether, leaving one with a dry, sterile syringe and needle.—*I am, etc.,*

Brighton, January 17th.

L. I. M. CASTLEDEN.

SIR,—I have been very interested in the observations of Dr. Bousfield (January 13th, p. 76) and Dr. Loewy (January 20th, p. 124) because I have for some time practised a technique in the giving of injections which I am assured gives rise to little or no pain. I had

observed that whenever an injection was followed by bleeding it had invariably been a painful one, and, conversely, that when no bleeding followed there had been, as invariably, a minimum of pain. I therefore resolved to avoid causing any bleeding when giving an injection, and whenever I have succeeded in this there has always been little or no pain.

My technique consists in holding the skin fairly tense and observing it closely in a good light. In most cases a fine mottling of the skin will be observed, in which the darker areas correspond to the vascular network and the paler areas to the avascular interstices. It is into the centre of one of these avascular areas that I insert the needle. The avascular areas are extremely small—no bigger than a small pin's head—but they are quite apparent after a little practice, except in certain skins, notably those which are very white and the more fashionable sun-tanned.

I have always used industrial spirit as a sterilizing agent, and I believe that what little spirit remains upon, and in, the needle becomes so diluted in the filling of the syringe that it can be disregarded.—*I am, etc.,*

S. F. DURRANS, M.R.C.S., L.R.C.P.

Broadstone, Dorset, Jan. 20th.

Legal Ownership of X-Ray Films

SIR,—Your article on this subject in the *British Medical Journal* of January 13th raises several interesting points. Briefly, you state that a court of law would be likely to make its decision according to the existing custom of the profession, and you suggest that it is not customary for a radiologist to hand over x-ray films to the patient. If we admit that the existing custom is likely to prove the deciding factor we must show that this procedure is generally adopted and recognized.

I always send the x-ray films and report on a patient direct to the medical practitioner concerned. If I did not do so the great majority of medical men would be dissatisfied. I usually do not see them again. If I insisted on their being returned a large amount of trouble would be caused through forgetfulness, etc. A certain number of practitioners retain the films themselves, but in this area I believe the majority hand them to the patient. One practitioner remarked to me: "I always give a patient your films, but never the accompanying report." I feel convinced that some similar procedure is adopted in a large number of places. Patients who come to see me for electrotherapy frequently remark that they have been x-rayed at various periods in the past in other places, and that they have their films, and I find it unusual for a patient to admit having been x-rayed without being given the custody of the skiagrams. Just as a practitioner would not be satisfied if he were not sent the films in the first place, so a large number of patients would be aggrieved if they were refused them subsequently. Human nature being what it is, we all try to please people when we can reasonably do so.

In certain instances a radiologist will take two films, retaining one himself; or, alternatively, he may make a print or a reduction, keeping either this or the original; but I am sure that there are very few who do not send either a film or a print to the patient's doctor, and I am equally convinced that a very large proportion of patients are subsequently presented with the films. From the above observations it would appear probable that a court of law would find that there was no universally accepted custom in this matter, or that it was usual for a patient to be presented with his films subsequent to his examination.—*I am, etc.,*

Ipwich, Jan. 15th.

C. H. C. DALTON.

"Under the Influence of Drink"

SIR,—In the *Times* of January 9th Lord Knutsford appeals, under the above title, for more suitable punishment of motor drivers convicted of accidents causing bodily injury whilst under the influence of drink. Would it not be possible to go further and endeavour to diminish the appalling toll in death and injuries due to this cause? The public are not interested in the dangers of alcohol as detailed by reformers, often more zealous than truthful, for many generations; but need biased propaganda deter an attempt to diminish in some measure this terrible price of modern transport? If it were possible to get a better perspective into the public mind regarding the action of alcohol something might be gained. But having been told that it affects judgement and diminishes efficiency, which experience has shown them it does not do in any material degree which affects their lives, the public is sceptical of statements of that kind. The all-important action of alcohol from the point of view of motor driving is its effect on attention. Professor Mellanby has taught us that 10 c.cm. of alcohol can be metabolized per hour by the human body, but half this quantity taken hour by hour diminishes attention. Deliberate judgement is not seriously affected even by relatively large doses of alcohol. An action which may require only the fraction of a second, however, probably is very sensibly affected. Notwithstanding the published papers and even monographs on the effect of alcohol on reflex actions, etc., the action of this substance on attention requires further investigation, especially on a large scale and from the point of view of emergencies in motor driving and similar occupations. And the purpose of this letter is to ask the Medical Research Council or other competent body to consider the undertaking of such large-scale experiments. I will willingly become a volunteer for my age group and submit to any experiments conducted in London, Oxford, or Cambridge that may be decided upon. If it were found that alcohol diminishes efficiency in mechanical emergencies a wise use of the fact by a proper authority might deter some men from drinking before driving.

One other point. The methods of determining the degree of drunkenness seem still to be an appeal to the speech and the legs. It is surely not impossible to devise some simple, cheap, and foolproof apparatus, capable of being kept at most central police stations, which would graphically record the efficiency of the driver of a wayward car whom the police might consider a danger to the public. That result might be an outcome of the investigation suggested.—I am, etc.,

Sidmouth, Jan. 13th

C. R. MARSHALL.

Actiology of Goitre

SIR,—It is with much interest that I have read Sir Robert McCarrison's able article on "Food and Goitre" (*October 14th, 1933, p. 671*). It is of particular interest to me, as in October, 1912, I read a paper before the Victorian Branch of the British Medical Association, which was published in the November 9th issue of the *Australian Medical Journal*, on "The Necessity of Lime in the System and its Relation to Goitre." I had been living in Southern Victoria, where goitre was very prevalent and was of the toxic variety. I found that during confinements these cases usually flooded. There was practically no lime in the district, and the cattle developed "the cripples," akin to rickets. The children, having to milk cows all their lives, disliked milk and rarely took it. The water supplies were rain water in galvanized iron tanks, which towards the end of the summer were very low, and whose bacterial content was extremely high, almost enough to poison them. There was much to suggest that

calcium was very deficient in their lives, and when put on calcium lactate they showed a wonderful improvement. Goitres improved, symptoms diminished, and all flooding ceased. The locality was coastal, so one assumed there was ample iodine. Feeling that both calcium and iodine were mixed up in the goitre question, I undertook some research work at the Melbourne University under Professor Osborne, and evolved a method for estimating the blood calcium, as at that time there was no workable method extant. After a lot of work a satisfactory method was established.

Rabbits were fed on a diet free from calcium, and some were given thyroid extract as well. These showed marked increased vascularity at the epiphyseal ends of the bones, which suggested that the bones were being called upon to supply the calcium necessary for the blood. This and the fact that calcium was needed, both as free ions as well as in colloidal combination, raised the question as to the value or otherwise of a blood calcium estimation. At the same time work was done on colloids, as in some goitres there is a retention of colloid and in others the vessels are found empty, showing that the rigidity of the colloid is liable to vary. Normally the colloid retains the iodine supply of the body till called upon for use. If it should be too thin it will not be retained and will be extravagantly wasted; if too thick to be brought into the circulation, it will collect and the body will be starved of iodine supplies, showing, on the one hand, signs of thyrotoxicosis, and, on the other, myxoedema. Not only may there be a shortage of available calcium, but once excessive thyroid activity starts there is increased excretion of that mineral. Colloids are dependent upon calcium and iodine for the state of their rigidity.

The experiments done in this connexion, though not conclusive, together with many clinical observations, were suggestive enough to make one feel that the thyroid controlled the viscosity of the blood and body fluids. Viscosity experiments done with capillary tubes showed a reduction up to 25 per cent. in the blood of exophthalmic and thyrotoxic goitres. The action of thyroid extract in getting rid of the colloid oedema of myxoedema is presumably due to the reduction of its viscosity by the thyroline. Hence the diuresis. The firmness of the clot in myxoedemias and the delayed clotting period in exophthalmic goitre were well known to those who had dealings with such.

These latter views were read before the Congress here in 1924, and because they were totally different from everybody else's—who were all quite satisfied that lack of iodine was the one and only cause of goitre—they received scant attention. At the same time these views were put forward as only dealing with a certain part of the process, for by this time it had been established to my own satisfaction that goitre could be cured by the removal of infections, and as no other form of treatment could do so, it must necessarily play a large part in the causation of it. I would like to suggest that where excess of fat tends to produce goitre there is a danger of calcium starvation, owing to combination of fatty acids with calcium salts forming insoluble soaps which are not broken down by the action of the bile. Some fatty acids form more insoluble soaps than others; that formed from cod liver is perhaps one of the most soluble. Prior to 1912 I had recognized the adrenal exhaustion in cases of hyperthyroidism, and treated all such cases accordingly.

It is surprising the number of organisms and toxins that are capable of producing goitre. Farrant found that abrin and ricin, as well as many bacterial toxins, when injected caused goitre. The gonococcus is at times responsible. Infusions of excreta and the drinking water from the tanks in Gipp land are both bacterial infections or toxic poisons. How far the lack of vitamins is responsible for goitre in Victoria is hard to say, but of this we are sure, that goitre can be cured by removal of infections together with adequate supplies of calcium, and very rapid results are obtained when the calcium is given intramuscularly, especially in thyrotoxic cases. At last we

can feel that the riddle of the causation of goitre is nearly solved, and the iodine boggy pushed into the background.

Briefly, the picture can be summed up thus. The normal mechanism of the thyroid is disorganized in the majority of cases by direct invasion of bacteria or gross toxic poisoning. The thyroid colloid is the storehouse of the iodine of the body. It is held in a certain state of rigidity ready for immediate use. This is largely governed by the calcium-iodine balance. Should the colloid be too thin it will not be retained, but constantly poured into the system, causing hyperthyroidism. In the effort to rectify matters calcium will be stolen from the bones, and so the body gradually becomes depleted; the iodine is used up, hence the need for more. To meet the demands the thyroid is called upon to do extra work, and hypertrophies in the process. Should retention of colloid be established, owing to too rigid a colloid, hypothyroidism will result till enough iodine is supplied to reduce its rigidity and so make it available. Clinical evidence strongly supports these views.—I am, etc.,

SYDNEY PERN,
Melbourne, Victoria, Nov. 30th, 1933. M.R.C.S., L.R.C.P.

Rest in the Treatment of Neuroses

SIR,—The question of whether or not rest in bed is indicated in the treatment of a neurosis is a separate problem for each individual case. In the majority of cases I think one must give a negative answer, and there are many sound reasons why it is in the best interests of the patient that he should continue to lead a normal life. The exhaustion which Dr. Astley Cooper mentions is certainly an obvious symptom in many cases; but the cause of it is that the patient is exhausting himself by mental conflict. By putting the patient to bed the physician is throwing the weight of his authority on the side of the Unconscious factors which are striving to get the patient to withdraw from his efforts at adaptation. Once in bed the patient finds himself back in the infantile position of irresponsibility which his Unconscious has desired. Many of my patients have confessed to me that the happiest periods of their lives have been the time spent in nursing homes when undergoing some operation.

In my experience conditions for a cure are much more favourable when the physician uses his prestige to aid the patient to struggle against this regressive attitude. The relief of unburdening himself to someone whom he feels to be understanding and sympathetic goes a long way towards relieving the patient's anxiety and consequent exhaustion.—I am, etc.,

Birmingham, Jan. 16th. R. MACDONALD LADELL.

The "Schoolboy's Heart"

SIR,—I was much interested by Dr. Cassidy's mention of "schoolboy's heart" in his article in the *Journal* of January 13th (p. 45). He does not go into the question of the cause of these patients' effort syndrome. My view of this—possibly the same as his own—may be worth mentioning, since it suggests an alternative line of treatment for those patients whom reassurance has failed to convince. These, in his hands, are probably negligible, but not in everybody's, as the patients who find their way here show.

The cause, I have found, is to be sought in the abdomen, even in those who complain of neither indigestion nor constipation. They do, however, complain as a rule of pain about the lower left ribs, and show some epigastric tenderness and excessive resistance to lateral compression of the left, but not the right, lower ribs. These signs result from a spastic pylorus and a dilated stomach. The former maintains the latter, which, in its turn, causes a

rapid pulse by its upward pressure's embarrassing the heart's action. Cessation of symptoms and a marked reduction in the pulse rate are produced in a few days by massage calculated to overcome the spasticity of the pylorus and then to diminish the volume of the stomach. The rapid subsidence of his symptoms and the demonstrable reduction in his pulse rate after the manipulations can hardly fail to convince a patient that his trouble is due to an easily remediable mechanical defect in the working of his stomach. Once fear is relieved, the emotion responsible for the failure to relax the pylorus is no longer operative; thus there is very little tendency to relapse.—I am, etc.,

London, W.1, Jan. 13th.

J. H. CYRIAC.

Birth Control Clinics and Cases of Sterility

SIR,—With reference to the review of the medical report of the Society for the Provision of Birth Control Clinics, in the *British Medical Journal* of January 13th, I should like to point out that cases of sterility are examined and, where necessary, are referred to hospitals or private practitioners for treatment. A recent analysis of our first eight thousand cases shows that thirty patients came on account of sterility. The financial position of this society makes it necessary that treatments should be limited to patients requiring contraceptive advice; facilities for other treatments are available elsewhere. The object of this society is primarily to give birth control advice and instruction which is not yet adequately provided in the existing medical services.—I am, etc.,

London, S.E.17, Jan. 16th

GLADYS M. COX.

SIR,—In the *Journal* of January 13th there was an annotation commenting on the annual reports of the Society for the Provision of Birth Control Clinics and of the National Birth Control Association. In it the following sentences occur:

"There are married women of the poorer classes who want guidance not as to how they can best reduce their liability to become pregnant, but how, if possible, they may overcome the sterility which distresses them. Ought not the staffs of clinics, especially of those established or aided by national or municipal funds, to be as ready to help the one woman as the other?"

At the women's welfare centres of which I am medical officer, and at which cases recommended and paid for by the local city and county health authorities are dealt with, an increasing number of sterile women come to the clinics each year for advice and help. To the best of my knowledge this has always been looked upon as part of the doctors' work at the clinics connected with the Society for the Provision of Birth Control Clinics; indeed, it is very definitely part of its programme of constructive birth control.—I am, etc.,

Crediton, Jan. 18th.

MARGARET C. N. JACKSON.

M.M.S.A. and D.C.O.G.

SIR,—The notice in your issue of January 20th concerning the institution of the diploma of the College of Obstetricians and Gynaecologists is somewhat misleading in that it would appear to suggest that up to the present no provision had been made which embraced the objects of the new diploma and the ground covered by the proposed examination. May I therefore be allowed to recall that the diploma of Mastery of Midwifery of the Society of Apothecaries, examinations for which have been held twice yearly since 1928, was in like manner designed to assist the public health authorities and others in the selection of practitioners who have made a special study of, and proved themselves expert in, ante-natal care, obstetrics, and infant welfare?

The public health side of the examination for the Mastery of Midwifery was further strengthened by the introduction last year of a special examination paper on "public health aspects of maternity and child welfare," which is set and marked by examiners of wide experience holding public health appointments. The examination, therefore, now has three written papers (obstetrics, paediatrics, and public health aspects) followed by full oral and clinical tests, and candidates are not admissible unless they are on the *British Register* and have held a registrable diploma for at least three years, and have complied with the regulations with regard to the appointments they have held.—I am, etc.,

HENRY COOPER,
Group Captain R.A.F.

London, E.C.4, Jan. 22rd. Registrar, Society of Apothecaries.

British Health Resorts

SIR,—I greatly doubt whether the medical profession has realized the present condition of the British Health Resorts Association, in spite of the letters that appeared from "Spartan," Dr. Collis Hallowes, and Dr. Alfred Cox. It is so serious that I venture to ask you to allow me to put the facts once more before your readers.

This association has only been kept in being by the fact that a few people, laymen and medical men, have subscribed freely to its funds. They and those others who have given so generously of their time to the very strenuous committee and other work that has been involved stand outside the benefits that the association can confer. The backing we have had from the medical profession has been all that we could ask. Every prominent medical body in the country has not merely given us its blessing, but deputed valuable and important members to form part of our committees and to help us in every possible way.

On the other hand, the pecuniary support we have received has been far less than we had hoped for and expected. We have been living from hand to mouth, and have had the greatest difficulty in paying the modest salaries for the valuable help we have had from our secretary and from our small paid staff. To the excellence and devotedness of their work I would like to pay a high tribute. If financial support is not forthcoming we shall be obliged to close down, for those who have hitherto provided it feel that it is not up to them to continue doing so, but that it is the duty of all those who will profit most abundantly by the movement—and among these I include not merely the doctors, but the towns, the transport services, and all those who cater for amusements or necessities in any form. We have convincing proof that where we have held conferences the towns have been benefited, and those concerned have unhesitatingly attributed this increased prosperity to our work. Our new handbook, with Dr. Fortescue Fox as its editor, will shortly be in the hands of the public, and we know that it will provide both the medical profession and their patients with a fund of valuable information which has not hitherto been available.

I appeal most urgently to the medical men in every place to which our invalids are sent to help us now. They can do so in two ways: (1) by joining the association and paying its very modest annual subscription of one guinea (through our secretary, Dr. Alfred Cox, at 199, Piccadilly, W.1); and (2), and more materially still, by actively interesting all with whom they come in contact on the urban, municipal, and other boards in our movement, which is a national one. We were told at our recent annual meeting that if the public only knew how good the movement was they would back it. It is up to the medical men to let them know. It has been abundantly shown that we have in Britain all the facilities for treating

a very large number of our invalids, but if this is to be done successfully there must be most careful and methodical organization. It has been estimated that if we could be sure of an income of between £2,000 and £3,000 a year we could launch out into work that would greatly foster the development of our health resorts. Surely this is not a big amount to pay in order to keep back in this country a serious fraction of the thirty million pounds a year which it is computed is being taken out of it by our people going to foreign resorts in search of health and pleasure. If we can weather another year Dr. Cox believes—and so, I think, do all of us who are working with him—that we shall be established. *Bis dat qui cito dat.*—I am, etc.,

R. H. ELLIOT,
London, W.1, Jan. 15th.

Chairman of Council, British
Health Resorts Association.

Serum Reaction for Malignancy

SIR,—Regarding the recent correspondence in the *British Medical Journal*, the Cronin Lowe modification of the Bendien test has been carried out at the Royal Institute of Public Health during the past nine months, using the Zeiss interferometer and, latterly, the Adam Hilger interferometer. Through the courtesy of Dr. Cronin Lowe advantage was provided of observing the complete detail in his laboratory, and, in spite of this, it was found that practical experience was so necessary that the first fifty results were regarded as of no other value than to perfect us in the technique. It should be noted that other workers are not all carrying out exactly the "Cronin Lowe" technique—his method of shaking the tubes and of mixing serum and reagent does not appear to be absolutely adhered to by some of the correspondents. Unless the method is carried out on more uniform lines criticism cannot be securely founded.

It would appear that a test of such importance, which claims to give some extra light on the diagnosis and cause of malignancy, has been dismissed too summarily by some of the correspondents, and that an insufficient number of tests have been carried out for mature judgement. It may be that the test in its present state is not applicable to general routine work; certain aspects of the technique depend too much on personal factors, and even such a precise instrument as the interferometer presents difficulties. Some 160 tests have been carried out at this Institute—even so, it is not considered that a definite conclusion can be arrived at.

The following important points arise in this connexion: Can it be said at present what constitutes a normal serum for the test? An apparently normal person's serum may give a malignant factor. If, in years to come, this individual develops cancer, has the test shown the predisposition or lack of "something" which will inhibit malignancy? A clinical diagnosis is not absolute, and even a tissue examination may not always be read truly. Is it not possible in some cases that positive serums with apparently clinical negative cancer diagnosis may eventually prove clinically malignant? Does the non-fasting blood give false readings? It would appear that the test can only be accurately judged after observation of a series of patients over a prolonged period of time, in order to verify many diagnoses and to test the sera of apparently normal individuals over a similar prolonged period.—I am, etc.,

E. G. ANNIS,
London, W.C.1, Jan. 9th. Acting Principal, Royal Institute
of Public Health.

P.S.—Since writing the above I note in the *British Medical Journal* of January 6th that Dr. C. J. Stocker of Lancaster has had similar experience and makes somewhat similar observations. His comment as to 1,700 tests is apt.

A "New" Type of Influenza?

SIR,—It may be of interest to mention that in North London during the last fourteen days a new clinical type of influenza (as far as we are aware) has presented itself. The initial cases caused a little anxiety on account of their lack of definite signs and continued pyrexia.

The clinical picture, typical in almost every case (twenty in all have been seen up to the present), was as follows:

The patients complained of swelling of the face, confined chiefly to the upper half over the supraorbital regions and eyelids. Puffiness of the lower lid was marked. In a high percentage there was chemosis and congestion of the conjunctivae, with increased vascularity. At this stage the patient was afebrile. Within six to twelve hours headache, malaise, and feverishness, with moderate perspiration, were complained of, and the temperature and pulse-rate were increased, typical findings being a temperature of 103° F. and a pulse rate of 120. The tongue was dry and coated with a dirty white fur. General physical examination was negative.

Acute nephritis was the tentative diagnosis arrived at in the early cases, but routine examination of the urine showed complete absence of albumin and blood in all cases.

Symptoms, with the addition in some cases of a slight hacking cough, continued from two to five days up to a week in severe cases.

This type is particularly resistant to treatment. Pulv. ipecac. co. and acid. acetylsalicyl., which we have used extensively in the past with success, was almost ineffective and tended to aggravate the lassitude. The most effective combination of drugs seems to be acid. acetylsalicyl. grains x, phenacetin. grains v, caffeine grains iij. Pyrexia in most cases began to fall within twelve hours, and there was a corresponding relief in the symptoms. Within two to five days temperature and pulse rate were normal and the symptoms had disappeared. A subdued light in the sickroom or an eyeshade gave considerable relief to the eye condition. Frequent bathing with lot. acid. boric. was also helpful. Treatment apart from this was carried out on general principles.

I should be interested to hear whether other members of the profession have met with a similar condition.—I am, etc.,

JAMES L. S. THOMSON, M.B., Ch.B.

London, N.22, Jan. 17th.

Obituary

Dr. WILLIAM ACKRILL STAMFORD, who died recently at the age of 93, had been in practice at Tibshelf, Derbyshire, for more than half a century. A native of Beverley, he was a student of the old Leeds School of Medicine, and qualified M.R.C.S.Eng. in 1883. In his early days Dr. Stamford was well known as an athlete and rider in point-to-point races, and he claimed to be the first Englishman to ride the old "bone-shaker" bicycle. He founded the local Ambulance Brigade at Tibshelf, which appeared for a command inspection by Queen Victoria at Windsor Castle, and in 1900 the Prince of Wales (afterwards King Edward VII) presented to Dr. Stamford on behalf of the Queen the long-service ambulance medal. Dr. Stamford was a prominent Freemason, and was twice Master of the Tibshelf Lodge, which he founded.

Dr. CHARLES RANDOLPH of Milverton, Somerset, died on January 14th, at the age of 83 years. He had practised in Milverton, and over a very large area of the district, for more than sixty years. He studied medicine at the Bristol Royal Infirmary and at St. Bartholomew's Hospital, London, qualifying M.R.C.S.Eng. in 1871, and obtained the L.R.C.P.Ed. in 1872. From that time he took over his father's practice, and carried it on until his retirement in 1931. Dr. Randolph belonged to the British Medical Association for the whole of his career, and was president of the West Somerset Branch about forty-five years ago. He held the appointment of medical officer of health to the Wellington Rural District Council from

1874 to 1931, and was Poor Law medical officer for the same period. His sole interest in life was his profession, and never once during his long career could he be persuaded to take any holiday for more than a couple of days, and even that rarely. His patients declared that his very presence in the sickroom carried confidence and comfort with it. He can best be described as a true friend of the poor, and was in fact the old type of family doctor and counsellor.

Universities and Colleges

UNIVERSITY OF LONDON

Lectures

A course of six lectures on cytology will be given at University College by Dr. R. J. Ludford, Dr. E. S. Horning, and Dr. K. C. Richardson, on Wednesdays, February 7th to March 14th, at 5 p.m. Dr. Ludford will deliver the first three lectures on "The Physical Properties of Protoplasm," "Vital Staining, the Reaction of Cells to Dyestuffs," and "Tissue Culture as a Technique for the Study of Living Cells." The fourth and sixth lectures will be given by Dr. Horning on "Micro-incineration" and "The Enzymatic Function of Mitochondria and the Significance of the Golgi Apparatus," and the fifth lecture will be delivered by Dr. Richardson on "The Secretory Phenomena in the Oviduct of the Fowl." The lectures will be followed by demonstrations of microscopical preparations, and are open without fee to students of the university and others interested in the subject.

UNIVERSITY OF DUBLIN

At the later winter commencements in the Hilary Term, held in Trinity College on January 17th, the following medical degrees were conferred:

M.Ch.—F. W. G. Smith (*in absentia*).
M.B., B.Ch., B.A.O.—D. S. Torrens (*stip. cond.*).

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE, NEWCASTLE-ON-TYNE

A special course of post-graduate instruction has been arranged for the months of January, February, and March. A course of lectures by Dr. J. C. Spence, followed by a clinical demonstration of cases, at the Royal Victoria Infirmary and Babies' Hospital, Newcastle, on Thursdays at 4 p.m., began on January 25th. A series of ten meetings dealing with pulmonary tuberculosis and infectious diseases is being held at the City Hospital, Walker Gate, Newcastle, on Wednesdays at 6.30 p.m. The fee for each special course is £3 3s.

Classes for clinical instruction in medicine and surgery, or lecture demonstrations, will be held at Newcastle General Hospital every Sunday at 10.30 a.m. until March 25th. There is no fee, and all medical practitioners are invited to attend.

The Services

DEATHS IN THE SERVICES

Lieut.-Colonel Edward Surman Peck, Bengal Medical Service (ret.), died at Montreux, Switzerland, on January 15th. He was born on March 23rd, 1866, the son of William Bishop Peck, Esq., wine merchant, of Westbury, Gloucestershire, and was educated at Cambridge, where he graduated B.A., M.B., and B.S. in 1891, and also took the D.P.H. in 1894. Entering the I.M.S. as surgeon lieutenant on January 29th, 1894, he retired, on account of ill-health, as major on December 6th, 1913, but was subsequently promoted to lieutenant-colonel while serving in the war, on December 11th, 1916. He served on the North-West Frontier of India in the Chitral Campaign of 1895, took part in the relief of Chitral, and gained the frontier medal with a clasp. In 1913 he took an air pilot's certificate. He rejoined for service in the war of 1914-18, from October 19th, 1914, serving for a short time in a hospital ship, and then in the Indian Hospital at York Place, Brighton, from its opening in November, 1914, to its closure on December 31st, 1915. He was then sent to India, but was invalided after a few months. He was married, and was a brother of the late Lieut.-Colonel F. S. Peck, I.M.S.

Surgeon Commander Edward Henry MacSherry, M.D., M.Ch., R.N. (ret.), died at Eastbourne on January 4th. He graduated M.D., M.Ch., and M.A.O. in the Royal University of Ireland in 1886.

VITAL STATISTICS FOR ENGLAND AND WALES, 1933

We are indebted to the Registrar-General for the following statement regarding the provisional birth rates and death rates, and the rates of infantile mortality, in England and Wales and in certain parts of the country, during 1933. The statement is issued for the information of medical officers of health.

ENGLAND AND WALES
Birth Rate, Death Rate, and Infantile Mortality for the Year 1933 (Provisional Figures)

	Live Births per 1,000 Population	Deaths per 1,000 Population (Crude Rate)	Deaths under One Year per 1,000 Registered Live Births
England and Wales	14.4	12.3	64
118 county boroughs and great towns, including London	14.4	12.2	67
131 smaller towns with estimated resident populations of from 25,000 to 50,000 at 1931 Census	14.3	10.9	56
London (administrative county)	13.1	12.5	49

The birth and death rates for England and Wales as a whole are calculated on the estimated mid-1933 population, but the remaining rates are calculated on the estimated mid-1932 populations.

For the fifth year in succession the birth rate is the lowest on record, being 0.9 per 1,000 below that of 1932 and 1.4 below that of 1931.

The death rate is 0.5 above that for 1932, and is the same as that for 1931. The infant mortality rate is 1 per 1,000 below that for 1932, and, with the one exception of the year 1930 (6), is the lowest on record.

Medical News

The Hunterian Society's banquet to commemorate the 206th anniversary of the birth of John Hunter will be held at the May Fair Hotel, Berkeley Street, W., on Thursday, February 8th, at 7 for 7.30 p.m. The guests of honour will include Lord Horder, Judge Cecil Whiteley, K.C., and Sir Charles Batho.

The Royal Sanitary Institute will hold a sessional meeting at Newport, Mon., on Friday, February 9th, in the Town Hall. At 5 p.m. papers will be read on "The Spread of Infectious Diseases," by Dr. J. Greenwood Wilson, medical officer of health, Cardiff; on "The Changing Outlook on the Control of Infectious Diseases," by Dr. H. W. Catto, medical officer of health, Newport; and on "The Housing Acts and the Need for Standards and Definitions," by Mr. C. J. Burr. The chair will be taken by Professor R. M. F. Picken.

The seventh annual meeting of the Association of Clinical Pathologists will be held at St. Mary's Hospital, Paddington, W., to-day (Saturday, January 27th), at 9.45 a.m., when there will be a discussion on the prognosis in meningitis.

A paper on the canning industry will be read before the Royal Society of Arts, John Street, Adelphi, W.C., on Wednesday, February 28th, at 8 p.m., by Mr. T. N. Morris, M.A., of the Low Temperature Research Station, Cambridge, with Professor E. F. Armstrong, F.R.S., in the chair.

A new post-graduate course opened at the National Hospital, Queen Square, W.C.1, on January 22nd, and will be continued till Friday, March 23rd. The course includes out-patient clinics, lectures and clinical demonstrations on each weekday, except Saturday, at 2 p.m. and 3.30 p.m. respectively; demonstrations on the pathology of the nervous system on Wednesdays and Thursdays at 12 noon; demonstrations on the anatomy and physiology of the nervous system on Tuesdays at 12 noon; and demonstrations on neurological ophthalmology on Mondays at 4.30 p.m. The fee for the course is £10 10s., and for clinical clerks or those who hold perpetual tickets, £8 8s. Special arrangements will be made for those who cannot take the whole course.

A three months' course of instruction in modern methods in the diagnosis and treatment of venereal diseases will begin at the Salford Municipal Clinic on Thursday, March 1st, at 11 a.m. Its main purpose is to

enable those attending it to obtain the Ministry of Health certificate. The fee for the course is two guineas, payable in advance. Those desirous of enrolling must send their names and addresses by February 19th to Dr. E. T. Burke, Municipal Clinic, 155, Regent Road, Salford, 5, Lancs.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the third of Dr. Clark-Kennedy's lecture-demonstrations will be given on January 30th at 2.30 p.m., and will deal with organic dyspepsia; the fourth, on February 6th, with vomiting and haematemesis. There will be a week's course in neurology at the West End Hospital for Nervous Diseases, from February 5th to 10th, occupying the whole of each day. A course in gynaecology will be given at the Chelsea Hospital for Women from February 5th to 17th, and a week-end course in physical medicine at the London Clinic and Institute of Physical Medicine on February 10th and 11th. A whole-day course in diseases of the chest will be given at the Brompton Hospital from February 12th to 17th. Four demonstrations on ante-natal treatment will be given by Dame Louise McLroy at the Royal Free Hospital at 5 p.m. on February 16th to March 9th, and six demonstrations on the interpretation of pyelograms by Dr. Mather Cordner, at 8 p.m. on Tuesdays and Fridays from February 13th to March 2nd. Courses arranged by the Fellowship of Medicine are open only to members and associates unless otherwise stated.

On Friday, February 9th, at 3.30 p.m., the new nurses' Home provided at the London County Council's hospital in Bancroft Road, Mile End, will be opened by the chairman of the Central Public Health Committee of the Council, Dr. F. Barrie Lambert.

A conference on atomic physics, to be opened by Lord Rutherford, will be held in 1934, under the auspices of the Physical Society. The details of the programme are not yet settled, but the conference is expected to last over two days at least, and some of the meetings will probably be held in London and some in Cambridge.

The committee of the Cancer Hospital, Fulham Road, London, has awarded a scholarship of the value of £100 per annum to Mrs. Boyland, B.A., in recognition of her services in the Research Institute of the hospital. She has investigated with Dr. E. Boyland the respiration of normal and cancerous tissues in the presence of derivatives of cancer-producing compounds, and will continue the development of this work. Mrs. Boyland had previously carried out research work at Cambridge, Heidelberg, and the Royal Institution.

The editorial board of the *British Journal of Anaesthesia* is offering a prize of £15 for the best essay on any subject directly connected with the physiology or practice of anaesthetics. The competition is open to any person holding a qualification within the British Empire. Essays must be not less than 2,000 and not more than 6,000 words in length, and written or typed on one side of the paper only. They must be submitted on or before August 31st to the Editor, at 29, St. Andrew's Mansions, Dorset Street, W.1. The editorial board will be the sole judges of the competition, and reserve the right to publish in the journal any or all of the essays submitted.

Lord Nuffield (Sir William Morris) has given £45,000 for the erection of a new block of private wards at Guy's Hospital. His donations to hospitals and charities now amount to over £750,000.

The issue of *Forschungen und Fortschritte* for January 10th contains an appreciation by Dr. Joachim Hammerling of the Kaiser Wilhelm Institute for Biology, Berlin, of the work of the biologist Gregor Mendel on the occasion of the fiftieth anniversary of his death.

The issue of the *Bulletin de l'Académie de Médecine* for December 12th contains a eulogy of the eminent scientist Prince Albert of Monaco, who died in 1922, by the general secretary, Professor L. Achard.

Dr. W. O. Sankey has been promoted to the rank of regional medical officer under the Ministry of Health.

Professor Forsell of Stockholm and Professor Nolf of Liège have been elected corresponding members of the Académie de Médecine.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is **EUSTON 2111** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Medisecra Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Threadworms

"GLEVUM" would be glad of advice how best to treat threadworms in an adolescent. Is quassia wood in powder ever given internally?

Treatment of Bacilluria

Dr. G. A. GARRY SIMPSON (London, W.2) would be glad to learn of the experience of others in the treatment of bacilluria with preparations of lactic acid bacilli.

Skull Measurements

Dr. KATHLEEN VAUGHAN (London, W.) writes: What is the average measurement in adult man of the *suboccipito-bregmatic* circumference of the skull? It varies considerably among civilized people (greater difference in size among their heads than among native tribes).

Oysters, Calories, and Food Prices

Professor J. A. NIXON writes with reference to Dr. Edward Cross's note (January 20th, p. 131) to say that Professor Dodds's figures are correct—namely, 88 calories for one dozen oysters. Professor Nixon wishes also to amend his statement of what 1s. will buy: 12 oz. butter yields 360 grams of fat, not 300; and 3,240 calories, not 3,600. In Bristol, he adds, 1s. would buy 1 lb. of beef without bone.

Income Tax

Change in Practice—Cash Basis

"C. R. C." disposed of his share in a partnership (A) as from October 31st, 1933, and acquired a share in a smaller practice (B) as from November 16th, 1933. He is told that either he must pay tax on the money received from his old practice after he left it or must state the amount of the debts due to that practice as at January 1st, 1932, and December 31st, 1932—figures which it is now very difficult to ascertain. Other points mentioned by "C. R. C." will be apparent from the answer below.

It is not stated whether an election has been made by the past and present members of partnership A to have the practice regarded as having ceased and been restarted at October 31st, 1933. If it has, the revenue authorities are entitled to have evidence of the correct amount of the earnings for the year and nine months subsequent to January 1st 1932, and the cash basis (which is correct in the long run but not necessarily over a short period) is not really appropriate. If, however, such an election has not been made—the more usual course—"C. R. C." is merely liable to account for tax on half of his share of the full partnership assessment on A. In neither case is he liable to account for tax on post-October, 1933, receipts as such. As accounts in firm B are usually made up to March 31st, nothing would be gained by changing the date.

The tax demanded as payable on January, 1934, is due for the year ending April 5th, 1934, but is normally calculated according to the income of the year 1932—or the year to March 31st, 1933.

LETTERS, NOTES, ETC.

Treatment of Chilblains

"R. C." writes: As there has been much correspondence about chilblains in your columns these observations on one of my cases may be appreciated. The patient, a female, aged 27, with marked pes cavus in her right leg, has for many years suffered during each winter from a large chilblain on the back of the lower third of her right leg. The chilblain has always occupied an area of several square inches, where the skin is blue and cold, and there is local oedema. At times, pruritus has been severe. The chilblain has been "broken" in some previous winters. The left leg is quite normal; there are no varicose veins. Her job is sedentary, but she gets abundant exercise—cycling, etc.—at week-ends. Last winter I treated her with kalzana, calcium lactate, and cod-liver oil. Iodex was rubbed in locally. I also gave the usual hygienic instructions about thicker stockings, etc. This treatment was practically ineffective. This winter I treated her by covering the area with elastic adhesive bandage (not encircling the leg), the strips being applied under tension to reduce the oedema. No internal treatment was given at all, and the dressing was left on for a month unchanged. During this period there was no pruritus, and on removal of the dressing the condition was improved. The patient is completely satisfied with the treatment, and I have put on another similar dressing.

Childbirth at 50 Years of Age

Dr. E. L. BUNTING (Worcester) writes: The following note of a case of childbirth at the age of 50½ years may be of interest. Mrs. P., born on July 18th, 1873, married for twenty-eight years, and having two daughters, aged 26 and 24 respectively, was delivered by me of a bonny male child, weighing 11 lb., on December 1st, 1923. The labour lasted thirty-six hours on account of early rupture of the membranes, and delivery was completed by low forceps. I took some trouble to verify the patient's age, and although this was not entered in the register of births for the district where she was born, I wrote to the vicar of the parish, who replied as follows: "The lady was baptised with her brother on January 4th, 1874. Date of her birth is not given. Double christening is in favour of the child being some months old at baptism. It looks as if the family has been looked up by a visitor from the church, and the two children brought to be christened together. This often happens." I also wrote to the patient's eldest brother, who replied as follows: "My sister was born July 18th, 1873. There is an entry in the family Bible, from which I have taken it to forward to you." I think this can be regarded as pretty conclusive evidence as to the patient's age, and I can say her appearance was that of a woman over 50.

Memorial to Philip Edward Glynn

The parents and sisters of the late Philip Edward Glynn, F.R.C.S., resident orthopaedic officer at Leeds General Infirmary, ask the hospitality of these columns to express their deep gratitude to his friends, colleagues, and patients at Leeds and elsewhere, who joined with them in endowing a child's cot in the Orthopaedic Department of Leeds General Infirmary in affectionate remembrance of him. The cot was dedicated by the Rev. P. D. Robbins, A.F.C., on January 12th.

A booklet, *Modern Cooking Methods in Modern Hospitals*, has been issued by the British Commercial Gas Association, and copies can be obtained free from the secretary of the association, 28, Grosvenor Gardens, London, S.W.1.

A folder, giving brief particulars of the Hot Springs, Bath, has been issued for the use of the medical profession, and copies may be had from Mr. John Hatton, the Spa director, at the Pump Room.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 39, 40, 41, 44, 45, and 46 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 35.

A Paper
ONSOME PRACTICAL POINTS IN THE TREATMENT
OF PULMONARY TUBERCULOSIS BY
ARTIFICIAL PNEUMOTHORAX

BY

A. LISLE PUNCH, M.B., M.R.C.P.

SENIOR PHYSICIAN, ROYAL NORTHERN HOSPITAL, AND PHYSICIAN TO
THE BRONCHITIS HOSPITAL FOR CONSUMPTION AND
DISEASES OF THE CHEST

The idea of treating pulmonary tuberculosis by collapsing the diseased lung was mooted as long ago as 100 years. Except in isolated cases it was not carried into practice until in 1894 Forlanini and Murphy of Chicago introduced it as a therapeutic measure. It remained comparatively neglected until Branner, Spengler, and others took it up and employed it in the treatment of pulmonary tuberculosis on an extensive scale. It was not till some years after the war that English physicians realized its value, and it is only in the last fifteen years or so that it has been widely used in Great Britain.

Although we have the experience of some fifteen years with which to form some estimate of its value and the type of case in which it is applicable, yet even now there is no unanimity of opinion on either point, even among those whose experience is sufficiently wide to render their opinion of value. We meet with all shades of opinion. At the one extreme there are those who maintain that it is valueless in any case, and at the other those who would urge it in every case as soon as a definite diagnosis of tuberculosis of the lung is established. "It would appear that the truth lies midway between these extremes, and that although, as Sir James Kingston Fowler has truly said, "artificial pneumothorax is the only advance in the treatment of pulmonary tuberculosis since the introduction of sanatorium treatment as carried out at Nordach," yet the advance, great as it is, is only applicable in something like 5 per cent. of cases. Ninety-five per cent. of sufferers from pulmonary tuberculosis have still to be treated by the old methods of diet, hygiene, and climate. Very great care must be taken in selecting cases for this treatment if it is to maintain its place as the valuable therapeutic measure which all the available evidence, if carefully sifted, indicates that it is. It is not an easy matter to be dogmatic and to lay down hard-and-fast rules for guidance as to the suitability or otherwise of any particular case for artificial pneumothorax treatment. No two cases of pulmonary tuberculosis are identical, and the interpretation by the physician of what he finds clinically, or by the radiologist of what he sees, is subject to so great a personal variation that all that can be done is to indicate on broad lines the chief factors that must be considered in determining this point.

UNILATERAL DISEASE AS A CRITERION

Only those cases in which the disease is unilateral or mainly unilateral are suitable for pneumothorax treatment. At this stage it might appear unnecessary to stress so obvious a point. There are still, however, not a few who would urge collapse of the worse side when the disease is bilateral, or who would, when it is impossible to determine which side is the worse, induce partial collapse of both sides simultaneously. With regard to the latter procedure—that is, bilateral simultaneous artificial pneumothorax—it is difficult to see any justification for it either in theory or judging from such results as are available. Collapse of the worse side when there is appreciable disease on the contralateral side has not in my hands, nor in the hands of many other observers,

yielded good results. Considerable disease on the contralateral side is therefore a definite contraindication to collapse therapy.

*Determination of Presence or Absence of Disease on
the Other Side*

In arriving at a decision in this matter two important points must be borne in mind.

1. The fact that no abnormal physical signs can be detected in the contralateral lung does not indicate that there is no disease in it. It is well recognized that a radiogram of a tuberculous lung will nearly always show more extensive disease than the physical signs indicate, and may indeed show infiltration of the lung where no abnormal physical signs are demonstrable.

2. The presence of crepitations at the contralateral apex does not of necessity indicate the existence of disease at that site. Not infrequently such crepitations are conducted from the opposite side. Here again an x-ray is the only reliable means of deciding the point.

It should be clear, therefore, that a radiogram is essential in determining whether a case is unilateral. It may be asked—and indeed often is—whether the x-ray is a reliable means of detecting or excluding active pulmonary tuberculosis. For practical purposes it may be affirmed that when there is an active tuberculous lesion in the lung the x-ray will show infiltration of the lung tissue, and that the absence of such infiltration can be taken to indicate no such lesion. Instances are occasionally met with of patients who are undoubtedly suffering from active tuberculosis of the lung (as proved by the presence of tubercle bacilli in the sputum) whose radiograms are negative, at all events on one occasion. Such cases are, however, so extremely rare that the absence of infiltration in the radiogram on the contralateral side can be taken for the purpose under consideration to indicate unilateral disease. The reading of x-ray pictures of the lung is by no means easy. Prolonged study and considerable experience are necessary for the correct interpretation of the significance of the shadows seen in the radiograms of the chest. Unfortunately, there are many radiologists who are quite prepared to give a definite opinion as to the presence or absence of tuberculosis in the lungs who have neither given that study nor acquired that experience which is essential for their opinion to be of value. It can be definitely stated that x-ray pictures of the lungs, when properly interpreted, are the most valuable means of diagnosis of pulmonary tuberculosis that we possess.

SELECTION OF SUITABLE CASES

Although, as stated above, artificial pneumothorax is only suitable for the treatment of unilateral cases, yet it is not indicated in all such instances. A careful study of several factors must be made in each case before artificial pneumothorax is decided upon. First in importance comes the character of the lesion.

Early Infiltration just below the Clavicle.—This lesion, occurring deep in the parenchyma of the lung, is a common mode of onset of pulmonary tuberculosis. The focus is unilateral, and is situated so deeply in the lung that the pleura is likely to be free from adhesions. It is on this ground eminently suitable for pneumothorax treatment. All such cases should not, however, have the affected lung collapsed immediately, for it must be remembered that a large proportion recover under conditions of rest and sanatorium treatment. They should be given the chance of so doing before collapse is induced. Delay, however, should not be too long if they fail to show signs of improving. If, on absolute rest in bed, the temperature does not subside in a few weeks, the patient continues to lose weight, and the x rays show that the

disease is spreading, a pneumothorax should be promptly induced.

Apical Lesions.—Where the lesion is situated actually at the apex we often get a history of recurrences over a period of time. Such lesions are generally fibrotic in character, and are not suitable for artificial pneumothorax treatment. In the first place, pleural adhesions are nearly always present, so that the diseased part of the lung cannot be collapsed, and, secondly, the activity will, as a rule, subside with rest and sanatorium treatment for two or three months.

Basal Tuberculosis.—Recent experience would tend to show that a lesion starting at the base of the lung is not so uncommon a mode of onset of pulmonary tuberculosis as was previously thought to be the case. My own personal experience leads me to believe that such cases, if untreated, are liable to do very badly. I regard the prognosis in them as distinctly worse than in apical cases. Collapse of the lung should be induced as soon as the diagnosis is confirmed. This is, of course, providing the lesion is unilateral.

Unilateral Caseous Pneumonia.—There is a certain difference of opinion with regard to the advisability of pneumothorax treatment for cases of acute pneumonic tuberculosis in which a whole lobe, or even a whole lung, may be involved in a tuberculous consolidation. Nearly all, however, who have had any extensive experience of this treatment have, on occasions, met with such astonishing cures in cases of this type that, bearing in mind that the prognosis in them is very grave if nothing is done, the view that pneumothorax is indicated would appear to be justified.

Other Factors

X-ray Appearances.—Apart from the site of the lesion, its character as ascertained by the radiogram is an important factor in determining the suitability of a case for this form of treatment. It is the exudative type of lesion, which looks soft in the x-ray, with an early tendency to break down with cavity formation, and an absence of fibrous tissue formation, that calls for artificial pneumothorax treatment.

Age of Patient.—This has a very important bearing on the subject under discussion. The younger the patients the more likely they are to be suitable for collapse therapy, for here it is more probable that the lesion will be of the soft, exudative variety, with an absence of fibrous tissue formation, and with a tendency to spread to the adjoining parts of the lung. I rarely induce a pneumothorax nowadays in a patient over 45 years of age except for some special reason, such as frequent haemoptyses of a dangerous severity.

Spontaneous Pneumothorax.—A large proportion of cases of spontaneous pneumothorax are due to tuberculosis of the lung, but not all. A small number are the result of rupture of emphysematous bullae. In those cases that are tuberculous, if the disease is unilateral, the correct thing to do is to maintain the collapse of the lung. In those that are not, this procedure, though not actually harmful, is entirely unnecessary. It is therefore necessary in these cases to establish their tuberculous origin before recommending a therapeutic pneumothorax. If the patient has sputum containing tubercle bacilli, that clinches the matter, and the lung should not be allowed to re-expand. If, however, as is often the case, there is no sputum, or it contains no tubercle bacilli, the lung should be allowed to re-expand, and the sputum should be tested frequently while it is doing so. At the same time the chest should be x-rayed once a week. If, as the lung comes out, infiltration of the lung tissue is seen, it should be promptly re-collapsed, and a therapeutic pneumothorax should be maintained. From the point of view of this treatment no case of spontaneous pneumothorax should be regarded as

added as payable on January, 1934, is due for tuberculous until April 5th, 1934, but is normally calculated tubercle bacilli in the year 1932—or the year to infiltration of the lung. pneumothorax is indicated if is unilateral.

NOTES, ETC.

Pulmonary Haemorrhage.—Pulmonary tuberculosis generally obliterates much correspondence save when, in rare cases, it is due to observations on one pulmonary aneurysm, when it will be patient, a female, is done. Collapse of the lung may, however, be called for to control haemoptysis in two, from a large her right leg.

1. Patients who are otherwise progressing satisfactorily are subject to repeated attacks of haemorrhage where is local tate their laying up for prolonged periods. This is a chillblain to occur in middle-aged patients with a fibrotic type of disease. It is the inconvenience that is caused by frequent having to lie up—especially in those who have to earn a living—that justifies attempting to collapse the lung in control the haemorrhage. Pneumothorax is induced in such cases with the sole object of controlling the haemorrhage, and not as a curative measure for the disease.

2. The second type of case in which collapse is sometimes called for is that in which continuous bleeding threatens death from loss of blood. These are very rare, but when met with collapse should be induced as an emergency operation.

In haemorrhage cases it is not always easy to determine the side from which the bleeding is coming. Sometimes the patient can assist from his subjective sensations, but when this help is not available it is reasonable to assume that the bleeding comes from the most affected side, especially if there is extensive disease with cavitation on the side and relatively little disease on the contralateral side.

Extrathoracic Conditions

The presence of considerable disease on the opposite side as a contraindication to this treatment has already been dealt with. We will now consider how far certain extrathoracic conditions militate against its use.

Tuberculous Laryngitis.—Usually tuberculous ulceration of the larynx is a late complication of pulmonary tuberculosis, and by the time that it has appeared the lung disease is extensive and bilateral, so that the case is unsuitable on general grounds for collapse treatment. Early affection of the larynx, while the disease in the lung is still unilateral, does not constitute a contraindication.

Intestinal Tuberculosis.—Tuberculous ulceration of the intestines is practically always a late manifestation of the disease. Here again the pulmonary disease is extensive and the case, judged by the criteria laid down above, is unsuitable for pneumothorax treatment apart from intestinal complication. When signs suggesting slight involvement of the intestines are present in an otherwise suitable case they do not prevent collapse being carried out.

Pregnancy.—If possible, pregnancy should, of course never be allowed to occur in an actively tuberculous woman. When it does occur, or when pulmonary tuberculosis develops in a pregnant woman, collapse of the lung is urgently called for, provided the criteria already laid down are fulfilled. Pregnancy in women suffering from active pulmonary tuberculosis should be terminated if it is of under three months' duration. If longer than that it should be allowed to proceed to full term.

Diabetes.—Diabetes mellitus is not a contraindication to pneumothorax treatment. On the contrary, the best hope for a diabetic patient who develops pulmonary tuberculosis is that the latter disease shall be detected while it is still unilateral. When this happens the lung should be promptly collapsed, the patient put on a generous diet, and the blood sugar content kept within normal limits by as large doses of insulin as may be necessary. The outlook is not, of course, as good as when the lung disease is uncomplicated by diabetes, but I have had several cases

A Paper ON SOME PRACTICAL POINTS OF PULMONARY ARTIFICIAL

POINTS IN TECHNIQUE

A. LISI, SENIOR PHYSICIAN, THE BRITISH HOSPITAL, introducing air into the pleural cavity that it need not be described in detail. However, some points that are still a subject of dispute and are relevant for discussion. Some points should be adopted if statistical records are to be of any value.

The results of this treatment are to be of any value. The difficulty is that we have the bare statement that an artificial pneumothorax was performed, without any indication as to the degree of collapse that was achieved or maintained, of the intrapleural pressures, the results of the refills, and similar points. Unless some uniformity is maintained in these matters statistics will be of no value.

Degree of Collapse

The pioneers of artificial pneumothorax treatment aimed at producing complete collapse of the lung, and did not hesitate to raise the intrapleural pressure to any attainable degree in order to arrive at this result. Subsequent experience has proved that this method is highly dangerous, in view of the likelihood of its producing rupture of adhesions at their insertion into the lung and of resulting pyopneumothorax (the most dangerous complication of this treatment). There are some authors who would maintain that good collapse is not an essential feature in getting good therapeutic effects. Whilst entirely endorsing the view that high intrapleural pressures must be avoided, yet it is my experience that the beneficial effects accruing are generally in proportion to the degree of collapse obtained in the diseased portion of the lung. It is perfectly true that in those cases in which a "selective" collapse occurs—that is to say, in which collapse of the diseased portion alone takes place as the result of introduction of air into the pleural cavity—good results are seen without complete collapse of the whole lung. But this selective collapse occurs in a relatively small proportion of cases, so that in order to collapse the diseased portion of the lung it is, as a rule, necessary to put out of action the whole lung.

Mediastinal Displacement

The structures in the mediastinum are not fixed rigidly in position. Any increase in the intrapleural pressure readily displaces them towards the opposite side. The mobility of the mediastinum varies enormously in different individuals. In cases of chronic fibroid tuberculosis it is often firmly fixed by rigid pleural and pericardial adhesions, so that moderate rises in the intrapleural pressure do not move it at all. In the more acute forms of exudative disease, however—especially in the lung—it is very much more mobile. In rare cases it is so mobile that any attempt to induce collapse causes such stress that the attempt has to be abandoned. Occasionally it is found that, on making a second attempt a few months later, the mediastinum has become more fixed, and collapse is possible without distressing symptoms. Though such extreme mediastinal displacement as this is exceptional, the heart tends in most cases to be displaced towards the opposite side, to a greater or less extent, and avoidance of this is one of the most important points that have to be borne in mind during the whole course of the treatment. Where this tendency is marked it may be obviated by collapsing the lung very gradually, and by giving small refills at fairly frequent intervals

rather than by introducing large quantities of air into the pleural cavity at each sitting. The above remarks refer to the mediastinal displacement that occurs during the induction of a therapeutic pneumothorax. On occasions, during the course of the treatment, a mediastinum which has not appreciably moved while the lung was being collapsed will be found to have suddenly shifted over to the contralateral side. This is usually due to the development of a spontaneous, on top of the artificial, pneumothorax, and is generally, though not always, associated with the development of a pyopneumothorax. Displacement of the mediastinum during the course of the treatment may also result from the collection of fluid in the pleural cavity on the treated side, though in this case the displacement is more gradual than when it is due to a spontaneous pneumothorax.

Intrapleural Pressures

The factors governing the intrapleural pressure are not fully understood. It varies considerably in different individuals. Moreover, even apart from the presence of adhesions, the degree to which the negative pressure has to be reduced in order to produce collapse of the lung is not constant in different cases. As a rule, it is only necessary to reduce the negative pressure, or, at the most, to raise it to atmospheric pressure, in order to collapse the lung. A slightly positive pressure is occasionally permissible, but in no case is it justifiable to attempt to collapse the lung by means of high positive pressures—the risk of rupturing an adhesion at its insertion into the lung and producing a pyopneumothorax is too great. When the pressure rises to a high figure in the early stages of the treatment it is an indication that the lung is adherent to the chest wall, and the treatment should be stopped. It is clear from the above that it is impossible to lay down any hard-and-fast rules as to the intrapleural pressure that should be secured. What has to be aimed at is to produce as good collapse of the lung as possible with as low a pressure as possible. What this figure will be will vary in each case. In most instances it will be a small negative one, and must never be a high positive one.

There is another important point with regard to intrapleural pressures that is frequently overlooked. Having obtained good collapse at a certain intrapleural pressure, some workers continue the treatment by introducing at stated intervals sufficient air to bring the pressure back to the same figure. In other words, they will be entirely guided by the pressure as to the amount of air that it is necessary to introduce at each refill. If this procedure is adopted it will often be found at the end of three or four months that the lung has partially re-expanded. The requisite intrapleural pressure to keep the lung well collapsed varies in many cases during the course of the treatment. Careful x-ray control is the only method of estimating the amount of air required for each refill in order to keep the lung well and continuously collapsed.

X-Ray Control

It cannot be too strongly insisted that this treatment should never be embarked upon unless there is a reasonable certainty that facilities for x-ray control will be available for the next three years. The ideal method of procedure is the one that I employ at my clinic at the Royal Northern Hospital, in which the patients are screened before and after each refill. This is, of course, not possible in all cases. But it should never be undertaken unless circumstances allow weekly x-ray control during the induction of the collapse and subsequent pictures or screening every two or three months.

When frequent screenings are done it is of the utmost importance that they should be as brief as possible. They should not occupy more than a few seconds. If

this point is not borne in mind there is a serious risk of deleterious effects resulting from cumulative doses of x rays.

ADHESIONS

In most cases of pulmonary tuberculosis some degree of adhesion between the visceral and parietal pleurae is present. Its extent, however, varies greatly. Three degrees may be recognized in so far as they affect collapse of the lung.

1. Universal adhesions.—In some cases the two layers of the pleura may be so widely and firmly glued together that the potential pleural cavity is obliterated. In such cases it is impossible to insert the point of the needle between the two layers of the pleura. If three attempts to get into the pleural cavity, made in different parts of the chest, fail, universal adhesions may be assumed; and further attempts at the treatment abandoned. It is impossible to detect either from clinical or radiological observations the presence of universal adhesions. One can never tell until an attempt is made whether one is going to get into the pleural cavity.

2. Secondly, adhesions, though not obliterating the pleural cavity, may be so widespread and firm as to prevent adequate collapse of the lung. In such cases, though it is possible to insert the point of the needle into the pleural cavity and inject some air into it, yet the intrapleural pressure tends to rise early on in the induction of the collapse and after the introduction of relatively little air. A radiogram will show the presence of multiple broad adhesions. No attempt should ever be made to stretch such adhesions by high intrapleural pressures, and the attempt at a pneumothorax should be abandoned.

3. In most cases adhesions, though present, are not so numerous or so firm as to prevent adequate collapse of the lung. They are most commonly seen extending from just below the apex of the lung outwards to the axilla. They tend to stretch as treatment progresses, though no deliberate attempt must be made to cause them to do so by increasing the intrapleural pressure. On the contrary, it is in the presence of such adhesions as these—especially when they are tenuous—that special care must be taken to maintain a negative pressure throughout, to prevent their breaking off at their insertion into the lung, with a resulting pyopneumothorax.

When a few fine adhesions are present it is a fairly simple operation to divide them. It is, however, an operation which I have ceased to perform. Generally speaking, when they are sufficiently fine and few as to be amenable to division it is unnecessary to divide them, while when they are so numerous and firm as to prevent adequate collapse of the lung they cannot be divided. It is, moreover, an operation that is not devoid of the risk of a resulting pyopneumothorax. The one possible exception in which division may be regarded as justifiable is when one or more divisible adhesions are holding open a cavity. As long as such a cavity remains open there is a likelihood of the patient continuing to expectorate tubercle bacilli. Division of the adhesions and collapse of the cavity will often render their sputum free of tubercle bacilli.

DISCONTINUATION OF ARTIFICIAL PNEUMOTHORAX

A great deal has been written on the subject of the indications for inducing a therapeutic pneumothorax. We find much less in the literature as to the indications for stopping it. It is clearly undesirable—nor is it necessary—for the treatment, once started, to be continued for an indefinite period. There appears to be a tendency among some workers to keep up the collapse much longer than is actually needful. I have seen some cases kept up for as long as six or seven years. Such a prolonged treatment is a great strain on the patience (and in the case

of private patients, the pocket) of the patient. It is a common observation that a very satisfactory result has been obtained in cases in which it has been found necessary to abandon an artificial pneumothorax for one of the reasons considered below—even after so short a period as six months from its inception. This aspect of the subject may be considered under two headings: (1) Compulsory cessation, (2) Voluntary cessation.

1. In a considerable number of cases it is found that one is compelled to cease the refills. As time goes on more and more difficulty is experienced in introducing air into the pleural cavity without producing a high intrapleural pressure. Coincident with this, control by x rays will show that the pneumothorax is becoming smaller and smaller, the visceral pleura is becoming thickened, and the heart and mediastinum displaced towards the side of the pneumothorax. Such a termination to an artificial pneumothorax is to be regarded as of good omen, and to indicate an obliterative pleuritis, with fibrosis of the lung and an early and rapid healing of the tuberculous process. No attempt should be made to keep the lung collapsed by producing high intrapleural pressures.

2. The treatment may be voluntarily stopped because (a) the disease has spread to the opposite side, or (b) it has done all the good it is likely to. This requires some discussion.

If during treatment there is evidence that the disease has extended to the opposite lung, or that such little disease as was originally present in the contralateral lung is spreading, the lung should be allowed to re-expand. Spread of disease to the contralateral lung is not always an easy matter to determine. In the early days of pneumothorax therapy alarm was experienced on observing in the radiograms, taken as a routine to determine the degree of collapse, extensive mottling in the contralateral lung. It is now, of course, recognized that such mottling is generally due to congestion of the lung, and not to tuberculous infiltration. The x -ray appearances of tuberculous infiltration and congestive mottling are fairly distinctive to the trained eye when they are present separately, but when there is marked congestion of the contralateral lung it is impossible to be certain from a radiogram that there is not tuberculous infiltration present as well. When the latter process has extended to produce softening and early excavation we can be quite sure as to its nature, as congestion does not lead to softening. Generally speaking, however, in the absence of excavation, it is dangerous to express an opinion on the condition of the contralateral lung when a pneumothorax is being done on a radiogram only. It is mainly on clinical evidence that we have to rely in detecting spread of disease to the opposite side. If a patient who up to date has been progressing well starts to lose weight, if cough and sputum which may have disappeared return, and if tubercle bacilli reappear in the sputum and there is pyrexia, a suspicion of spread to the opposite side should be entertained. Detection of physical signs which had not been present before, and possibly a radiogram, will confirm this suspicion, and the treatment should be stopped.

In those cases in which neither the occurrence of spontaneous obliteration of the pneumothorax nor the spread of the disease to the other side has resulted in the treatment being abandoned, it has to be determined how long it must be maintained. As a result of my own experience I have arrived at the conclusion that three years is the average period for which a pneumothorax should be kept up. This would appear to be a reasonable period, in that it is not so long as to put too great a strain on the patience of the patient, and yet is sufficiently long to produce all the benefit that it is likely to. This period of time must not be applied too arbitrarily, as circumstances

of a particular case may indicate prolongation of the treatment beyond it. It is, however, the duration for which an average case should be kept up.

Actual Manner of Termination

It is the practice of some workers, when it has been decided to terminate the treatment, gradually to increase the intervals between the refills, and to diminish the amount of air introduced each time. There does not appear to be any particular point in this procedure. It is my custom, once it has been decided that the treatment should be stopped, to effect this abruptly. If this is done the lung in most cases will take three or four months to expand completely. During this time the patient should be kept under careful observation. A record of the weight should be kept, the temperature taken morning and evening, the sputum (if any) examined weekly, and an x-ray taken as often as circumstances permit. If, during the re-expansion of the lung, the result of any of the above observations indicates that the disease is still active, the lung should be recollapsed for a further period.

DANGERS AND COMPLICATIONS OF ARTIFICIAL PNEUMOTHORAX THERAPY

Pleural shock and air embolism have always been regarded as the two chief dangers of the induction of a pneumothorax. With due attention to technique they can, as a rule, both be avoided, and their occurrence is becoming less and less frequent.

Clear Pleural Effusions.—If frequent x-ray examinations of the chest are made during the treatment a small amount of fluid will be seen in the pleural cavity at some time in practically all cases. Less often large collections accumulate. Provided that they remain clear they have in themselves no deleterious effect on the patient, nor do they affect the prognosis adversely. The question that arises is the correct method of dealing with them. If such effusions cause any embarrassment to the patient they should, of course, be removed. It is my custom generally to remove large effusions, even in the absence of distress, and to replace the fluid with air. Frequently, for some unexplained reason, the fluid will not reaccumulate after two or three tapplings. Moreover, the patient, though not actually embarrassed by the effusion, will often feel more comfortable with air in the pleural cavity rather than fluid.

Pyopneumothorax.—Pyopneumothorax is the one really serious danger associated with collapse therapy. Since the adoption of low-tension pneumothoraces it is much less common than it was when attempts were made to produce collapse of the lung by the production of high intrapleural pressures. It results from the rupture of an adhesion at its insertion into the lung. A hole in the lung is thus produced, and the pleural cavity becomes infected by organisms passing into it from the bronchi—that is, a bronchial fistula is established. This is most likely to occur when a few fine adhesions are present, and, as already mentioned, these are most commonly seen extending from the region of the apex outwards to the chest wall in the axillary region. In the presence of such adhesions special care must be taken to collapse the lung gradually and to keep the intrapleural pressure low. The supervention of a pyopneumothorax, though not of necessity uniformly fatal, constitutes a serious danger to the patient, and renders the prognosis very grave.

It is a complication that may result after the division of adhesions. The probable explanation of its occurrence at that time is that, in addition to the main adhesions, there are present finer ones, which break off at their insertion into the lung after the division of the former. With due care and forethought the occurrence of pyo-

pneumothorax can be reduced to a minimum, but even then it will happen on occasion.

Haemothorax.—The collection of blood in the pleural cavity is very rare. I have only met with one case. In that the fluid was pure blood. The blood was removed and the patient made a good recovery.

CONCLUSIONS

The chief points that have been stressed in this article are:

1. That in artificial pneumothorax we have a valuable form of treatment for something under 5 per cent. of all cases of pulmonary tuberculosis.
2. That the remaining 95 per cent. of cases have still to be treated by the old methods of diet, hygiene, and climate.
3. That great care must be taken in the selection of suitable cases along the lines laid down.
4. That the patient must remain under careful medical supervision during the course of the treatment, especially as regards x-ray control.
5. That the operator should aim at producing as good a collapse as possible, with the minimum amount of mediastinal displacement, and as low an intrapleural pressure as possible.
6. That the treatment should not be continued for too long, three years being the correct time for an average case.
7. That the great danger that has to be guarded against is the supervention of a pyopneumothorax.

THE EFFECT OF FLUID COMPLICATING ARTIFICIAL PNEUMOTHORAX

BY

R. R. TRAIL, M.D., F.R.C.P.

PHYSICIAN, ROYAL CHEST HOSPITAL; LATE MEDICAL SUPERINTENDENT, KING EDWARD VII SANATORIUM, MIDHURST

Of eighty cases, T.B. positive, in which I induced artificial pneumothorax at Midhurst between 1924 and 1930, and all of which have since ceased refills for various causes—from completion of treatment to obliteration by adhesion—fluid appeared at some time during the treatment in forty. No case is considered unless fluid was demonstrable by physical signs and/or x-ray examination. These forty patients have been followed up by a special form to find out their condition in November, 1933, and therefore at intervals of three to nine years from the date of induction, in an attempt to assess the influence of the complication.

Summary of Results

	Alive		Dead	Totals
	T.B. +	T.B. - or no sputum		
Completed treatment ...	—	14	—	14
Continued treatment: fresh disease appeared	4	1	1	6
Obliterated { With spread ..	—	—	3	3
{ Without spread	1	10	1	12
T.B. Pyopneumothorax ...	1	—	4	5
Totals ...	6	25	9	40

The above table shows that fourteen patients carried on refills until it was considered safe in the individual case to allow re-expansion; this was, on an average, three years from the date of induction. Two only required gas replacements, and only one has had accessory

treatment, phrenic evulsion being necessary to avoid too much traction of the heart and mediastinum to the affected side. The only evident effect in these cases was an apparently good one in the lengthening of the intervals between refills. All the patients are free from symptoms, have no sputum, and are fit for work.

Within an average period of ten weeks from the date of the appearance of fluid six cases showed evidence of a spread of disease; in five this was in the opposite lung, in the sixth it was in the larynx. Two of the five with lung disease had pneumothorax induced in the other lung, and while one of these is still sputum-positive, the other is sputum-free and fit for work; two more are alive, but sputum-positive and in poor condition; and one is dead. The patient who developed laryngeal tubercle was healed of this complication by galvano-cautery, but never became tubercle-free; phrenic evulsion was performed, but the patient refused thoracoplasty. Two of these six cases had gas replacements.

Fifteen cases obliterated—that is, at varying periods from the date of the onset of fluid it was no longer possible to continue refills as the pneumothorax cavity closed by spreading adhesion of the pleural surfaces. In three of these the obliteration was rapid, within at most three months from the appearance of fluid. All three showed rapid extension of disease on the opposite side, and all three are dead; two, however, were already bilateral at the time of induction, and had laryngeal tuberculosis, so that the treatment was instituted more as a palliative than as a curative agent.

Twelve cases obliterated without evidence of spread of disease to the other side. Eight of these patients have remained soundly healed without further treatment, and are fit for work, while a ninth is also in this condition after phrenic evulsion, which was performed as there were signs of activity when the lung re-expanded. The remaining three again became sputum-positive. One of these refused further treatment; her general condition has been good for six years. The other two became acutely ill, and were advised to have thoracoplasty, and while one died following the first stage of the operation, the other has remained sputum-free and in good condition for two years. Six of these fifteen cases required gas replacements.

Tuberculous pyopneumothorax developed in five cases. Four of these patients are dead; the immediate cause in three was tuberculous meningitis, and in the fourth it was frontal lobe abscess. The fifth developed the complication following a superimposed spontaneous pneumothorax at a period when he required several gas replacements; in 1932 he had a three-stage thoracoplasty, and while he is still sputum-positive his general condition is fair.

CONCLUSIONS

Thirty-one of forty patients are alive at intervals of three to nine years from the date of appearance of fluid, and twenty-five of these are sputum-free or sputum-negative. Nine patients are dead—three from acute spread following obliteration (two were already bilateral at the time of induction), one from acute disease in the opposite side soon after the appearance of the fluid, one from re-exacerbation in the same lung, and four from tuberculous pyopneumothorax.

Gas replacement would seem to have no definite bearing on the after-history for good or bad results. Tuberculous pyopneumothorax is a serious complication, but where this does not develop fluid has seldom a bad effect on the ultimate result of artificial pneumothorax.

[It is hoped that a paper to show comparative results in those cases that did not develop fluid and in "control" cases where pneumothorax failed for various reasons will be ready for publication in the next few weeks.—R. R. T.]

CHRONIC APPENDICITIS*

BY

W. MUIR DICKSON, M.B., F.R.C.S.

SURGEON TO WILLESDEN GENERAL HOSPITAL.

In the great majority of cases acute inflammatory lesions of the appendix give a fairly clear group of signs and symptoms, not all of them being present in each case, which enables a diagnosis to be made—stomach-ache starting all over the abdomen, or in the epigastrium, or umbilical area, which, after a varying length of time, radiates to the right iliac fossa; nausea or vomiting; probably some rise in temperature and pulse rate; tenderness in the right iliac fossa or near neighbourhood; and perhaps rigidity and alteration of the cutaneous sensation and abdominal reflexes.

Chronic appendicitis does not, as a rule, give rise to signs and symptoms so definite that they can be considered characteristic of this condition, and of this condition only, and it is frequently only by a process of exclusion that a diagnosis of chronic appendicitis can be entertained as the most probable cause of the signs and symptoms. These, I think, may be classified into four groups, but it must be remembered that the mental reaction of patients to an inflammatory lesion differs very greatly, so that the same apparent degree and intensity of inflammation in two patients may evoke descriptions of pain and symptoms which are quite different, and will also affect their conduct during the process of their illness—one may feel compelled to go to bed and call in his doctor, the other may carry on his work and not take much notice of the upset. The result, then, is that the term "chronic appendicitis" must be of rather an arbitrary nature, depending on the duration of the patient's symptoms, his description of and reaction to them, as well as on the appearance of the suspected area at the time of operation, along with the macroscopic and microscopical changes seen in the appendix.

The chronic inflammation may follow an attack of acute appendicitis, or the condition may be chronic throughout. An acute attack may supervene on the chronic and simplify diagnosis.

The four groups I should suggest are:

1. With signs and symptoms of a very mild nature, resembling those already described for acute appendicitis.
2. Appendicular dyspepsia.
3. Lower abdominal pain.
4. Without symptoms or signs.

Group 1.—It is in patients of this group that the diagnosis of chronic appendicitis is rather arbitrary. The signs and symptoms are of a very mild nature, but are fairly characteristic—pain starting all over the abdomen and radiating to the right iliac fossa, where there is tenderness and perhaps rigidity. These attacks (of varying duration) may have recurred over a prolonged period, without having interfered with the patient's employment, and without having had any obvious effect on his general health. Between attacks the patient may enjoy normal health, and operation may show no macroscopic abnormality in the appendix or its area, or there may be adhesions; but microscopically the appendix shows changes of a fibrotic nature in the submucous coat, with round-cell infiltration of all coats, or its lumen may be occluded and replaced by fibrous tissue.

Group 2.—Indigestion of appendicular origin may simulate very closely that due to peptic ulceration of the stomach or duodenum, or that of cholecystitis. It may follow on an attack of acute appendicitis which has subsided, or the inflammatory lesion of the appendix may be chronic from the start. The similarity of the symptoms of these conditions may be very close, both in periodicity and in type—indigestion occurring in bouts lasting from twenty-four hours to two weeks or longer, with periods of almost complete freedom up

*Read to the Willesden Division of the British Medical Association, November, 1933.

to six months, the pain being in the epigastrium, possibly severe, coming on half an hour to two hours after food, often waking the patient at night, and there being possibly vomiting, which causes relief, as do eructations—and the diagnosis may not be settled by x-ray or chemical examinations, so that an exploratory operation has to be undertaken before the appendix is removed. In other cases the appendix may give clearer indications that it is the cause of the trouble, and whether it is removed through an incision in the right iliac fossa or after an exploratory operation will depend on the choice of the surgeon. The appendix on microscopical examination will show fibrotic changes of varying degree. Removal of the appendix in such cases is not followed by immediate and complete disappearance of the patient's signs and symptoms. These gradually disappear, and the patient returns to normal health. If, however, the chronic inflammatory lesion has been present for a prolonged period, organic changes may have taken place in the upper abdomen, and the treatment of these lesions will complicate the recovery. In my experience this condition is not a common one, but the difficulty of diagnosis between a peptic ulcer and a chronic appendix may, if x-ray appearance after an opaque meal is inferential only, lead to wrong diagnosis of some cases, and unless operation is performed in every case, some patients with appendicular dyspepsia may be thought to have ulcer and be treated accordingly, till such time as a flare-up in the inflammatory lesion leads to a correct diagnosis.

Group 3.—Lower abdominal pain—the pain is of very varying severity; it is sometimes described as a dull ache, or a feeling of burning, a feeling of fullness, like a knife sticking in the part. It may be of daily occurrence, or it may come on at irregular intervals; it may be influenced by food, being made worse half an hour to two hours after meals, or it may be quite unaffected by the taking of food; it may be made worse by walking. The pain may be in the umbilical area or in the hypogastrium (occasionally in the epigastrium), with perhaps stabbing pain in the right iliac fossa, or the pain may be confined to this region. It may have been experienced for months or years, with or without nausea, and may not have interfered with the patient's employment, or, so far as can be judged, with his general health. As a rule there is tenderness in the right iliac fossa. At operation the area round the appendix may appear normal, or there may be adhesions of an inflammatory character so dense that the removal of the appendix is very difficult. Macroscopically, by surface appearance, the appendix may look normal, or may show signs of pathological change, while microscopically any degree of fibrosis and round-cell infiltration is present.

Group 4.—It frequently happens that a pathological appendix is removed during the course of an operation which is being done for some other condition, and yet there is no history suggesting any inflammatory lesion of the appendix. This might be on account of confusion of the symptoms between the two conditions, or it may be that the chronic inflammation of the appendix gave rise to no symptoms; but it is quite possible that the appendicular lesion has had some influence on the development of the diseased condition, if the latter is in the upper abdomen. It is quite common for an attack of acute appendicitis to settle down, leaving no evident trace of a pathological condition, for years perhaps, and if the appendix is removed in a subsequent attack, to find, in addition to signs of acute inflammation in it, fibrosis and obliteration of the lumen of the distal part, perhaps with dense adhesions to surrounding structures. This fibrosed part may be evidence of a healed lesion, or it may be considered as a chronic inflammation which has not given rise to signs or symptoms, although the results of its presence may not be evident at the time, but may develop later.

DIFFERENTIAL DIAGNOSIS

1. **Gastric and Duodenal Ulcer.**—X-ray appearance of the stomach after a barium meal may in many cases give definite indications of the presence of these ulcers, but, where the evidence is inferential only, the diagnosis is still in doubt. The x-ray appearances of a chronic appendix lesion have been much discussed, and many points have been stressed as peculiar to it, such as tenderness on pressure of the visualized appendix, delay in emptying, persistent kink, bulbous tip, and many others,

but there does not seem to be unanimity among radiologists as to the interpretation of these signs, and disappointment with the results of appendicectomy following x-ray diagnosis has been fairly frequent. In the absence of positive findings, therefore, exploratory operation is the only choice left.

2. **Visceroptosis.**—In patients with this condition—and they are usually females—the attacks of pain have been frequent since the age of 15 years. They are variously described, and are always in the right iliac fossa. Patients may feel sick, and discontinuance of work—that is, from the severity of the attacks—depends greatly on the mentality of the patient. The thoracic outlet is very narrow, and the pelvis seems correspondingly broad. There may be some hyperaesthesia to the right of the umbilicus, and constipation is common. Patients say they are tender in the right iliac fossa, and their conduct towards pressure in that region is some indication of their mental reaction—some will just complain of the pressure, while others will squirm about or even jump off the couch. The caecum may be felt to be mobile and large. This is the type of patient whose signs and symptoms are made much worse if appendicectomy should be done. At operation the caecum is found to be large and mobile, of a greyish blue colour, and with walls slightly thickened, and the appendix shows no changes of an inflammatory character. Removal of the appendix in these patients for such signs and symptoms as have been described leaves the patient no better off, and is frequently the starting-point of further invalidism. Some time ago I examined some of these cases by x rays after a barium meal, and by pyelography, but, apart from the low and mobile condition of the caecum, no other abnormality was seen. It is possible that in a few such patients partial torsion of the caecum may account for the symptoms, but if this was the true explanation one would expect volvulus of the caecum to be commoner than it is; the conditions of volvulus are there, but, in my experience, this is a very uncommon cause of intestinal obstruction.

3. **Renal and Ureteric Conditions.**—Right-sided manifestations of these conditions must be excluded before a diagnosis of chronic appendicitis is made. In those which give signs and symptoms of a chronic nature the similarity between the two conditions may be great, but as a rule there is some indication of the origin, and investigation will clear up the diagnosis. Chronic pyelitis may cause pain in the right side of the lower abdomen, but there is frequently tenderness over the kidney, and a catheter specimen of urine will show the presence of abnormality. Hydronephrosis of slight degree causes discomfort in the right side of the abdomen, but this is frequently relieved by rest, and pyelography at once demonstrates the pathological condition. A ureteric stone of sufficient size to remain in the ureter may give signs and symptoms of a chronic nature in the lower abdomen—the pain may be intermittent in character, and may seem to be affected by the taking of food. X rays and the passage of an opaque catheter up the ureter will reveal the stone and its site, and the appropriate treatment can be carried out. The passage of a small stone down the ureter gives rise to acute symptoms which may simulate those of acute appendicitis.

4. **Pathological conditions of the tubes and ovaries** usually give physical signs which distinguish them from chronic appendicitis. There is a type of case in which pain in the right iliac fossa begins at the time of the menstrual periods and recurs with each period, yet in which the uterus, etc., are said to be normal. I have not found sufficient indication of appendicular mischief in these cases to justify operation.

5. **Adenitis in the mesentery** near the ileo-caecal anastomosis may cause signs which can be confused with those of acute

treatment, phrenic evulsion being necessary to avoid too much traction of the heart and mediastinum to the affected side. The only evident effect in these cases was an apparently good one in the lengthening of the intervals between refills. All the patients are free from symptoms, have no sputum, and are fit for work.

Within an average period of ten weeks from the date of the appearance of fluid six cases showed evidence of a spread of disease; in five this was in the opposite lung, in the sixth it was in the larynx. Two of the five with lung disease had pneumothorax induced in the other lung, and while one of these is still sputum-positive, the other is sputum-free and fit for work; two more are alive, but sputum-positive and in poor condition; and one is dead. The patient who developed laryngeal tubercle was healed of this complication by galvano-cautery, but never became tubercle-free; phrenic evulsion was performed, but the patient refused thoracoplasty. Two of these six cases had gas replacements.

Fifteen cases obliterated—that is, at varying periods from the date of the onset of fluid it was no longer possible to continue refills as the pneumothorax cavity closed by spreading adhesion of the pleural surfaces. In three of these the obliteration was rapid, within at most three months from the appearance of fluid. All three showed rapid extension of disease on the opposite side, and all three are dead; two, however, were already bilateral at the time of induction, and had laryngeal tuberculosis, so that the treatment was instituted more as a palliative than as a curative agent.

Twelve cases obliterated without evidence of spread of disease to the other side. Eight of these patients have remained soundly healed without further treatment, and are fit for work, while a ninth is also in this condition after phrenic evulsion, which was performed as there were signs of activity when the lung re-expanded. The remaining three again became sputum-positive. One of these refused further treatment; her general condition has been good for six years. The other two became acutely ill, and were advised to have thoracoplasty, and while one died following the first stage of the operation, the other has remained sputum-free and in good condition for two years. Six of these fifteen cases required gas replacements.

Tuberculous pyopneumothorax developed in five cases. Four of these patients are dead; the immediate cause in three was tuberculous meningitis, and in the fourth it was frontal lobe abscess. The fifth developed the complication following a superimposed spontaneous pneumothorax at a period when he required several gas replacements; in 1932 he had a three-stage thoracoplasty, and while he is still sputum-positive his general condition is fair.

CONCLUSIONS

Thirty-one of forty patients are alive at intervals of three to nine years from the date of appearance of fluid, and twenty-five of these are sputum-free or sputum-negative. Nine patients are dead—three from acute spread following obliteration (two were already bilateral at the time of induction), one from acute disease in the opposite side soon after the appearance of the fluid, one from re-exacerbation in the same lung, and four from tuberculous pyopneumothorax.

Gas replacement would seem to have no definite bearing on the after-history for good or bad results. Tuberculous pyopneumothorax is a serious complication, but where this does not develop fluid has seldom a bad effect on the ultimate result of artificial pneumothorax.

[It is hoped that a paper to show comparative results in those cases that did not develop fluid and in "control" cases where pneumothorax failed for various reasons will be ready for publication in the next few weeks.—R. R. T.]

CHRONIC APPENDICITIS*

BY

W. MUIR DICKSON, M.B., F.R.C.S.

SURGEON TO WILLESDEN GENERAL HOSPITAL.

In the great majority of cases acute inflammatory lesions of the appendix give a fairly clear group of signs and symptoms, not all of them being present in each case, which enables a diagnosis to be made—stomach-ache starting all over the abdomen, or in the epigastrium, or umbilical area, which, after a varying length of time, radiates to the right iliac fossa; nausea or vomiting; probably some rise in temperature and pulse rate; tenderness in the right iliac fossa or near neighbourhood; and perhaps rigidity and alteration of the cutaneous sensation and abdominal reflexes.

Chronic appendicitis does not, as a rule, give rise to signs and symptoms so definite that they can be considered characteristic of this condition, and of this condition only, and it is frequently only by a process of exclusion that a diagnosis of chronic appendicitis can be entertained as the most probable cause of the signs and symptoms. These, I think, may be classified into four groups, but it must be remembered that the mental reaction of patients to an inflammatory lesion differs very greatly, so that the same apparent degree and intensity of inflammation in two patients may evoke descriptions of pain and symptoms which are quite different, and will also affect their conduct during the process of their illness—one may feel compelled to go to bed and call in his doctor, the other may carry on his work and not take much notice of the upset. The result, then, is that the term "chronic appendicitis" must be of rather an arbitrary nature, depending on the duration of the patient's symptoms, his description of and reaction to them, as well as on the appearance of the suspected area at the time of operation, along with the macroscopic and microscopical changes seen in the appendix.

The chronic inflammation may follow an attack of acute appendicitis, or the condition may be chronic throughout. An acute attack may supervene on the chronic and simplify diagnosis.

The four groups I should suggest are:

1. With signs and symptoms of a very mild nature, resembling those already described for acute appendicitis.
2. Appendicular dyspepsia.
3. Lower abdominal pain.
4. Without symptoms or signs.

Group 1.—It is in patients of this group that the diagnosis of chronic appendicitis is rather arbitrary. The signs and symptoms are of a very mild nature, but are fairly characteristic—pain starting all over the abdomen and radiating to the right iliac fossa, where there is tenderness and perhaps rigidity. These attacks (of varying duration) may have recurred over a prolonged period, without having interfered with the patient's employment, and without having had any obvious effect on his general health. Between attacks the patient may enjoy normal health, and operation may show no macroscopic abnormality in the appendix or its area, or there may be adhesions; but microscopically the appendix shows changes of a fibrotic nature in the submucous coat, with round-cell infiltration of all coats, or its lumen may be occluded and replaced by fibrous tissue.

Group 2.—Indigestion of appendicular origin may simulate very closely that due to peptic ulceration of the stomach or duodenum, or that of cholecystitis. It may follow on an attack of acute appendicitis which has subsided, or the inflammatory lesion of the appendix may be chronic from the start. The similarity of the symptoms of these conditions may be very close, both in periodicity and in type—indigestion occurring in bouts lasting from twenty-four hours to two weeks or longer, with periods of almost complete freedom up

* Read to the Willesden Division of the British Medical Association, November, 1933.

to six months, the pain being in the epigastrium, possibly severe, coming on half an hour to two hours after food, often waking the patient at night, and there being possibly vomiting, which causes relief, as do eructations—and the diagnosis may not be settled by x-ray or chemical examinations, so that an exploratory operation has to be undertaken before the appendix is removed. In other cases the appendix may give clearer indications that it is the cause of the trouble, and whether it is removed through an incision in the right iliac fossa or after an exploratory operation will depend on the choice of the surgeon. The appendix on microscopical examination will show fibrotic changes of varying degree. Removal of the appendix in such cases is not followed by immediate and complete disappearance of the patient's signs and symptoms. These gradually disappear, and the patient returns to normal health. If, however, the chronic inflammatory lesion has been present for a prolonged period, organic changes may have taken place in the upper abdomen, and the treatment of these lesions will complicate the recovery. In my experience this condition is not a common one, but the difficulty of diagnosis between a peptic ulcer and a chronic appendix may, if x-ray appearance after an opaque meal is inferential only, lead to wrong diagnosis of some cases, and unless operation is performed in every case, some patients with appendicular dyspepsia may be thought to have ulcer and be treated accordingly, till such time as a flare-up in the inflammatory lesion leads to a correct diagnosis.

Group 3.—Lower abdominal pain—the pain is of very varying severity; it is sometimes described as a dull ache, or a feeling of burning, a feeling of fullness, like a knife sticking in the part. It may be of daily occurrence, or it may come on at irregular intervals; it may be influenced by food, being made worse half an hour to two hours after meals, or it may be quite unaffected by the taking of food; it may be made worse by walking. The pain may be in the umbilical area or in the hypogastrium (occasionally in the epigastrium), with perhaps stabbing pain in the right iliac fossa, or the pain may be confined to this region. It may have been experienced for months or years, with or without nausea, and may not have interfered with the patient's employment, or, so far as can be judged, with his general health. As a rule there is tenderness in the right iliac fossa. At operation the area round the appendix may appear normal, or there may be adhesions of an inflammatory character so dense that the removal of the appendix is very difficult. Macroscopically, by surface appearance, the appendix may look normal, or may show signs of pathological change, while microscopically any degree of fibrosis and round-cell infiltration is present.

Group 4.—It frequently happens that a pathological appendix is removed during the course of an operation which is being done for some other condition, and yet there is no history suggesting any inflammatory lesion of the appendix. This might be on account of confusion of the symptoms between the two conditions, or it may be that the chronic inflammation of the appendix gave rise to no symptoms; but it is quite possible that the appendicular lesion has had some influence on the development of the diseased condition, if the latter is in the upper abdomen. It is quite common for an attack of acute appendicitis to settle down, leaving no evident trace of a pathological condition, for years perhaps, and if the appendix is removed in a subsequent attack, to find, in addition to signs of acute inflammation in it, fibrosis and obliteration of the lumen of the distal part, perhaps with dense adhesions to surrounding structures. This fibrosed part may be evidence of a healed lesion, or it may be considered as a chronic inflammation which has not given rise to signs or symptoms, although the results of its presence may not be evident at the time, but may develop later.

DIFFERENTIAL DIAGNOSIS

1. Gastric and Duodenal Ulcer.—X-ray appearance of the stomach after a barium meal may in many cases give definite indications of the presence of these ulcers, but, where the evidence is inferential only, the diagnosis is still in doubt. The x-ray appearances of a chronic appendix lesion have been much discussed, and many points have been stressed as peculiar to it, such as tenderness on pressure of the visualized appendix, delay in emptying, persistent kink, bulbous tip, and many others,

but there does not seem to be unanimity among radiologists as to the interpretation of these signs, and disappointment with the results of appendicectomy following x-ray diagnosis has been fairly frequent. In the absence of positive findings, therefore, exploratory operation is the only choice left.

2. Visceroplisis.—In patients with this condition—and they are usually females—the attacks of pain have been frequent since the age of 15 years. They are variously described, and are always in the right iliac fossa. Patients may feel sick, and discontinuance of work—that is, from the severity of the attacks—depends greatly on the mentality of the patient. The thoracic outlet is very narrow, and the pelvis seems correspondingly broad. There may be some hyperaesthesia to the right of the umbilicus, and constipation is common. Patients say they are tender in the right iliac fossa, and their conduct towards pressure in that region is some indication of their mental reaction—some will just complain of the pressure, while others will squirm about or even jump off the couch. The caecum may be felt to be mobile and large. This is the type of patient whose signs and symptoms are made much worse if appendicectomy should be done. At operation the caecum is found to be large and mobile, of a greyish blue colour, and with walls slightly thickened, and the appendix shows no changes of an inflammatory character. Removal of the appendix in these patients for such signs and symptoms as have been described leaves the patient no better off, and is frequently the starting-point of further invalidism. Some time ago I examined some of these cases by x rays after a barium meal, and by pyelography, but, apart from the low and mobile condition of the caecum, no other abnormality was seen. It is possible that in a few such patients partial torsion of the caecum may account for the symptoms, but if this was the true explanation one would expect volvulus of the caecum to be commoner than it is; the conditions of volvulus are there, but, in my experience, this is a very uncommon cause of intestinal obstruction.

3. Renal and Ureteric Conditions.—Right-sided manifestations of these conditions must be excluded before a diagnosis of chronic appendicitis is made. In those which give signs and symptoms of a chronic nature the similarity between the two conditions may be great, but as a rule there is some indication of the origin, and investigation will clear up the diagnosis. Chronic pyelitis may cause pain in the right side of the lower abdomen, but there is frequently tenderness over the kidney, and a catheter specimen of urine will show the presence of abnormality. Hydronephrosis of slight degree causes discomfort in the right side of the abdomen, but this is frequently relieved by rest, and pyelography at once demonstrates the pathological condition. A ureteric stone of sufficient size to remain in the ureter may give signs and symptoms of a chronic nature in the lower abdomen—the pain may be intermittent in character, and may seem to be affected by the taking of food. X rays and the passage of an opaque catheter up the ureter will reveal the stone and its site, and the appropriate treatment can be carried out. The passage of a small stone down the ureter gives rise to acute symptoms which may simulate those of acute appendicitis.

4. Pathological conditions of the tubes and ovaries usually give physical signs which distinguish them from chronic appendicitis. There is a type of case in which pain in the right iliac fossa begins at the time of the menstrual periods and recurs with each period, yet in which the uterus, etc., are said to be normal. I have not found sufficient indication of appendicular mischief in these cases to justify operation.

5. Adenitis in the mesentery near the ileo-caecal angle may cause signs which can be confused with those of acute

appendicitis, but the more chronic variety—usually tuberculous—may cause symptoms less acute in character and spread over a longer time, so that confusion may arise, and it may not be possible to differentiate between the two conditions without operation. The adenitis may heal without having caused any symptoms, and may be discovered accidentally, as in a little girl operated on some time ago for recurrent appendicitis in whom, in addition to the appendicular lesion, were found a healed glandular lesion of the mesentery, an enteric intussusception, a Meckel's diverticulum, and a cystic right ovary.

6. *Foreign bodies*, such as shot, can lodge in the appendix, and are probably the cause of the pain and discomfort described. They can be seen by *x* rays; worms have also been found in the appendix at operation undertaken for similar symptoms. Stercoliths of large size may be associated with signs and symptoms of a chronic nature, but I have found them more frequently in acute cases, where they must, judging by their size, have been lodged for some time; and yet no history of any abnormality in the abdomen could be obtained from the patients till the acute attack started.

7. *Spinal and nerve conditions*—such as arthritis of the spine, psoas abscess—may cause pain in the right iliac fossa, but examination of the vertebral column should obviate error. Tabes should be ruled out as a routine measure.

8. *Carcinoma near the ileo-caecal junction* causes pain of a colicky character in the lower abdomen and right iliac fossa, but the age of the patient at the onset of the first symptom, the nature of the pain, and an investigation by barium enema may point to the diagnosis. If the diagnosis is in doubt, exploratory operation should be carried out without delay. Carcinoma of the appendix, or "carcinoid," has been found in a number of cases in which there were complaints of pain, etc., in the lower abdomen and the right iliac fossa. It is a rare condition: I have only had one case, and have unfortunately lost touch with it, so that I do not know whether the patient has improved as the result of appendicectomy. These cases usually run a simple course, but several instances are reported of secondary growths in the liver.

9. *Incipient hernia* in the right inguinal canal may cause pain in that region, and this may be confused with the pain of a chronic appendix.

DISCUSSION

My experience leads me to believe that the condition of chronic appendicitis does exist, and that it may follow an acute attack, or may not have an acute onset, but run a chronic course. It is not, however, a common condition, and its lack of definition in the clinical features makes me approach its diagnosis with caution, and take steps, where they are necessary, to exclude other lesions before reaching a conclusion. The history and general clinical examination are, I think, most important. The younger the patient the more probable it is that the appendix, if at fault, is the cause of his symptoms, and its removal will bring about restoration of function. In such cases I think incision through the right iliac fossa is justifiable and proper, and that an exploratory incision should not be used. For older patients, unless the diagnosis is almost certain, exploratory operation is probably better than the more limited operation.

If the appendix only is at fault, the operation results are good, and the patients soon return to normal health. Removal of the appendix for a lesion which is situated elsewhere can only bring the operation into disrepute, and the fact that such patients are secure from acute appendicitis in the future does not justify the procedure unless it is done specifically for that purpose.

There is great controversy as to whether a condition of chronic appendicitis does occur. The normal histology of the organ is also subject to discussion and varying opinions. It is said that as age advances, fibrosis takes place as a normal process, and that this is in no way connected with a chronic inflammation. Some pathologists agree that occlusion of the lumen by fibrous tissue and fibrosis of the walls point to chronic inflammation, while others state that these are only the usual processes of repair, and deny that there is a pathological basis for the diagnosis of chronic appendicitis. Others, again, say the fibrosis is due to disease of the sympathetic ganglia and Meissner's ganglia, and attribute the poor results which frequently follow appendicectomy to this condition. Radiologists are as variable in their views as pathologists, and there does not seem to be sufficient unity of opinion from *x*-ray examination to make the investigation a dependable diagnostic procedure. Surgeons, too, are not lacking in differences of opinion. Some say the condition must start with an acute attack, while others hold that it may be "chronic" from the beginning; still others deny its existence as a clinical entity. Many points of tenderness have been described, and many tests tried, but there is no general acceptance of them as cardinal signs of the condition.

SUMMARY

1. Chronic appendicitis may follow an acute attack, or it may have a gradual onset and run its course without any acute signs.

2. It is not a common condition, and the lack of a clear clinical picture makes its diagnosis dependent on the exclusion of other lesions.

3. Removal of an appendix, the seat of chronic inflammation, cures the patient, if it is the only lesion present.

4. The longer such an appendicular lesion is left untreated, the more probable is it that other lesions may develop, especially in the upper abdomen.

THE ANAPHYLACTIC BASIS OF RHEUMATISM

BY

C. E. JENKINS, M.R.C.S., L.R.C.P.

PATHOLOGIST TO Salford Royal Hospital, ALTRINCHAM GENERAL HOSPITAL, STRETFORD MEMORIAL HOSPITAL, ECCLES AND PATRICROFT HOSPITAL, MANCHESTER EAR HOSPITAL, AND MANCHESTER BABIES' HOSPITAL

This paper is an attempt to survey the possible connexion between rheumatism and anaphylaxis, a phase of immunity in which, as Besredka has said, all the rules of immunity are made to stand upon their heads. The aetiology of the rheumatic group of diseases is now entering upon a fresh phase, and the fact is at last receiving common recognition that streptococci have a causal relation to the group. The bacteriological and immunological problems involved have not been understood by many clinicians, but it is unnecessary to direct attention to some of the absurdities produced. The present position is that streptococci and possibly other organisms are causally related, but that the relation is not of the simple order that would satisfy Koch's postulates.

THE ORGANISM

Skin tests have been made by many observers, and there is fairly good agreement that most patients are allergic to the streptococcal group. There is no satisfactory evidence that a specific organism is responsible, and Topley and Weir (1921) have shown that similar lesions can be produced in rabbits by a variety of streptococci. Wright (1926) caused endocarditis in rabbits

by repeated injections of non-haemolytic streptococci, each dose of which was not in itself toxic. The flora of rheumatic and normal throats was examined by Hitchcock (1928), who found that they were identical. Irvine-Jones (1928) obtained similar evidence, and found, further, that the rheumatic cases were skin-positive to their own streptococci and to those obtained from normal throats. A non-methaemoglobin-forming streptococcus described by Birkhaug was tested by Kaiser (1928), who found that 72 per cent. of rheumatic cases were skin-positive to it. The probable explanation of the claims and denials of streptococcal specificity lies in the close antigenic similarity of different members of the group, and the position may be assumed to be the same for rheumatism as for scarlet fever. In the latter connexion, McLachlan and Mackie (1928) found that there was a certain amount of common agglutination in all streptococci.

Streptococci have been isolated by blood culture, when large volumes are taken, but there is no proof of specific relation to the disease in the ordinary usage of the term. It has to be borne in mind also that the sterility of the blood is not that of the inside of a furnace, but is only relative—even in health.

In the bacteriological examination of a case one of the problems that arise is to determine whether the organism isolated is causal, or at least whether its antigenic structure is such that it could have induced the allergic state found. Skin tests of the autogenous organism, with certain stock strains and a good control, make this possible. The control should always be a sample of the uninoculated broth in which the organisms were grown. Antigenic overlap can be minimized to some extent by the conditions of growth of the culture.

It is appropriate in this connexion to consider the *Micrococcus deformans* described by Crowe, which is a variety of staphylococcus. This worker's conclusions, possibly erroneous, have been rather arbitrarily dismissed by critics who in some instances do not seem to be specially well qualified to express an opinion. In man the only feasible method of testing for anaphylactic specificity is the skin test: this in my hands has given, with proper controls, a higher percentage of positive staphylococcal readings than I had hitherto thought possible, and it is pertinent to recall that in all the published skin tests in arthritis the percentage of positive streptococcal results has been appreciably short of the centum. It does not seem to have occurred to most workers to try the staphylococcus at the same time.

THE ALLERGIC REACTION

Various distinctions have been drawn between allergy and anaphylaxis, but for the present purpose the two terms will be used indiscriminately. The antigen that produces anaphylaxis is known as a "sensitogen," and it is allied to, or identical with, the precipitinogens.

It has been stressed by the Arthritis Committee of the British Medical Association (1933), and by others, that vaccines when given should be in exceedingly small doses, and most users of vaccines will agree that there is no disease in which overdosage can produce a more retrograde state in the patient. The observation is consistent with the allergic hypothesis. Let us contrast this with protein-shock therapy. A fairly severe systemic shock usually does the patient no ultimate harm, the reason being that he is not allergic to the foreign protein used. For a short period the clinical condition may be improved, then a relapse occurs and the treatment has to be repeated indefinitely: in the few cases where shock treatment can be held to be successful the result is obtained after the first injection. Before leaving the matter it is as well to state that another question—non-specific desensitization—has for a number of reasons no relation to protein-shock therapy. The nature of the general and prodromal signs and symptoms of arthritis deformans is of the highest significance. Tachycardia, irregular pulse,

localized sweating, adenitis, swelling and pain around joints, muscular tremors, leucopenia with a relative lymphocytosis, increased sedimentation rate of the blood, and asthenia, are all present, and all of them are to be found in the usual type of human anaphylaxis—serum sickness. The phenomena of anaphylaxis vary according to the species of animal; but in any given species the signs and symptoms are the same, regardless of the nature of the sensitizing agent in operation. If the description of the general and prodromal features of arthritis deformans, as given by the Arthritis Committee and by various standard textbooks, be compared with the description of serum sickness by Kolmer (1923), Muir and Ritchie (1919), Zinsser (1922), and others, it will be found that the two are exactly interchangeable.

SUGGESTED EXPLANATION OF RHEUMATISM

Anaphylaxis is probably the most confusing branch of immunology, and it is necessary for the student to attune his mind to the anaphylactic concept. A supposititious example will illustrate the point. Intolerance to a drug means only that the individual develops the distinctive toxic picture with an unusually small dose, and the syndrome has nothing in common with drug allergy. The allergic syndrome of digitalis is high fever, adenitis, sweating, and swelling and pain in several joints. Bacterial anaphylaxis is considered by Amoss and Bliss (1927) to be an initial stage of general immunity, and Derrick and Swift (1927) concluded that it is an early stage of resistance in a localized focus, whilst general immunity is the response of tissues over a wide area to a reasonably maximum dose of antigen. Similarly, Bessau and Detering (1928) hold that specific cellular allergy is the primary reaction in immunity, circulating antibodies being a later effect. Nordman (1931) points out that the Arthus phenomenon offers an explanation of the endocardial lesions in acute rheumatism. Arthus (1903) found that repeated injections of sensitizing into an anaphylactic animal gives rise to increasingly severe local reactions, which may pass on to necrosis; so that any original damage done by streptococci or their toxins during the early stage of infection may leave the damaged area open to attack by the circulating sensitizing agent. The explanation implies, *a priori*, an original selective action by the organism: such is known to occur in man, because, during recovery from proved streptococcal septicaemia, a pyogenic infection of one or more joints is not uncommon. The observation of Arthus may have some relation to that of Auer (1930), who found that injury to the skin of a sensitized animal when antigen was in the circulation may produce a local allergic reaction due to the actual excretion of sensitizing into the injured area. It could be inferred from this that once a joint is damaged a more or less continuous irritation is set up by the antigen in the blood, and a vicious circle is started which can be broken only by the removal or neutralization of the circulating antigen.

Since the anaphylactic syndrome is independent of the nature of the sensitizing agent, it follows that there is nothing to prevent any organism causing the disease provided it is capable of producing allergy in man, and this may explain why cases are reported from time to time as being due to some bacterium not usually associated with the disease. A possibility that will not lessen the complexity of the whole question is that "rheumatism may conceivably be produced by the combined action of a selective toxin and a distinct sensitizing agent. They may be derived from the same organism, or two species may be in action. The hypothesis is not very far-fetched because clinical anaphylaxis is almost invariably revealed during treatment of a bacterial disease by means of horse serum containing the appropriate antibody. A profound alteration in an animal's metabolism may induce some variation

in the anaphylactic syndrome peculiar to the species. Fleisher and Wilhelmj (1927) studied anaphylaxis in thyroidectomized guinea-pigs, and found that, although the operation did not influence the ease of production of shock in this animal, the syndrome was modified. In man, chronic villous arthritis is the only form of rheumatism in which thyroid deficiency is clearly suggested, and in which administration of thyroid recognizably benefits most cases. The clinical variation of this disease from the general type may constitute the parallel change.

The liability to allergy in general is a weakness of the host, inherited or acquired. That the actual allergic state to some particular substance is itself truly transmitted is very doubtful, since allergy in young infants has never been shown to have been transmitted by the father. Transmission through the mother has been recorded frequently, but this is probably due to passage of sensitogens through the placenta. Ratner, Jackson, and Gruehl (1927) find that antitoxins, precipitins, and sensitogens can permeate the human placenta, and believe it to be due to the fact that the layer separating the two blood streams is only one cell thick. A hereditary liability to anaphylaxis has been found in animals, and the adduced facts may explain why rheumatism is frequently a familial disease, and may also constitute an answer to the triumphant query as to why, if pyorrhoea is a cause of rheumatism, every sufferer from the former disease does not also exhibit evidence of the latter.

TREATMENT BY DESENSITIZATION

There are two methods of desensitization. Non-specific desensitization has been induced by a number of substances, and a list of them is chiefly remarkable for the dissimilarity of its constituent members. They range from sodium chloride to proteins, and it is certain that if each of them in turn was tried upon a sufficient number of rheumatic cases a brilliant result would be effected by each—once. In animals they are neither reliable nor permanently successful: Isaacs (1928) finds that non-specific desensitization is successful in about 50 per cent. of guinea-pigs, and that the result disappears in about twenty-four hours. Specific desensitization is the alternative and rational method. It consists in treating the animal with the sensitizing agent that caused the condition. In the case of rheumatism that substance is the bacterial antigen in its crude form, or some modification of it that will stimulate the supply of specific antibodies. The inevitable inference from this is that some type of bacterial antigen is the cardinal line of treatment, and that all the drugs employed are but adjuvants to it. A point as to the selection of an immunizing antigen arises here. Toxoid, whilst free from toxicity, is known to be a good immunizing agent, and at first sight it might be preferred to toxin, assuming that the latter was the operating sensitizing agent; but if the precipitate theory of the mechanism of shock be accepted—and much modern work suggests that it is true—then there is no reason why shock should not be produced by either substance indifferently. The antibody is already present, and one introduces an antigen which can combine with it. Common toxicity may not enter into the question.

USE OF SHOCK-DEPRESSANT DRUGS

A certain number of drugs have long been known as depressants of anaphylactic shock—that is, they can mask the severity of any particular shock and may even abort it. None, however, have any influence upon the anaphylactic state itself. The animal is just as sensitive as before. Among these drugs are salicylates, aspirin, salol, antipyrine, some narcotics and anaesthetics, calcium, magnesium, bromides, iodides, and some resins. The salicylates in acute rheumatism illustrate the limitations of shock depressants. They lower temperature and make

the patient more comfortable, but they have no influence upon the incidence of subsequent endocarditis, a result which agrees with their role in anaphylaxis. The action of salicylates in experimental streptococcal arthritis in rabbits was studied by Davis (1915), who found that they had no effect in preventing endocarditis or the localization of organisms in the joints. Moreover, they did not affect the course of the infection once it was established. His results were confirmed by Fantus, Simmonds, and Moore (1917), and substantially so again by Swift and Boots (1923). *Salol* has a reputation as an intestinal antiseptic in allergic diseases of the skin, and has been used in rheumatism. Yet it can be shown that its bactericidal power in the intestine is negligible. Viewed as a shock depressant its occasional successes are understandable. (It is of interest to note that in serum sickness Kolmer recommends aspirin for the muscular and neuritic pains, and sodium salicylate with bicarbonate when the joints are involved.) In lowering temperature and abolishing joint pain and swelling, *atropine* hypodermically is more efficient than salicylates and is equally useless for true curative purposes.

Magnesium is one of the commonest constituents of spa waters, and it is a depressant of unstriated muscle, the reaction of which is one of the basic anaphylactic phenomena in all animals. But it is possible that its utility as a remedy does not end there. In man fatal cases of anaphylaxis permitting post-mortem examination are rare, but Dean (1922) found that the liver cells were much injured, and was able to confirm Weil's view that dilatation of the hepatic capillaries is an important factor in human shock. Parallel to that is the finding of Mendenhall, McClure, and Cate (1926) that magnesium sulphate in small doses is a true cholagogue, and it is therefore not unreasonable to suppose that the daily action of small doses may assist the liver in its resistance to anaphylactic irritation. The intake of great quantities of water, with some small proportion of dissolved salts, may also be advantageous, since Raulston (1927) has shown that during shock anaphylactic rabbits mobilize water and electrolytes from the tissues. It is believed that many of the simpler sensitizing agents, such as *iodine*, owe their effects to combining with a protein of the host, and in so doing altering it sufficiently to cause it to act as a foreign protein: this is supposed to be particularly true of *iodine*. Klopstock and Selter (1927) used diazotized *atoxyl* with serum, and considered that the mixture reacted with natural proteins to give a denatured protein changed enough to act as a foreign protein. (The activating agent of a shock can be very simple. Thus Smetana (1927) sensitized animals to haematoporphyrin and shocked them by exposure to sunlight.)

The bearing of the foregoing observation upon rheumatism is on the question of desensitization. It has been found by many workers that if a substance capable of sensitization be administered to an animal, anaphylactic to another sensitizing agent, a few hours before a shock dose of the animal's sensitizing agent is given, then the shock is frequently averted. This action may explain the beneficial effects of *iodine* in arthritis deformans, the action being one of non-specific temporary desensitization. However one chooses to regard the action of *iodine*, it is a fact that its beneficial effects are chiefly seen in the chronic infective diseases which are considered to have an allergic factor in their pathogenesis—namely, syphilis, yaws, tuberculosis, and disease due to the higher vegetable parasites.

CONCLUSION

The parallelism that exists between the syndromes of the two diseases—anaphylaxis and rheumatism—and between the drugs used in their treatment are, when itemized, far too numerous to be dismissed as a series of co-

incidences. There being no other theory that will account for all the phenomena of rheumatism and its treatment, I submit that the anaphylactic explanation must be accepted as the only alternative to a position that is no more than a contradictory muddle of mysteries.

A dictum of Kolmer is a fitting conclusion: "Under proper conditions it is reasonable to suppose that anaphylactic shock or shocks may occur during the course of a given disease, and that the effects of these may contribute to the lesions and symptomatology in no small degree."

BIBLIOGRAPHY

- Amoss, H. L., and Bliss, E. A.: *Journ. Exper. Med.*, 1927, xlv, 411.
 Arthus, A.: *C. R. Soc. de Biol.*, 1903, lv, 817.
 Auer: *Journ. Exp. Med.*, 1920, xxxii, 427.
 Bessau, G., and Detering, C.: *Zentralbl. f. Bakt.*, 1928, I Abt. Orig., cvi, 11.
 Davis, J. D.: *Arch. Int. Med.*, 1915, xv, 555.
 Dean, H. R.: *Journ. Path. and Bact.*, 1922, xxv, 305.
 Derrick, C. L., and Swift, H. F.: *Proc. Soc. Exp. Biol. and Med.*, 1927, xxv, 222.
 Fantus, B., Simmonds, W. E., and Moore, J. I.: *Arch. Int. Med.*, 1917, xix, 529.
 Fleisher, M. S., and Wilhelmj, C. M.: *Zeit. f. Immunitäts. u. exp. Therap.*, 1927, li, 115.
 Harding, A. E. B.: *Journ. Path. and Bact.*, 1926, xxix, 189.
 Hitchcock, C. H.: *Journ. Exper. Med.*, 1928, xlviii, 403.
 Irvine-Jones, E. I. M.: *Arch. Int. Med.*, 1928, xlii, 784.
 Isaacs, M. L.: *Arch. Path.*, 1928, v, 1028.
 Kaiser, A. D.: *Journ. Infect. Dis.*, 1928, xlii, 25.
 Klopstock, A., and Selter, G. E.: *Klin. Woch.*, 1927, vi, 1662.
 Kolmer, J. A.: *Infect., Immun., and Biol. Ther.*, Saunders, 1923, p. 658.
 McLachlan, D. G. S., and Mackie, T. J.: *Journ. of Hyg.*, 1928, xxvii, 225.
 Mendenhall, W. L., McClure, C. W., and Cate, M.: *Boston Med. and Surg. Journ.*, 1926, xcvi, 76.
 Muir, R., and Ritchie, J.: *Manual of Bacteriology*, Oxford University Press, 1919, seventh edition, p. 600.
 Nordman, M.: *Physiol. Rev.*, 1931, ix, 41.
 Ratner, B., Jackson, H. C., and Gruhl, H. L.: *Journ. Immunol.*, 1927, xiv, 249, 275, 291.
 Raulston, B. O.: *Biochem. Zeit.*, 1927, clxxxiv, 31.
 Smetana, H.: *Proc. Soc. Exp. Biol. and Med.*, 1927, xxiv, 821.
 Swift, H. F., and Boots, R. H.: *Journ. Exper. Med.*, 1923, xxxvii, 553.
 Swift, H. F., Hitchcock, C. H., and Derrick, C. L.: *Proc. Soc. Exp. Biol. and Med.*, 1928, xxv, 312.
 Topley, W. W. C., and Weir, H. B.: *Journ. Path. and Bact.*, 1921, xxiv, 333.
 Wright, H. D.: *Ibid.*, 1926, xxix, 5.
 Zinsser, H.: *Textbook of Bacteriology*, Appleton, New York, 1922, fifth edition, p. 367.

THROMBOSIS, EMBOLISM, AND THEIR TREATMENT

BY
GEORGE BANKOFF, M.D., M.S.

HONORARY SURGEON, ST. JOSEPH'S HOSPITAL, MANCHESTER

With the recent progress of surgery, especially in major operations, there has been an increase of thrombosis and embolism, constituting an ever-present threat to the success of such operations. With this fact in mind I conducted experiments directed towards an inquiry into the cause of these pathological conditions. The results have been published by the *Klinische Wochenschrift*, 1932, ii, 502. On account of the interest taken in this work I will set forth the method of treatment which I have found very successful in the practical application of the principles established therein.

THEORIES OF CAUSATION

Before entering into details of the treatment we must discuss briefly what is the origin of thrombosis, so that it may be determined in which patients the disease is likely to occur. On this point scientific opinion is divided into two main groups—one believing it to be due to bacterial infection, and the other to a special constitutional predisposition. The first group—the supporters of bacterial infection—have reported cases of thrombosis and embolism in which they have tried to prove conclusively that certain infectious diseases are the cause of the

thrombosis. In the majority of cases the cause of infection was attributed to such non-virulent bacteria as the organisms found in influenza, bronchitis, etc., and in cases in which it was impossible to demonstrate any definite organism it was explained that the disease was due to some unknown ultra-filterable virus. The principal advocates of the germ theory—Franke, Kuskow, Kinzel, and Pathy—while subscribing to it in a general way, differ slightly in their conclusions. Either they believe thrombosis to be a direct result of bacterial action or they think that the virus or its toxin affects the individual, producing irregularity in the blood circulation, hypotonia, and damage to the blood vessels, thus giving rise to thrombosis.

The second group deny that infection has any connexion with thrombosis. The supporters of this theory—Payr, Morawitz, and especially Rehm, who is its founder—believe that all patients affected by thrombosis belong constitutionally to one type. They call this condition thrombopathy, and emphasize that in all such cases the patients are found to have a special construction of the sympathetic nerve system. Some members of this group qualify their opinion by stating that thrombosis may be due, not necessarily to a permanent, but to a temporary, difference in this system. Others—Koenig, for instance—in cases in which no cause can be found for thrombosis, nevertheless deny it to be the result of an infection. It is not my intention to criticize this theory at length, but I believe from the experiments I have made that it is absolutely wrong to state that there is a special idiosyncrasy which gives rise to thrombosis, because, if this were admitted, it would be impossible to explain why a patient, operated on two or more times, on one occasion suffers from thrombosis and on another does not, and why the conditions for thrombosis are not present at each operation. If we admit that temporary damage to an organ can bring about thrombosis, why must we exclude damage from a germ? To explain further: if damage to the intima of the blood vessels can produce thrombosis, that damage may arise from bacterial action. It cannot therefore be denied that infection may be a direct cause of thrombosis. On the other hand, one cannot agree with the supporters of the germ theory who believe that thrombosis is due only to infection. There are many cases in which it is absolutely impossible to find any organism, and in which, on the contrary, it is easy to find some special organic construction. The presence of a non-visible germ in these cases is not an acceptable theory.

METHOD OF DETECTING LIABILITY TO THROMBOSIS

I now wish to emphasize my opinion that thrombosis can never be regarded as due to only one class of causes: it is a pathological state which can arise from different causes at any time the equilibrium of the patient is destroyed. (It is irrelevant to discuss here the aetiology of this destruction of the equilibrium.) I do not believe that all patients are liable to thrombosis. In order to be affected by this condition it is not enough to have present the causes for producing it. I divide patients into two groups. In the first and, fortunately, the largest are the patients who can never suffer from thrombosis, even if the organs are damaged. In the second group there will always be a risk without any external influences. In making my experiments my intention was to find a means of detecting which patients can be affected by thrombosis and which can not. I began to search for some agent which would produce definite symptoms enabling me to divide the patients into two groups: those predisposed to thrombosis, and those whom I believed to be immune to it. After long and involved experiments it was possible to demonstrate that by the hypodermic injection of thyroxine the reaction of each group was different.

The method I have adopted is as follows. Two days before the operation all patients are injected with 1 c.cm. of thyroxine. After three hours the temperature, pulse, and blood are examined. In the first group, which may be termed "thyroxine-sensitive," as a result of the injection, the pulse quickens and the temperature rises slightly; difference in the blood composition is noticeable by the variation of the quantity of the blood corpuscles—the number of the red corpuscles increases slightly, whilst the number of blood platelets decreases. After two or three injections of thyroxine these become two or three times more abnormal, and the time necessary for blood coagulation is longer. On a patient in this thyroxine-sensitive group any external influence, especially the operation itself, will produce the effects mentioned above, and for this reason I do not believe they can be affected by thrombosis. In patients in the second group, termed "thyroxine-resistant," as a result of the same injection it is impossible to detect any change in temperature, pulse, or blood composition. A slight variation in blood corpuscles is sometimes noticeable, but is of no importance. To these patients every operation will bring the danger of thrombosis.

The scientific explanation of the reaction to thyroxine is explained in different ways. Freund and Boshamer believe that the thyroxine acts on the vegetative nervous system, and at the same time directly affects the cardiovascular system, producing the clinical symptoms in the patient. In the thyroxine-resistant group of patients the effects of the injection are almost unnoticeable, because the systems mentioned above show very little reaction. In this group of patients the parasympathetic nerve system predominates, thus facilitating the formation of thrombosis. During the last three years I have experimented with more than two thousand patients admitted for operation. In every case thyroxine was administered and the patient afterwards examined. In this way patients were divided into two classes: thyroxine-sensitive and thyroxine-resistant.

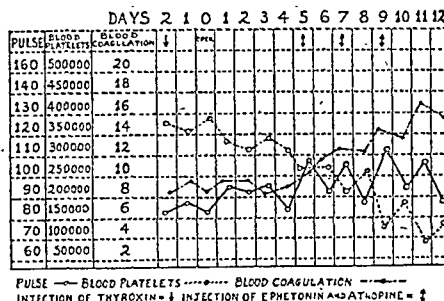
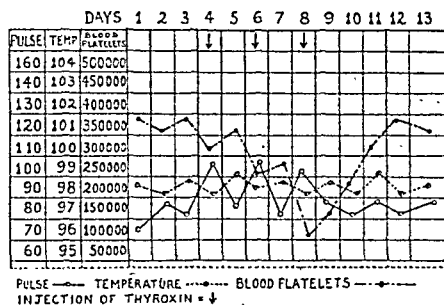
PREVENTIVE TREATMENT

After the thyroxine effect had been discovered it was necessary to find some treatment to prevent thrombosis. During this experimental period all cases in which thrombosis occurred were examined and were found, without exception, to belong to the thyroxine-resistant group. This tended to confirm my conclusion that only patients of this group were liable to thrombosis. The treatment that was found to be successful consisted in the administration, hypodermically, of a combination of atropine and ephetonin in the proportion of 1/100 grain atropine to 1/4 grain ephetonin. Not less than three injections in all were given every other day, beginning from the fifth day after the operation. I am able to state that not one patient treated in his way suffered from thrombosis or embolism.

The scientific explanation of the influence of atropine and ephetonin is as follows. With the first injection a variation in the blood composition is noticeable. Six hours after the injection the number of blood platelets is less than 100,000 per c mm., and the number of red cells is slightly increased. The decrease of blood platelets occurs after every injection until the third, when the same level is maintained. The time necessary for coagulation of blood is two or three times longer than usual. This is shown more clearly in the diagrams.

In small hospitals where there is no laboratory equipment and it is thus impossible to divide the patients into thyroxine-sensitive and thyroxine-resistant, I believe it is advisable to treat all patients as belonging to the latter division. The injection of atropine and ephetonin can never be harmful to the patient, and is even useful for

the prevention of post-anaesthetic lung trouble. In this way mistakes will be avoided and deaths from thrombosis will be reduced to the minimum.



SUMMARY

The origin of thrombosis is not confined to one group of conditions. It is rather a special pathological state due to external influences such as constitutional predisposition, bacterial infection, or toxæmia. Not all patients are affected by the thrombosis, but by the use of thyroxine it is possible to divide them into two groups: those immune from, and those predisposed to, thrombosis. The symptoms which demonstrate the difference between the two groups are the pulse, temperature, and variations and change in the blood composition. The treatment is the hypodermic administration on alternate days, beginning on the fifth day, of a combination of ephetonin and atropine.

TORSION OF THE NORMAL FALLOPIAN TUBE

BY

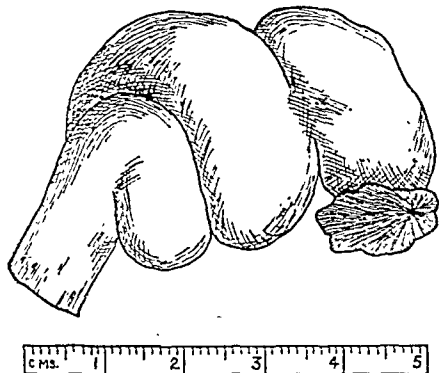
ALISTAIR McEACHERN, M.B., B.S., F.R.C.S. Ed.
RESIDENT MEDICAL OFFICER, KING GEORGE HOSPITAL, HILFORD

Torsion of abnormal uterine appendages is not an uncommon condition, but torsion of normal appendages is much less frequently encountered. Torsion may involve either the normal tube or the normal ovary, or both; but this brief review is confined to tubal torsion, of which the following is an example.

A girl, aged 14, was admitted to King George Hospital on April 5th, 1931, under the care of Mr. Harold Dodd. Pain in the right lower quadrant had begun four days previously. After twenty-four hours it had become central, and vomiting occurred. The pain persisted and remained central. The bowels had acted on the day of admission, and there were no urinary symptoms. The first menstrual period had begun on January 1st, 1931, and had lasted seven days; the second, on February 4th, lasted four days; and the third, on March 8th, lasted four days. (The fourth began on April 6th, twenty-four hours after the operation, and lasted two days.) Since the age of 2 she had suffered from attacks

of pain in the right iliac fossa, associated with headache. These attacks lasted three to four days, beginning and ending suddenly, and were usually associated with vomiting. Up to the age of 7 they occurred every one to two months, but subsequently they had become much less frequent.

On admission her temperature was 98.8° F. and her pulse 86. There was well-marked tenderness and rigidity in the right lower quadrant. Nothing abnormal was noted on rectal examination, and the urine was normal. A diagnosis of acute appendicitis was made, and the abdomen was opened by a gridiron incision. The appendix appeared to be mildly inflamed, and was removed. A mass was then detected in the right side of the pelvis, necessitating exposure through a right paramedian incision. This proved to be the right Fallopian tube, which had undergone two complete turns in an anti-clockwise direction (see Fig.) It was dark red and



Acute torsion of the right Fallopian tube.

much enlarged, due to swelling of its walls and haemorrhagic effusion into the wall and lumen. The mass was 5 cm. long and 3 cm. in diameter. It was removed, and the wounds were closed in layers. Recovery was uneventful, and the patient was discharged from hospital on the fourteenth day. The specimen was submitted for examination to Dr. Arthur Davies, who reported that there was no evidence of pregnancy, and that the haemorrhagic effusion was the result of torsion. In the two years which have elapsed since the operation there have been two attacks of pain somewhat similar to those which occurred in childhood.

In my opinion the interesting features of this case are:

1. The history of recurrent attacks of pain. This has been a feature of some of the recorded cases, but in this instance it seems probable that the repeated attacks were due to some other cause.
2. The definite relation to the pre-menstrual period.
3. The anti-clockwise direction of the twist, which is the reverse of that which is said to be usual on the right side. Kustner's law (quoted by Downer and Brines¹) says that, in torsion of uterine adnexae, twisting on the right side is clockwise and on the left side anti-clockwise.

The factors concerned in torsion of the Fallopian tube have been discussed from time to time in the gynaecological literature of the last twenty years, and a number of theories have been advanced to explain why a normal tube should suddenly undergo axial rotation to a pathological extent. It has been suggested that the tube is only apparently normal, and that it has been the seat of a mild inflammatory process, possibly associated with a slight hydrosalpinx. It is postulated that this may have resulted from vulvovaginitis in childhood, or that it may have occurred as a complication of one of the exanthemata.^{2,3} To reduce to a minimum the possibility of a low-grade infection of Neisserian or puerperal origin, this review is confined to torsion of the Fallopian tube in virgins. It would appear that in the recorded cases no very definite evidence of antecedent disease has been

found, and in the present case there were no adhesions and no suggestion of hydrosalpinx. I think, therefore, that it is probable that a tube indistinguishable from the normal can undergo torsion. Unusual mobility of a tube due to unusual length of the tube itself, the fimbria, or the mesosalpinx would predispose to unnatural twists; but in addition to a predisposing anatomical condition some further factor would be necessary to precipitate acute torsion.

Association in some way or another with menstruation occurs so frequently in the recorded cases that it would appear to have some aetiological relation. In this connexion two aspects of the menstrual function are of particular interest: first, it is conceivable that the passive congestion at this time may be one of the factors concerned; and secondly, it has been observed that during menstruation the tube occasionally contains menstrual blood. That this does sometimes happen has been established by Sampson,⁴ Bailey,⁵ and others; and it is generally believed that it is the result of regurgitation from the cavity of the uterus. Another view is that it arises by a process of tubal menstruation,⁶ but although this would appear to be embryologically possible it has never been proved to take place. The presence of blood in the tube may be concerned in the origin of torsion in one of two ways: it may be responsible for, or associated with, the initiation of abnormal contractions of the tube, or the simple factor of weight may be of importance. It is interesting that at least ten of the cases referred to have occurred after puberty, whereas torsion of the ovary or ovary plus tube before puberty is by no means unknown.

Another aetiological factor which has been commented upon is that of strain or sudden movement, but this does not appear to occur so frequently as association with menstruation. The most reasonable explanation of the way in which strain might be concerned in the origin of torsion is that contained in the haemodynamic theory of Payr, which is quoted by Gabe⁷ and Thorek.⁷ Payr showed, by injecting the vessels in the pedicle of the spleen, that torsion was imparted as a result of the spiral course of the vessels. It is conceivable that a sudden rise of pressure in tortuously disposed vessels may be a factor in torsion of the Fallopian tube, even though the anatomical arrangements are different from those obtaining in the pedicle of the spleen.

It would appear from these considerations that the important factors in the aetiology of torsion of the normal tube are anatomical predisposition, association with menstruation, and strain or sudden movement.

In the literature at my disposal I have found records of nine cases of torsion of the Fallopian tube in virgins. (1) Stark,⁸ 1911. Aged 46. Three previous attacks. Dermoid right broad ligament. Torsion left tube. (2) Davies,⁹ 1925. Aged 19. Clockwise torsion right tube. Long mesosalpinx. Association with menstruation. (3) Rogers,¹⁰ 1925. Aged 16. Torsion right tube, also left to less extent. Menstruating. (4) Darner,² 1926. Aged 13. Clockwise torsion right tube. Menstrual period began five days after operation. Onset of pain followed a kick. (5) Jefferson,¹⁶ 1926. Aged 32. Clockwise torsion right tube. Long mesosalpinx. Menstruated two days after operation. (6) Gillies,¹¹ 1926. Aged 23. Torsion left tube. Last period two weeks previously. (7) Corlette,¹² 1927. Aged 20. Clockwise twist of left tube occurring while confined to bed following fracture of tibia. Tube enormously distended. (8) Koster,¹³ 1929. Aged 16. Torsion of right tube. Menstruating. (9) Michon,¹⁴ 1930. Aged 26. Torsion of left tube. Koster¹² gives references to five further cases reported by Auvray, Schweitzer, Hausen, Heil, and Gabe.

SUMMARY

1. A case of torsion of a normal Fallopian tube in a virgin is reported.

2. Nine other cases have been found in the literature, in addition to five quoted by Koster.

3. The aetiology in general is discussed, the salient points being preternatural mobility, association with menstruation, and strain or sudden movement.

My thanks are due to Mr. Harold Dodd for permission to publish this case.

REFERENCES

- ¹ Downer and Brines: *Amer. Journ. Obstet. and Gynecol.*, 1931, xxi, 665.
- ² Darnier, H. L.: *Ibid.*, 1926, ii, 368.
- ³ Gabe, W. E.: *Arch. of Surg.*, 1929, xviii, 1304.
- ⁴ Sampson: *Amer. Journ. Obstet. and Gynecol.*, 1927, xiv, 422.
- ⁵ Bailey: *Journ. Obstet. and Gynaecol. British Empire*, 1924, xxxi, 539.
- ⁶ Stark, J.: *Ibid.*, 1911, xix, 258.
- ⁷ Thorck: *Med. Journ. and Record*, 1927, cxxv, 470.
- ⁸ Davies, D. J.: *British Medical Journal*, 1925, i, 657.
- ⁹ Rogers, L.: *Ibid.*, 1925, i, 778.
- ¹⁰ Jefferson, J. C.: *Ibid.*, 1926, i, 55.
- ¹¹ Gillies, J.: *Ibid.*, 1926, i, 187.
- ¹² Corlette, C. E.: *Med. Journ. of Australia*, 1927, ii, 719.
- ¹³ Koster, H.: *Amer. Journ. Surg.*, 1929, vii, 67.
- ¹⁴ Michon, L.: *Gynecol. et Obstet.*, 1930, xxi, 103.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

COMPLICATIONS FOLLOWING ANAESTHESIA WITH SODIUM EVIPAN

The case to be described is the only one in a series of 150 in which complications have followed the use of sodium evipan. It is of interest by reason of (1) the long latent period before the onset of symptoms, and (2) the toxic manifestations not being those commonly associated with poisoning by drugs of the barbituric group.

The patient, a man aged 23, was admitted to the hospital for the excision of a sebaceous cyst from the scrotum. There was some ptosis of the right eyelid, which had been present since birth, and atrophy of the right testicle, presumably due to mumps; otherwise he was apparently healthy and normal. Following my (E. L.) usual practice no preliminary medication was employed, anaesthesia being induced with evipan 10 c.cm. and supplemented with gas-oxygen anaesthesia. The cyst was removed, the course of the operation being uneventful. When the patient returned to consciousness about half an hour after the operation he was very restless; he was restrained, and there is no evidence that he injured himself in any way during that period. Eight hours later he was still restless, and was suffering some discomfort; 1/4 grain of morphine was injected and sleep ensued.

The following morning the patient appeared well, but complained of some headache; he was able to read, and took his food well. This persisted throughout that day, the following day, and until 9.30 on the evening of the third day, when he complained of sudden severe frontal headache, giddiness, spots before the eyes, and photophobia. The pulse rate dropped to 40; the temperature and respirations remained normal. He was seen by a colleague, who prescribed 1/50 grain of atropine and 10 minims of adrenaline. The pulse rate rose to 50, and the patient slept. On the morning of the fourth day he was somewhat drowsy, and lay back with neck and legs flexed. The temperature and rate of respiration were normal; the pulse rate was 36. The heart showed no signs of organic disease, and the blood pressure was 135/80. The pupils reacted to light and accommodation, but there was lateral nystagmus to the left. There was no evidence of paresis or anaesthesia in any part of the body. All tendon jerks were exaggerated, and the plantar response was flexor on both sides. The abdominal reflexes were brisk, and dermatographia was marked. Kernig's sign was negative, and the disks appeared normal. There were no sensory changes. The liver was not enlarged, and there was no jaundice. The urine contained no albumin, blood, sugar, or acetone bodies. Lumbar puncture was performed, and a clear fluid under slightly increased pressure was obtained. The manometer reading was 170 mm. 25 c.cm. of fluid being withdrawn. This fluid on examination revealed no excess of cells, no organisms, and

normal content of sugar, albumin, globulin, and chlorides. An electrocardiogram showed no abnormality. The nystagmus disappeared after the lumbar puncture.

On the fifth day the patient was still drowsy, and complained of occipital headache. The blood pressure was 140/85, and the pulse rate varied during the day between 40 and 50. Towards the end of the day the nystagmus reappeared, and the patient vomited twice. On the sixth day the patient's condition remained the same. The vomiting had become persistent, and he was unable to retain any food. Hypertonic glucose was given intravenously, and later in the day the blood pressure was found to have fallen to 120/70. The injection of hypertonic glucose was repeated on the seventh day, the vomiting ceased, and the headache became less severe. Eight days after the operation the pulse rate rose to 60, and the blood pressure fell still further to 115/60. There was no vomiting or headache, and the nystagmus had disappeared; the tendon reflexes remained brisk. From that day onwards the patient made an uninterrupted recovery, and was discharged on the sixteenth day after the operation. His pulse rate remained low, between 50 and 60, until two days before his discharge.

An x-ray examination of his skull showed no evidence of any abnormality or injury. The Wassermann reaction of his cerebro-spinal fluid was negative. It is difficult to assign a head injury as the cause of the symptoms; in these circumstances they can only be attributed to the sodium evipan.

We wish to thank Mr. Fedde Fedden, senior surgeon, St. George's Hospital, and Dr. Anthony Feiling, physician, St. George's Hospital, for their advice and help in the treatment of this case, and for their permission to publish these notes.

E. LANDAU, M.R.C.S., L.R.C.P.,
Anaesthetist, St. George's Hospital.

E. J. S. WOOLEY, M.B., B.S.,
House-Surgeon, St. George's Hospital.

FRACTURE OF FEMUR IN A WOMAN OF 80

This case seems to warrant recording because of the age of the patient at the time of the accident, and the satisfactory anatomical and functional state that has resulted after treatment.

In July, 1931, the patient, a woman of 80, fell heavily on a hard floor, and when I saw her, within two hours of the accident, it was obvious that there was a fracture of the right femur in the neighbourhood of the neck. She was moved carefully to bed in an adjoining room. An x-ray photograph was taken in her own bed the following morning by means of a Philips portable x-ray apparatus, and a paratrochanteric fracture of the right femur was demonstrated. A Thomas splint was applied to give temporary extension during transit, and the patient was removed with extreme care to the Butterfield Cottage Hospital, Bourne. On the following day a general anaesthetic was given, and the limb was fully abducted, extended—that is, protracted, while the foot was internally rotated—and a plaster-of-Paris spica applied. After four days had elapsed and on each day during her stay in hospital she was lifted from bed and placed in as upright a position as possible on a reclining chair. She was sent home ten days after admission to hospital.

After three weeks from the time of the accident the ankle was liberated and movements encouraged, and after a further three weeks the knee was liberated and again movements instituted. Three months from the date of the accident the patient was allowed to bear weight on the affected limb, and to walk as best she could, wearing the plaster case. In the week before Christmas the plaster cast was entirely removed, this being five months from the time of fracture. She was then able to move about almost unaided. There is now no disability, and the patient speaks of the right leg as being her "best leg."

It seems to me that several factors contributed towards the successful result: first, knowledge of the exact lesion, from the x-ray photograph taken in the patient's own bed without disturbance before removing her to hospital;

secondly, making the period of recumbency as short as possible, which was done because of the patient's age and consequent liability to pulmonary complications; and thirdly, the early weight-bearing, which would appear to have justified the risk taken in allowing it.

It seems hardly necessary to mention that the treatment outlined above is in no way suggested as suitable for any sort of routine treatment.

Bourne, Lincs.

W. B. R. MONTEITH, F.R.C.S.Ed.

TREATMENT OF AN UNCOMMON OBSTETRIC DIFFICULTY

This case may be of interest on account of the treatment of an uncommon obstetric difficulty.

A primipara, aged 24, was admitted to the Sussex Maternity and Women's Hospital, Brighton, at midnight on September 21st, in the second stage of labour, with the presenting part wedged in the pelvis. The provisional diagnosis was "impacted breech." She had been in labour for forty-eight hours. On examination under anaesthesia it was found that the presenting part was a well-moulded "brow," with its sagittal plane in the maternal coronal plane and the occiput to the right. It was disengaged from the brim and the head flexed bimanually until the occiput presented. As there was a strong tendency to revert to the brow presentation Willett's forceps were applied to the scalp over the occiput, giving it slight anterior bias. A weight of 1 lb. was attached to the handles, and the head was left to remould in its new attitude. After three and a half hours the head had descended again. The patient was re-anaesthetized, Willett's forceps removed, and the head delivered with obstetric forceps as a right occipito-anterior.

The infant weighed 6 lb. 12 oz., and breathed normally. Red marks and the spike holes could be seen where the scalp had been nipped. This area was covered with elastoplast, which was left to come off, the scalp having then healed. The puerperium was uneventful.

I wish to thank Dr. Cairn for permission to publish the case, and for his very kind constructive criticism of this account.

Brighton.

T. P. MULCAHY, M.R.C.S.,
L.R.C.P.

THE FORMATION OF GALL-STONES

In an article published in the *British Medical Journal* of May 20th, 1933, Mr. D. H. Patey asked for information which would help him to decide the minimum time required for gall-stones to form in the gall-bladder. The following case is instructive, as it shows that well-defined cholesterol stones can certainly develop in twelve months, and probably in three months.

Mrs. R., aged 38, was admitted into the Ninian Hospital on March 6th, 1929, complaining of flatulence and pain in the epigastrium and right iliac region. There was no history of biliary colic or jaundice. Examination showed slight tenderness in the areas complained of. On March 7th, 1929, I opened the abdomen by a right paramedian incision and removed a fibrosed appendix and also two gall-stones, 1 1/2 in. in diameter, from the gall-bladder. There were no other gall-stones present. The gall-bladder was closed by two rows of catgut sutures, and the abdomen closed without drainage. She was discharged on March 27th, 1929. Within three months of leaving hospital the patient commenced having typical attacks of biliary colic. These got worse, and on March 4th, 1930, she was admitted into the Royal Infirmary. Renal calculi were excluded by x rays. On March 6th, 1930, I reopened the abdomen and removed the gall-bladder. It contained over a dozen cholesterol stones 1/8 to 1/4 in. in diameter. Convalescence was uneventful, and she left hospital on March 28th, 1930.

D. J. HARRIES, M.D., D.Sc.,
F.R.C.S.,
Surgeon, Cardiff Royal Infirmary.

British Medical Association

CLINICAL AND SCIENTIFIC PROCEEDINGS

NYASALAND BRANCH AVITAMINOSIS A

At the annual meeting of the Nyasaland Branch for 1933 Dr. S. B. SINGH read a paper on avitaminosis A, with special reference to the facilities for investigating the problems in this connexion in the Tropics. Dr. Singh said that the vitamin concerned in the particular function of keeping the epithelial membranes which lined the various passages of the body intact and resistant to infections was vitamin A, one of the fat-soluble group, and related to D. Its precursor, carotene, was present in plants, the amount being regulated by the solar rays, and so being subject to seasonal variations, which were in their turn responsible in some measure for the seasonal oscillation of infectious diseases. In the body this vitamin was stored in the liver, and to a lesser extent in the kidneys, but, unlike vitamin D, could not be manufactured in the body by the agency of sun rays, and so required to be renewed daily. It was thermostabile and, with a minimal protection from air, milk did not lose its vitamin A content to any appreciable extent on boiling, although oxidation destroyed it even at low temperatures. Irradiation with certain wave-lengths could synthesize it from its precursors; other wave-lengths would destroy it. Too prolonged irradiation of foodstuffs enriched them as regards vitamin D, but made fats go rancid, and simultaneously lowered their vitamin A content.

After referring to the experimental work which had revealed the importance of this food factor, Dr. Singh dealt in detail with the effects of avitaminosis A in man. The resulting clinical picture, he said, was very puzzling, owing to the simultaneous occurrence of other grave nutritional deficiencies. Lack of the vitamin in the maternal milk retarded growth in the infant. The earliest signs of avitaminosis A, which appeared in the conjunctival epithelium, had been inadequately appreciated, owing to the fact that high degrees of this deficiency were rare in Western countries, where the staple diet contained much bread-and-butter. In India the basis of the diet was dal and bhat, or roti, and the dull, lustreless, muddy eyes of ill-fed children were strikingly obvious in village schools. The exposed part of the bulbar conjunctiva, as the result of keratinization, became thick, fatty-looking, and of a dirty yellow colour, wrinkling into coarser folds when the eyeballs moved laterally. A thin, translucent band of stratified squamous epithelium, seldom broader than 1 mm., encroached upon the upper part of the cornea from the limbus. In more advanced cases the lower edge of this band was often fringed with a number of pin-point pits, representing minute areas of superficial ulceration. The keratinization might later affect the conjunctiva of the fornicæ and lids, the lower being first affected. If the dietary deficiency continued, there was an attempt by the conjunctival cells to develop pigment in their basal layers—a reaction which aimed at protecting the weakened retina from light. At such a stage the normal function of the retina was almost always lost, and the patient complained of night-blindness; all these signs and symptoms cleared up in a few months with better feeding. A similar but deeper shade of pigmentation of the eyes appeared in cases of chronic malaria, and was due to the deposit of melanin. Examination with the loop showed that the melanin was distributed in a short, curved streak or coarse spots, while the pigmentation of avitaminosis A was lighter, and was uniformly distributed in the deeper cells of the more exposed parts of the conjunctiva. The fatty appearance was caused by the keratinization and desquamation of the surface cells. On the other hand, pterygium was discernible by the fine blood vessels running through it. Pinguecula, again, affected the elderly, and was usually more marked on the nasal side. The translucent band on the cornea might be confused with the pannus of trachoma, a disease which affected the well nourished as

well as the underfed. Pannus, also, had streaks of blood vessels running through it. With continued lack of vitamin A the eye changes progressed, and ultimately reached the well-known stages of xerophthalmia and keratomalacia.

The epithelium of the respiratory system lost its integrity and vitality in hypervitaminosis A, with the consequent appearance of catarrhal conditions, sinusitis, adenoids, discharging ears, and bronchitis. The degeneration of the ciliated epithelium brought the lungs within easy reach of pathogenic organisms, and pleuritis and pneumonia followed. Pyorrhoea alveolaris was also induced to a considerable extent by lack of vitamin A. In advanced cases the salivary and other glands showed ducts choked by the shed keratinized debris, and atrophied subsequently. The mouth became dry, and aphonia followed. With involvement of the glands of the digestive tract gastro-enteritis and colitis ensued. In the urinary system keratinization provided a nucleus for calculus formation. This was furthered by the deposit of calcium phosphate, caused by self-induced hypervitaminosis D in an attempt to cure the general ill-health by ultra-violet irradiation and the administration of this vitamin. The genito-urinary tract invariably became inflamed in such circumstances. Demyelination of the peripheral nerves explained many of the nervous disorders which were so frequently encountered in cases of avitaminosis A. The irritability of the nerves was further accentuated by the associated hypovitaminosis D disturbing the calcium and phosphorus metabolism. Under such conditions the nervous system was easily overpowered by the low-grade toxins produced within the body or introduced into it. The convulsive ergotism in rye-eating communities, and lathyrism in the lathyrus-pea-eating tribes of India, occurred in times of famine and drought, when there was scarcity of dairy products and vegetables, and consequent avitaminosis A. Such degenerative conditions of the spinal cord were also met with in Addison's disease, beri-beri, pellagra, epilepsy, and the cachexia of cancer, and it was quite possible that a lack of vitamin A might play some part in these diseases. The administration of liver, which was rich in this vitamin, caused great improvement in the cord in pernicious anaemia. The improvement in cases of general paralysis treated by malaria therapy was probably traceable to the release of large amounts of vitamin A latent in the liver. These and other possibilities deserved closer attention and more intense investigation. There could be no doubt that vitamin A had pronounced antibacterial properties; deficiency of it induced cellular deterioration and an upset of the normal activities of the reticulo-endothelial system. It did not act alone, however, in preserving the general health, for both vitamins B and D were often associated, but its study had thrown much light on many baffling borderline states of ill-health. It was usually the case that an Indian child, after weaning, was improperly fed, and it was not sufficiently widely realized that the pregnant Indian woman needed an ample supply of vitamin A for the foetus as well as for herself. During the physiological readjustments of metabolism at puberty and the menopause the reserves of vitamin A soon became exhausted and, if not replenished adequately, paved the way for infections. Intensive administration of this vitamin was of great value in many diseases and their convalescent stages. In certain disorders, such as pyrexias, obesity, acidosis, asthma, and some skin diseases, the ingestion of fat had to be limited, but this should not be allowed to lead to hypovitaminosis. In the treatment of kidney disease, for example, when diets rich in protein and poor in fluid were required, milk should be given as curd, and not be cut out of the diet. It must also be remembered, added Dr. Singh, that in certain cases of defective absorption of fat the diet might be adequate but the bile or pancreatic secretion be deficient. This occurred in obstruction of the ampulla of Vater or the duct by tumour or inflammation of the pancreas, in interference with the flow through the intestinal lymphatics: in gastro-colic fistula; in sprue; and in coeliac disease. Many artificially prepared concentrates of vitamin A were now available, and these should be used in conjunction with other vitamins, especially B, when indicated by the clinical condition.

Reviews

ABDOMINAL AND RECTAL OPERATIONS

This well-produced and superbly illustrated volume, *Operative Surgery: The Abdomen and Rectum*, by Professor MARTIN KIRSCHNER, is really the second of a series which, when complete, should cover the science and art of operative surgery in a manner never before attempted. It is well translated from the German by Dr. Ravdin, who pauses occasionally to introduce (in brackets) his own views, which do not necessarily accord with those of the distinguished author, but he naturally gets the last word.

There is nothing to criticize; we can only express amazement at the immense industry, the infinite care, and the wide knowledge which every page reveals. This is a book on the heroic scale, and is not for the beginner; but those who seek adventure on the higher slopes of surgical endeavour will find what they require here. The Kirschner thoraco-laparotomy, the excision of stoma ulcers involving the colon, and the surgical exposure of the oesophagus are examples of some of the operations described. This is the "big stuff" of surgery, but the author does not neglect the minutiae of more everyday proceedings, and there is much of value that cannot be obtained elsewhere. In what other textbook of operative surgery would one find, for instance, a consideration of the calorie value of jejunostomy feeds? Among many matters that will especially interest the practical surgeon is the stress laid upon the value of such mechanical aids to surgery as the Petz suture instrument, which is claimed to have "given gastro-intestinal surgery a new angle"; and the electro-surgical knife, which is stated to have "brought about a veritable transformation in gastro-intestinal surgery." It is interesting also to note such divergences from current British practice as the use of silk for intestinal suturing, and of silver wire for tension stitches. Intriguing, too, and strange to our eyes is the author's use of rubber condoms for the temporary closure of the bowel ends during the course of intestinal resection.

This is certainly a great book, which reflects the utmost credit on all concerned in its production. In his preface to the present volume Martin Kirschner rather pathetically states that German science and German texts are struggling for recognition in the world, but the reception this book is certain to receive from the world of surgery ought to make him a happy man.

CUTANEOUS NEOPLASMS

Largely owing to climatic reasons Australia enjoys a regrettable pre-eminence in the frequency of cutaneous neoplasms among its inhabitants. Dr. NORMAN PAUL, who is dermatologist to Sydney Hospital, has had exceptional opportunities for studying them, and has crystallized his observations in the form of a convenient little book¹ furnished with plenty of illustrations. He deals both with the various forms of malignant disease and also with the less serious but interesting growths, such as adenoma sebaceum, granuloma annulare, etc.; but the part of his book which will attract the greatest interest is that concerned with various forms of new growths associated with the strong sunlight that beats upon the Australian scene.

¹ *Operative Surgery. The Abdomen and Rectum*. By Professor Martin Kirschner. Authorized translation by I. S. Ravdin, B.S., M.D. London: J. B. Lippincott Company. 1933. (Pp. xiv + 569; 355 figures. 50s. net.)

² *Cutaneous Neoplasms*. By Norman Paul, M.B., Ch.M. London: H. K. Lewis and Co., Ltd. 1933. (Pp. xii + 154; 62 figures. 10s. 6d. net.)

The epithelial triad, as it has been called, consists of keratoses, rodent ulcer, and epithelioma, and they owe their frequency to the fierceness of the Australian sun. Up to the present time they have been observed for the most part among agriculturalists and others whose occupation necessitated long periods of exposure to the sun. In recent years, however, the popular practice of sun bathing has led to the appearance of these pathological changes in the skin among the numerous individuals addicted to this pursuit, and the author warns them seriously against the danger of the damaging effect of strong and continuous sunlight upon a skin insufficiently protected by pigment. The first sign of trouble is the condition which is termed "dermatitis solaris chronica." It is a degenerative condition of the skin characterized by irregular macules of pink or brownish pigmentation, and by keratoses, which may ultimately develop into malignant neoplasms. Fair-complexioned persons, the least protected by melanin, are the most susceptible, and Dr. Paul says that the condition is a very prevalent one in Australia.

Is there any need for the sun bathers of Great Britain to take warning? Probably not. Sunlight in this country is neither so powerful nor so consistent as that in Australia, and in all likelihood we may continue to take advantage of all we can get of it without risk of developing cutaneous cancer in our old age.

OEUVRES DE PASTEUR

The first five volumes of the edition of the Works of Pasteur¹ which is in course of publication by Masson and Cie, under the editorship of Professor VALLERY-RADOT, have already been referred to in the *Journal* of June 29th, 1929. Volume six has now been issued, and there remains only a single volume to complete the work. This splendid edition includes not only a transcript of the formal announcement and description of Pasteur's discoveries, but also an account of the various stages which led up to the discoveries, together with the criticisms and discussions to which they were subjected at the meetings of the Académie de Médecine and the Académie des Sciences in which Pasteur himself took part. It contains, therefore, in Pasteur's own words, and with incomparable clearness, the history of every step leading to the revolution which he effected in medical and surgical thought; and it will probably also form an important source from which an insight into Pasteur's personality is to be obtained. The idea from which Pasteur started is expressed in a characteristic manuscript note of his dated 1859.

"When the struggle of life and death leaves the latter victorious the dead plant or animal undergoes fermentative changes which gradually reduce its parts to the simple combinations which enable its elements to re-enter into the unending cycle of life and death. Everything indicates that infectious diseases owe their existence to causes of a similar nature."

Pasteur had already refuted Liebig's theory of fermentation; he had shown that micro-organisms were the essential cause of the process, and foresaw the significance of that fact in its bearing on the nature of infectious disease. At the time, the theory of the spontaneity of contagious disease was, according to Professor Bouillaud, dying out in France: specificity was recognized, but the cause was attributed to miasms; microbes had been detected in a few diseases, but a causal connexion was unsuspected or denied. On the other hand, fermentation was known to be sometimes associated with micro-organisms, and in many forms the latter appeared to be absent, and when present

were regarded merely as an accidental contamination. Pasteur showed that micro-organisms, derived from the exterior, were the essential causes in both cases; the important results that immediately followed, together with the germ-theory of disease based on the discovery, form the main subject-matter of the volume now published.

The first two of the fourteen sections into which the volume is divided contain the discussions held at the Academy on putrefaction and fermentation; the following section relates to Guérin's communication on cotton-wool dressings; the fourth to the theory of germs and its application to medicine and surgery, especially in relation to puerperal sepsis, furunculosis, and osteomyelitis. The fifth section deals with the aetiology and prophylaxis of anthrax, including the researches on the dissemination of the disease through the presence of spores in the soil. The following sections recount Pasteur's studies on chicken cholera and attenuation, on vaccinia, variola, plague, peripneumonia, pig typhoid, and cholera. The remarkable series of researches on rabies form the subject-matter of the twelfth section, culminating in the announcement of the successful treatment, by inoculation, of Joseph Meister, aged 9 years, who had been severely bitten by a mad dog. The announcement was made at the Academy on October 26th, 1885, a date which the president rightly described as one of the most memorable in the history of the conquests of science. The remaining sections contain various official documents, including the minutes of the Academy relating to the establishment of the Pasteur Institute. Various scientific notes, lectures, articles and correspondence will form the contents of the final volume, which is in course of preparation.

FUNCTIONAL AFFINITIES OF MAN, MONKEYS, AND APES

Mankind is always interested in his lower relations, and innumerable volumes have been published on the affinities of the human and simian primates. Almost without exception, however, these have been more or less morphological, and it has been left to Dr. S. ZUCKERMAN, in his *Functional Affinities of Man, Monkeys, and Apes*,² to bring within a single cover an authoritative study of the bearings of physiology and behaviour upon the taxonomy and phylogeny of the primates. The interest in the subject is by no means confined to classification, however: the comparative method can be applied to primates as effectively as it can to other animals. What is obscure in a functional activity of man, for example, may be classified by some peculiarity in the working of the homologous process in a related species. Dr. Zuckerman has used the term "functional" in the widest sense to refer to any character revealed by methods used in the investigation of the dynamic, rather than the static, aspects of organisms. He begins with a study of the classification of the order, and proceeds to discuss the differentiation of the mechanisms of reproduction, of blood reactions, of receptor organs and their functions, and of behaviour patterns. He studies the diseases and parasites of the primates, and passes on to consider psychological measure of intelligence in the primates, including a study of the brain, the phylogenetic implication of cortical physiology, and the evolution of primate behaviour. His concluding chapter sums up functional differentiation in relation to the evidence of morphology and palaeontology.

The chapter of most interest in a volume full of interest to the medical man is that dealing with disease and parasites. This subject has only been studied most super-

¹ *Œuvres de Pasteur*. Tome vi. Deux fascicules. *Maladies Infectieuses, virus-vaccins et prophylaxie de la rage*. Réunies par Pasteur Vallery-Radot. Paris: Masson et Cie. 1933. (Pp. 918 160 fr.)

² *Functional Affinities of Man, Monkeys, and Apes*. By S. Zuckerman, M.A., D.Sc. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1933. (Pp. 203; 24 figures. 10s. 6d. net.)

ficially, and Dr. Zuckerman gives a valuable summary of what is known—especially from the point of view of one concerned with the taxonomic relationships of the primates. The volume is fully illustrated by two dozen excellent representative photographs of various primates. There is also a comprehensive bibliography, both scattered throughout the text and in an appendix, as well as a subject index and an author's index. Dr. Zuckerman's book forms a constructive addition to our knowledge of the comparative physiology and psychology of the order of which man is a member, and it should be of great value to students of the subject.

BREATHING EXERCISES IN PULMONARY TUBERCULOSIS

Writing an official report¹ to the United States Government upon the Hague conference of the International Union against Tuberculosis, Dr. S. ADOLPHUS KNOFF of New York gives an excellent general outline of some phases of contemporary tuberculosis work. The most personal and original is a good description of his method of systematic respiratory exercises in pulmonary patients. The movements are performed in the semi-recumbent position. The stimulus is partly mental (by repeating the suggestion that breath is being taken in from the toes upwards). The object is to change the air at the base of the chest while leaving the upper lobes at rest. It is claimed that by this method, which gives the thoracic muscles much greater repose than during ordinary breathing, healing of active lesions is promoted. In many cases, as the author observes, a patient can make these exercises his only occupational therapy. As a further development of the idea, Dr. Knopf advises elevation of the chest while the diaphragm is in controlled movement. The number of respirations per minute can be reduced greatly. A tranquil aeration is achieved which is the very reverse of the deep thoracic respiration that in pulmonary tuberculosis we try to avoid. Probably there is a psychological element in these manoeuvres, and the benefit of such a simple procedure is worth investigation.

Other chapters in this report deal with care work in tuberculosis; psychological and social aspects of after-care work; B.C.G. inoculation; salt-free diet, etc. With regard to Calmette's work and his attenuated bacillus, the author adopts the view of W. H. Park of New York, which is favourable to the method, and he repeats the evidence that has been brought forward as to its harmlessness and efficacy. In this country most workers take a different view on bacteriological and statistical grounds. Dr. Knopf's report is to be looked upon as the personal reaction of a highly competent and experienced observer to some of the problems of his time. And the method of controlled diaphragmatic breathing is one that should be investigated by all clinicians.

"ANNALS OF MEDICAL HISTORY"

The sixth and last of the bi-monthly numbers of Volume v of the new series of the *Annals of Medical History*² bears on its cover the portrait of J. P. Frank, the famous hygienist of the eighteenth century, whose life and work are described by Drs. Leona Baumgartner and Elizabeth Ramsey; their statement that he is now "almost forgotten" is a rather extreme description of the present state of opinion, for his name is written large on

the façade of the London School of Hygiene and Tropical Medicine in Keppel Street. Surgeon-Lieutenant J. J. Keevil, R.N., gives an account of the work done during his short life of thirty years by William Anderson, master surgeon in the Royal Navy, who sailed with Captain James Cook in the *Resolution*; this article is the result of much research, and is a pious attempt to do justice to the memory of a little-known naturalist. In an informative essay on influenza epidemics Dr. J. F. Townsend recognizes as such outbreaks of disease occurring in 412, 393, and 43 B.C.; full acknowledgement is made to the late F. G. Crookshank, eight out of the twenty references being to his publications. The Graefenberg Medical School, founded in 1851 by Dr. Shepard in Alabama, and conducted as a family concern, is described by Dr. Roy Turner. Under the heading "The Intolerance of Great Men," Dr. D. B. Radner recalls Sir J. Y. Simpson's opposition to Listerism, Pavy's to Claude Bernard's storage of carbohydrates in the liver, Virchow's to Darwinism and to Koch's and Behring's views about toxins and antitoxins, and Pettenkofer's to Koch's cholera work. Sir Humphry Rolleston's interesting article, "The Two Heberdens," is concluded, the portrait of William Heberden, the younger, forming the frontispiece. Dr. Kate Campbell Hurd-Mead's "Introduction to the History of Women in Medicine," which has run through all the six numbers in this volume, also comes to an end, the record reaching the twelfth century. In an editorial, Professor George Dock quotes from a little-known work by J. H. Kopp the information that Larrey had practised mediate auscultation by means of a roll of paper long before Laennec invented the wooden stethoscope.

Notes on Books

Dr. G. E. BLAUMONT and Professor E. C. DODDS show themselves once again as indefatigable as ever in maintaining their popular *Recent Advances in Medicine*³ in an up-to-date condition. In the seventh edition they have added over one hundred pages of fresh material and discarded various sections where methods have not stood the test of time. It is perhaps significant of the trend of medicine that the book now opens with a composite chapter on sex hormones, vitamins, and ductless glands instead of the familiar introductory section on clinical investigation. Other new material deals with such subjects as the urea clearance tests, ketogenic diet, and new work on anaemia, while there is now included a good account of the tests available for estimating respiratory efficiency. To revise each section of the book for each edition must prove a difficult task, but it is surely time that the section on the gastric function should include mention of the use of the alcohol meal and the effects of histamine injection on the gastric secretion. In fairness we must add that attempts to find other deficiencies have failed, and all that is recent and worthy of notice seems to have been included in what must be regarded as one of the most successful numbers of this useful series.

We have received, as a 290-page supplement to the Hungarian publication *Orvosi Hetilap*, a full account of the third session of the Hungarian Medical Week, a yearly gathering of all medical societies of the country, which met in Budapest on June 4th, 1933. Reports were submitted by the Society for Internal Medicine, the Dermatological Society, the Society of Psychiatrists, the National Society of Dental Surgeons, the Association of Oto-laryngologists, the Pediatric Society, the Society for the Study of Rheumatism, the Tuberculosis Society, the Association of Pathologists, the Surgical Society, and the Society of Oculists.

¹ Report to U.S. Government on Tuberculosis, with some Therapeutic and Prophylactic Suggestions. By S. Adolphus Knopf, M.D. New York: National Tuberculosis Association of America, 450, Seventh Avenue.

² *Annals of Medical History*, Vol. V, No. 6, November, 1933. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc.; London: Baillière, Tindall and Cox. (Pp. 511-612; illustrated. Price for volume of six numbers, £2 15s.)

³ *Recent Advances in Medicine*. By G. E. Blaumont, M.A., D.M., and E. C. Dodds, M.V.O., D.Sc., Ph.D., M.D. Seventh edition. London: J. and A. Churchill, 1934. (Pp. 485; 58 figures. 12s. 6d.)

The second volume of *Brompton Hospital Reports** follows the same lines as its predecessor twelve months ago, containing a group of papers recently published from this hospital, but is considerably improved by the addition of the annual medical report of the institution for 1932, to which is appended a fuller account than usual of interesting cases in the wards during that year. An index to the two volumes is supplied. The present volume opens with two papers of historical interest—namely, a review of the life and times of Nicholas Culpepper by Dr. Cecil Wall, and an appreciation of the influence on medicine of Koch's discovery of the tubercle bacillus, which was prepared by Dr. R. A. Young for the eighteenth annual conference of the National Association for the Prevention of Tuberculosis. The greater part of the book is devoted to papers on the clinical and therapeutic aspects of pulmonary tuberculosis, and in this way a survey is provided of modern views concerning this disease.

* *Brompton Hospital Reports*. Vol. ii. 1933. Brompton, London: The Hospital for Consumption. (Pp. 193. 2s. 9d. post free.)

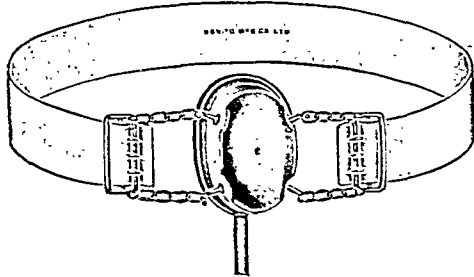
Preparations and Appliances

ATTACHMENT FOR SUPRAPUBIC BOX

Mr. H. J. McCURRICH, M.S., F.R.C.S. (Hove, Sussex), writes:

For some time I had been dissatisfied with the rubber belt and attachments for retaining a suprapubic apparatus in position. The belt was apt to become sodden, to perish, and to tear, and in spite of boiling frequently to have an offensive smell. I therefore got the Genito-Urinary Manufacturing Company to make an attachment as shown in the illustration.

On each side of the box there is a pair of rustless steel chains terminating in a buckle. A piece of elastic webbing (which costs for cotton webbing 1s. 6d. a yard, and for silk elastic webbing 2s. 6d. a yard) is passed round the back and buckled to each buckle in front. The webbing is cheap, and when soiled can be thrown away—each case can start with a



new and clean bit. The silk webbing has a more pleasant feeling against the skin. The buckles and chains can be used indefinitely, and are sterilizable by boiling. Another advantage of the chains is that each link is large enough to place on the stud at the side of the suprapubic box, so that an oblique pull can be obtained; for instance, in a very fat patient the chains may be left at full length on the upper studs while several links can be taken up in the lower studs so as to get a pull at right angles to the slope. For a thin concave abdomen this procedure can be reversed.

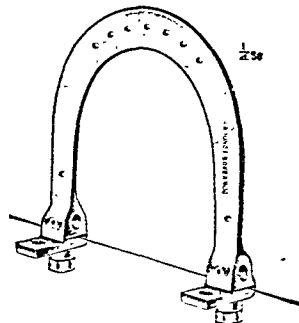
I prefer a Galbraith's modification of the Hamilton Irving box. It has only one exit tube, and this is situated at the lowest portion of the box, and so a puddle at this point is avoided. In my experience of prostate cases the patients do not lie on their sides while wearing a suprapubic box, and do not desire to do so, so that there is little point in the two tubes. And I believe that the puddle that forms between these two exits is the cause of much of the discomfort associated with a suprapubic apparatus. In the ordinary way while lying quiet a suprapubic box, if the rim is well vaselined, does not leak; some sudden movement dragging on the attachments may lift the box a little, or a sudden inspiration such as occurs before coughing, does this. If there is a puddle the whole of this may escape; if, on the other hand, there is no puddle, and the box is empty, only a drop or two may escape by running down the skin from the wound.

The box is made of rustless steel, and is therefore boilable. These chains have been in use by my colleagues at the Royal Sussex County Hospital and the Brighton Infirmary, as well as by myself, for the last eighteen months, and have proved satisfactory in use. They are supplied by the Genito-Urinary Manufacturing Company, London, W., at 7s. 6d. for a pair of buckles and chains.

KIRSCHNER'S STIRRUP

Major MEURICE SINCLAIR, C.M.G., R.A.M.C. (ret.) (London, W.1), writes:

The figure reproduced here shows a Kirschner's stirrup with a "thread" *in situ*, which has been made for me by Messrs. Down Brothers, Ltd. It has several practical advantages over other stirrups. It is extremely simple in



construction and practical in use. It will also take all gauges of "threads." I have added a quadrilateral "washer" to each end of the stirrup, and through each "washer" an extra hole is drilled—as a holdfast for the extension tapes, which I originally tied to the "thread" between the ends of the stirrup and limb. These holes are seen in the figure, and for practical purposes are situated at the same level as the "thread." This gives an important supplementary value to the stirrup, as it can now be safely used for all fractures of the lower limb. For instance, the "thread" can be passed through the malleoli while the limb is supported in a Thomas splint; the stirrup can be so arranged, and fixed, to be either in front or behind the leg as the surgeon desires. Accordingly, in fractures of the lower limb, with the "thread" and stirrup secured in the above manner, and with the extension tapes fixed to these holes, the stirrup can be used for all the long-bone fractures of the lower limb, and the surgeon can obtain a permanent and efficient pull in the *correct axis* of the limb, while causing a minimum amount of damage for introduction and producing the maximum benefit for the patient—provided the correct aseptic technique has been adopted and the "thread" has been passed through an adequate proportion of bone.

CERVICAL IRRIGATOR

Dr. W. NEVILLE MASCALL, Chief Assistant Medical Officer, L.C.C. Whitechapel Clinic, E.1, writes:

The cervical irrigator here illustrated has been made to my design by Arnold and Sons of 50-52, Wigmore Street, W.1,



and is used at the L.C.C. Whitechapel Clinic, where it has proved very successful in the daily routine treatment of gonorrhoea and other cervical infections.

The instrument is 10 inches long, with a gentle curve to facilitate its introduction into the cervical canal. The gauge along the shaft is that of a No. 8 English catheter. It terminates in a small bulbous protrusion, which is perforated both terminally and on all sides with the gauge of a No. 2 English catheter. This type of construction causes a back-flow which thoroughly douches the vagina.

The instrument is made of stainless metal, and in one to permit easy sterilization.

A CLINICAL AND RADIOLOGICAL EXAMINATION OF WORKERS EXPOSED TO ANTHRACITE DUST

REPORT BY THE INDUSTRIAL PULMONARY DISEASE
COMMITTEE OF THE MEDICAL RESEARCH
COUNCIL.

In 1931 the Medical Research Council referred to their Industrial Pulmonary Disease Committee a request by the Mines Department and the Home Office for an inquiry into whether the working health and capacity of coal miners are impaired by inhalation of anthracite dust, and, if so, to what extent. The Industrial Pulmonary Disease Committee having undertaken to investigate this problem, a preliminary study was made of the size and constitution of the working population at the South Wales anthracite collieries. The results of this study showed that, under the existing industrial conditions, the problem was likely to be an extremely difficult one to solve. To enable an adequate investigation to be made, the basic requirement was a population, of reasonable size, of workers whose state of health—clinical condition, presence or absence of physical impairment, degree of disability, etc.—could clearly be related to the specific factor incriminated—namely, anthracite dust—without the intervention of other extraneous and, possibly, important factors. With underground workers, at the coal face or on the haulage, this requirement was found not to be fulfilled. Such workers are undoubtedly exposed to various concentrations of anthracite dust in the atmosphere they breathe during their hours of work, but they may, in addition, be exposed at times to stone dust containing silica, especially when engaged on such tasks as roof ripping or driving hard headings. It was concluded, therefore, that if underground workers were, in fact, shown to be less healthy than other workers not exposed to anthracite dust, it could not be deduced that their higher rate of disability was due to their exposure to anthracite dust. Their impaired health might equally well be attributed to their exposure to stone dust containing silica, which, it is well recognized, can produce serious damage to health. Since, in addition, the effects of exposure to silica dust will not necessarily be immediately apparent, it was considered essential to reject also any surface worker who had ever worked underground for an appreciable length of time. Again, demonstrable damage to health in such surface workers would not necessarily be due to their exposure to anthracite dust above ground, but quite possibly to their previous exposure to stone dust beneath ground; indeed, already impaired health may have been responsible for their seeking work upon the surface, as is known to be the fact in many cases.

This preliminary survey of the population and its environmental conditions thus led to the conclusion that any consideration of the health of underground workers, past or present, could not contribute to a clean-cut solution of the specific problem. Attention was therefore turned to workers upon the surface. After the coal has been brought to the surface the general procedure at the anthracite collieries is to sort it by mechanical means into various grades according to size. For this purpose it is tipped upon the "screens," crushed, and shaken mechanically on different meshes, so that coal of a given size will fall to its right level and be conveyed on travelling belts either to the washery or direct to the trucks. While the coal is travelling along the belts, operatives are employed to remove pieces of shale, stone, and other foreign matter. Men employed on the processes—tippers, workers on the belt, and other screen workers—are exposed to the inhalation of varying amounts (sometimes very high) of anthracite dust. In the preliminary survey a census was taken of these operatives at the South Wales anthracite mines, and a study was made of their age distribution and length of employment upon these and other operations. It was found, without doubt, that there was a decided tendency to draft to

this relatively light work numbers of operatives who had previously worked underground and had for one reason or another become partially incapacitated or damaged lives. In addition, this preliminary inquiry showed that a large number of boys start work upon the screens but rapidly move away to other employment. The general evidence was that they are drafted underground, where the physical labour is heavier but the rate of pay superior. The inference must be that the healthiest and strongest workers will inevitably transfer to underground work, and it follows, therefore, that the screen workers, *apart from their recruitment of the disabled in later life*, are at all ages likely to include an undue proportion of men of under-average physique and health.

If, then, the examination of such a group of workers should show that it included a high proportion with impaired health, or that it suffered an unduly high rate of sickness, this result alone could not with any adequate degree of certainty be ascribed specifically to the effects of the inhalation of anthracite dust. It might be considerably influenced by the fact that the workers who select screen work and remain upon screen work are initially less healthy than any control group of surface workers adopted for comparison; in other words, any difference in health apparent might be the expression of the reaction of under-average lives to such general factors as tuberculosis, fibrosis, etc., rather than the reaction of normal lives to exposure to anthracite dust. Only the finding of some distinctive form of impairment that does not occur in persons unexposed to anthracite dust could remove this objection. In the absence, as yet, of any evidence suggesting that such a distinctive form of disability would be present, it was felt that no group of workers at the mines, either on the surface or below ground, could provide material by which the solution of the problem could satisfactorily be determined.

It therefore became necessary to see whether any other group of workers could supply the essential requirements of the investigation. For this purpose a preliminary survey was made of coal trimmers at Swansea docks. These workers are engaged in the hold of a ship during loading operations, their task being to level the coal as it is shot into the hold by mechanical conveyors. Their work is heavy, so that the recruitment of the physically unfit for the job is improbable, and this factor was therefore not likely to be of importance. They are exposed to the inhalation of anthracite dust, but also to other coal dusts, as the same workers will load any kind of coal according to the supply of the various kinds at different ports. The greater part of the anthracite supplies are loaded at Swansea, and here it forms a very large percentage of the total coal loaded; attention was therefore confined to the trimmers at this port. Their number is not large, roughly 250, and a study of the sickness or total disability rate of such a small group would not be illuminating. Accordingly, it was decided that the most hopeful line of approach would lie in the clinical and radiological examination of a sample of these workers. If the results of such inquiry revealed the presence of any distinctive form of disability the problem could then, it was felt, be reopened at the mines with more hopes of success.

It was determined to examine a sample of forty operatives, or, roughly, one-sixth of the total, the sample to comprise a group of fifteen recruits to the industry, whose employment in coal trimming amounted to three to four years, and a group of twenty-five older men with fifteen to forty years' service. These two groups were chosen at random from the complete list of operatives, with the intent that the first group should give a representative picture of the type of operative recruited by the occupation, and the second group a representative picture of men who had been at work for a relatively long period of time in the environment. The selection was completed in the third week of June, 1933, and when the examinations were commenced, on July 10th, eleven of the selected men were absent (one dead, two ill, eight for unknown reasons). Four of these absentees were from the group of "recruits," and seven from the group of

older workers. To make good the deficiency in numbers, volunteers were secured from the docks in place of the absentees. Such substitutions make it doubtful whether the sample is completely representative of the whole population. The results of the examinations may have been affected, it seems, by a readiness to volunteer on the part of individuals, who, on account of some known or suspected disability, desired to be examined. In the list of results of examinations the "volunteers" are numbered 41 to 51, and the gaps in the serial numbers 1 to 40 indicate the absentees for whom they were substituted. By arrangement with the Home Office, the clinical examinations were made at Swansea by two members of the Silicosis Medical Board. The record of examination of each worker included the following data: age; duration of employment in coal trimming; nature and duration of work in any other employment; family and personal history of illness; notes on general nutrition, the presence of respiratory embarrassment, cough, expectoration. Measurements of the chest and the condition of the upper respiratory passages were noted. A complete clinical examination was made, in which physical signs were recorded and interpretation of the clinical findings noted in each case. The condition of other organs was noted, and, finally, the degree of impairment of general physical capacity, if any, was estimated. The Welsh National Memorial Association, through its chief medical officer, undertook the radiological examination at the Swansea Tuberculosis Institute. These radiograms were examined in London by a special subcommittee of the Committee on Industrial Pulmonary Disease on July 21st, 1933, and the members independently recorded their interpretations of the films.

The Medical Board's records of the clinical examinations and the findings of the subcommittee on radiograms were carefully studied by the whole committee, and the results of its conclusions are set out in the table below. In this table particulars of the employment, history, and the personal history of illness are given for each person examined. The conclusions arrived at in the interpretation of the clinical and radiological data are indicated for each case by the letters A, B, C, and D, which have the following significance:—A: Nothing in the examination to suggest fibrosis in the lungs (nineteen cases). B: Evidence of fibrosis in the lungs not considered to be due to dust but to other causes, mainly antecedent disease (fourteen cases, of which nine are among the "volunteers"). C: Some clinical evidence of fibrosis in the lungs not confirmed radiologically (two cases). D: Pathological conditions found in the chest other than pulmonary fibrosis and not due to dust (five cases).

The personal history of previous illness includes five cases of influenza occurring within the last two years; six of pneumonia, two of these during Army service, and four during the period of work on coal trimming; three cases of pleurisy, all during the period; and three cases of rheumatism, two of them before the period. Pulmonary tuberculosis was diagnosed in four cases definitely, in three of which the disease appeared to be old and inactive; in three other cases the presence of the disease was suspected.

After considering the reports provided by the clinical examiners, the committee was unable to find, in this series of cases, any evidence that the inhalation of anthracite or other coal dust had caused fibrosis of the lungs.

The thanks of the committee are due to Drs. Keating and Thomas for carrying out the clinical examinations, and to Drs. Howell Williams and Prosser Evans for conducting the radiological examinations. Without the active co-operation of employers and trades union officials it would not have been possible to make adequate arrangements for the inquiry, and the committee wishes to thank representatives of the Amalgamated Anthracite Collieries and other employers; Mr. J. James, secretary of the Anthracite Miners' Branch of the South Wales Miners' Federation, and other trades union officials; Mr. Jonah Charles, district secretary of the Transport and General Workers' Union; and Mr. H. W. Morgan, representing the Great Western Railway Docks at

Swansea. All of these either co-operated in the preliminary inquiries at the mines or facilitated the arrangements for examining the coal trimmers.

TABLE SHOWING RESULTS OF EXAMINATION

No.	Age	Period of Employment in Years					History of Past Illness	Classification
		Coal Trimming	Other Coal Dust	Underground	Other Dusty Occupations	Non-dusty Occupations		
1	26	3 to 4	3	—	—	5	Dry pleurisy, 1931	A
3	25	"	—	—	—	6	Otorrhoea	A
6	26	"	—	—	—	8	Influenza, 1932	A
7	27	"	—	—	—	9	—	A
8	35	"	4	—	10 (four and grain)	3	Influenza, 1933	A
9	26	"	—	—	—	8	Hæmatemesis	A
10	25	"	—	—	6 (grain)	7	—	A
11	30	"	—	—	—	12	Sore throats	B
12	28	"	—	—	—	10	—	A
13	36	"	—	—	—	18	Tonsillitis; malaria; pneumonia, 1918	B
15	35	"	—	—	—	16	—	A
16	51	31	3	—	—	5	Hernia; dyspepsia	C
17	48	26	—	—	—	10	Malaria	A
18	50	33	—	—	—	3	Appendicitis; pneumonia 18 months ago	B
19	48	27	—	5	—	2	—	A
20	47	25	6	—	—	2	Hernia	A
22	56	35	5	—	—	5	Double pneumonia, 1918; operations; knee and hernia	D
23	41	20	5	—	—	2	—	A
24	42	26	—	—	—	2	Renal colic, 1926; influenza, 1931	D
25	54	38	—	—	—	3	Fracture rib, 1925; pleurisy, 1927	B
26	53	30	3	—	2	5	—	C
27	73	50	9	—	—	4	"Blood pressure"	D
28	60	40	3	—	3	—	Rheumatism, 1923	B
29	40	19	7	—	—	—	—	A
30	34	14	6	—	—	—	—	A
34	44	20	—	9	—	1	Fracture spine, 1921; influenza, 1931	A
36	54	22	—	—	—	14	Double pneumonia, 1915; peritonitis, 1920	A
38	53	31	—	—	—	8	—	A
39	47	26	—	—	—	7	—	A
41	49	23	5	—	—	2	Pleurisy, 1923; influenza, 1931	B
42	52	26	3	4	—	8	Rheumatic fever at the age of 8	B
43	44	27	—	—	—	3	Pneumonia at 21	B
44	57	26	10	—	—	8	Fracture four ribs, 1923; malaria 33 years ago	B
45	54	22	—	—	—	20	Dyspepsia	B
46	46	23	—	—	—	10	Pneumonia, 1925	B
47	51	29	—	—	—	14	Ecterie, 1901	B
48	51	27	—	—	—	10	Heart trouble, 1922	D
49	48	26	3	—	—	6	Chronic rheumatism since 21 years of age	D
50	52	35	—	—	—	3	—	B
51	50	25	—	—	—	13	—	B

The members of the Industrial Pulmonary Disease Committee appointed by the Medical Research Council are: Professor A. J. Hall, M.D., F.R.C.P. (Chairman); A. E. Barclay, O.B.E., M.D.; J. C. Bridge, F.R.C.S. Ed.; Professor S. L. Cummins, C.B., C.M.G., M.D.; Professor E. H. Kettle, M.D., F.R.C.P.; Stanley Melville, M.D.; Air Vice-Marshal Sir David Munro, K.C.B., M.B.; Professor M. J. Stewart, M.B., F.R.C.P.; Cecil Wall, D.M., F.R.C.P.; and E. L. Middleton, M.D. (Secretary).

British Medical Journal

SATURDAY, FEBRUARY 3rd, 1934

THE CARE OF CHRONIC ILLNESS

The institutional accommodation required for people suffering from chronic diseases differs in a number of respects from that needed for cases of acute illness. At the present time, when economy is still imperative and local authorities are completing their survey of hospital and other institutional provision for all those for whose care they are responsible, it is important to ascertain as nearly as may be not merely the total amount of the accommodation needed, but also, since this must vary in kind, the proportion of each kind which it will be wise to supply. On November 11th last (p. 879), under the title "Chronic Disease and the Community," we considered the general question of the need for communal care, and referred to the statistical and other conclusions which had been arrived at in a report on chronic illness in New York by Mary C. Jarrett, published on behalf of the Welfare Council of that city. The second volume¹ of that report, and part of the first volume, are devoted to a consideration of the institutional provision, both municipal and private, there needed and available. While the main conclusion arrived at is that the accommodation existing to-day is very deficient, both in amount and in character, it is possible that some of the facts set out may have a bearing upon the situation in this country. Here, as in New York, it may be found that "discrepancies between the type of care best suited to the patients' needs and the type of care they receive indicate that, in addition to the insufficiency and inadequacy of facilities for the chronic sick, there is also considerable misuse of the existing facilities."

The reader must bear in mind that in the New York report cases of pulmonary tuberculosis, mental disease, and blindness and deafness are not considered, public provision being already available for these classes. Apart from this, approximately 1 per cent. of the population is said to be disabled by chronic disease. We find it a little difficult from the various figures given to gather what exact proportion of these sufferers is regarded as needing institutional care of one kind or another, but it seems to be rather more than a half. The rest may be adequately dealt with by care at home, or by a clinic or dispensary. Three grades of institutional care can be distinguished. To adopt the nomenclature of the report, there are: first, medical care (A), for those who need active medical study and treatment; secondly, nursing care (B), for those who require skilled nursing under medical supervision; thirdly, attendant care (C), for those who are disabled and need assistance but cannot be further benefited

by medical treatment. For the first two types some form of hospital is required; for the third type an institution mainly of a custodial character suffices. Of the total number of patients covered by the New York census about 20 per cent. are regarded as being in need of institutional provision of the A type; about 3 per cent. of the B type, and about 34 per cent. of the C type. This calculation is, however, complicated by another consideration. Cases of chronic illness may obviously be classified, not according to the degree of medical and nursing attention they need, but according to the nature of the disease itself; and so it may be desirable or convenient to provide institutions for the care of orthopaedic cases, of neurological cases, of cardiac cases, of rheumatic cases, or of cancer cases, of varying degrees of severity.

Provided that these hospital beds for chronic illness, whether of a special or of a more general character, are made freely available for purposes of teaching and of clinical research, it may be held to be inadvisable to admit cases of chronic illness into the wards of general hospitals primarily intended for more acute cases. Such cases, medical and surgical, are likely at any time to be numerous enough to occupy all the beds available for them. They produce and require an "atmosphere" quite different from that most suitable for more chronic cases; and the medical and surgical staffs, and sometimes the nursing staff also, are apt to regard the presence of chronically ill patients as preventing the admission of cases of a more interesting and hopeful kind, and as producing a feeling of helplessness in dealing with "chronics" in the absence of social and economic adjustments which lie outside the medical province. Nevertheless, from one cause or another, there will usually be a certain number of cases of chronic illness in the ordinary general hospital. At the time of the New York investigation some 20 per cent. of the accommodation of the hospitals primarily intended for acute illness was occupied by such patients. The investigators regarded four-fifths of these as being out of place, and express the opinion that from 3 to 5 per cent. of the beds in general hospitals are really required for patients with chronic illness admitted for what they regard as legitimate reasons. These grounds are: emergency admission, temporary observation for a special condition, and the need for receiving treatment for an acute phase of the chronic illness. Clearly, institutions for chronic disease of the C type mentioned above should always be in close touch either with a hospital of the A type or with a general hospital.

It must not be assumed that all hospitals or institutions for the reception of cases of chronic disease can be established and maintained at a less cost than the ordinary general hospital. For the most part, and on the average, this will be true; but hospitals of the A type may require almost as complete a medical and surgical equipment as the general hospital, and many of them, as well as institutions of types B and C, need, in addition, provision for purposes of recreation and outdoor exercise which the hospital for acute cases is not expected to have. Moreover, the much greater

¹ *Chronic Illness in New York City. Vol. II. The Care of the Chronic Sick by Different Types of Voluntary Agencies.* By M. C. Jarrett. London: H. M. S. O., Oxford University Press, 1933 (2 vols., not the two volumes).

importance and extent of various social services and agencies in connexion with hospitals and institutions for chronic illness, and the entirely additional need for educational service, especially in hospitals for children suffering from rheumatic, cardiac, or orthopaedic conditions, have to be reckoned with. These last are, however, merely services transferred to the hospital from another sphere in which they would be wanted in any event. In the New York report there is an excellent chapter explaining and describing "medical social service in relation to the care of the chronic sick." We commend this to the perusal of any member of a hospital staff who is not already convinced of the paramount need for this kind of work and co-operation.

PITUITARY TUMOURS

As a result of a study of tumours of the pituitary gland recently met with at their hospital in Paris, Roussy and Oberling¹ present an interesting account of the types of tumour occurring in this region. Coming from so important an authority in this domain as Roussy it will be of interest to examine shortly the views he puts forward. Glandular tumours of the pituitary, he says, belong for the most part to the adenomata, and their histological study raises two problems. First, we wish to know the nature of their constituent cells, since the clinical manifestations of the tumour depend upon this. Secondly, it should be possible to determine the degree of malignancy of the tumour removed surgically, and thus decide on the necessity for accessory treatment.

Pituitary adenomata are relatively frequent, 10 per cent. of all subjects showing adenomatous foci, although in the vast majority of cases these foci are microscopic in size. The authors consider that these minute foci are able to give rise to real pituitary tumours as a result of as yet unknown stimuli to proliferation. Pituitary adenomata are seen at all ages, but mostly in young adults of either sex. The constituent cells of these tumours resemble one or other of the cells of the pituitary gland itself. The cells are either chromophobe—with poorly developed protoplasm, poorly staining, and non-glandular—or chromophil, with highly developed cytoplasm containing easily stainable granules (eosinophil or basophil). It was Roussy and Clunet who applied the terminology at present commonly used to these tumours—namely, chromophobe and chromophil adenomata. Later the chromophobe tumours were divided into trabecular and alveolar types, and it came to be recognized that the chromophil tumours differed from the chromophobe, not only by the presence of granules, but also by the different character of the nucleus and the volume of the cytoplasm. Adenomata have also been described the cells of which resemble in greater or less degree both the chromophobe and the chromophil cells (Dott and Bailey). The existence of tumours in association with pregnancy, which consist apparently of the hypertrophied principal cells of the

pituitary, is considered and confirmed by the authors. Since the diagnosis of the nature of the pituitary tumours is still a matter of histological technique, the authors emphasize the necessity for the employment of only the best methods and reagents.

The great majority of pituitary adenomata are of the chromophobe type, in that they are agranulocytic, but their cytoplasm may be in considerable degree chromophil, so Roussy and Oberling prefer the term "agranulocytic adenoma," reserving the term "chromophobe" for the cells with clear cytoplasm only very lightly stainable with eosin. In general these tumours are very vascular. In a consideration of tumours with eosinophil but non-granular cells (pregnancy cells) it is suggested that they present evidence of a gradation from the parent true chromophobe to the eosinophil chromophil cell. Of the basophil adenomata the authors have nothing to add to the classical description, but state that they may easily be missed on a first examination. As to the eosinophil adenomata it is pointed out that the cells differ widely in their content of granules, some being crammed and others entirely free from them. Some present the appearance of having discharged their granules and remain vacuolated. Roussy and Oberling confirm the observations of other workers in stating that these chromophil tumours of the pituitary are never mixed in the sense of containing both eosinophil and basophil cells. Tumours of intermediate type between chromophobe and chromophil are, however, found, and others consisting of a mixture of chromophil and chromophobe cells are also described.

Attention is drawn to the secondary lesions to which pituitary tumours are liable, especially haemorrhages with subsequent formation of areas of necrosis. Whilst adducing evidence that the chromophobe tumours are the most frequent, Roussy and Oberling advise caution in interpreting statistics. As regards the malignancy of pituitary tumours it is considered certain that they vary widely in this respect, some remaining stationary for years, others showing signs of rapid extension and invasion. The histological classification of these "malignant" tumours is still unsettled.

AETIOLOGICAL AGENT IN MUMPS

C. D. Johnson and E. W. Goodpasture¹ have lately recorded experiments in which they were successful in producing acute non-suppurative parotitis in monkeys by inoculation with saliva taken from early cases of mumps. Of six specimens of saliva collected from patients and inoculated directly into Stensen's duct in *rhesus* monkeys, four proved virulent. The clinical course, with its incubation period, its rise of temperature, its leucopenia with relative lymphocytosis and often true monocytosis, and its painful enlargement and oedema of the parotid glands, closely simulated the disease in man. Macroscopically, glands removed from monkeys that were killed were markedly congested, and revealed small haemorrhagic areas varying

¹ *Presse Médicale*, November 18th, 1933.

¹ *Journ. Exper. Med.*, January, 1934, p. 1

from pin-point up to 1 to 2 mm. in diameter, while sections showed primary degeneration and necrosis of single or small groups of acini accompanied by diffuse oedema. Passage experiments were successful when a suspension made from the ground-up glands was injected into Stensen's duct on both sides. Altogether seven passages have been made without any apparent diminution in the virulence of the infective material. Ground-up glands from monkeys filtered through a Berkefeld N candle proved to be virulent in each of five trials. The authors have satisfied themselves that the lesions are not the result of ordinary bacteria or of spirochaetes, and are not determined by either the vaccinia or the herpes virus. They consider that the disease they have produced is a specific parotitis due to the same agent—a filterable virus—as is responsible for mumps in human beings. Experiments show that the virus is resistant to freezing, to desiccation, and to 50 per cent. glycerin. It has not yet been shown to give rise to special inclusion bodies, and attempts to neutralize it with the sera of immune persons have not yielded very clear-cut results. (The paper contains convincing illustrations of monkeys suffering from parotitis.)

MEDICAL MEN CALLED "SYLVIVS"

"Wood" is not an uncommon name in this country, and in the sixteenth and seventeenth centuries medical men with its equivalents—"Dubois" in French, or in its latinized form "Sylvius"—were not unknown. Thus the *Dictionnaire des sciences médicales, Biographie médicale* (1820) gives short notices of four bearers of the name Dubois otherwise unknown to fame. Two others very familiar in medical history under the name of Sylvius are the physiological chemist of Leyden, François de la Boë (1614-72), and the anatomist of Paris, Jacques Dubois (1478-1555), teacher of Vesalius and later, as a bigoted follower of Galen, his opponent. These two prominent men are often confused, and there is another medical man, probably of English descent, who is sometimes called Sylvius—namely, Zachariah Wood, "Physician of Rotterdam," who translated into Latin the *Dissertation* (1653) of Jacobus de Back of Rotterdam, and into English the *Exercitationes anatomicae de Motu Cordis et Sanguinis Circulatione*. His preface to the latter work expressed the position about Harvey as the discoverer of the circulation (thus challenging the sacrosanct doctrine of Galen, which had dominated medicine for more than thirteen centuries) in the words: "Truly a bold man indeed, O Disturber of the quiet of physicians, O seditious citizen of the Physical Commonwealth." It would be interesting to know more about Zachariah Wood. In a communication to the Bibliographical Society of Ireland Dr. T. Percy Kirkpatrick,¹ the historian of Irish medicine, has recently unearthed, and given an account of, another Jacobus Sylvius (1646-89), who in 1686 published in Dublin a thin octavo volume entitled *Noxissima Idea de Febribus*. This went through five editions, the last in 1700, which are exhaustively analysed from a bibliographical point of view by Dr. Kirkpatrick. It was a mechanical explanation of fever

based on faulty physiology and inadequate pathology, and, though containing evidence of observation, is mainly of historical interest in anticipating many of the iatro-mechanistic views of the versatile Friedrich Hoffmann (1660-1742) in later times. It strongly recommended the therapeutic use of camphor, as Hoffmann did in the treatment on much the same grounds early in the next century. This Jacobus Sylvius described himself as a Hollander, and as having entered on the physic line at Leyden on January 18th, 1666-7; he appears to have come from Dordrecht, but when and where he obtained the doctorate, or exactly when he came to practise in Dublin, where he died intestate in 1689, is unknown. There is not any proof that he is related to the great Sylvius of Leyden. He was an original member of the Dublin Philosophical Society founded in 1684 by Sir William Petty, and in the dedication of his book to William Stuart, Viscount Mountjoy, and to the members of the Dublin Philosophical Society he apologizes for his silence in the society for more than three years, and explains it as partly due to modesty and partly to ignorance of the English language. Why in these circumstances he came to practise in Dublin is unexplained. He used the microscope and examined the blood and the semen, but though he wrote of "insensible particles" apparently in solution in the former, he did not see the red blood corpuscles or refer to Malpighi or Leeuwenhoek's accounts of them in 1661 and 1674; in the human semen he described infinitely small animalcula, but again did not mention Leeuwenhoek's previous observation.

THE PSYCHO-GALVANIC REFLEX

Nearly half a century ago the phenomenon known as the psycho-galvanic reflex was first described by a French worker, Féré, and since then others have confirmed the existence of the reflex and investigated the physiology and psychology of its production. The reflex consists of a fall in the electrical resistance of the skin during mental effort or emotion. This can be recorded by passing a low-tension current through the skin of a hand connected with one branch of a Wheatstone's bridge, certain constant conditions being maintained during the experiment and a suitable galvanometer being used for indicating electrical variations in the circuit. Electrodes of silver coated with silver chloride are the only kind found to be reliable for this procedure. The first workers attributed the reflex to changes in the peripheral blood vessels, but this theory was shaken by Varaguth, who concluded that the response was due to increased activity in the sweat glands, which thereby lowered the skin resistance. Varaguth's theory received more support than any other, but recent work fails to find any real evidence for assuming that the sweat glands are concerned. Indeed, when sweating was abolished by the action of atropine the response still occurred, and also was elicited in a patient in whom sweat glands were absent (confirmed by histological examination). In 1924 Aveling and McDowall, working on chloralosed and decerebrate cats, established the primitive nature of the reflex and found that the electrical resistance of the skin was lowered by conditions causing vaso-

¹ Kirkpatrick, T. P. C.: *Irish Journ. Med. Sci.*, December, 1933, p. 67.

constriction in the skin, and was raised by conditions causing vaso-dilatation. Subsequently Wells developed this work on man, confirming the findings that the electrical response was increased by vaso-constriction and diminished by vaso-dilatation in the skin. Among conditions causing the former are cold, injection of adrenaline, and haemorrhage, and the fall in electrical resistance during the menstrual period is probably due to the last. In a recent survey¹ of the physiology of the psycho-galvanic reflex, McDowall, by accounts of his own and other experiments, shows that the reflex is influenced by the circulation in that part of the skin in the electrical circuit, and that when the response is elicited vaso-constriction is always observed. The work of Lewis and Zotterman (1927) goes to prove that the reflex is produced in the stratum corneum of the skin. Its biological significance is still obscure, but evidence points to its being possibly of a protective nature, arising from primitive sensory stimulation and producing in the body a state of alertness in preparation for defence or attack. There is, however, another possible application of the psycho-galvanic response that deserves investigation. As long ago as 1893 Head² demonstrated that, in certain diseased conditions of the viscera, well-defined areas of skin became hyperalgesic. These findings are still used to-day by surgeons by the inaccurate and clumsy method of pinching the skin or testing it with the point of a pin. The areas so defined must therefore be in a physiologically abnormal state, and it should, in view of all the recent developments in our electrical knowledge, be possible to indicate this by appropriate apparatus. It would indeed be a useful clinical development of the psycho-galvanic reflex if it were shown that a skin "patho-galvanic reflex" existed which could be measured, and from this some idea might be gained of the activity of the morbid state of the viscera corresponding to each particular area of skin as established by Head. Here, then, is an opportunity for the experimental physiologist to prove or disprove the existence of such a reflex—not, indeed, a physiologist working in a laboratory, with laboratory animals and apparatus, but one with medical training who would carry his researches to the bedside of pre-operative cases and check his results by the findings in the operating theatre.

HYPERVITAMINOSIS A

The artificial production of vitamin D by irradiation of ergosterol was soon followed by the discovery that excessive doses of irradiated ergosterol caused toxic effects. It was suggested that these were due to some toxic by-product. This hypothesis was abandoned when it was found that the same results were brought about by excessive doses of pure calciferol, but recent investigations have shown that irradiation of ergosterol produces a series of activated sterols, and that some of these are more toxic than others. Hence the original hypothesis of a toxic by-product appears to have been approximately correct in the case of hypervitaminosis D. When it was found that vitamin A was formed in the body from carotene, and when its chemical nature was consequently determined, the preparation of pure con-

centrates of this vitamin was facilitated. Experiments with these have indicated that gross excess of vitamin A leads to toxic effects. Agduhr³ in 1928 drew attention to certain toxic consequences of cod-liver oil, while Drigalski² described toxic symptoms in rats induced by pure vitamin A. The chief symptoms were loss of weight, loss of hair, and inflammation of the eyes. This work has been confirmed by Collazo and Rodriguez,⁴ who gave young rats a daily dose of 20,000 rat units of a preparation of pure vitamin A. Beyond the observations already mentioned these latter workers also found exophthalmos and fragility of bones, the latter resulting in spontaneous fractures. These findings have a certain resemblance to the Schuller-Christian syndrome, a pathological condition occasionally observed in human patients, which is said to be associated with hypercholesterinaemia. The authors state that in their animals they demonstrated a disturbance of the cholesterol metabolism and a marked cholesterol impregnation of the reticulo-endothelial system. In conclusion, it may be pointed out that these experiments do not suggest that there is any practical danger associated with the clinical use of vitamin A, since the doses given were so enormous.

OPHTHALMOLOGY IN EGYPT

The seventh annual report of the Giza Memorial Ophthalmic Laboratory⁴ in Cairo, of which Dr. Rowland P. Wilson is the director, contains many records of interest. Ocular tuberculosis, it is observed, is very rare in Egypt, although the mortality from all forms of tuberculosis is higher in Egypt than it is in America. Angelucci and Sgrosso have suggested that there is a natural opposition between tuberculosis and trachoma; the former thought a serum from trachomatous patients effective in ocular tuberculosis. In a recent examination of 240 tuberculous patients all were found affected by trachoma, but none showed any ocular tuberculosis. In diseases of the retina it is recorded that myopia and its sequelae play a most important part; high myopia is frequently seen in Egypt. As might be expected detachment is not uncommon; in 1931 it accounted for 31 per cent. of all diseases of the retina. Myopia is prevalent amongst Egyptians; this is all the more striking since most of the people are illiterate. Meyerof said: "It appears to me incontestable that the Egyptian race is particularly subject to hereditary weakness of the posterior sclerotic, which, as it yields, gives rise to myopia. Heredity in the myopia of Egyptians is certain." An interesting experiment in preventive treatment of trachoma and conjunctivitis has been carried out in a village for three years. "Blue drops" (zinc sulphate 0.5 per cent. with mercury pyocyanate 0.01 per cent.) and droppers were supplied to every household and a trained nurse gave instructions to the mothers. At first there was enthusiasm, then slackness, and the venture failed. Next the experiment was tried on children whose parents wanted them to have good eyes, but this also failed. The chosen babies were visited

¹ *Quart. Journ. of Exper. Physiol.*, 1933, XXIII, 277.

² *Brain*, 1893, xvi, 1; *ibid.*, 1894, xvii, 389.

³ *Acta Paed.*, 1928, vii, 189.

⁴ *Rev. Week.*, 1933, xiv, 558.

⁵ *Brit.*, 1933, vii, 1732, 1758.

⁶ *Schindler's Press*, Cairo, 1933.

at their homes, but it was found that, after a time, the children had been removed. In the end, bribery was resorted to. Ten babies were selected. Five received trypanflavine drops regularly, but all developed trachoma; the other five had "blue drops," and only one developed trachoma after nine months; the others remained free after one year. This is held to be remarkable, considering the state of the village and the fact that the average onset of trachoma is at six months. The results of a number of new methods of treating trachoma are given. Chaulmoogra oil combined with copper sulphate was of value. Hydnoceol and copper sulphate acted similarly to chaulmoogra oil, but had a little advantage where there was discharge. Antimony compounds were useless. Certain vaccines had been advocated but were found of no service. Heat treatment of the pannus showed some advantage, but conjunctival lesions did not benefit. There is a valuable paper on a research conducted by Major F. H. Stewart on the Prowazek-Halberstaedter body found as an inclusion in the epithelial cells of the conjunctiva. These "bodies" were discovered twenty-five years ago in trachoma, and despite much arduous research their true role is unknown. Major Stewart has been unable to find them in a single case of uncomplicated trachoma. He comes to the conclusion that trachoma without inclusion "bodies" may be the pure disease, and trachoma with inclusions a secondarily infected form, in which case the bodies are the result of the secondary infection and not the cause of the condition. He thinks that the "body" is formed by the phagocytosis of bacteria which are not the cause of trachoma but which may carry the virus of that disease." The report is well illustrated.

LATE CONGENITAL SYPHILIS

A valuable contribution¹ to the subject of congenital syphilis, by Dr. F. R. Smith, is interesting in the light shed upon the late clinical manifestations and the treatment of this malady in its late stages. The material consisted of 462 patients seen in the syphilis clinic of the Johns Hopkins Hospital; all were over 13 years of age. In not a single instance in the series had the mother been treated for syphilis during pregnancy, since, as Dr. Smith remarks, the mean age of the patients was 15 years and "the routine treatment of pregnant syphilitic women was not current practice when these patients were *in utero*." In histories obtained from the parents the evidence of manifestations of infantile syphilis was completely lacking in nearly 90 per cent. In 195 of the patients the infection was latent, while in the remainder by far the commonest sequelae were disease of the eyes, osseous lesions, nerve deafness, disorders of the central nervous system, and other lesions, in that order of frequency. The blood Wassermann reaction was positive in 92 per cent. of the cases, and in the 182 patients who were free from any clinical evidence of involvement of the nervous system examination of the cerebro-spinal fluid showed asymptomatic neurosyphilis in 10 per cent. Details of therapeutic results have been analysed for 267 of patients in this series. The method employed has

usually been arsphenamine alternating with a heavy metal. Before 1925 the metal usually given was mercury by inunction, but since that date this has been abandoned in favour of intramuscular injections of bismuth salicylate in oil. These drugs have been administered by a continuous method, the arsenical preparation for a course of six to eight weekly injections alternating with the heavy metal course of six to twelve weeks. The treatment has been considered "adequate" when fifty or more weeks of therapy have been possible, "moderate" when between thirty and fifty weeks, and "inadequate" when less than thirty. The results of treatment have been estimated mainly from the clinical aspect, "satisfactory" meaning that the patient has been restored to physical health and maintained in this condition for an indefinite period of time irrespective of whether the Wassermann reaction became negative or not. On this basis some rather surprising results were obtained, for over 80 per cent. of the patients receiving "inadequate" treatment had a satisfactory clinical outcome, a proportion slightly higher than the patients receiving "moderate" or "adequate" treatment. Relapse or progression in the symptoms appeared in about 20 per cent. of the entire group; this was unrelated to the length of treatment. A persistently positive Wassermann reaction was as common in patients treated for a year or more as in those treated for six months or less, and Dr. Smith does not consider failure to reverse the Wassermann reaction as of unfavourable prognostic significance. Various other aspects of the problem are dealt with in his review. For example, so-called "nerve deafness" occurring in sixty-two patients in the present series was not associated with signs of disease of the nervous system in a single instance, and Dr. Smith considers that the evidence means that, whatever the nature of the lesion in such cases, it is outside the nervous system. Treatment in the latent cases was extremely effectual in preventing the subsequent development of the serious eye and ear complications, but a little treatment appeared to do just as much as a great deal. The final conclusions, which appear of great importance, are that the optimum amount of treatment varies according to the disappearance of the clinical features of the malady, and that the blood Wassermann reaction may be completely disregarded as a guide to the type of treatment or to its duration.

SIR WILLIAM HARDY

Sir William Hardy, F.R.S., the distinguished biologist who died on January 23rd, soon after coming into office as President of the British Association, had many close contacts with medicine, though, unlike most of the Cambridge physiologists of his time, he did not take a medical degree. Richly endowed with the qualities of mind and heart that inspire confidence, he soon made his mark in the scientific life of the university, both as investigator and as teacher. Later years brought him opportunities to develop a great gift for scientific organization, and for the application of laboratory work to the needs of everyday life. As joint secretary of the Royal Society he proved a far-seeing friend to research in pure science; and

¹ *Bull. Johns Hopkins Hosp.*, 1933, lxx, 231.

when problems of war rationing arose he threw himself into a new branch of applied science, first as secretary to the Food (War) Committee of the Royal Society, then as chairman of the Food Investigation Board, and latterly as Director of Food Investigation under the Department of Scientific and Industrial Research and head of the Low Temperature Research Station at Cambridge. The country and the Empire owe an incalculable debt to Hardy for the work done under his leadership during the past eighteen years in a hitherto almost untilled field. It is not too much to say that the outcome of these investigations into the scientific problems concerned with storage and transport of foodstuffs is revolutionizing the food industry. In former years, when university lecturer in physiology, he taught and inspired a long line of students who have passed on to work in various branches of medicine. Many Cambridge men who later won distinction in medical research or practice are indebted to him and to Sir Hugh Anderson, M.D., F.R.S. (also a Fellow of Gonville and Caius, and afterwards its Master), for their first clear ideas of method and sincerity in scientific work. Hardy and Anderson were fast friends, complementary the one to the other in temperament as in physical stature, and Hardy wrote for these columns a beautiful tribute to the Master of Caius at his death in 1928. Both were benefactors to medicine and to innumerable members of our profession.

STANDARDIZATION OF BIOLOGICAL STAINS

In view of the importance of stains and staining materials used by microscopists engaged in biological investigation and research, and with a view to mitigating the variability of stains at present available, the Council of the Royal Microscopical Society announced at its annual general meeting, on January 17th, the appointment of a committee to consider the standardization of biological stains and staining materials manufactured in this country, and to make recommendations to the council of the Society of standard specifications and tests for adoption, with a view to the certifying of manufactured stains conforming to such standards. In addition to those Fellows of the Society appointed by the council to serve on the committee, the following official bodies have appointed representatives to serve thereon: the Medical Research Council, the Royal Society of Tropical Medicine and Hygiene, the Institute of Chemistry, the Chemical Society, the Society of Chemical Industry, the Pathological Society, and the Physiological Society. The committee has held several meetings during the session covered by its annual report, and the drafting of standard specifications for methylene-blue, acid fuchsin, and eosin are under consideration. In addition, a standard specification for xylol for microscopical purposes is receiving attention. Other stains will be dealt with as soon as the biological tests of those in hand have proved them to be satisfactory. It is felt that with this organized co-operation between chemists and biologists, manufacturers of British stains will welcome the results of the committee's deliberations.

The sixty-fifth annual meeting of the Canadian Medical Association will be held at Calgary, Southern Alberta, from June 18th to 22nd.

SCIENCE AND INDUSTRY

PROGRESS OF ORGANIZED RESEARCH

During the year 1932-3, reviewed in the annual report of the Department of Scientific and Industrial Research,¹ the grant of £1,000,000 made by the Government in 1917, for the encouragement of industrial research, became exhausted. The fund has been used by the Department for assisting the formation of co-operative research associations in various industries, maintained partly by grants from the Department and partly by subscriptions from industry. Though the "million fund" is no longer available the Department's grants are now being made from its Parliamentary Vote. A large part of the report of the Advisory Council of the Department, signed by Lord Rutherford, is devoted to a survey of the research association scheme and to summarizing the results of this important experiment. The expending of the million fund has attracted a total industrial contribution of £1,750,000, and at the moment the State is contributing £65,000 a year and industry £170,000 a year towards the support of a group of nineteen research associations, which include in their membership some 5,000 firms.

While it is impossible, as a rule, to assess in terms of money the important part played by the research associations in the industrial progress of the country, nevertheless some very striking examples are quoted to illustrate the enormous savings that have accrued from research work in various large industries. An annual sum of less than £250,000 is trivial, the report continues, in relation to the interests involved and the possibilities awaiting realization. The basis on which many of the research associations are working is hardly commensurate with the size of the industries they serve.

DOMESTIC APPLICATIONS

Much of the work in progress at the Department's own establishments and in the laboratories of research associations is of direct interest to every householder and housewife. For example, work in progress at the Department's Building Research Station includes the study of the most economical means of warming a house, investigations on wall plasters, on the problem of damp walls, on painting on cement and plaster, and on the deterioration of bricks. A full investigation is being carried out on the factors causing the frost bursting of water-pipes of various materials; while means are being found for the prevention of the corrosion of galvanized hot-water tanks and of the dulling of the bright metal surfaces used architecturally both inside and outside buildings.

The work of the Food Investigation Board of the Department is meeting with considerable success in improving the quality of foodstuffs and in eliminating waste by better methods of transport and storage. In this connexion a study of the storage of bacon in carbon dioxide promises to be of real assistance to bacon curers in this country, while improved kilns for the smoke-curing of fish, based on methods of control worked out at the Torry Research Station, have been erected by commercial firms.

The Wool Industries Research Association has found a new process for making wool unshrinkable by the treatment of the wool fibres in bulk before they are spun. The process also eliminates, it is claimed, the usual prickly feeling met with in woollen goods, and gives lustre and softer handle to the fabrics. The work of the Association has also provided the public and manufacturers with reliable scientific tests for judging the resistance of a coloured woollen fabric to fading as a result of impurities in the atmosphere, dampness, or laundering. Tests for shrinkability have also been devised. Again, the Cotton Research Association has evolved a new method for the rapid separating of good cotton from unwanted dust and foreign matter.

RESEARCH FOR THE MOTORIST

Work on the problem of cylinder and piston wear, which involved 360 distinct engine tests and 15,000 measurements, has afforded good evidence that cold cylinder walls, with consequent corrosion, play the most important part in the wear of cylinders. Besides this work, the Research Committee of the Institution of Automobile Engineers is carrying out important investigations on the wear of valves and valve-seats, big-end bearing problems, lubricating oil pumps, and

¹Cmd 4483 H.M. Stationery Office (3s. 6d. post 3d.)

oil consumption. During the year the responsibility for road research has been transferred to the Department from the Ministry of Transport. Researches on road tars are being carried out at the Chemical Research Laboratory. Work on motor-car headlights at the National Physical Laboratory has led to a method for determining the light distribution which should be aimed at for a headlight beam.

PUBLIC HEALTH

Many of the researches of the Department have a direct bearing on public health. Chief among these is the work of the Water Pollution Research Board on water supplies and the prevention of pollution. Means for preventing the pollution of rivers by the discharge of effluents from beet sugar factories have been worked out, and the treatment of milk factory effluents is now being studied. One result of the Board's work is that future installations of coke ovens in the Tees area will be designed in such a manner that little or no polluting effluent will be discharged. A complete survey is being made of existing knowledge regarding the solvent action of water on lead. The effect of electric currents in leaden water-pipes on the lead content of the water is also being investigated. Work is also being done on water-softening processes.

At the request of the Home Office, the Department has arranged for an investigation to produce more efficient respirators for use in industrial processes as a protection against the inhalation of dust. This work has led to the production of a new respirator with which very satisfactory results have been obtained in tests in mines, quarries, and silica and asbestos works. Research is also being carried out on the detection of small quantities of toxic gases in the atmosphere, and on respirators to prevent the breathing of such gases. This work should result in affording better protection to workers in chemical and other factories.

The improvement of materials used in dentistry is also a subject of research under the Department, while x-ray examinations have been carried out in co-operation with the Medical Research Council on the structure of teeth. These have shown the existence of various typical forms of enamel, and an attempt is being made to correlate the occurrence of the different forms with tendency to decay.

INTERNATIONAL FIRST-AID CONGRESS

The fourth international congress for life-saving and first aid in cases of accidents will be held in the Rigsdag, at Christiansborg Castle, Copenhagen, from June 11th to 16th, under the patronage of the King of Denmark. An international exhibition, demonstrations, competitions, etc., are being planned for the same week. As the congress promises to be one of a far-reaching character, a tentative British committee has been formed, composed of the following, some of whom have already promised to read papers. An invitation is extended to all who are interested in the items of the programme: organization of international aid in case of large catastrophes; international organization of first aid in case of quick traffic; theoretical and practical training of physicians for purposes of first aid; organization of first-aid competitions; organization of salvage work in case of railway catastrophes; means to avert accidents by bathing, and organization of first aid; whether mines ought always to have medical practitioners at disposal; and occupational maladies.

The British committee of the congress comprises: Sir Thomas Oliver, M.D. (chairman); Professor S. L. Cummins, M.D. (Welsh National School of Medicine); Dr. Edgar L. Collis, M.D. (late Talbot professor of preventive medicine, University of Wales); Professor John Glaister, M.D. (Glasgow University); Colonel P. S. Lelean, F.R.C.S. (professor of public health, Edinburgh University); Colonel Donald J. Mackintosh, M.B., and Mr. Wellwood R. Ferguson (chairman of council and general secretary respectively of St. Andrew's Ambulance Association); Dr. D. A. Coles; Dr. Theodore Thompson; Mr. Frederick P. Mills (chief officer, Durham and Northumberland Collieries Fire Brigade Association); Mr. Ridley Warham (managing director, Ashington Coal Company, Ltd.); Dr. Gilbert Burnett (chief surgeon, National Fire Brigade Association); Mr W. G. Webster, and Mr. Guy Maunsell.

Further particulars may be obtained from Mr. G. L. Perry, secretary, Industrial Welfare Society, 51, Palace Street, S.W.1.

Reports of Societies

PRE-OPERATIVE INVESTIGATIONS

At a meeting of the Medical Society of London on January 22nd, with Sir JOHN THOMSON-WALKER in the chair, a discussion took place on "The Value of Pre-operative Investigations."

Dr. F. J. POYNTER, in introducing the subject from the physician's aspect, began by remarking that when he had a case in hospital which he believed to need operation he invariably asked the surgeon to meet him and discuss the case before the crisis. He always prevented, if possible, a hasty operation when there was time to spare for a review of the case. Empyema in childhood had not infrequently been looked upon as requiring an urgent operation, when, in fact, it was unusual if there was no time to review the case; sometimes as a result of such review mistakes were corrected. With regard to anaesthesia, he felt that forcible anaesthesia for children should be abolished as far as possible. He could not speak as an anaesthetist, but as a clinician he could say that he had seen highly strung children grievously affected by forcible anaesthesia. With regard to pre-operative investigations in general, it could not be doubted that they were proving of increasing value in assisting good surgery, though he was sure there would be general agreement that the long-established precautions to which the clinical physician was accustomed must not be relaxed. In spite of special tests they must strive to be good clinicians if they were to take the responsibility of advising operations. Speaking of blood tests, he said that the value of the blood urea examination was considerable in renal surgery, and he believed that in many ways the skilled examination of the blood had given much additional help to the physician and surgeon. The value of radiography as a pre-operative investigation would increase every year. His own difficulty was in the ability to interpret the shadows. In the condition termed "chronic intussusception" he had been helped by x rays. Of the value of x rays in detecting appendicular disease he desired to hear opinions. He deprecated the wholesale use of radiography as expensive, and as another tax on the patient, and he held that the physician should use it with a definite purpose in his mind. With regard to other investigations, the fractional test meal and the estimation of the free hydrochloric acid and the total acid were of established value. The condition of the patient in cases of hepatic disease and gall-bladder affections had always interested him, particularly from the point of view of possible haemorrhage after operation; the blood platelets in cases of jaundice were often normal, but when there was a tendency to haemorrhage these might be diminished. He desired opinions upon the value of intravenous injection of glucose when, in septic cases, jaundice began to be manifest, and an operation to liberate pus was required. Did this injection assist in preventing the development of hepatic necrosis? The pre-operative investigations were not without their disadvantages to the patient. A barium enema might cause much suffering, and a bismuth meal was not a pleasure. That was his reason for saying that a good clinician enhanced the value of pre-operative investigation, because he was aware of the strain which such investigations imposed upon the patient, and was able to decide which, if any, were really needed apart from curiosity.

Mr. NORMAN C. LAKE, speaking from the surgical point of view, said that one feature of pre-operative investigation was the economic aspect. While in some of the might be both feasible and advisable to have. Later set of investigations carried out, such as to develop a great consuming, both for doctor and for patient, to be expensive, so that there were practical application their unrestricted application. It might be a great life. inquire whether the modern intensive procedure, he proved had really improved the standard of surgery; and There were many who maintained that it

methods were capable of giving results comparing favourably with those obtained with the newer aids, but for his own part he was convinced that these new methods had brought about a great improvement. There were fewer gross mistakes in diagnosis and fewer unjustifiable operations, and while other factors were concerned in this improvement, pre-operative investigation had been the most outstanding. He divided such investigations into three categories: those devoted to the attainment of greater precision in diagnosis; those directed to the estimation of the patient's ability to stand the operation, and those which attempted to estimate the prognosis—this last restricted group, which had come into some prominence since the possibilities of sympathetic surgery, began to attract attention. It was of some philosophic interest to note that practically all new aids to diagnosis were by way of rendering changes more obvious to that finest of all senses, the vision. More confidence was evidently placed in that sense than in any other, and the public also insisted that "seeing is believing." It was true that the sense of hearing had been used in the case of the stethoscope, but even there the inventor could not resist the temptation "scope." He thought the method of investigation by smell had been insufficiently used in the practice of medicine. In a brief review it was impossible to touch on more than the most frequently used tests. There was no branch of surgery in which pre-operative investigation had been more intensively applied than in renal surgery. The ability to estimate the functional capacity of the kidneys had greatly reduced the mortality of prostatectomy and other operations. The more recent introduction of lipiodol injection of the vas, which clearly demonstrated the anatomy of the genital tract, was of limited application, but the corresponding tests for patency of the tubes in the female had proved of real diagnostic value. The technique of the barium meal and enema was now firmly established, though he felt there was room for improvement in the interpretation of results. In the case of gastric ulceration the method was fairly accurate, but even here a good deal depended upon the phase of the ulceration. The apparent radiographic size of the crater was dependent upon such factors as the surrounding inflammatory oedema and muscular spasm, which were only marked in the active phase, though, of course, it was in the active phase that the radiographs were generally taken. In the case of duodenal ulcer the results were far less satisfactory. Here again the phase of the disease must be taken into account. Deformities of the duodenal cap might be produced by other intra- and sometimes extra-abdominal causes. Passing to the appendix, he felt that the x-ray method of investigation was of little value. Large numbers of appendices showed slight variations from the normal which, with the backing of x-ray diagnosis, might be interpreted as pathological. The barium enema had proved its worth, but it was not infallible, and in the early stages of colonic carcinoma it might be very misleading. On the other hand, in diverticulitis its value was paramount. The fractional test meal he had found to be of small diagnostic value in the case of ulcer, except as supporting other evidence. The test for occult blood was a very accurate one, but it was obviously an indication of the presence of disease rather than of its nature, and might be tantalizing and misleading. On the subject of cholecystography he was rather a heretic. It must not be overlooked that four separate factors were involved—namely, the ability of the intestine to absorb the dye, of the liver to secrete it, of the dye to reach the gall-bladder, and of the walls of that structure to concentrate it. But the test was frequently of value, and when a filling defect due to a calculus was present it was absolutely diagnostic. It is, therefore, it was safe to say that the value of all pre-operative tests was enhanced by their repetition.

EDMUND I. SPRIGGS did not agree with the statement that radiology was not of value in appendicitis. It was, sometimes it was not; with an appropriate technique over 80 per cent. of appendices could be demonstrated; and with experience abnormal appen-

dices can be recognized. As to the costs of tests, which had been mentioned by Mr. Lake, that consideration came in, of course, but he did not think it was a point with which, as scientific physicians, they ought now to concern themselves; if it was desirable to have investigations made the cost would ultimately be provided. He dissented also from Mr. Lake's general conclusions with regard to cholecystography, a method which he regarded as most valuable. Formerly there was much confusion as between the duodenum, the appendix, and the gall-bladder, but now, thanks to radiology, it can often be demonstrated if these organs are normal or not. Negative as well as positive findings had value. Some years ago he went through 500 consecutive cases, comparing the provisional diagnosis made by his colleagues and himself after examining the case clinically, with the eventual diagnosis at which they arrived a week or ten days later, after making such investigations as were appropriate to the case. It was only right to say that these 500 were not ordinary cases; a great many of them were cases of difficulty. In 40 per cent. the opinion of his colleagues or himself as to the diagnosis was the same after the investigation as it had been before; in 19 per cent. it was quite different, the investigation having revealed something unknown previously. In the remaining 40 per cent., while the diagnosis was modified as a result of the later investigation, it remained essentially the same. For want of investigations a great number of people had been treated for complaints which they had not got, and hundreds, probably thousands, of unnecessary operations had been done, while similarly for want of such investigations great numbers of necessary operations had not been done.

Mr. W. H. OGILVIE took a contrary view to Dr. Spriggs with regard to the value of cholecystography. When that method first appeared he used it considerably, but as time had gone on he had used it less and less. He had had a good many gall-bladder cases returned by eminent radiologists as normal which had been found at operation to have very obvious disease. Every surgeon was familiar with the type of gall-bladder which was otherwise normal, but had a number of small stones, and the healthier the gall-bladder and the smaller the stones, probably the more irritable the symptoms. "Strawberry" gall-bladder could not be demonstrated by cholecystographic methods. It was true that a diseased gall-bladder should concentrate the dye, but the differences in shadow were so considerable that he did not think the degree of concentration could be used with any certainty in diagnosis. The method also had definite dangers.

Dr. T. JENNER HOSKIN referred to the importance of preliminary investigation in Graves's disease. He did not think the basal metabolic rate was quite as accurate as might be hoped for, and very often the resting pulse in these cases was nearly as accurate. X-ray examination was important to see that there was no substernal goitre; examination of the larynx should also be made to ensure that both cords were satisfactory before the surgeon acted. With regard to prostatectomy, he pointed out the importance of the examination of cardiovascular function. He had been specially troubled with low blood pressure in these cases; high blood pressure had never worried him at all.

Mr. EARDLEY HOLLAND approached the subject as a gynaecologist, saying that gynaecologists were apt to concentrate their attention on the pelvis, and thereby sometimes overlooked other factors and were led into error. The whole discussion simply drove home the lesson that the complete history must first of all be taken—a thing which specialists were apt to neglect—and that a complete medical examination must be made. Mr. TUDOR EDWARDS referred to tests in the lung, and pointed out that some of these introduced risks, and that unless these risks were appreciated the minor operation to which the patient was subjected might turn out to be a major disaster. He referred particularly to the introduction of lipiodol into the lung. On several occasions he had seen a gross cellulitis of the neck follow. Sir WILLIAM

WILLCOX agreed that while appendicitis should not be diagnosed on x-ray examination, given a case with clinical symptoms which pointed to chronic appendicular trouble, and having excluded by investigation other causes, the x-ray examination did give most valuable assistance. He added that formerly one was afraid of operation in diabetic cases, but now this fear obtained no longer; it was important to see that there was no acidosis, but he did not mind if there was a little sugar in the urine. He thought it a mistake to overdo starvation before operation, and to let the patient undergo the serious strain of surgical intervention when he was suffering from lack of nutrition. Mr. GREEN-ARMYtage referred also to the importance of a wider investigation in gynaecological cases, particularly as to the discovery of the cause of the frequent cases of backache. Sir JAMES DUNDAS-GRANT narrated a personal experience of appendix trouble, in which it had been possible to palpate the appendix while lying in a hot bath. Mr. ERIC LLOYD referred to some orthopaedic problems bearing on the subject. Mr. WILLIAM EBBOTSON spoke on the role of the physician and bacteriologist in tonsil cases, saying that unless they were in co-operation he was sure that tonsillectomies would continue to be done without real justification. He also instanced a case of the rare condition of syphilitic stricture of the oesophagus in which radiography completely cleared up the diagnosis; from the symptoms it was thought that the patient had carcinoma. Mr. ALBAN ANDREWS mentioned early renal tuberculosis as a good example of a condition in which clinical and special investigation had an almost equal importance. Dr. MAURICE SHAW suggested how the physician might proceed when his surgical colleague asked whether a patient was fit for the operation. His survey would include, in the first place, the lungs, then the cardiovascular system, and then the kidneys and liver.

In replying to the discussion, Mr. NORMAN LAKE said that after some twenty-five years' experience of surgery the conditions which necessitated urgent operation became, to his thinking, fewer and fewer. It seemed to him that perforated ulcer, a perforated viscus in the abdomen, and some violent haemorrhage almost exhausted the list of emergencies. Sir J. DUNDAS-GRANT suggested strangulated hernia, but Mr. LAKE said that even this was not as urgent as those he had just mentioned. His conclusion on the whole matter was to paraphrase Abraham Lincoln: "You may diagnose some patients all the time, and all patients sometimes, but you cannot diagnose all patients every time."

FACTORS INFLUENCING RENAL FUNCTION

At a meeting of the Section of Urology of the Royal Society of Medicine on January 25th, with Mr. CLIFFORD MORSON in the chair, the subject for discussion was the factors influencing renal function, together with an assessment of the various methods of investigation.

Dr. T. IZOD BENNETT said that the factors which might adversely influence renal function were numerous and complicated. He divided them into intrinsic factors, such as anatomical changes, and extrinsic factors—namely, mechanical, circulatory, lymphatic, and nervous changes. Anatomical changes, of course, could be multiplied to include every type of neoplasm and many diseases over and above the large group which he had included under the term "Bright's disease." Physicians and pathologists together agreed that one of the large groups which constituted Bright's disease, and was sometimes still described as chronic interstitial nephritis, demanded re-naming, and the term "ischaemic nephritis" was offered. Long before such cases manifested themselves as nephritis they were indicated to the clinician owing to the severe degree of hypertension which was present. It was only a small proportion of the total number of such cases—perhaps 10 per cent.—which terminated by renal failure and uraemia; the far commoner termination was some cerebral catastrophe or left-sided cardiac failure. True inflammatory nephritis was often in its late stages indistinguishable from ischaemic nephritis, being character-

ized by sclerosis of the kidneys and extreme hypertension. Careful examination of the blood pressure should form part of the routine examination in every urological case. Urological surgeons were people who appreciated accuracy, and the modern sphygmomanometer was an instrument of great precision. If urologists studied the blood pressure they would avoid occasional catastrophes and add to the knowledge of the subject. Apart from cases of permanent diminution in total blood supply to the kidney, cases occurred in which ischaemia was temporary, but might be sufficient to produce severe alteration of renal function. Everyone had had experience of cases in which disease had apparently followed the passage of an instrument into the lower urinary tract. Personally he believed one was here faced with a reflex ischaemia resulting in suppression—a nervous mechanism. Blood changes affecting renal function must be considered under two headings, the first being changes in the quality of the blood reaching the kidneys. These changes might be due to bacteria and their toxins, to chemical poisons of known character, such as mercury and lead, and to chemical poisons supposed to be of endogenous origin. But what he particularly wished to speak about were the changes in the relative normal constitution of the blood. It was known that renal failure would bring about changes in the blood chemistry. Such changes appertained far more to the relative distribution or relation of the various chemical substances in the blood than to the appearance of new substances. Although alterations in renal function might bring about considerable changes in the relative concentration of the various normal chemical constituents, it was not nearly enough realized that if the relative concentration of such substances were altered, this alone might produce a diminution in the secreting capacity of the kidney. Changes in the constitution of the blood might be causes as well as effects of alteration in renal function. Nitrogen retention of extra-renal origin was a subject which had received considerable attention of recent years. If for any reason the water supply through the kidney were impaired it would create nitrogen retention, and this might cause a still greater interference with renal function, and push the patient into actual uraemia. An important aspect of this question was connected with another group of surgical catastrophes, in which, after a severe operation, suppression of urine, sometimes followed by death, occurred. French workers had shown that if observations were made on the blood urea of a patient for several days prior to operation and for a certain time afterwards, the blood urea would be found to rise for a time after severe operation. It was claimed by some surgeons that a prophylactic injection of normal saline prior to operation was of the greatest value in preventing catastrophes. Dr. BENNETT then proceeded to discuss the methods of investigating renal function. Cystoscopy, pyelography, and x-ray examination of the urinary tract were of the highest value. The urea clearance test of van Slyke was probably far more valuable than any single biochemical test which it had been customary to use hitherto; but it would be regrettable and dangerous if it were forgotten that a test like that represented only the patient's renal function at one particular moment, and must be repeated at varying periods for some time before any fair picture of what might be regarded as the patient's capacity was obtained. The test made a great appeal because, after taking a sample of blood and one or two samples of urine, the biochemist was able to supply the clinician with a fairly accurate figure, giving the patient's function as a percentage of normal. It would also be regrettable if the simplicity of the final figure given by this test should persuade clinicians to give up examining closely the figures furnished by a fuller analysis. He wished to make a serious suggestion to his surgical colleagues. With all their care and with the increasing technical perfection, tragedies were still encountered from time to time, and it would be of value, he thought, if whenever a renal case was lost owing clearly to renal failure of some type, the plan were adopted of holding a post-mortem inquiry of a different character from that usually followed. It was generally of very little interest to know the degree of renal damage shown post mortem, and it would be of far greater interest if careful blood examination prior to death were

made so as to enable it to be said afterwards that the patient died of extreme nitrogen retention, or of acidosis, and so forth. A complete blood analysis often enabled one to state with precision the mechanism of death, and so forewarned one for future occasions. He added that the estimation of the daily output of urine was of great value, particularly when coupled with an estimation of fluid intake.

Mr. DUNCAN MORISON said that, from a urological aspect, the lesions which adversely affected renal function did so by producing some hindrance to the normal outflow of the urine. The hindrance induced a stasis, and soon there was established a state of back pressure which was transmitted to the kidney, impairing its activity and leading to nephrosis. In addition to stasis there was infection, and the two were closely related. He reviewed briefly certain forms of insidious obstruction. Two main types occurred in the urinary tract—primary and secondary. With regard to the primary type, throughout the conducting system from the renal pelvis to the external meatus there were certain sites at which obstruction most commonly occurred. Those nearer the kidney would, as a rule, produce more rapid functional impairment than those more remotely situated, though exceptions to this rule might occur. The speaker discussed different types of obstruction as related to different sites. He pointed out that all these lesions, by impeding the normal outflow of urine, produced proximal strain and the occurrence of stasis; and stasis aided in renal failure by encouraging and harbouring infection. Secondary obstructive lesions followed upon infection, either of a primary character, in the genito-urinary tract, or secondary, due to some outside focus or general systemic cause. This was a large group, and one of interest to the urologist. He did not need to enlarge on the manner in which repeated infection led ultimately to the formation of fibrous tissue. A typical example of the primary infection was the gonococcal. There was also a lesion frequently found in women which was of special interest. It was commonly attributed to the trauma of childbirth and repeated attacks of cystitis. The same bladder picture was found as in chronic fibrous prostate in the male, and the symptomatology at times was remarkably similar in both sexes. In a few observations of methods of investigation, he said that in order to obtain a proper estimation of the lower urinary tract, particularly the bladder neck, it was advisable to employ the lateral as well as the end view with the urethroscope. From investigations carried out under local anaesthesia much information regarding the bladder base and neck could be obtained. For the determination of urethritis it was essential to employ bulb bougies or catheters—but he preferred bulb bougies—whereby the calibre, site, and extent of the urethritis could be estimated.

Dr. CUTHBERT DUKES limited himself to discussing, by means of diagrams, three factors which influenced renal function tests—namely, the effect of operations, of intestinal obstruction, and of urinary obstruction. The information he showed in a series of graphs was derived from performing the same tests on the same patient day after day, in some cases for two or three weeks. As a test of renal function he had carried out the urea clearance test, which really measured the amount of blood which would be cleared completely of urea per minute if the kidneys worked in that way. He described the clearance test, and pointed out that a defect in renal function might be revealed by this test when the blood urea was still within normal limits. The influence of a minor surgical operation (excision of haemorrhoids) on renal function showed that on the day following operation the urea clearance value fell from 76 per cent. to 52 per cent., but it returned to the original level the next day. In the case of a major surgical operation (excision of rectum for cancer) the urea clearance test prior to the operation showed 103 per cent., and then a temporary decline in urea clearance was followed next day by a period of hypertension. He added that van Slyke spoke of anything from 75 to 120 per cent. as within normal limits; but there was really nothing to worry about until the figure shown by the clearance test was 40 per cent. or

less. He had compared a hundred cases at St. Peter's Hospital to discover the value of the various tests. From an estimation of the figures it was probable that in the surgical type of case the estimation of the blood urea alone gave all the essential information which the surgeon really wished to have. Different forms of renal function tests might be required for the investigation of different types of disease. Whether the urea clearance test had any future in surgical practice or not must be decided by future experience, but it was of great interest scientifically, and, he thought, of value in medical cases.

Dr. KENNETH WATKINS said that he had had the privilege of studying for twelve months under Dr. Hugh H. Young at the Brady Urological Institute of the Johns Hopkins Hospital, Baltimore. There he had been impressed by the value of the phenolsulphonethylphthalate test, and had used it since his return. The test was first introduced in 1910, but it was not until a great deal later, when fractional methods were employed, that it came into its own. At the Brady Clinic specimens were taken each half-hour after the injection of phenolsulphonethylphthalate, and he showed a graph of the excretion of the normal individual. After the injection of 6 mg. of the dye the appearance time was within three minutes. He thought the test gave an excellent graphic representation of the recovery function following relief of obstruction. Dr. Young had insisted that it was not a return to a certain definite level of renal function which was important, but that the return should represent the greatest ability of each individual case. In that way Dr. Young had operated on many cases successfully in which the actual dye elimination was poor. So far as differential renal function tests went, he thought this test also was of great value, and probably gave much better evidence than the other tests at one's disposal. The test was simply carried out. A large volume of water should be given before it was started. He had come back from America with a very favourable impression of this test, which was used widely in American urological practice.

Mr. E. W. RICHES felt that, as regards renal function tests in general, the clinical condition of the patient was the most reliable index of renal function only in extremes of good or bad function, and it was in borderline cases that the laboratory tests were of most value. From the surgical point of view particularly, tests of this nature were valuable in a prostatic case. He thought that all prostatic cases required some renal function test. He had taken a figure of 60 per cent. with the van Slyke clearance test as the borderline to indicate whether a one-stage or a two-stage operation should be performed, and since doing so he had not lost a case after prostatectomy. After removal of a tuberculous kidney the renal function tended to rise, provided there was no secondary infection in the bladder or the opposite kidney. The presence of infection seemed to him the most potent single factor in causing a depression of the renal function. He felt that, from a surgical point of view, the urea clearance test was the most valuable of the tests available, especially in prostatic cases. If it was performed, it did not depend on any artificially produced diuresis. It was taken with the patient just as he was.

Mr. H. P. WINSTON-WHITE said that there had always been too great a tendency to consider that good renal function indicated a proportionally good prospect of recovery from operation. In operations on the urinary tract tests of renal function were useful, but they were misleading unless equal consideration was given to the clinical facts. Discussing the effect which bladder drainage had on renal function, he said that he constantly made use of two types of bladder drainage—namely, the indwelling catheter and suprapubic cystostomy. In cases of prostatic obstruction where prostatectomy had to be considered, the effect of the obstruction might be so severe that even suprapubic cystostomy was contraindicated. The coaxing back of an extremely debilitated patient to a state of health by stages was reflected in the renal function tests. He described his practice with the water test. Normally, if 50 oz. of water were drunk in the space of half an hour, it was excreted roughly up to about 75 per cent. in four hours. Very considerable delay

in excretion was noted in advanced cases of prostatic obstruction. He had been in the habit of testing by simply marking the specific gravity. One charted the urine excreted every two hours and the specific gravity was noted. With regard to the concentration test, he did not find it anything like so reliable as the water test.

Dr. GEORGE GRAHAM considered the effects of alkalosis and acidosis, pointing out that the condition of alkalosis could be produced by vomiting after operation. When people vomited after an anaesthetic they were given an alkali, whereas in many cases they should be given either acid or sodium chloride intravenously, or glucose together with insulin, and a good many of the people who were likely to develop uraemia after vomiting could be saved in that way. On the other hand, some patients had not alkalosis but acidosis. These people could be helped by giving them alkali. A person who had got a severe acidosis very often would show a condition similar to that of the air hunger which occurred in diabetic coma; whereas a patient with alkalosis always had very quiet breathing. For the purpose of making certain, however, as between the two conditions, it was necessary in the very bad cases to determine the alkali reserve. He was a little sceptical of the treatment of acute nephritis by starvation. He had had equally good graphs of recovery in patients who had had a reasonable amount of protein given to them. He believed that Dr. Bennett had been unnecessarily gloomy as to the prognosis in cases of acute nephritis.

Mr. SWIFT JOLY said that in the examination of cases requiring prostatectomy he placed a good deal of reliance on the elimination of water, and he always tried to push up the excretion of water before the operation, endeavouring to double the normal amount. It was interesting to chart the quantity of urine in twenty-four hours with the quantity of fluid intake. Very often one did get a considerable lag in the quantity of urine, and sometimes no response to the fluid at all. The cases in which there had been voluntary reduction of the intake of fluids were extraordinarily fatal if one operated on them without due preparation.

ENVIRONMENT AND ACUTE RHEUMATISM

'At a meeting of the Sections of Epidemiology and Children's Diseases of the Royal Society of Medicine on January 26th, the subject of discussion was "Acute Rheumatism and Chorea: Social and Environmental Factors." The chair was taken by Dr. J. D. ROLLESTON.

Dr. J. ALISON GLOVER began by referring to the 1927 report of the Child Life Committee of the Medical Research Council on the subject of "Social Conditions and Acute Rheumatism." This embraced the medical and social histories of 721 rheumatic families, 200 control families, and 2,000 children living in Poor Law schools. The medical particulars included familial inheritance and incidence, the incidence of sore throat and throat conditions generally, and in particular tonsillectomy; and the social points inquired into embraced maternity care, exposure, sleeping accommodation, clothing, cleanliness, distance of residence from school, and occupation and income of parents. In spite of a careful study of the results of the inquiry, the findings were declared to be largely negative; but the speaker considered that poverty, overcrowding, malnutrition, and dampness were associated factors of great significance. Gray Hill and Allan seemed satisfied that it was not possible to define the "rheumatic type" of child on any bodily or pigmentary standard. The Child Life Committee had stated that if children of the hospital class were divided into three categories according to their degree of poverty then the very destitute poor showed a lower rheumatic incidence than did those of the other two classes. Still Dr. Glover expressed his belief that, in the main, the incidence of acute rheumatism was in direct proportion to the degree of poverty. The chief advance on the subject was marked by the identification with the cases of the *Streptococcus pyogenes*; while the work of Coburn in the United States

established a direct correlation between the geographical and the seasonal distribution of haemolytic streptococcal throat infection and acute rheumatism. Paul and Salinger made a study of fifteen rheumatic families, and found that non-specific respiratory infections occurred before the appearance of characteristic acute rheumatism. Also, the parents in rheumatic families did not enjoy such good health as in other families.

Dr. REGINALD MILLER said that one had to consider three sets of causative factors in relation to this subject: (1) the bacterial cause circulating in the blood; (2) the predisposing factors; and (3) the exciting factors. The disease, it was agreed, was essentially one affecting the children of the poorer classes, though it was doubtful whether it could be called a true poverty disease in the sense that squalor and poverty determined its class incidence. If it should be proved that the causative agent of juvenile rheumatism was a haemolytic streptococcus, ideas would need to be considerably rearranged. He thought the report of the Special Committee of the British Medical Association¹ was correct where it stated that juvenile rheumatism was essentially a disease of children of the artisan class who lived in damp houses in industrial towns, attending public elementary schools under compulsion, and suffering from infected tonsils. At present, however, no single factor could be held culpable.

Dr. W. S. C. COPENAN, though a believer in the infective origin of acute rheumatism, considered that secondary factors could well modify the clinical course of the disease. The following factors could not be left out of consideration: soil, climate, barometric variations, wind, degree of damp, temperature, poverty, ventilation, and overcrowding. He thought that the subjects of this disease had a defect in their heat-regulating mechanism of the skin. He agreed in attaching importance to the dietetic factor; it was not merely a question of the total calorie value of the food taken, but, as Dr. Warner suggested, it might extend back to the beginnings of the disease. As overcrowding was invariable in the case of people below a certain poverty level, it would be difficult to assign to it a special place in the causation of rheumatism. He advocated a careful study of what were regarded as minor factors; he was not of those who considered that clinical research had been exhausted on the subject.

Dr. E. C. WARNER considered that an infective origin was not demonstrable for all rheumatic diseases; for instance, in the case of chorea without carditis there was a good deal of evidence against the hypothesis of an infective encephalitis. Also, in these cases the sedimentation rate did not show any rise from the normal, but as soon as carditis occurred—even before it became manifest clinically—the sedimentation rate rose. A study of class incidence and familial incidence seemed to suggest that an important part in causation was played by a metabolic factor. In the case of many rheumatic families which were inquired about there was no deficiency in the total calorie value of the food taken, as it averaged 3,250 per man-value per day; also the protein intake was sufficient. An invariable observation was that rheumatic children manifested a dislike for fatty foods—in the form of fresh milk and butter—in comparison with the likes of non-rheumatic children; but the rheumatic subjects showed a great fondness for potatoes. At Christ's Hospital the diet was generous and was rich in animal fats, and five-year comparisons showed a steady decrease of rheumatic diseases there. In an inquiry Dr. Warner found that in cases of chorea the calcium content rose in the cerebrospinal fluid, and at the same time the phosphorus content fell. Many observers had remarked on the occurrence of a period of general debility in those who later developed rheumatism of chorea, and the speaker thought this debility might be due to defective diet.

Dr. R. J. LLEWELLYN said that multiple stimuli, such as heat rays, light rays, varying barometric pressure, were constantly impinging on the human organism, and the latter either swiftly adapted itself to them or fell a victim to disease. Man and his environment were one and

¹ British Medical Journal, Special Supplement, July 3rd, 1925.

indivisible. Rheumatism, he thought, was mainly a matter concerning the skin, being only secondarily one of bones and joints. In the adaptive processes of the body the cutaneous glands, especially the sebaceous glands, played a marked part. In infancy and young childhood those glands were comparatively inactive, and so the supply of protective and lubricating sebum was defective, and hence the skin was very sensitive to humidity because of the defective heat retention. Whether any particular child would fall a victim to rickets or rheumatism depended largely, he thought, on its inherited make-up.

Dr. C. BRUCE PERRY (Bristol) remarked that his own findings on the sedimentation rate of the blood in uncomplicated chorea were similar to those which Dr. Warner had just stated. Also that the sedimentation rate would rise as a precedent to clinically recognizable carditis. He spoke of the investigation into the incidence of cases of rheumatism in Bristol and the three surrounding counties which had been made, and said that a closer inquiry into the figures for Bristol itself showed that there were greater differences for various parts of Bristol than between Bristol as a whole and the three counties. In the city ward with the highest rheumatic incidence the figure was 3.7 cases of rheumatism per 1,000 of the population, whereas the lowest incidence (Clifton and Redland) was 0.15 per 1,000. If, as Dr. Glover contended, a concentration of haemolytic streptococci played a very important part in this striking distribution, the incidence of scarlet fever over the same period should show a parallel distribution; but that was not the case, nor was it so in the case of diphtheria. The Bristol inquiry, he thought, seemed to show that it was not the infection itself which enabled the disease to gain a footing, but rather the soil, the child's diathesis, and the environmental conditions.

Professor J. A. NIXON (Bristol) said comment had often been made on the fact that the incidence of rheumatism in Poor Law schools was low—lower than among children of the same social class who attended the ordinary day schools. The disease was also largely passing from the great public schools. Another form of closed community in which the disease was very rare was the institution for mental defectives. Yet in these institutions there had been a number of outbreaks of scarlet fever. A useful line of investigation, he suggested, was to study the communities in which rheumatism was practically absent.

Dr. LEONARD FINDLAY said it was now the general belief in the profession that acute rheumatism was an infectious disease, and, if that were so, it would be natural for social conditions to influence its onset, either by favouring transmission or in the way of deterioration of general health and lowered resistance. He did not think the actual cause of the disease had yet been established, despite the arguments in support of arraigning the haemolytic streptococcus. There was, he felt sure, some factor other than a microbial one, was it a symbiosis, or was it merely a matter of environmental influence? Certainly the great need among the rheumatism-inflicted community was for decent houses to live in.

Dr. E. W. GOODALL asked whether, in the cases specially mentioned by Dr. Glover, tonsillitis was an associated condition.

Dr. GRAY HILL (Carshalton) said that among the 3,000 inhabitants of his institution there was little rheumatic manifestation except chorea. The soil was a chalky one, and the children lived in excellent hygienic conditions, with a generous dietary. He considered that rheumatism was largely due to bad environmental conditions.

Dr. GLOVER, replying to Dr. Goodall, said that in practically all the cases of rheumatism he referred to there was also tonsillitis. A high tonsillectomy rate did not increase resistance to rheumatic invasion; indeed, the opposite seemed to hold. It would be well worth making an inquiry into a number of rheumatic families, and an equal number of control families, keeping an exact record of the illnesses of every member, week by week, on parallel lines, and especially to keep going a weekly swab examination.

Dr. REGINALD MILLER, in reply, agreed with Dr. Nixon as to the importance of studying rheumatism-free communities; this had been done by the B.M.A. Committee in the case of certain schools. He agreed that people in institutions for the mentally defective were notoriously free from rheumatism and heart disease, and that provided one of his reasons for contending that the wear and tear and exposure incidental to compulsory school attendance by children of the poor was a factor in the incidence of rheumatism. At the present stage of knowledge it was, he thought, a serious matter for anyone to question the infective origin of acute rheumatism.

THE GENERAL PRACTITIONER AND MIDWIFERY

At a meeting of the Edinburgh Obstetrical Society, on January 10th, Dr. WILLIAM HAMILTON read a paper on "The Position of General Practitioner Midwifery."

Dr. Hamilton began by giving a general account of the conditions under which the midwifery of general practice was conducted. He discussed the economic basis, the nature of the assistance available, the services actually rendered, and the technique adopted. Chloroform, he said, was given at the end of labour in every case. Primigravidae received heroin and hyoscine fairly frequently, while multiparae rarely received these drugs. Pituitrin was used freely; it had been given to 34 per cent. of primigravidae and to 42 per cent. of multiparae. No bad effects had ever been observed. Its use had permitted a more free administration of anaesthesia without compelling recourse to delivery by forceps, had diminished the forceps rate among multiparae, and had had a beneficial effect in securing a rapid and physiological third stage. In only three of 1,409 cases had manual removal of the placenta been required. Lysol was the only antiseptic used. The technique was a compromise between what was theoretically desirable and what was economically, domestically, and professionally practicable. The results indicated that there was no positive correlation between elaborate technique and the prevention of maternal morbidity and mortality. The speaker next presented a detailed analysis of 1,409 cases attended in a partnership practice since the war; he considered these were a true sample of obstetrical cases. Each patient received on an average 12.4 visits in her home between the beginning of the eighth month and the end of the puerperium. During the years 1925-33 in 1,164 pregnancies the abortions had equalled 7.6 per cent. of the live births and 7 per cent. of the total pregnancies. Of 1,434 foetuses delivered during 1919-33 almost exactly 17 per cent. were delivered operatively. The operative delivery rate was:

	Primigravidae	Multiparae
Occipito-anterior cases	35 per cent.	27 per cent.
Perineal or occipito-posterior cases	41	43
Breech cases	43	46

Severe laceration during delivery was confined to primigravidae, and very largely to persistent occipito-posterior and breech cases. Among multiparae, whatever the presentation, the laceration rate was lower in the operative than in the spontaneous cases. Intra-natal and neonatal deaths actually or possibly due to dystocia were as follows:

	Primigravidae	Multiparae
Occipito-anterior cases	36 per cent.	36 per cent.
Perineal or occipito-posterior cases	25	25
Breech cases	113	113

Over the whole series the infection rate was slightly higher in operative than in spontaneous cases, but the reverse was true of occipito-anterior cases both in primigravidae and in multiparae. Severe puerperal sepsis was confined almost entirely to women who had been delivered spontaneously. The five fatal cases of puerperal sepsis occurred in women who had been delivered spontaneously and without laceration and with a minimum of vaginal examination or with none. From these and other facts he was compelled to conclude that the occurrence and severity of puerperal sepsis depended very largely on

factors peculiar to the woman herself. The maternal death rate in this series of cases was 6.5 per 1,000. The actual admissions to hospital for medical and obstetrical reasons were: ante-natal 1.2 per cent., intra-natal 2.4 per cent., puerperal 1.3 per cent.

Dr. Hamilton finally discussed the question of maternity services in Scotland, and brought forward evidence to show that maternal mortality rates in different types of areas did not vary with the nature of the service, and that areas where maternity services were rendered very largely by general practitioners had on the whole a lower death rate. After explaining the impossibility of basing a maternity service either on maternity hospitals or on certificated midwives, he pointed out that general practitioner midwifery was almost invariably conducted in circumstances where equipment and nursing assistance alike were inadequate, and indicated directions in which improvements that were economically practicable could be made. He concluded that the results of general practitioner midwifery were good, and might be better still if the general practitioner were properly supported by the Department of Health and the public health authorities; and that no advance towards the solution of the problems of maternal mortality and morbidity was possible without proper utilization of the general practitioner.

SIMPLER PATHOLOGY

At a pathological meeting of the Liverpool Medical Institution, held on January 18th, with the president, Dr. H. R. HURTER, in the chair, Professor J. M. BEATTIE read a paper entitled "A Plea for a Simpler Pathology."

This communication was in the nature of a protest against the specialization which is becoming marked in the teaching of pathology. It was maintained that the fundamental facts of disease processes were being neglected, and that emphasis was being laid on theories, elaborate classifications, and obscure pathological details. Evidence of this was given from pathological literature. Professor Beattie suggested that the specialized research which was being so elaborated in pathological institutes and the craving for publication were largely responsible for this unfortunate state of affairs. The teachers of pathology, he maintained, were not now doing that "grinding" course which was so essential for real training in every branch of the work. They were urged to publish and to publish—but the work in this "grinding" stage did not lend itself to publication, and therefore it was not of any use to the man who, if he hoped to be a successful applicant for a teaching post, had to present a long list of publications. His real training and teaching ability were secondary considerations. Examples of the specialization and the mania for classification were elaborated by reference to the literature of the reticulo-endothelial system, of the classification of diseases of the kidney, and of tumours of the brain. No two authors agreed as to the definition of the reticulo-endothelial system, and the speaker held that the differentiation between cells should be based on an examination of the living cell and not on the stained, dead, and distorted cell. He saw no special value in the classification of diseases of the kidney, and none at all in the elaborate classification of gliomata. What the student or practitioner should know was what changes were produced in the various organs as the result of toxic agents, and chemical and other poisons. The clinician should be able to picture these conditions, but not necessarily give them a name. He should have studied the simple beginnings of disease and the changes which followed and which produced the more complicated pathological picture, rather than be able to describe the complicated picture without a knowledge of how it was built up. In the discussion which followed Dr. T. N. A. JEFFCOATE said that there was already a tendency for gynaecological pathology to become simplified—especially in so far as the diseases of the endometrium were concerned. Moreover, he considered that gynaecologists were fortunate in being responsible not only for the clinical side of their subject but also for the pathology.

CORRESPONDENCE

Legal Ownership of X-Ray Films

SIR.—Your most interesting article on the above question, in the *Journal* of January 13th last, has been read by many members of the British Institute of Radiology, and, as president of this body, it has been left to me to write to you.

The matter has frequently been discussed by the Medical Committee of this Institute. As there has never been an action at law to settle the point we have come to conclusions similar to those expressed in your article—namely, that intention of the parties, together with the usual custom of our profession, must govern the matter. The question has not infrequently been the subject of acrimonious correspondence, and from time to time consideration has been given to the advisability of a friendly action in the Law Courts in order to settle the matter by means of a decision. There seems to be no doubt that a legal decision would be given on the above lines—intention and custom—and, so far as can be made out, would certainly follow the many cases already forming precedents in the case of the photographer. There seems to be no doubt that the film is the property of the radiologist, and is the means whereby he makes a record for the advantage of his report and for the use of the medical man at whose instigation the consultation takes place. There is no absolute compulsion (short of definite arrangement) for a film to be taken, and there are many cases in which all that is required is an examination on the fluorescent screen. Here custom comes in, and it is usual for a film to be taken. Naturally the radiologist will file his films for such period as seems good to him, and will certainly do so in cases in which they may be required either to watch the progress of a case or in the event of medico-legal action. There is, however, no legal compulsion upon him to do so. Further, it is the custom of the radiologist in this country to be as considerate as he can be of the needs of the patient and of other medical men, but this naturally has its obvious limitations.

There would seem to be no room for doubt that x-ray films taken in hospital are the property of the hospital; indeed, this point has long ago been settled, though not in a court of law. The same argument would surely apply to a patient in a nursing home which has its own x-ray outfit. Here again the film is usually taken to assist the radiologist in making his report, and also to enable him to discuss the x-ray findings with the medical practitioner in charge of the case—and this follows the custom pertaining to any work in private.

In one class of case both intention and custom seem to have their best example. I refer to x-ray examination done for the insurance companies in cases that are going to litigation. Here the films become the property of the insurance company and/or their medical referee. It is conceivable that the radiologist himself, in the early days of radiography, may be to blame in that he appeared to exaggerate the importance of the print, and thereby conveyed to the public a wrong impression.—I am, etc.,

London, W 1, Jan. 23rd.

STANLEY MELVILLE.

The Sterilization Report

SIR.—In the Report of the Departmental Committee on Sterilization, para. 94, p. 50, the committee calls attention to the need for further research to determine whether prepuberty vasectomy is likely to exercise any prejudicial effect on physical development by arresting the growth of the interstitial cells of the testis.

May I draw attention to the fact that Dr. Hammond, F.R.S., at the School of Agriculture, Cambridge, has

recently performed vasectomy on a number of young male rabbits, in which the later results show that the ligation of the ducts does not interfere with physical or sexual development, or capacity for sexual intercourse? We must, of course, be cautious in applying the results obtained from operations on animals to the human subject; but in view of the facts already known about the absence of prejudicial effects from vasectomy in the human adult, and the strong probability that the results obtained in rabbits are applicable to other mammals, including man, we may, I think, legitimately conclude, in the absence of evidence to the contrary, that vasectomy in the human subject performed before the age of puberty is not likely to interfere with physical or mental development or sexual capacity.

The matter is important, because some experts are inclined to suggest that, in view of possible prejudicial effects, an age limit should be fixed below which vasectomy should not be performed in the human subject, and the committee has suggested that the age should be the attainment of physical maturity (para. 91, p. 48). Any such limitation would, however, add to the administrative difficulties which already attend the adequate supervision and control of young and adolescent mental defectives, and, if not necessary on physiological grounds, the decision as to the age at which the operation should be performed should surely be left to the medical experts concerned, having regard to the circumstances in each individual case. I should add that Dr. Hammond's results were not available in time for consideration by the committee before issuing its report, but they are quite definite, and would, I think, fully justify the reconsideration of the question of fixing an age limit.—I am, etc.,

Leicester, Jan. 22nd.

C. J. BOND.

The New Cancer Problem

SIR,—The letter on the above subject, by Mr. Hastings Gilford, in your issue of January 20th has interested me greatly. I well remember the beautifully turned out and excellently illustrated reports of the early days of cancer research; the proud boast (well founded) that the few milligrams of original Jensen tumour had in a few years produced, by mouse inoculation, so many tons of cancer! But even then I anticipated the disillusionment that now seems to have overtaken cancer researchers. *Tout le monde est sage après coup*; but thirty years ago, on reading a paper on the origin of new growths before the Cork Medical and Surgical Society, I said: "When we know why a blade of grass grows and why a fertilized ovum becomes endowed with such tremendous energy, then we may understand how a malignant tumour grows." Does not all this disappointment arise from the simple fallacy of regarding cancers and sarcomata as essentially abnormal? In what essential respect does a cancer cell differ from a common epithelial cell? Is it always easy to distinguish between a sarcoma (round or spindle cell) and granulation tissue? Is there not a close affinity between tumour growth and repair? In what case of malignant tumour can one definitely exclude injury or irritation?

Lorrain Smith, in his suggestive booklet *Growth*, speaks at length on "controlled" growth and "controlled" repair. Is repair, as we recognize it, always controlled? In the majority of cases a cut is repaired by a scar: just enough scar tissue is produced, no more—controlled repair. Occasionally, especially in negroes, a scar is not controlled: result, a keloid. An epithelial surface is damaged: in most cases the damage is repaired by just about the amount lost by damage—controlled repair. Sometimes, when the irritation is long continued, repair becomes uncontrolled—result,

a cancer. The same process obtains in injury to connective tissue. Normally, granulation tissue is produced and strictly limited in quantity to the need of the part; later it "fulfils its ultimate developmental intention" and a cicatrix is formed—controlled repair. Occasionally the formation of granulation tissue is uncontrolled, or the growth of certain round or spindle cells therein is uncontrolled—result, a sarcoma. Why, then, call in bacteria or a virus to account for tumour formation and not for ordinary repair?

Adami defined inflammation as "the local attempt of repair of a tissue"; if asked to define "repair" more clearly, can it be doubted that he would have said "controlled repair"? Why not define a tumour as "the uncontrolled attempt at repair in a tissue"? How does growth become uncontrolled? How does it become controlled in ordinary growth or repair? Here is heresy: can orthodoxy suggest better?—I am, etc.,

Department of Pathology, University
College, Cork, January 22nd

A. E. MOORE.

SIR,—The controversy that periodically rages over the relative merits of clinical and experimental methods in cancer research will be settled only when the problem is finally solved and we, or our descendants, can review impartially the part played by the several branches of medical science in overcoming this scourge.

Mr. Hastings Gilford, in his letter in the *Journal* of January 20th (p. 121), challenges in a general way the value of experimental cancer research and all the positive data it has produced. The discovery of carcinogenic substances, their isolation, and the possibility of recognizing them in, and eliminating them from, oils in commercial use apparently has no significance in connexion with human cancer. Admittedly occupational cancer represents only a small fraction of human cancer, and the protection of those engaged in dangerous occupations does little to reduce the appalling annual death roll due to cancer; but the failure of experimental workers to solve all the problems associated with malignant disease does not constitute a new problem. No one, not even the most successful surgeon, can claim a record of uninterrupted success, and even if experimental workers have not achieved the success that Mr. Gilford had anticipated, that does not justify his accusation of a "record of hard work, great ingenuity, and unbroken failure."

Clearly, in tackling such a problem as this, it is idle to demand success within a time-limit. If Mr. Gilford disapproves of our experimental methods what alternative does he suggest? Why should he object if experimental work offers no support to theories that could only be useful as a basis for investigation? Surely all serious students of cancer, be they clinicians or laboratory workers, are actuated by the same motive—the collection of accurate data bearing on all aspects of the disease. If the immediate utility of some experimental investigations is not obvious to all, we should at least give the writers the benefit of the doubt and assume that they are pursuing a definite line of thought, though I admit that it is sometimes difficult to guess what it can be.

In view of his extreme pessimism about experimental research it would be of considerable interest to know what leads Mr. Gilford to anticipate "that the most central problem of cancer, no longer obscured or made difficult by the clouds and winds of useless controversy, will then not only be clearly seen, but will be attacked with far better prospects of success," if only the research worker will cease to concern himself with human tumours, leaving the field clear to—whom?—I am, etc.,

Jan. 22nd.

F. R. PROCTOR,
Department of Pathology,
University College, Cork

The Tuberculosis Problem

SIR,—The recent 'spate of correspondence on this problem in your columns, culminating in Dr. Gordon Tippet's letter and quotation from a county medical officer of health's sad report on January 13th, surely shows that something is wrong with our anti-tuberculosis campaign. Whose is the fault that cases are not recognized or sent for treatment until so advanced? Presumably an old scapegoat, the G.P., will be indicted by most; for do not the authorities provide tuberculosis dispensaries and sanatoria staffed by (presumably) specialists? Meanwhile the G.P., floundering amidst the various advices to pasteurize, not to pasteurize, to use and not to use tuberculin, et cetera, and armed with a stethoscope, a little common sense, and perhaps with the help of a municipal laboratory and a hospital's out-patient department, struggles on with the endeavour to obtain early diagnosis and early treatment for cases of consumption.

Are these local specialist tuberculosis centres rendering all the assistance possible? Consultation with some G.P. colleagues confirms the impression that, in this district at any rate, the dispensary dispenses with the use of x rays, tuberculin, more than one sputum examination (done in the local municipal laboratory and not in the clinic), and even suspicion of any history, signs, or symptoms, except a positive sputum. Suspected early cases are referred for advice, the specialist makes a few peremptory dabs at their chests with fingers and stethoscope, and they are usually returned with a chit marked "No evidence of tuberculosis." Many of these folk are then diagnosed at a hospital, notified, and again sent to the dispensary for advice on treatment. They are told to attend quarterly or perhaps monthly, but their names are not entered for institutional treatment until they become emaciated and pyrexial, owing to economic stress preventing adequate treatment at home. There is even then usually not less than six weeks' wait before admission. When these patients come out of the sanatorium they complain about the draughts (fresh air) and poor food, though regrettably they can never be persuaded to put these complaints into writing. The attitude of the clinic to the possibility of relapse in such patients is similarly ostrich-like.

Now by way of some constructive criticism, here are a few practical questions which arise:

1. How many such organizations are as inefficient as ours? I am hopeful that replies to this letter will prove—none. The facts will then be represented to the appropriate authority.
2. Is there any system of inspection of such organizations, and is any attempt made to keep them well equipped and to standardize their functions?
3. Can any tuberculosis clinic afford to spurn the use of (a) repeated sputum examinations, (b) an x-ray apparatus, (c) careful and repeated clinical examination, and (d) tuberculin, especially in the case of children, as aids to early diagnosis?
4. Should not such organizations be competent and instructed to advise individual treatment, either by a written pamphlet to the patient direct or to the G.P. in charge of the case, if any?
5. Finally, tuberculosis being a notifiable and presumably "infectious" disease, cannot steps be taken to lessen the interval before isolation and institutional treatment?

This letter is not intended as a personal attack on the local tuberculosis medical officer, but upon the system (or rather lack of it) which allows such a parody of scientific organization against the scourge. I shall be delighted to correspond and co-operate with any fellow G.P. who holds similar views, but in order not to shock any lay readers living locally who may chance to see the *Journal* I must sign myself anonymously

A. R. F.

January 17th.

Artificial Pneumothorax for Tuberculous Children

SIR,—In the *Journal* of January 6th (p. 14) Dr. William Stobie describes the treatment of three cases of pulmonary tuberculosis in children by artificial pneumothorax. The ages of his cases were 9, 12, and 15 years respectively. It will perhaps be of interest to him, as well as to your other readers, to know that, since the beginning of 1926, 132 cases of pulmonary tuberculosis in children were treated by this method at High Wood Hospital. At the time of the induction of the pneumothorax fifteen of these cases were below the age of 10 years, and the rest were between the ages of 10 and 15. In the youngest case the initial fill of air was given at the age of 4 years.

We do not, however, make any claims to originality in this matter, as many workers on the Continent have practised collapse therapy in children younger than ours at High Wood. Armand-Delille¹ describes 120 cases of pulmonary tuberculosis in infancy treated in this way, and although he does not state the exact ages of his cases here, in an earlier publication² he describes two cases aged 14 months and 1 year. But even this is not the last word on the subject, for as early as 1914 Billon is stated to have induced an artificial pneumothorax on a baby only 9 months old.—I am, etc.,

High Wood Hospital for Children,
Brentwood, Jan. 22nd.

A. G. L. READE,
Medical Superintendent.

Control of Metastases in Breast Cancer

SIR,—Dr. Annis, while in general agreement with the views expressed in my letter of January 6th, nevertheless thinks that I am "too readily belittling the value of the time, labour, and, especially, money, which has been spent upon cancer research work under very distinguished auspices in this and other countries—with far too little result, I admit . . . but still surely with some." Now the point of my letter was that, since the days of Tut-ankh-Amen, practically no progress had been made in prevention of metastases. Research has been concentrated largely upon what may be called the cytology of cancer. Much has been added to our knowledge in this respect, and time, labour, and money spent upon the acquisition of fresh knowledge is never wasted. A recognition of this truth should not blind us to the fact that little has so far been discovered which can at the present moment be applied in practice.

The question of the prevention of metastases is obviously connected with that of susceptibility. Let us see what one of our leading research workers, Dr. Cramer, has to say on this subject (*Lancet*, January 6th, 1934, p. 104):

"If it [susceptibility] could be diminished, it would offer another method for the prevention of cancer. . . . I have carried out experiments with that object in view over several years, but as yet with no result. There is, however, experimental evidence that this factor can be increased by the administration of liver. . . . Unfortunately this change is in the wrong direction, but at any rate it suggests the possibility that by other means a change in the right direction might be brought about."

There is at present no drug or gland treatment which can be counted upon to reduce susceptibility: or, to put it in another way, to raise resistance. On the other hand, there is evidence, both clinical and experimental, to show that certain forms of generalized radiation can prolong life in cancer subjects, and that established metastases can be held in check in a small percentage of cases for

¹ *Rev. de la Tuberc.*, June, 1932.

² *Soc. Méd. des Hôp.*, June, 1927.

several years. The generalized x-ray treatment, briefly mentioned in my letter as a means of controlling metastases, is at present empirical.

What is badly needed is some laboratory test which will tell us when latent cancer is likely to become active, so that we may forestall it. Work in this direction is being carried out. The ultimate weapon against metastases may be something far removed from radiotherapy of any kind; but meanwhile it is better to use an empirical method which has had some successes to its credit than to sit with folded hands waiting for manifestations of distant invasion, which in a large proportion of cases are bound to occur.—I am, etc.,

London, W.I. Jan. 24th.

S. GILBERT SCOTT.

Raised Intraocular Tension

SIR,—In your issue of January 20th Flight Lieutenant R. L. Raymond describes a new symptom-complex of increased intraocular tension and frontal headaches in young persons. He draws his conclusions from four cases; but, apart from an ophthalmological point of view, the evidence which he gives is not sufficient to support the diagnosis of raised intraocular tension. Apparently the author based his diagnosis of increased tension on digital tonometry, confirmed in one case by a shallow anterior chamber in another by cupping of the optic disk, and corroborated in all by tenderness of the eye and the abolition of all symptoms on exhibiting eserine. The remainder of the evidence is negative.

On the above positive evidence the following observations may be made without going too much into detail. Digital tonometry is of great value when definite alterations of intraocular pressure are present. It is, however, unsafe to base a diagnosis on it in doubtful cases, and some doubt appears to have existed in Dr. Raymond's mind, as he states that the tension was "thought to be higher" on digital examination. One of the cases was thought to have a slightly shallower anterior chamber in the affected eye; but it must be pointed out that it is difficult to compare depths of anterior chambers when the pupils are of different size. In the case quoted the pupil of the affected eye was constricted by eserine, and the anterior chamber in such an eye usually appears shallower, quite apart from the question of raised pressure, merely because there is a larger area of iris in evidence. Another case was stated to have an optic disk which was slightly more cupped in the affected eye, but which was normal on examination five weeks later, after treatment with eserine. This is remarkable evidence, as no treatment has yet been known to remove cupping of the optic disk. Tenderness of the eyeball is no evidence of glaucoma, and may merely be associated with the headache. The therapeutic test of the effect of eserine is not easily put to one side, but the instillation of distilled water has often done much to relieve pain which has not been shown to have an organic basis.

I do not question the accuracy of Dr. Raymond's clinical observations, but I feel that he has attached undue importance to some relatively insignificant details which cannot be regarded as of diagnostic import. However, no one should place any reliance whatever on digital tonometry which has not been confirmed by a more accurate method of tonometry, unless it is possible to say that the intraocular pressure is raised beyond all shadow of doubt, and then, of course, there would be other indubitable signs of glaucoma. In any case glaucoma can, and not infrequently does, occur in young persons of all ages, and the pain may be referred to the frontal region.—I am, etc.,

London, Jan. 24th.

VICTOR B. PURVIS.

"Cheap Anaesthesia"

SIR,—In the daily Press there is an account of an inquest at which an eminent pathologist is reported to have stated that open ether is the safest anaesthetic. I do not want to criticize in any way the case out of which this comment arose. I know nothing about it except that it was a bad risk. Besides, deaths on the table may happen to anyone; I freely admit that my own record is not free from them. But it is not apparent why a pathologist, whose opinion in his own department is no doubt most valuable and reliable, should make dogmatic statements about anaesthetics, on which subject he is about as likely to be correct as an anaesthetist who pontificates on pathology.

The pathologist in question, in thus retailing an opinion ten years out of date, has apparently never heard of gas and oxygen or ethylene and oxygen. The former is certainly and the latter probably far less toxic. He also omitted to mention the undoubted facts that open ether is the most unpleasant method known from the patient's point of view, and that its popularity is largely due to its apparent ease of administration and the strange mentality of surgeons who demand exorbitant fees for themselves and yet cheerfully risk their patients' comfort and safety by insisting on cheap anaesthesia.

The astounding lethargy with which the art of anaesthesia is regarded in many districts, an attitude of mind which assumes that nineteenth century methods are good enough for twentieth century work and that no improvement is desirable or possible, makes me think it high time the whole subject was ventilated.—I am, etc.,

Morley, nr Leeds, Jan. 24th.

W. STANLEY SYKES.

Local Anaesthesia in Midwifery

SIR,—Infiltration of the perineum with a suitable local anaesthetic, during the second stage of labour, has its advantages, and although I do not suggest that this is anything new, yet it does not appear to be very much employed. By combining it with very light anaesthesia from a Junker's inhaler a normal labour can be rendered sufficiently free from pain at this stage without the disadvantage of rendering the patient incapable of helping herself and taking "the kick" out of the uterine muscle. The general condition of the patient, both mental and physical, after this method, is better than when more general anaesthetic is given. If perineal stitches or division of the perineum is required this can be done painlessly without any more general anaesthetic. An anaesthesia with gas and oxygen is not easily arranged for, and this method is so simple and harmless. The agonizing pain of the stretching and tearing of the perineum is abolished and the worst of the pain is eliminated.

It is specially applicable in the case of a primipara or in a breech delivery, when a painless perineotomy can be performed which improves the child's chances by facilitating the delivery of the after-coming head and relieving pressure on the cord. Perineal examination and suturing afterwards can be done more easily, as the patient does not contract her thighs when touched.

The method advocated is to wait until there is some bulging of the perineum, and then to inject, with a fine hypodermic needle on either side of the midline of the perineum, half-way between the anus and the external edge of the perineum, about 2 ccm. of paraffin or 1 ccm. of the ampule on either side of the perineum. Paraffin "oil" is satisfactory, as it can be used in each delivery as and is conveniently put up in 5.5 ccm. ampoules (1 in 1,000), and in these doses is harmless and efficient.

After this method the perineal incision heals quickly and cleanly, bruising having been avoided. I often find that the patient can give all the anaesthetic necessary herself or assisted by the nurse, and the obstetrician can confine his attention without interruption to the birth and give his instructions to a patient who is not "out of control" from pain.—I am, etc.,

Farnborough, Hants, Jan. 27th.

E. LAWTON MOSS,
C.M.G., M.C.O.G.

Pruritus Ani

SIR,—I should like to endorse Dr. Hernaman-Johnson's views (*Journal*, January 20th, p. 123) on the treatment of pruritus ani. In his letter he states that in the majority of cases of this troublesome disorder surgical treatment is quite unnecessary. It is my practice in these cases always to make a rectal examination, and should there be any evidence of piles, fissure, or other abnormalities, these must of course be treated. The importance of making such an examination cannot be overestimated. Examination is also made for the presence of worms, which are sometimes responsible for the condition.

The skin is usually lichenified and excoriated as a result of scratching—and in places may be denuded of epithelium.

With regard to treatment, any raw areas should be painted with a 2 per cent. solution of silver nitrate. Four doses of 1/3 B unfiltered x rays are given at intervals of ten days, and an antipruritic ointment is prescribed. In most cases the patient begins to feel some relief after the second treatment, and it is advisable to warn him not to expect any improvement until then. At the end of the course of treatment most patients are completely relieved and do not need to use any antipruritic applications. The cessation of irritation and the return of undisturbed sleep at night soon lead to a marked improvement in the patient's general condition.—I am, etc.,

NORMAN BURGESS, M.D., M.R.C.P.

Clifton, Bristol, Jan. 23rd.

SIR,—In his very interesting letter in your issue of January 20th, Dr. Hernaman-Johnson falls into the common error of writing on pruritus ani as if it were a disease *sui generis*, and of referring to it as being "curable" by the application of x rays. A certain amount of unnecessary mystery surrounds pruritus ani, which is not the case with other skin irritations. Pruritus ani is a mere symptom of very numerous rectal abnormalities. It is perfectly true that temporary relief may be afforded by various forms of treatment—for example, subcutaneous injections of A.B.A., Ball's operation, or—as Dr. Hernaman-Johnson writes—by x-ray treatment. All of these, however, act merely by rendering the skin of the anal region anaesthetic or more healthy for a longer or shorter period. It can only happen rarely that such relief proves permanent, because all of these treatments overlook the underlying cause—whatever it may be in each individual case.

The causes of pruritus are numerous, and it is impossible in a letter of reasonable length to enumerate them fully and to describe the treatment appropriate to each. To show the fallacy of applying treatment to the skin only it is sufficient to mention that one of the common causes of severe and intractable pruritus is, as Colonel W. P. Macarthur pointed out in the *British Medical Journal* of August 22nd, 1931, the presence in the bowel of the *Enterobius vermicularis*—a parasite resembling the thread-worm of children. A large proportion of cases of pruritus can be shown to be due to this cause. Once this fact

has been admitted, the fallacy of writing as a "cure" of any application to the skin alone of remedies such as x rays, injections of A.B.A., or anything else, becomes obvious. They undoubtedly may give temporary relief, but until the parasites have been destroyed no permanent "cure" of the irritation can be expected.

Among other common causes of pruritus are internal haemorrhoids, chronic proctitis, inflamed anal crypts, submucous tracks, etc. To effect a permanent relief of pruritus each case must be fully investigated by an expert proctologist and the cause found and dealt with. Only in the cases in which a painstaking search for a cause has failed should local anaesthetic remedies or x rays be tried. In my opinion too many of these cases are referred to dermatologists instead of to proctologists. The cause of pruritus is a rectal one in the very great majority of cases, and it is as useless to send a case of pruritus ani to a skin specialist instead of to a proctologist as it is to send a case of neuralgia due to a carious tooth to a neurologist instead of to a dentist. In both cases temporary relief may be given, but no permanent "cure" can be expected until the cause has been found and removed.

Dr. Hernaman-Johnson also writes that cases of pruritus "associated with severe piles will, of course, require operation." I have been trying for the past eighteen years or so (latterly with considerable success) to convince the profession that most cases of internal haemorrhoids—even very severe ones—can be treated successfully without operation by means of injection. In no class of case are the results more satisfactory than in those in which intolerable pruritus is a symptom. The cases in question are by no means always those in which the haemorrhoids are unusually large. It must be remembered, however, that it does not follow that because a patient with pruritus has haemorrhoids there may not be other rectal abnormalities present also. Relief will be permanent only if all the rectal abnormalities which are present are dealt with effectually.—I am, etc.,

London, W.1, Jan. 26th.

ARTHUR S. MORLEY.

Left-sided Stance for Urethral Instrumentation

SIR,—I have been much interested in Mr. Neve's description of litholapaxy simplified (*Journal*, December 30th, 1933, p. 1211) and the subsequent correspondence on left-sided stance for urethral instrumentation in your issues of January 13th and 20th (pp. 78, 124).

I am right-handed, and as a student learnt to stand on the left side of the patient for passing urethral catheters and bougies, but after doing many cases of litholapaxy by standing on the right side of the patient I developed a sense of touch for urethral instrumentation. Hence the right-sided stance is adopted by me in all these cases except in perineal litholapaxy, when the patient is in the lithotomy position and I in the median position. I may here state that I have found the best urethral bougie to be a lithotrite. I have, with the aid of the weight of the lithotrite plus the sense of touch for the passing of urethral instruments, succeeded in passing through most, if not all, strictures, and when more than a false passage was present. Another big advantage of the lithotrite as a bougie is that, after passing through a stricture and before withdrawal, the blades can, if necessary, be separated sufficiently to stretch the tissues in the stricture without tearing the mucous membrane of the urethra.—I am, etc.,

C. C. MURISON, F.R.C.S. Ed.,
Colonel I.M.S. (ret.).

Knocke-Zoute, Belgium, Jan. 20th

SIR.—If Dr. Browdy (*Journal*, January 20th, p. 124) is referring to the method by which the passage of a curved metal urethral instrument is commenced by holding it parallel to Poupart's ligament of the left side, certainly, by standing on the left side, one avoids awkwardly reaching over the patient and crossing the hands at the beginning of the manoeuvre. But, at the end, there is an awkward "backhand" use of the right hand, unless, as described and illustrated by one authority, the hands are changed during the manoeuvre. It is, however, better to keep one hand entirely for holding the penis and the other for the instrument.

Again, most couches are placed so that the patient's left side is against a wall. But, even if both sides are accessible, it involves unnecessary exercise—for instance, in a stricture clinic—to stand on the left when passing a metal instrument and on the right when passing a soft one, as recommended by one textbook.

These disadvantages of the left-sided stance are avoidable if the operator always stands on the right for urethral instrumentation, as is the routine practice of the leading exponents of the art whom I have seen. Curved metal instruments are then best passed by the so-called "tour de maître," in which the concavity of the curve at first faces downwards, and the point of the instrument presses towards the floor of the anterior urethra, thus minimizing the small risk of catching the point in the lacuna magna or other orifice in the urethral roof. There is then no awkward crossing of the hands, no needless changing of them in the middle of the manoeuvre, and no unnecessary jumping about from side to side of the couch.—I am, etc.,

London, W.1, Jan. 23rd.

ALEX. E. ROCHE.

Vision of Brightness and Colour

SIR.—The address of Professor J. S. Haldane to the Royal Medical Society of Edinburgh not only strikingly shows the inability of hitherto current doctrine to explain the facts which he gives, but also the need to examine certain fundamental physiological doctrines. Tradition has handed down to us the idea that retinal end-organs are structures which are quiescent until excited to activity by light. This, however, is not a scientific theory, for there never was a time when anyone put together the facts of retinal stimulation and deduced therefrom that those organs are quiescent until excited, just as are the members of the excised muscle-nerve preparation. None, moreover, could so do, because every retinal phenomenon observed requires a special hypothesis to explain away the fact that retinal behaviour is never what it ought to be if the end-organs were of this type. The current physiology of retinal stimulation is a mass of such special hypotheses which are not required by the facts themselves but by the attempts to bring these facts into line with a preconceived notion that retinal end-organs are quiescent until excited.

Actually, some of the modern work on muscle and nerve provides the renitent evidence against this fundamental theory. We now know that the responses of structures, such as retinal organs have been presumed to be, are "all or nothing." It is possible to account for a grading of response in living muscle by imagining that the organ works fractionally, with each fraction always doing its utmost; but such an hypothesis cannot be applied to the eye because the size of a retinal picture, and with it the number of end-organs involved, is independent of the brightness of the light. If, then, this fundamental hypothesis were correct, our vision could be only of dazzling brightness or inky blackness, and the only picture we could see would be areas of those two states.

Nothing, however, could be more typical of the

behaviour of a rhythmically active structure than a capacity to give responses, as augmentations, which are graded according to the strength of the stimulant. Our capacity to perceive differences of light and shade constitutes, in fact, part of the evidence that retinal end-organs have an inherent rhythmical activity which is augmented by light. The other features of retinal stimulation all fall into line with this. The proposition of stimulating a rhythmical organ to greater activity is, however, as different from that of exciting a quiescent one as is the sparking of gases in a motor different from the proposition of getting more power out of the machine after it has begun to tick over. But physiologists, in their past studies of excitability, did the equivalent of studying the laws which govern the sparking of gases, and imagined that these laws were applicable to throttle adjustments.

The capacity of a rhythmical tissue to have its activity modified by environmental change has been called "responsiveness" and its laws studied. Furnished with a knowledge of these laws, Professor Haldane, instead of presenting his audience with a puzzle in his crossed shadow experiment, could have informed them that it was a predictable phenomenon. The puzzle was provided by the assumption that this was a phenomenon of excitability. In addition, one may further predict that what Professor Haldane seems to have looked for will probably be seen if he keeps his gaze accurately fixed for some five or ten minutes—the time will vary according to the previous history of the seeing eye. A further predictable phenomenon, on the basis that retinal end-organs have rhythm, is that the eye of a miner at the coal face will be more responsive to light than it is at the surface. The actual hundred-thousand-fold increase may not be predictable, but nevertheless is not surprising, a million-fold having been found in hearts. Alternatively, when one possesses an adequate knowledge of the properties of rhythmical tissues, these facts concerning the miner's eye provide part of the evidence that retinal end-organs have an inherent rhythmical activity.

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In contrast with this I have dealt primarily with questions of fact. The existence of responsiveness and its laws, for example, are not only questions of fact, but also they are capable of verification by anyone who cares to look. The existence of an inherent retinal end-organ rhythm is admittedly a theory, but nevertheless it is directly derived from the facts, and stands the test of a capacity for accurate prediction. But its derivation and the making of predictions requires more knowledge of the properties of rhythmical tissues than some physiologists seem to possess. The necessary more is admittedly new knowledge, but it consists of facts.—I am, etc.,

King George's Medical College, Lucknow,

W. BURRIDGE.

After this method the perineal incision heals quickly and cleanly, bruising having been avoided. I often find that the patient can give all the anaesthetic necessary herself or assisted by the nurse, and the obstetrician can confine his attention without interruption to the birth and give his instructions to a patient who is not "out of control" from pain.—I am, etc.,

E. LAWTON MOSS,
C.M.G., M.C.O.G.

Farnborough, Hants, Jan. 27th.

Pruritus Ani

SIR,—I should like to endorse Dr. Hernaman-Johnson's views (*Journal*, January 20th, p. 123) on the treatment of pruritus ani. In his letter he states that in the majority of cases of this troublesome disorder surgical treatment is quite unnecessary. It is my practice in these cases always to make a rectal examination, and should there be any evidence of piles, fissure, or other abnormalities, these must of course be treated. The importance of making such an examination cannot be overestimated. Examination is also made for the presence of worms, which are sometimes responsible for the condition.

The skin is usually lichenified and excoriated as a result of scratching—and in places may be denuded of epithelium.

With regard to treatment, any raw areas should be painted with a 2 per cent. solution of silver nitrate. Four doses of 1/3 B unfiltered x rays are given at intervals of ten days, and an antipruritic ointment is prescribed. In most cases the patient begins to feel some relief after the second treatment, and it is advisable to warn him not to expect any improvement until then. At the end of the course of treatment most patients are completely relieved and do not need to use any antipruritic applications. The cessation of irritation and the return of undisturbed sleep at night soon lead to a marked improvement in the patient's general condition.—I am, etc.,

NORMAN BURGESS, M.D., M.R.C.P.

Clifton, Bristol, Jan. 23rd.

SIR,—In his very interesting letter in your issue of January 20th, Dr. Hernaman-Johnson falls into the common error of writing on pruritus ani as if it were a disease *sui generis*, and of referring to it as being "curable" by the application of x rays. A certain amount of unnecessary mystery surrounds pruritus ani, which is not the case with other skin irritations. Pruritus ani is a mere symptom of very numerous rectal abnormalities. It is perfectly true that temporary relief may be afforded by various forms of treatment—for example, subcutaneous injections of A.B.A., Ball's operation, or—as Dr. Hernaman-Johnson writes—by x-ray treatment. All of these, however, act merely by rendering the skin of the anal region anaesthetic or more healthy for a longer or shorter period. It can only happen rarely that such relief proves permanent, because all of these treatments overlook the underlying cause—whatever it may be in each individual case.

The causes of pruritus are numerous, and it is impossible in a letter of reasonable length to enumerate them fully and to describe the treatment appropriate to each. To show the fallacy of applying treatment to the skin only it is sufficient to mention that one of the common causes of severe and intractable pruritus is, as Colonel W. P. Macarthur pointed out in the *British Medical Journal* of August 22nd, 1931, the presence in the bowel of the *Enterobius vermicularis*—a parasite resembling the thread-worm of children. A large proportion of cases of pruritus can be shown to be due to this cause. Once this fact

has been admitted, the fallacy of writing as a "cure" of any application to the skin alone of remedies such as x rays, injections of A.B.A., or anything else, becomes obvious. They undoubtedly may give temporary relief, but until the parasites have been destroyed no permanent "cure" of the irritation can be expected.

Among other common causes of pruritus are internal haemorrhoids, chronic proctitis, inflamed anal crypts, sub-mucous tracks, etc. To effect a permanent relief of pruritus each case must be fully investigated by an expert proctologist and the cause found and dealt with. Only in the cases in which a painstaking search for a cause has failed should local anaesthetic remedies or x rays be tried. In my opinion too many of these cases are referred to dermatologists instead of to proctologists. The cause of pruritus is a rectal one in the very great majority of cases, and it is as useless to send a case of pruritus ani to a skin specialist instead of to a proctologist as it is to send a case of neuralgia due to a carious tooth to a neurologist instead of to a dentist. In both cases temporary relief may be given, but no permanent "cure" can be expected until the cause has been found and removed.

Dr. Hernaman-Johnson also writes that cases of pruritus "associated with severe piles will, of course, require operation." I have been trying for the past eighteen years or so (latterly with considerable success) to convince the profession that most cases of internal haemorrhoids—even very severe ones—can be treated successfully without operation by means of injection. In no class of case are the results more satisfactory than in those in which intolerable pruritus is a symptom. The cases in question are by no means always those in which the haemorrhoids are unusually large. It must be remembered, however, that it does not follow that because a patient with pruritus has haemorrhoids there may not be other rectal abnormalities present also. Relief will be permanent only if all the rectal abnormalities which are present are dealt with effectually.—I am, etc.,

London, W.1, Jan. 26th.

ARTHUR S. MORLEY.

Left-sided Stance for Urethral Instrumentation

SIR,—I have been much interested in Mr. Neve's description of litholapaxy simplified (*Journal*, December 30th, 1933, p. 1211) and the subsequent correspondence on left-sided stance for urethral instrumentation in your issues of January 13th and 20th (pp. 78, 124).

I am right-handed, and as a student learnt to stand on the left side of the patient for passing urethral catheters and bougies, but after doing many cases of litholapaxy by standing on the right side of the patient I developed a sense of touch for urethral instrumentation. Hence the right-sided stance is adopted by me in all these cases except in perineal litholapaxy, when the patient is in the lithotomy position and I in the median position. I may here state that I have found the best urethral bougie to be a lithotrite. I have, with the aid of the weight of the lithotrite plus the sense of touch for the passing of urethral instruments, succeeded in passing through most, if not all, strictures, and when more than a false passage was present. Another big advantage of the lithotrite as a bougie is that, after passing through a stricture and before withdrawal, the blades can, if necessary, be separated sufficiently to stretch the tissues in the stricture without tearing the mucous membrane of the urethra.—I am, etc.,

C. C. MURISON, F.R.C.S.Ed.,
Colonel I.M.S.(ret.).

Knocke-Zoute, Belgium, Jan. 20th.

SIR.—If Dr. Browdy (*Journal*, January 20th, p. 124) is referring to the method by which the passage of a curved metal urethral instrument is commenced by holding it parallel to Poupart's ligament of the left side, certainly, by standing on the left side, one avoids awkwardly reaching over the patient and crossing the hands at the beginning of the manoeuvre. But, at the end, there is an awkward "backhand" use of the right hand, unless, as described and illustrated by one authority, the hands are changed during the manoeuvre. It is, however, better to keep one hand entirely for holding the penis and the other for the instrument.

Again, most couches are placed so that the patient's left side is against a wall. But, even if both sides are accessible, it involves unnecessary exercise—for instance, in a strict clinic—to stand on the left when passing a metal instrument and on the right when passing a soft one, as recommended by one textbook.

These disadvantages of the left-sided stance are avoidable if the operator always stands on the right for urethral instrumentation, as is the routine practice of the leading exponents of the art whom I have seen. Curved metal instruments are then best passed by the so-called "tour de maître," in which the concavity of the curve at first faces downwards, and the point of the instrument presses towards the floor of the anterior urethra, thus minimizing the small risk of catching the point in the lacuna magna or other orifice in the urethral roof. There is then no awkward crossing of the hands, no needless changing of them in the middle of the manoeuvre, and no unnecessary jumping about from side to side of the couch.—I am, etc.,

London, W.1, Jan. 23rd.

ALEX. E. ROCHE.

Vision of Brightness and Colour

SIR.—The address of Professor J. S. Haldane to the Royal Medical Society of Edinburgh not only strikingly shows the inability of hitherto current doctrine to explain the facts which he gives, but also the need to examine certain fundamental physiological doctrines. Tradition has handed down to us the idea that retinal end-organs are structures which are quiescent until excited to activity by light. This, however, is not a scientific theory, for there never was a time when anyone put together the facts of retinal stimulation and deduced therefrom that those organs are quiescent until excited, just as are the members of the excised muscle-nerve preparation. None, moreover, could so do, because every retinal phenomenon observed requires a special hypothesis to explain away the fact that retinal behaviour is never what it ought to be if the end-organs were of this type. The current physiology of retinal stimulation is a mass of such special hypotheses which are not required by the facts themselves but by the attempts to bring these facts into line with a preconceived notion that retinal end-organs are quiescent until excited.

Actually, some of the modern work on muscle and nerve provides the renitent evidence against this fundamental theory. We now know that the responses of structures, such as retinal organs have been presumed to be, are "all or nothing." It is possible to account for a grading of response in living muscle by imagining that the organ works fractionally, with each fraction always doing its utmost; but such an hypothesis cannot be applied to the eye because the size of a retinal picture, and with it the number of end-organs involved, is independent of the brightness of the light. If, then, this fundamental hypothesis were correct, our vision could be only of dazzling brightness or inky blackness, and the only picture we could see would be areas of those two states.

Nothing, however, could be more typical of the

behaviour of a rhythmically active structure than a capacity to give responses, as augmentations, which are graded according to the strength of the stimulant. Our capacity to perceive differences of light and shade constitutes, in fact, part of the evidence that retinal end-organs have an inherent rhythmical activity which is augmented by light. The other features of retinal stimulation all fall into line with this. The proposition of stimulating a rhythmical organ to greater activity is, however, as different from that of exciting a quiescent one as is the sparking of gases in a motor different from the proposition of getting more power out of the machine after it has begun to tick over. But physiologists, in their past studies of excitability, did the equivalent of studying the laws which govern the sparking of gases, and imagined that these laws were applicable to throttle adjustments.

The capacity of a rhythmical tissue to have its activity modified by environmental change has been called "responsiveness" and its laws studied. Furnished with a knowledge of these laws, Professor Haldane, instead of presenting his audience with a puzzle in his crossed shadow experiment, could have informed them that it was a predictable phenomenon. The puzzle was provided by the assumption that this was a phenomenon of excitability. In addition, one may further predict that what Professor Haldane seems to have looked for will probably be seen if he keeps his gaze accurately fixed for some five or ten minutes—the time will vary according to the previous history of the seeing eye. A further predictable phenomenon, on the basis that retinal end-organs have rhythm, is that the eye of a miner at the coal face will be more responsive to light than it is at the surface. The actual hundred-thousand-fold increase may not be predictable, but nevertheless is not surprising, a million-fold having been found in hearts. Alternatively, when one possesses an adequate knowledge of the properties of rhythmical tissues, these facts concerning the miner's eye provide part of the evidence that retinal end-organs have an inherent rhythmical activity.

It would probably take up too much of your space to discuss in detail Professor Haldane's experiments on colour vision. I may, however, be permitted to point that, on the basis of retinal rhythm, the apparent existence of four primary colours, arranged as Hering arranged them, is predictable. There is also no difficulty in accounting for the fact that others have found only three. The current difficulties concerning colour-blindness also have an automatic solution. An undamped rhythmical or vibrating system provides all the possibilities that Professor Haldane finds but cannot account for on the basis of the theories hitherto current. His facts constitute, indeed, cogent evidence against them, but, like their authors, Professor Haldane has not been able to get away from that fundamental error of presumption, quiescence. He has therefore been constrained to act as they did—namely, to produce still another hypothesis, which attempts to weld the facts into accord with a preconceived notion.

In contrast with this I have dealt primarily with questions of fact. The existence of responsiveness and its laws, for example, are not only questions of fact, but also they are capable of verification by anyone who cares to look. The existence of an inherent retinal end-organ rhythm is admittedly a theory, but nevertheless it is directly derived from the facts, and stands the test of a capacity for accurate prediction. But its derivation and the making of predictions requires more knowledge of the properties of rhythmical tissues than some physiologists seem to possess. The necessary more is admittedly new knowledge, but it consists of facts.—I am, etc.,

King George's Medical College, Lucknow,

W. BURRIDGE.

"Under the Influence of Drink"

SIR.—Professor C. R. Marshall's letter will be of interest to the general public as well as to the medical profession. One must cordially agree with his statement, "If it were possible to get a proper perspective into the public mind regarding the action of alcohol something might be gained."

There are three points upon which attention should be focused. They are: (1) It is not the amount of alcohol imbibed, but the percentage of alcohol circulating in the blood at any given time, which produces the signs and symptoms of being "under the influence of drink." (2) The amount absorbed does not necessarily bear a proportional relationship to the amount taken into the stomach. (3) The percentage of circulating alcohol which produces signs and symptoms of intoxication is quite small: (a) "slight" intoxication with 0.1 per cent.; (b) "marked" intoxication with 0.25 per cent.; (c) "grave" intoxication with 0.3 per cent.; (d) "coma" with 0.35 per cent.; (e) "death" with 0.4 per cent. From this it is to be recognized that 0.1 per cent. of circulating alcohol will very sensibly affect any action requiring only a second for judgement. The suggestion made by Professor Marshall that a competent body should carry out large-scale experiments is overdue, and should be put in hand forthwith.

May I venture to suggest a form of the "simple, cheap, and foolproof apparatus," less elaborate than Miles's pursuit-meter, which could be kept at the police station for the use of the police surgeon when called upon to test a person suspected of being under the influence of drink. The apparatus consists of three buttons placed vertically, and coloured from above downwards green, amber, and red (the reverse order of traffic signal lights). The subject is asked to press one of these buttons, and, at the same time, by means of an electrical connexion, his judgement as to selection would be recorded. If the reaction was markedly delayed it would be suspicious. If, on a repetition of this test, the time taken was longer than the average for a non-alcoholic subject, it would be confirmation. Such a test, plus an accurate determination of the alcohol-blood content, which can be obtained from 0.2 c.cm. of the patient's blood withdrawn into and sealed within a capillary tube forthwith, should be sufficient, it would seem, to give a statement on oath as to whether or not a person was under the influence of drink so as to be incapable of proper control of a car.—I am, etc.,

Woodbridge, Jan. 27th.

H. K. V. SOLTAU.

Painful Injections

SIR.—I have been much interested in the observations made about painful injections, in reply to my letter published in the *Journal* of January 13th (p. 76). I do not wish to be accused of hair-splitting, but, in answer to Dr. Loewy (January 20th, p. 124), I should like to point out that his method depends on evaporating the ether from his syringe "by means of aspirating air repeatedly." It has the disadvantage that, outside a sterilizing plant, sterile air does not exist, and some day one might be unlucky enough to aspirate some pathogenic spores which were not killed by the ether. I think Dr. Castleden (January 27th, p. 172) is nearer the mark with his antiseptic solution, "provided that he is lucky enough to have sterile cooled water always handy to wash out the solution." If he uses ether his method is open to the same objection as that which I raised to Dr. Loewy's method. Personally, I never use anything but all-glass syringes, which I have not found to warp if boiled from the cold. Also, using rustless steel needles, I have not found these to become blunt from repeated boiling. As

regards Dr. Loewy's remarks—that boiling leaves water in the syringe, and that measurements of injections are thereby faulty—I should like to point out that a good syringe empties practically every drop of fluid. All that it does not expel it does not deliver! It is therefore wise to buy syringes that do empty themselves, in which case the objection disappears. Dr. Durrans's observations (January 27th, p. 172) on avascular areas have interested me greatly, and I am going to attempt to confirm them.

May I, in conclusion, make a practical suggestion? A number of years ago the research workers of Messrs. Burroughs and Wellcome gave me a very useful tip. Most glass syringes have a flange at the top. It is easy to find glass test tubes of various sizes which allow the syringe to drop into the tube as far as the flange. The syringe, with needle in position, can be boiled together with the tube, drained, and a sterile lint wrapping with a rubber band then placed over the top until the syringe is required for use. During work the tube can be laid on the edge of a table, and if it is desired to place the syringe down for a moment a sterile receptacle is waiting. Most practitioners could afford to keep two or three syringes thus prepared to carry round, and the daily preparation of these is easily effected in odd moments.

I still maintain that boiling in distilled water is the best method of sterilizing any all-glass syringe (and I use no other sort), and the possession of several of these overcomes the necessity of rapid and unsatisfactory sterilization for the next patient. I should be pleased to give particulars of the syringes and tubes which have proved satisfactory to anyone who is interested.—I am, etc.,

London, S.E.5, Jan. 28th.

GUY BOUSFIELD, M.D.Lond.

SIR.—May I add another note to the "painful injections" series?

Select a spot of skin free from a hair follicle, for if the needle is thrust through one of these it will be likely to "tickle up" the associated sensory nerve ending. As to injections with spirit in or on the needle, I personally have received several of them, and should like to record that the result is a sensation not unlike being stung by a wasp!—I am, etc.,

Findon, Sussex, Jan. 28th.

W. R. E. HARRISON.

SIR.—The site of an injection should certainly be observed closely in a good light, as Dr. Durrans suggests (*Journal*, January 27th, p. 172). It will then be easy to avoid the hair follicles when inserting the needle. As we know from attempts in removing adhesive plaster, the hair follicles are most sensitive to pain.—I am, etc.,

London, W.1, Jan. 28th.

F. E. LOEWY.

Continuous Intravenous Saline

SIR.—I am glad to learn that Sir William Coates, who antedated me by a year in his post as obstetric assistant, anticipated me by several years in using intravenous injection of fluid for the treatment of post-partum haemorrhage. But I would point out that my paper (eight cases) was on the intravenous injection of normal saline fluid, in large quantity (25 to 40 ounces), repeated if necessary. This repetition the continuous method of Bailey and Carnow obviates. Of Sir William Coates's two cases, in one not saline but "about 22 ounces of simply warm water" was the fluid injected; in the other an unstated quantity of Jennings's solution, which contained five salts and alcohol (Jennings himself injected 16 ounces). The reasons for using normal saline and for increasing the quantity injected will be found in my paper, which also

refers to a previous case of intra-arterial injection for post-partum haemorrhage.

As a historian I cannot but be pleased if it can be shown that I have been anticipated, either in the employment of larger quantities (up to 40 ounces) of normal saline or in the provision of sealed glass tubes containing two drachms of sodium chloride in sterilized solution from which to make it (see my letter in the *Journal*, January 13th, p. 75).—I am, etc.,

London, W., Jan. 27th.

HERBERT R. SPENCER.

A Falling Birth Rate

SIR,—I note that the birth rate in England and Wales for 1933 has fallen to the lowest level on record—14.4 per thousand of the population. It is useful to remember that (assuming, as I am doing in this letter, emigration and immigration to balance one another and the national [= average] expectation of life to remain constant) the birth rate needful to ensure a stationary population in a nation is one thousand divided by the national expectation of life—that is, supposing the expectation of England and Wales to be 56 years, the birth rate necessary to ensure and maintain a stationary population in that region would be $1,000 \div 56 = 17.7$. So long as the birth rate is above that necessary to produce a stationary population, the population will continue to increase year by year and the younger members will outnumber the older. If, in a country with such a birth rate, the birth rate falls to the level needful to produce a stationary population but no further, the population, owing to the excess of young members, will not at once begin to decline, but the yearly increment will begin to decline year by year, until finally the population remains at a dead level, neither increasing nor diminishing from year to year. Should, however, the birth rate fall, as it has done in England and Wales, below the figure necessary to produce a stationary population—that is, from $17\frac{1}{2}$ to $14\frac{1}{2}$ —there necessarily ensues, not only (a) a rapid fall in the yearly increment until the level is reached at which births and deaths equal one another, but (b) a rapid yearly decline in the population after this stage is reached, which, should the process continue long enough, will ultimately lead to extinction.

A diminution of the population of this country by, say, two millions, might have its advantages, but what of the vacant spaces in the Empire? I understand the Japanese are increasing at the rate of a million annually.

How do these considerations concern us as a profession? It is highly probable that the birth rate will continue to fall below the record figure 14.4, because the lowest social grades are still largely ignorant of contraceptive measures. Does it not seem that, from the standpoint of eugenics and imperial welfare, we should do our utmost to check the falling birth rate among the most desirable while encouraging it among the least desirable?—I am, etc.,

London, W., Jan. 28th.

HARRY CAMPBELL.

Hereditary Blindness

SIR,—If Mr. Myles Bickerton has the prevention of blindness at heart it is hard to see how his contribution headed "The Menace of Hereditary Blindness" is going to help the cause. Surely we have got past the stage when highly coloured and even inaccurate statements can be accepted. For example, his notes on the figures in Table I would lead one to believe that there is a steady annual increase of blindness, whereas it is generally recognized that the rise in numbers is almost entirely one of registration, because registration now brings benefits to the blind which were not available in 1919.

My own small experience as certifier for the Plymouth City Corporation proves this, as there is a steady drop in the number that I examine per annum, due to the fact that I have almost wiped off a large list of persons who applied as they became aware of the benefits they could get. Why does he stop at the figure of 250,000, which he suggests as a possible total? Any other figure might be just as accurate, especially as he includes categories 3, 4, and 5 and ignores all the certificated cases undergoing training or receiving necessitous grants in addition to their pensions. On going over his paper there are so many questionable points that it would need a whole issue of the *Journal* to hold a paper refuting them.

I would, however, like to know how 1 in 15 of senile cataracts can be prevented (Table II), or how—short of forbidding marriage to any person with a myopic history—he would prevent all the cases of blindness due to myopia. I have only got as far as the second out of twelve columns of Mr. Bickerton's paper, but I will skip on to the last column, which contains his possible remedies; of these, the first and last seem to me to be the only sensible suggestions, and those not even mainly for their influence on hereditary blindness.—I am, etc.,

Plymouth, Jan. 24th.

Cecil B. F. Tivy.

Comments in the Coroner's Court

SIR,—I entirely agree with the remarks of a consulting surgeon in the *Journal* of January 13th (p. 79) regarding comments by coroners, and I am prompted to record an experience that befell me some years ago when I held an appointment as honorary surgeon to a small hospital.

A patient was admitted into this hospital suffering from injuries as the result of a street accident. The house-surgeon telephoned to me and informed me of the admission. I was just going out to dinner, but offered to come to the hospital if necessary. He said that the man had concussion, and possibly a fractured base of the skull. He outlined the treatment he had adopted, and said he was not anxious about the patient. There was nothing to add to this treatment. During the evening I telephoned from my friend's house, and found that the house-surgeon had been out for the evening, but was expected back in a few minutes. I said that I should be where I was for another half-hour, and I gave the telephone number, asking that a message should be left for the house-surgeon on his return to telephone there if he wanted me to visit the hospital. I heard nothing more until the following day, when I was told that the patient was dead. The house-surgeon had tried the number I had given, but said he could not get a reply. He did not speak to the supervisor, nor did it occur to him to telephone to my house. My visit would have been merely a matter of form, as no treatment could have saved the patient, who died of a fracture of the base of the skull and intracranial damage to the base of his brain.

I was not interviewed by the coroner nor by any representative of his. I was not informed when the inquest was to be held. I was not called, or even advised to be present. Yet I was severely criticized in public, by name, by the coroner, who had formerly been in medical practice, and now aired such medical knowledge as he possessed. He talked rubbish about the possibilities of decompression operations in cases of fractured base, and so on. My complaint, however, is not with his flights of surgical fancy, but with his conduct of a legal inquiry in which he violated every principle of fair play. The house-surgeon avoided any censure by giving a sufficiently different tale to the one outlined above. I felt so strongly about the whole matter at the time that I wished to take it up; but my colleagues, while sympathizing with my sense of injury, persuaded me not to do so, lest the coroner might vent his spleen upon the hospital by a still further display of his power to inflict damage by unrestricted comments.—I am, etc.,

January 18th.

ANOTHER CONSULTING SURGEON.

Death Certification

SIR.—In view of the fact that there has been discussion from time to time as to the advisability of making it compulsory for a medical man to view the body before issuing a death certificate, the following experience of mine may be interesting.

One evening not long ago a man called for a death certificate for his mother, aged 91, whom I was attending, and who had last been visited three days earlier. There was no relative living in the house of the patient, and he was therefore first in succession of those entitled to have the certificate issued to them. Nevertheless, I refused on the grounds that he had not actually seen his mother since her alleged decease (a fact not volunteered by the man), and it is fortunate that I did so, for the following morning an occupant of the patient's house called, not for a certificate, but for a bottle of medicine for the lady in question!

Considering the age of the patient, and the fact that she was confined to bed with bronchitis, the evidence of the son might have been considered sufficient to justify the issue of a death certificate.—I am, etc.,

Kirkby-in-Ashfield, Jan. 25th.

J. D. DURANCE.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a congregation held on January 26th the following medical degrees were conferred:

M.B., B.CHIR.—G. W. Hall-Smith, N. M. James, J. Parkes.
M.B.—E. W. Price, A. H. Charles.
B.CHIR.—*T. M. Bell, J. S. Mitchell, W. E. Wells, S. M. Thompson, F. Clifton, R. H. Young.

* By proxy.

UNIVERSITY OF LONDON

At the meeting of the Senate on January 24th, with the Vice-Chancellor, Professor L. N. G. Filon, F.R.S., in the chair, G. P. Wright, D.M.Oxf., was appointed to the Sir William Dunn Chair of Pathology tenable at Guy's Hospital Medical School as from March 1st. Since 1931 Dr. Wright has been assistant lecturer in morbid anatomy and curator of the museum at University College Hospital Medical School, and also pathologist to the hospital. The title of Reader in Pathology in the University was conferred on Miss Joan M. Ross, M.D. (London (Royal Free Hospital) School of Medicine for Women).

British Post-Graduate Medical School

The Senate was informed that it was expected that the new British Post-Graduate Medical School would be opened to students in October next. The school buildings are at Hammersmith, adjoining the London County Council Hospital, with which it will be associated. In accordance with the terms of the Royal Charter the Governing Body of the school (of which the Right Hon. Sir Austen Chamberlain is the chairman) has applied for its recognition as a School of the University, and the Senate has, as a temporary measure, given it such recognition for a period of two years.

Lectures on Mental Deficiency

A course of lectures for medical practitioners on mental deficiency, including conditions allied to it, and problems connected with retarded and difficult children, supplemented by a course of clinical instruction, has been arranged by the University Extension and Tutorial Classes Council in co-operation with the Central Association for Mental Welfare during April. It will be divided into two parts: I, Mental Deficiency (April 16th to 21st), II, Retarded and Difficult Children (April 23rd to 28th). The whole course may be taken or Part I may be taken separately; Part II may be taken separately by medical practitioners who have attended Part I in previous years, or who have specialized experience approved for the purpose of this course. The course will be based on the requirements for the University of London diploma in psychological medicine, and is intended for qualified practitioners, more especially for those who are engaged as school medical officers, certifying officers to local authorities under the Mental Deficiency Acts, or as medical officers of institu-

tions, or who are otherwise definitely concerned with the care of subnormal or abnormal persons. The University will grant certificates of attendance to those who have attended regularly either part or both parts of the course, taking both theoretical and practical work. The course will be held only if enough applications are received to make it financially possible. All communications should be addressed to Miss Evelyn Fox, c/o University Extension Department, University of London, Imperial Institute Road, South Kensington, S.W.7.

Two advanced lectures in chemistry will be given at University College, London (Gower Street, W.C.) by Professor L. Ruzicka of Zürich on February 27th and March 1st, at 5.30 p.m. Lecture I will be on the many-membered carbon rings, Lecture II on the constitution of the sesquiterpenes and diterpenes. The lectures will be delivered in English; admission free, without ticket.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

A quarterly meeting of the Royal College of Physicians was held on January 25th, when the President, Lord Dawson of Penn, reported the valuable gift to the library of engraved portraits of medical men by Dr. Arnold Chaplin, and announced the award of the Swiney Prize for 1934 to Sir William Searle Holdsworth, K.C., Vinerian Professor of English Law in the University of Oxford.

Dr. G. F. Buchart was appointed, to represent the College at the congress of the Royal Sanitary Institute to be held in Bristol in July, and Dr. R. R. Trail as representative at the annual conference of the National Association for the Prevention of Tuberculosis in June.

A donation of 100 guineas was voted to the fund for the purchase of the Codex Sinaiticus.

Lectures

The following lectures will be delivered at the College: on February 27th and March 1st, at 5 p.m., the Milroy Lectures by Sir George Buchanan, C.B., on "International Co-operation in Public Health: its Achievements and Prospects"; on March 6th, 8th, and 13th, at 5 p.m., the Goulstonian Lectures by Professor E. C. Dodds, M.V.O., on "Hormones and their Chemical Relations"; on March 15th and 20th, at 5 p.m., the Lumenian Lectures by Dr. H. L. Tidy on "Glandular Fever and Infective Mononucleosis."

Membership

The following candidates, having satisfied the Censors' Board, were admitted Members of the College:

Jamshed Nasarvanji Bhada, M.B.Lond., Edward James Doome, M.B.Birm., Wilfrid Ingram Card, M.D.Lond., George Miller Clough, M.B.Sydney, Charles Richard Croft, M.D.Oxf., Amalanda Das, M.B.Calcutta, Charles Allan Gavan Duffy, M.D.Melb., George Ronald Ellis, M.D.Camb., Frank Scott Powtewatner, M.D.Liverp., Paul Ghaliongui, M.D.Cairo, Thomas Moore Greenaway, M.B.Sydney, Charles Herbert Stuart Harris, M.B.N.Z., John Henderson Hunt, M.B.Camb., William Hughes M.B.U.K., Robert Knox, M.B.Lond., M.B.Oxf., Renatus Kempthorne, L.R.C.P., John Parkes, L.R.C.P., Malcolm Henry MacKeith, M.D.Oxf., Douglas Gordon Radcliffe, M.B.Sydney, Max Leonard Rosenheim, M.B.Camb., Christopher Bagot Sangster, M.B.Adelaide, Arthur Maurice Stewart-Wallace, M.B.Lond., Matthew Westwood, L.R.C.P.

Licences and Diplomas

Licences to practise physic were conferred upon the following 150 candidates (including twenty women) who have passed the final examination in medicine, surgery, and midwifery of the Conjoint Board, and have complied with the necessary by-laws:

S. B. Adams, S. H. Alavi, S. R. Ali, N. Asbell, H. H. Atkinson, J. S. Bailey, Louie M. M. Badnell, T. M. Bell, R. H. R. Beley, R. L. Benison, T. A. Best, I. S. Bhalla, Mary A. M. Bibby, E. W. Bintliffe, E. A. Bisson, C. J. F. Blumenthal, W. A. Bowdler, J. C. Buckley, P. G. Burgess, W. A. Cannell, F. F. Cartwright, T. Chandrasekharen, A. S. Cheong, M. M. D. Chughtai, R. H. Clark, C. W. J. Claydon, L. A. Collins, H. V. Corbett, Beryl D. Corner, Margaret C. Cox, C. S. V. Daniels, E. A. Danino, D. R. Davies, Enid S. Davies, L. W. Davies, W. A. Dawes, W. J. B. De Gruchy, C. J. D'Monte, D. P. Dewe, C. B. Dharmasena, T. H. Dias, W. L. Dove, Katharine E. M. Dunne, E. Dunphy, R. M. Ealand, G. D. ff. Edward, E. H. Evison, R. M. Farrington, Constance E. Field, W. T. J. Fowler, H. E. D. Gale, J. F. Gallaway, J. G. Gavey, C. A. George, S. S. B. Gilder, T. D. M. Gilles, C. G. A. Gilruth, C. Ll. Greening, I. H. Griffiths, R. M. Haines, S. Hales, H. C. A. Harris, P. L. S. Hutton, F. S. M. Higgs, R. Hill, G. T. Hindley, A. V. House, T. E. Howell, N. M. Jacoby, Elizabeth M. James, G. H. James, Joyce B. Jewson, R. W. John, D. J. Johnson, E. G. Jones, F. A. Jones, H. W. E. Jones, I. R. Jones, J. G. Jones, L. E. Jones, Ng K. Kai, Alice M. Kenn, W. L. Kerr, G. A. Kiloh, I. T. H. Knight, Mildred J. B. H. Gwladys R. Howland, Phyllis S. Lockie, L. Lunt, J. W. John, McArthur, J. M. A. McArthur, J. W. Mansel, E. Macfarlane, W. N. MacK. Mason, L. H. Mattison, E. A. Mayston, Birlina E. Morton, R. B. Morton, G. A. Myers, R. V. N. Niyidra, Denis E.

Oxford, R. S. Pachnanda, B. J. Philbin, J. Phillips, J. W. Piper, A. H. Pirie, J. D. Powell, Margaret H. Prentice, W. L. Price, H. S. Rassian, T. R. F. Raw, S. A. Razvi, D. C. Reavell, C. Reburn, C. W. D. Reeves, J. W. Rhys, J. D. Richardson, S. A. W. Rushbrooke, R. T. Rushton, M. F. P. Ryan, N. S. Sabha, H. S. K. Sainsbury, C. A. J. Sampson, P. H. Sandifer, B. I. Sanger, D. J. Sheehan, E. Shipman, A. Smith, M. C. L. Smith, O. C. Smith, L. Sobiya, A. B. Stenhouse, K. F. Stephens, D. L. McK. Stewart, A. A. J. Stolor, S. Sunkavally, R. J. C. Sutton, K. R. Tattersall, S. J. L. Taylor, R. E. Thomas, M. Tin, Beryl Twyman, G. R. Usmar, R. S. Vine, Winifred J. Wadge, S. H. Wass, D. Whittaker, M. E. Wigfield, Brenda Winterton, Sylvia V. F. Wolfe.

Diplomas in Public Health were granted, jointly with the Royal College of Surgeons, to the following:

S. S. Alam, S. S. Banker, D. G. Evans, W. H. Green, Rachel Halperin, A. N. Haworth, Victoria H. King, W. E. B. Lloyd, E. M. Lourie, G. P. McCarthy, J. G. Morgan, V. Nadarajah, R. C. F. Smith, T. H. Stephens, B. B. Wable.

Diplomas in Psychological Medicine, Laryngology and Otology, Tropical Medicine and Hygiene, and Medical Radiology were conferred jointly with the Royal College of Surgeons. The names of the successful candidates were printed in the report of the meeting of the Council of the Royal College of Surgeons published in our issue of January 20th (p. 130).

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—E. H. E. Cross, D. P. King, I. B. McCrae, H. Paroulakis, P. H. Willcox.

MEDICINE.—E. C. Dax, E. G. Houghton, I. B. McCrae, S. Smith. **FORENSIC MEDICINE**.—T. Gardner, G. R. Greene, E. G. Houghton, H. R. Kasday, I. B. McCrae, R. M. Outin, T. Sherman, D. Walton. **MIDWIFERY**.—F. G. S. Alderson, S. A. de Souza, H. O. Dole, J. C. Harvey, I. B. McCrae, J. R. Owen, H. Sobhi, H. M. R. Waddell.

The diploma of the Society has been granted to Messrs. T. Gardner, E. G. Houghton, I. B. McCrae, and S. A. de Souza.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the requisite examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P. and S.Glas.:

Kate S. E. Muschamp, A. S. Russek, N. W. Nisbet, A. A. Crook, A. J. V. Klein, L. Krom, T. W. F. Gemmell, R. Ratnam, J. M. Dvca, A. S. Salama, J. W. D. Ferdinand, H. E. Schoen, A. B. Kabnick, Dorien Levine, J. A. Ratnayake, A. D. Macdonald, A. W. F. Catto, A. M. Chatelier, G. H. Taylor, S. Bedford, Mary R. McQuillan, H. Bogart, J. Weinberger, V. S. Invedi, I. C. Ostreicher, A. B. Johnson, M. J. Lowther.

Obituary

WILLIAM JAMES DOWLING, B.A., M.D. Trin. Dubl., assistant tuberculosis officer at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, died at the hospital, on January 24th, of pneumonia, at the age of 41. He was the second son of Thomas Dowling, district inspector of the Royal Irish Constabulary, and was educated at Rockwell College and Trinity College, Dublin. He was an exhibitioner in modern languages and Nutting scholar. Immediately after qualifying in 1915 he joined the Special Reserve of the R.A.M.C., and was on active service in France throughout the rest of the war. He served with the 3rd Division, and was stretcher bearer captain to the 42nd Field Ambulance and 3rd Battalion Machine Gun Corps. He was mentioned in dispatches by Lord French, and subsequently awarded the Military Cross with bar. After the armistice he served in Germany with the Army of Occupation, and represented the 3rd Division (acting as adjutant for a combatant corps, an unusual distinction for a non-combatant officer) in the march under the Arc de Triomphe in Paris. After the war he settled in practice in North London, and subsequently became medical officer to out-patients, and then assistant tuberculosis officer, at Victoria Park.

The death took place on January 12th at Sawbridge-worth, Herts, of Dr. JOHN KENNEDY WILL. He was born at Cullen, Banffshire, in 1857, and received his medical education at Aberdeen University, graduating M.B., C.M. in 1882, and proceeding M.D. in 1887. In 1884 he was appointed assistant medical officer to Bethnal House

Asylum, London, under the late Dr. John Miller, whom he succeeded as medical superintendent in 1886. Later he was appointed lecturer in mental diseases to the London Hospital, a position which he held until 1920, when the site of Bethnal House was sold to the local authorities in connexion with the housing scheme. After a visit to Ceylon, where he had family connexions, Dr. Will retired and lived at Sawbridge-worth. He married in 1889 Miss Ella Ring, and had a family of three sons and four daughters, all of whom, with the exception of one son who was killed in aerial combat in 1917, survive him. Dr. Lindley Scott writes: John Will's clear head and sound judgement made his advice much valued; firm enough he could be, but his gentleness and kind thought of others were very convincing. His hospitality at Bethnal House remained long in the recollection of many old students of the London. As a friend he was delightful, ever generous, full of anecdote, with a sporting instinct and a keen sense of humour that gave him unusual charm. To know him well was to love him well. He leaves a gap in one's friendship very difficult to fill.

We regret to announce the death, on January 8th, of Dr. MARJORIE MAISIE SPEIRS. She was the daughter of Mr. John Duggan of Builth Wells, and graduated B.Sc. of the University of Wales in 1924; after studying at the Welsh National School of Medicine she obtained the M.B., B.Ch. degrees in 1926. During the next five years Dr. Duggan held the post of demonstrator in the department of pathology of the Welsh National School of Medicine, and in 1931-2 joined the staff of the department of biochemistry in the University of Alberta Medical School, Edmonton. She returned from Canada in 1932 to become assistant bacteriologist to the Welsh National Memorial Association at Cardiff. She was a member of the Pathological Society of Great Britain and Ireland, and had joined the British Medical Association immediately after graduating in medicine. In June last Dr. Duggan married Mr. A. Speirs of Cardiff. Her untimely death is deplored by many colleagues and friends.

The following well-known foreign medical men have recently died: Geh. Med.-Rat CHRISTIAN BÄUMLER, emeritus professor of medicine at Freiburg, i.B., aged 97; Professor GEORG SCHMIDT, editor of the *Deutsche Zeitschrift für Chirurgie*; Dr. FRANZ WEBER, extraordinary professor of gynaecology at Munich, aged 56; Professor ARTUR MEYER, head of the surgical department of the Westend Hospital, Berlin, and author of a work on lung surgery, aged 48; Dr. BURCI, professor of clinical surgery at the University of Florence; Dr. RAYMOND CESTAN, professor of clinical medicine at Toulouse, aged 61; and Dr. GASTON MELLO, head of the Mexican department of health.

The dean of St. Mary's Hospital Medical School, Dr. C. M. Wilson, and Mrs. Wilson were entertained to dinner at Claridge's Restaurant on January 23rd, by members of the honorary medical and surgical staff of the hospital, and lecturers in the medical school, in celebration of the building of the new school and its opening by the King and Queen on December 12th, 1933. Sir William Willcox presided, and on behalf of his colleagues presented Dr. Wilson with a beautiful silver cup, a copy of the famous "Fire of London Cup," and an illuminated address with the names of the subscribers. The following were also present:

Sir John Broadbent, Sir Ernest Graham-Little, Dr. Sidney Phillips, Mr. Leslie Paton, Dr. Harris, Mr. D. C. L. Fitzwilliam, Dr. T. E. Stevens, Dr. G. Harrison Orton, Dr. R. Miller, Professor Langmead, Professor Pannett, Mr. V. Z. Cope, Mr. F. Juler, Professor Frazer, Dr. J. Matthews, Dr. A. Fleming, Dr. J. Freeman, Dr. Gordon Bryan, Mr. R. M. Handfield-Jones, Mr. T. C. Hunt, Mr. A. W. Bourne, Mr. H. Smale, Dr. G. W. B. James, Dr. J. A. H. Brincker, Dr. W. D. Newcomb, Mr. Williamson-Noble, Dr. Courtney Gage, Mr. Leslie Williams, Dr. G. W. Ellis, Dr. W. Fish, Dr. G. R. Phillips, Dr. A. W. Matthew, Dr. L. Morris, Dr. Justina Wilson, Mr. V. H. Ellis, Mr. A. D. Wright, and Mr. B. E. Matthews.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Parliament reassembled on January 29th. In the House of Lords that day Lord Amulree introduced the Supply of Water in Bulk Bill. The House adjourned till February 7th. Lord Dawson of Penn put down for February 13th the second reading of the Contraceptives Bill. This proposes to make unlawful the sale or offer in any street or public place, or by means of an automatic machine which can be reached from a public place, any contraceptive. It also makes illegal, with certain exceptions, entry into any premises to offer such goods for sale and the display in or outside any shop so as to be visible to persons outside the shop, any contraceptives, any container, or picture or written description of such goods. The dispatch to unmarried persons under the age of 18 of circulars containing information relating to any contraceptive, for the purpose of trade or business, is also to be an offence. The text of the Bill is given in this week's *Supplement* at page 54.

The House of Commons was in committee for most of the week on the Unemployment Bill. Dr. Howitt gave notice that on February 1st he would ask the Minister of Health whether he would consider the present unrestricted sale of the barbituric drugs. Mr. Leckie put down a question for January 31st asking the President of the Board of Trade to repeal or reduce the duty on insulin. The Parliamentary Medical Committee has arranged to hear, at a meeting on February 7th, statements on the supplies and cost of insulin from manufacturing chemists. Professor Mellanby has also been asked to address this meeting. The Consultative Committee on Health and Housing arranged to discuss on January 31st the recent report on sterilization, Sir Francis Fremantle presiding. Sir Hilton Young was expected to attend this meeting.

Housing

On January 29th Mr. SHAKESPEARE informed Mr. Stourton that the slum clearance programmes received contemplated the demolition and replacement under the five-year plan of 224,515 houses containing over one million persons. There were in all 1,716 housing authorities, of which 1,604 had made returns, and 1,257 returns had been accepted. Mr. Shakespeare also told Mr. Hicks that during 1933 orders were confirmed under the 1930 Act providing for the demolition of 10,313 houses, while approvals were given for building 15,667 new houses under that Act.

On the same date Sir HILTON YOUNG informed Dr. O'Donovan that his housing officers were in consultation with the local authorities responsible for housing at Stepney. The borough council was clearing two areas containing 315 houses, and providing accommodation for 1,963 persons. The council was purchasing under the Act of 1930 an area containing seventy-two houses, and was about to commence rehousing work on this area. The L.C.C. was clearing two areas in the borough containing 682 houses, with assistance under the Act of 1923, and providing new accommodation for 4,306 persons. The purchase of further sites in Stepney for rehousing was under consideration.

Legislation to Reduce Road Accidents

On January 29th Mr. OLIVER STANLEY, replying to Mr. Anstruther-Gray and Mr. White, said that the Government was concerned at the returns of road accidents during 1933, and had decided to introduce legislation to deal with the subject at an early date. He desired to bring home to the public during the next few months the nature of the loss caused by road accidents and the extent to which they could be prevented by care and consideration for others on the part

of all users of the highway. He would in due course appeal to the Press, the B.B.C., and the film industry for co-operation and assistance. He had made a contribution from the Road Fund towards the cost of a special campaign for the promotion of road safety, which the National Safety-First Association had projected for the spring and summer of the present year.

Notes in Brief

The Home Secretary regrets that he cannot promise legislation this session dealing with workmen's compensation.

Medical News

The winter conversazione for members of the University of London Medical Graduates' Society and medical graduates of the University of London not yet members of the society will be held in the Hastings Hall, B.M.A. House, Tavistock Square, W.C., on Thursday, February 15th, from 3.30 to 6 p.m. After tea a film, "Round the Empire on the Track of Malaria," will be described by Major Lockwood Stevens, and Mr. Ferris-Scott will conduct parties to see the setting-up of the *British Medical Journal* and other points of interest. Applications for tickets should be made not later than February 7th, to the secretary of the society, 9, Hardinge Road, N.W.10.

A discussion on the administration of the Housing Acts in relation to unfit individual houses will be opened by Dr. James Fenton, medical officer of health for Kensington, at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Thursday, February 15th, at 5.15 p.m., with Lord Balfour of Burleigh in the chair.

The chairman of the London County Council, Mr. Ernest M. Dence, LL.D., will open the newly altered and enlarged portions of the Council's Hackney Hospital in High Street, Homerton, on Wednesday, February 21st, at 2.45 p.m.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the fourth lecture-demonstration, by Dr. Clark-Kennedy, will take place on February 6th, at 2.30 p.m., at 11, Chandos Street, W., and will deal with vomiting and haematemesis; the fifth lecture, on February 13th, will be on constipation. The second of the series of lecture-demonstrations, on the second Saturday of every month throughout 1934, will be held at the National Temperance Hospital, Hampstead Road, on February 10th, at 3 p.m. when Mr. Acton Davis will lecture on orthopaedic cases. A week-end course in physical medicine has been arranged at the London Clinic and Institute of Physical Medicine on February 10th and 11th. The course will include treatment of gynaecological, neurological, and chest cases; manipulation; action of ultra-violet and infra-red rays. A whole-day course in diseases of the chest will be given at the Brompton Hospital from February 12th to 17th. Four ante-natal demonstrations will be given by Dame Louise McIlroy at the Royal Free Hospital, at 5 p.m. on Fridays, from February 16th to March 9th. Six demonstrations on the interpretation of pyelograms will be given by Dr. Cordiner, at 8 p.m. on Tuesdays and Fridays, from February 13th to March 2nd. Forthcoming courses include medicine, surgery, and the specialties, at the Prince of Wales's Hospital, February 19th to March 3rd; M.R.C.P. evening courses, Tuesdays and Thursdays, at the National Temperance Hospital, February 20th to March 6th; medicine, surgery, and gynaecology, at the Royal Waterloo Hospital, March 5th to 24th; proctology, at the Gordon Hospital, March 5th to 10th. Courses of instruction, lectures, clinics, etc., are open only to members and associates of the Fellowship.

A series of post-graduate lecture-demonstrations has been arranged at the Salford Royal Hospital, commencing on Friday, February 16th. Tea will be provided at 3.45 p.m. and the demonstrations will begin at 4.15. There is no fee for the course.

Miss Nina Symington, daughter of the late Professor Symington of Belfast, has bequeathed the residue of her estate, amounting to some £9,000, and to be known as the Johnson Symington Memorial Bequest, to the Anatomical Society of Great Britain and Ireland for Anatomical Research.

A post-graduate course will be held in Berlin during March and April under the auspices of the medical faculty of Berlin University and the German organization for post-graduate courses. From March 5th to 17th there will be lectures on internal medicine, and from March 19th to 25th on x rays. A surgical course, to include one day devoted to operative gynaecology, has been arranged for April 9th to 14th, and a course on hereditary biology for April 23rd to 28th. Further information concerning these courses may be obtained from the office of the International Post-Graduate Courses, Robert-Koch-Platz 7, Berlin, N.W.7.

The fourth congress of the International League against Rheumatism will be held in Moscow from May 3rd to 6th, 1934. Further information can be obtained from the office of the League, Keizersgracht 489, Amsterdam.

The next annual congress of the Royal Institute of Public Health will be held at Norwich from May 15th to 20th, 1934, on the invitation of the Lord Mayor and Corporation. The scientific work of the congress will be conducted in the following sections: State medicine and industrial hygiene; women and children and the public health; tuberculosis; veterinary medicine and agriculture; pathology and bacteriology.

The twentieth annual conference of the National Association for the Prevention of Tuberculosis will be held in the new Conference Hall of the London County Council on June 14th, 15th, and 16th. The conference will take the form of an all-round discussion concerning "The National Tuberculosis Scheme: The Experience of Twenty-one Years," and the subject will be introduced by Lord Astor, followed by leading representatives of central and local health authorities.

The Privy Council, in pursuance of the Pharmacy and Poisons Act, 1933, has nominated as additional members of the council of the Pharmaceutical Society Sir Humphry Rolleston, Sir Malcolm Delevingne, and Dr. James Andrew Gunn, professor of pharmacology, Oxford.

The Council of the Harveian Society has chosen the "Nutritional Factors in Disease" as the subject for the Buckton Browne Prize. The prize consists of a medal together with the sum of £100. The competition is open to any member of the medical profession registered in the British Isles or the Dominions, and is limited to candidates under 45 years of age. Essays must be sent in by November 1st, 1935. Further particulars may be obtained from Mr. Cecil P. G. Wakeley, D.Sc., F.R.C.S., 24, Queen Anne Street, W.1.

The following medical men were elected to the council of the Royal Microscopical Society at the annual meeting on January 17th: As vice-presidents: Professor D. M. Blair, Dr. G. M. Findlay. As an honorary secretary: Dr. R. T. Hewlett. As members of the council: Dr. A. S. Burgess, Dr. J. E. McCartney. Professor Frank Balfour Browne is the new president.

The Advisory Committee for Leverhulme Research Fellowships invites applications for the 1934 awards. These fellowships are intended in the first instance for the assistance of experienced workers rather than to add to the provision already existing for workers in the early stages of their careers. The trustees have in mind particularly men and women who are prevented either by pressure of routine duties or by any other cause from undertaking or completing an investigation of value. They have decided, as in 1933, that no definite limit shall be placed to the amount of individual grants, but that they will be adjusted according to the circumstances of each case. Fellows will usually be required to work at or in connexion with a recognized centre of research, either at home or abroad. No subject of inquiry is excluded from the scope of the scheme, but under present conditions the trustees intend that preferential consideration should be

given to subjects in which the existing provision is inadequate. The closing date for receipt of applications is March 1st, 1934. All applicants must be British born, and they must also be normally resident in the United Kingdom. Communications should be addressed to Dr. L. Haden Guest, secretary, Leverhulme Research Fellowships, Union House, St. Martin's le Grand, E.C.1, from whom forms of application may be obtained.

In the January issue of *Science Progress* Professor Major Greenwood contributes an article on epidemiology as a branch of experimental biology, which will be of great interest to all those concerned in this aspect of medicine.

The January issue of the American monthly journal *The Dental Cosmos* celebrates in appropriate fashion its seventy-fifth anniversary. In one among a number of historical articles the editor, Dr. L. Pierce Anthony, traces the influence of this periodical on dental literature. It was in 1859 that the *Dental News Letter*, founded in 1847, became merged in *The Dental Cosmos*.

Among the latest contributions to King Edward's Hospital Fund is £200, being the annual subscription of the President, H.R.H. The Prince of Wales.

The Second Spanish Congress of the Pathology of the Digestive System was recently held at Barcelona under the presidency of Dr. Gallant Mones, when the chief subject for discussion was the aetiology, diagnosis, and treatment of colitis.

Dr. F. W. M. Lamb, lecturer in pathology at the University of Birmingham, has been appointed professor of toxicology and medical jurisprudence to the medical faculty of the University of Cairo.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, *British Medical Journal*, B.M.A. House, Tavistock Square, W.C.1.

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The TELEGRAPHIC ADDRESSES are:

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FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Mediscera Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*); telephone: 6250 (Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Intrauterine Death of Foetus

"W. G." (Sussex) writes: I have had one or two cases of recurrent stillbirths due to foetal death in the last month of pregnancy, not associated with toxæmia, syphilis, or other disease of the mother, and apparently due to infarction of a substantial portion of the placenta. I should be grateful for any suggestions as to pathology and prophylaxis.

Silvester of Silvester's Method

Dr. M. BINGEN (Mathias Wynandstraas 6, Maastricht, Holland) would be glad to know where he can obtain a portrait of Dr. Henry Robert Silvester, who published in 1858 his well-known method of resuscitating stillborn children and of restoring persons apparently drowned or dead.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Parliament reassembled on January 29th. In the House of Lords that day Lord Amulree introduced the Supply of Water in Bulk Bill. The House adjourned till February 7th. Lord Dawson of Penn put down for February 13th the second reading of the Contraceptives Bill. This proposes to make unlawful the sale or offer in any street or public place, or by means of an automatic machine which can be reached from a public place, any contraceptive. It also makes illegal, with certain exceptions, entry into any premises to offer such goods for sale and the display in or outside any shop so as to be visible to persons outside the shop, any contraceptives, any container, or picture or written description of such goods. The dispatch to unmarried persons under the age of 18 of circulars containing information relating to any contraceptive, for the purpose of trade or business, is also to be an offence. The text of the Bill is given in this week's *Supplement* at page 54.

The House of Commons was in committee for most of the week on the Unemployment Bill. Dr. Howitt gave notice that on February 1st he would ask the Minister of Health whether he would consider the present unrestricted sale of the barbituric drugs. Mr. Leckie put down a question for January 31st asking the President of the Board of Trade to repeal or reduce the duty on insulin. The Parliamentary Medical Committee has arranged to hear, at a meeting on February 7th, statements on the supplies and cost of insulin from manufacturing chemists. Professor Mellanby has also been asked to address this meeting. The Consultative Committee on Health and Housing arranged to discuss on January 31st the recent report on sterilization, Sir Francis Fremantle presiding. Sir Hilton Young was expected to attend this meeting.

Housing

On January 29th Mr. SHAKESPEARE informed Mr. Stourton that the slum clearance programmes received contemplated the demolition and replacement under the five-year plan of 224,515 houses containing over one million persons. There were in all 1,716 housing authorities, of which 1,604 had made returns, and 1,257 returns had been accepted. Mr. Shakespeare also told Mr. Hicks that during 1933 orders were confirmed under the 1930 Act providing for the demolition of 10,313 houses, while approvals were given for building 15,667 new houses under that Act.

On the same date Sir HILTON YOUNG informed Dr. O'Donovan that his housing officers were in consultation with the local authorities responsible for housing at Stepney. The borough council was clearing two areas containing 315 houses, and providing accommodation for 1,963 persons. The council was purchasing under the Act of 1930 an area containing seventy-two houses, and was about to commence rehousing work on this area. The L.C.C. was clearing two areas in the borough containing 682 houses, with assistance under the Act of 1923, and providing new accommodation for 4,306 persons. The purchase of further sites in Stepney for rehousing was under consideration.

Legislation to Reduce Road Accidents

On January 29th Mr. OLIVER STANLEY, replying to Mr. Anstruther-Gray and Mr. White, said that the Government was concerned at the returns of road accidents during 1933, and had decided to introduce legislation to deal with the subject at an early date. He desired to bring home to the public during the next few months the nature of the loss caused by road accidents and the extent to which they could be prevented by care and consideration for others on the part

of all users of the highway. He would in due course appeal to the Press, the B.B.C., and the film industry for their co-operation and assistance. He had made a contribution from the Road Fund towards the cost of a special campaign for the promotion of road safety, which the National Safety-First Association had projected for the spring and summer of the present year.

Notes in Brief

The Home Secretary regrets that he cannot promise legislation this session dealing with workmen's compensation.

Medical News

The winter conversazione for members of the University of London Medical Graduates' Society and medical graduates of the University of London not yet members of the society will be held in the Hastings Hall, B.M.A. House, Tavistock Square, W.C., on Thursday, February 15th, from 3.30 to 6 p.m. After tea a film, "Round the Empire on the Track of Malaria," will be described by Major Lockwood Stevens, and Mr. Ferris-Scott will conduct parties to see the setting-up of the *British Medical Journal* and other points of interest. Applications for tickets should be made not later than February 7th, to the secretary of the society, 9, Hardinge Road, N.W.10.

A discussion on the administration of the Housing Acts in relation to unfit individual houses will be opened by Dr. James Fenton, medical officer of health for Kensington, at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Thursday, February 15th, at 5.15 p.m., with Lord Balfour of Burleigh in the chair.

The chairman of the London County Council, Mr. Ernest M. Dence, LL.D., will open the newly altered and enlarged portions of the Council's Hackney Hospital in High Street, Homerton, on Wednesday, February 21st, at 2.45 p.m.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the fourth lecture-demonstration, by Dr. Clark-Kennedy, will take place on February 6th, at 2.30 p.m., at 11, Chandos Street, W., and will deal with vomiting and haematemesis; the fifth lecture, on February 13th, will be on constipation. The second of the series of lecture-demonstrations, on the second Saturday of every month throughout 1934, will be held at the National Temperance Hospital, Hampstead Road, on February 10th, at 3 p.m., when Mr. Acton Davis will lecture on orthopaedic cases. A week-end course in physical medicine has been arranged at the London Clinic and Institute of Physical Medicine on February 10th and 11th. The course will include treatment of gynaecological, neurological, and chest cases; manipulation; action of ultra-violet and infra-red rays. A whole-day course in diseases of the chest will be given at the Brompton Hospital from February 12th to 17th. Four ante-natal demonstrations will be given by Dame Louise McIlroy at the Royal Free Hospital, at 5 p.m. on Fridays, from February 16th to March 9th. Six demonstrations on the interpretation of pyclograms will be given by Dr. Cordiner, at 8 p.m. on Tuesdays and Fridays, from February 13th to March 2nd. Forthcoming courses include medicine, surgery, and the specialties, at the Prince of Wales's Hospital, February 19th to March 3rd; M.R.C.P. evening courses, Tuesdays and Thursdays, at the National Temperance Hospital, February 20th to March 6th; medicine, surgery, and gynaecology, at the Royal Waterloo Hospital, March 5th to 24th; proctology, at the Gordon Hospital, March 5th to 10th. Courses of instruction, lectures, clinics, etc., are open only to members and associates of the Fellowship.

A series of post-graduate lecture-demonstrations has been arranged at the Salford Royal Hospital, commencing on Friday, February 16th. Tea will be provided at 3.45 p.m. and the demonstrations will begin at 4.15. There is no fee for the course.

Miss Nina Symington, daughter of the late Professor Symington of Belfast, has bequeathed the residue of her estate, amounting to some £9,000, and to be known as the Johnson Symington Memorial Bequest, to the Anatomical Society of Great Britain and Ireland for Anatomical Research.

A post-graduate course will be held in Berlin during March and April under the auspices of the medical faculty of Berlin University and the German organization for post-graduate courses. From March 5th to 17th there will be lectures on internal medicine, and from March 19th to 25th on *x* rays. A surgical course, to include one day devoted to operative gynaecology, has been arranged for April 9th to 14th, and a course on hereditary biology for April 23rd to 28th. Further information concerning these courses may be obtained from the office of the International Post-Graduate Courses, Robert-Koch-Platz 7, Berlin, N.W.7.

The fourth congress of the International League against Rheumatism will be held in Moscow from May 3rd to 6th, 1934. Further information can be obtained from the office of the League, Keizersgracht 489, Amsterdam.

The next annual congress of the Royal Institute of Public Health will be held at Norwich from May 15th to 20th, 1934, on the invitation of the Lord Mayor and corporation. The scientific work of the congress will be conducted in the following sections: State medicine and industrial hygiene; women and children and the public health; tuberculosis; veterinary medicine and agriculture; pathology and bacteriology.

The twentieth annual conference of the National Association for the Prevention of Tuberculosis will be held in the new Conference Hall of the London County Council on June 14th, 15th, and 16th. The conference will take the form of an all-round discussion concerning "The National Tuberculosis Scheme: The Experience of Twenty-one Years," and the subject will be introduced by Lord Astor, followed by leading representatives of central and local health authorities.

The Privy Council, in pursuance of the Pharmacy and Poisons Act, 1933, has nominated as additional members of the council of the Pharmaceutical Society Sir Humphry Rolleston, Sir Malcolm Delevingne, and Dr. James Andrew Gunn, professor of pharmacology, Oxford.

The Council of the Harveian Society has chosen the "Nutritional Factors in Disease" as the subject for the Buckston Browne Prize. The prize consists of a medal together with the sum of £100. The competition is open to any member of the medical profession registered in the British Isles or the Dominions, and is limited to candidates under 45 years of age. Essays must be sent in by November 1st, 1935. Further particulars may be obtained from Mr. Cecil P. G. Wakeley, D.Sc., F.R.C.S., 24, Queen Anne Street, W.1.

The following medical men were elected to the council of the Royal Microscopical Society at the annual meeting on January 17th: As vice-presidents: Professor D. M. Blair, Dr. G. M. Findlay. As an honorary secretary: Dr. R. T. Hewlett. As members of the council: Dr. A. S. Burgess, Dr. J. E. McCartney. Professor Frank Balfour Browne is the new president.

The Advisory Committee for Leverhulme Research Fellowships invites applications for the 1934 awards. These fellowships are intended in the first instance for the assistance of experienced workers rather than to add to the provision already existing for workers in the early stages of their careers. The trustees have in mind particularly men and women who are prevented either by pressure of routine duties or by any other cause from undertaking or completing an investigation of value. They have decided, as in 1933, that no definite limit shall be placed to the amount of individual grants, but that they will be adjusted according to the circumstances of each case. Fellows will usually be required to work at or in connexion with a recognized centre of research, either at home or abroad. No subject of inquiry is excluded from the scope of the scheme, but under present conditions the trustees intend that preferential consideration should be

given to subjects in which the existing provision is inadequate. The closing date for receipt of applications is March 1st, 1934. All applicants must be British born, and they must also be normally resident in the United Kingdom. Communications should be addressed to Dr. L. Haden Guest, secretary, Leverhulme Research Fellowships, Union House, St. Martin's le Grand, E.C.1, from whom forms of application may be obtained.

In the January issue of *Science Progress* Professor Major Greenwood contributes an article on epidemiology as a branch of experimental biology, which will be of great interest to all those concerned in this aspect of medicine.

The January issue of the American monthly journal *The Dental Cosmos* celebrates in appropriate fashion its seventy-fifth anniversary. In one among a number of historical articles the editor, Dr. L. Pierce Anthony, traces the influence of this periodical on dental literature. It was in 1859 that the *Dental News Letter*, founded in 1847, became merged in *The Dental Cosmos*.

Among the latest contributions to King Edward's Hospital Fund is £200, being the annual subscription of the President, H.R.H. The Prince of Wales.

The Second Spanish Congress of the Pathology of the Digestive System was recently held at Barcelona under the presidency of Dr. Gallant Mones, when the chief subject for discussion was the aetiology, diagnosis, and treatment of colitis.

Dr. F. W. M. Lamb, lecturer in pathology at the University of Birmingham, has been appointed professor of toxicology and medical jurisprudence to the medical faculty of the University of Cairo.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, Aitology Westcent, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Medisecra Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Intrauterine Death of Foetus

"W. G." (Sussex) writes: I have had one or two cases of recurrent stillbirths due to foetal death in the last month of pregnancy, not associated with toxæmia, syphilis, or other disease of the mother, and apparently due to infarction of a substantial portion of the placenta. I should be grateful for any suggestions as to pathology and prophylaxis.

Silvester of Silvester's Method

Dr. M. BINGEN (Mathias Wynandsstraas 6, Maastricht, Holland) would be glad to know where he can obtain a portrait of Dr. Henry Robert Silvester, who published in 1858 his well-known method of resuscitating stillborn children and of restoring persons apparently drowned or dead.

Threadworms

Dr. FRANCIS JOHNSTON (Oxton, Birkenhead) writes: I have found garlic oil very useful in ridding adults of threadworms. The oil is put up in capsules by Allen and Hanburys. I believe that it is not wholly for the sake of the flavouring that garlic is so popular in Continental kitchens. In the salad it may be an effective anthelmintic.

Dr. E. C. MURIE (Glasgow) writes in reply to the query by "Glevum" (January 27th, p. 178): There is no intestinal parasite that will persist on a diet in which raw garlic is incorporated. As with all other methods of treating worms, meat and other purine-containing foods should be strictly limited, and an abundance of raw fruit and conservatively cooked vegetables should be taken with plain wholemeal bread, and plenty of plain water between meals. The garlic should be chopped up finely, about two or three "cloves" or divisions, so that they could be swallowed without chewing. This should be done at the two largest meals of the day. No purgatives are necessary unless the patient be habitually constipated, when a large dose of salts in a pint of warm water, fasting, should be taken each morning. In the case of threadworms I generally help matters by giving a quart enema (for an adult) in which are dissolved two drachms of common salt and half an ounce of turpentine: retain ten minutes. By the use of garlic I cured a woman of *Ascaris lumbricoides* in thirty-six hours, during which time she passed a male worm 13½ inches long and a female with a bunch of newly hatched young, which were uncountable. I might add that garlic has many other therapeutic uses besides that of a vermifuge. It is a pity the intolerable odour renders it impracticable for common use as an article of dietary in this country.

"X" (Kew) writes: I have personally found the treatment for threadworms given in the *Journal* of August 22nd, 1931 (p. 336), to be the only efficacious one.

* * The treatment referred to is described in the course of an article by Colonel W. P. Macarthur, entitled "Pruritus Ani." Briefly, it consists of (1) four-ounce rectal injections of saline solution (two ounces of salt to a pint), and (2) the use of two grains of santolin and half an ounce of calomel by mouth. Full details are given in the article.

Income Tax

Subletting of Portion of House Unfurnished

"C.'s" house is assessed to income tax, Schedule A, on a net value of £90; he sublets a portion, for which he receives a rent of £100. Does the Schedule A assessment cover his full liability to tax?

* * Schedule A deals with income from property, and if the £100 is derived only from the consideration that a right of occupancy of a part of the property is given, then no part of the rent can be assessed except as part of the Schedule A assessment on the property as a whole. This principle was made clear in a fairly recent case, usually quoted as the Salisbury House case. *Prima facie*, therefore, the assessment of £90 in "C.'s" case covers his full liability. If, however, other considerations enter into the question—for example, that "C." provides some services in connexion with the letting, or that the £100 includes some annual sum in the nature of a payment for goodwill, there may be further liability, either direct on "C." under Schedule D, or indirectly through deduction of tax by "C.'s" tenant.

LETTERS, NOTES, ETC.

Herpes and Varicella

Dr. J. F. P. FORSTER (Porlock) writes: The correspondence in the *British Medical Journal* on the above subject, and especially Dr. A. H. Spicer's letter (December 30th, 1933), prompts me to record an almost similar case in my practice last November. A man, aged 47, came to me with a very severe attack of herpes over the spine of the right scapula, inner aspect of arm and forearm, and front of chest. He said he first noticed it two days previously. Exactly eleven days afterwards I was called to see his daughter (aged 10), who was rapidly developing a typical attack of varicella. The father had definitely had varicella in childhood.

Prescription of Hypnotic Drugs: A Suggestion

"PHARMACIST" writes from Cornwall: In view of the widespread publicity given to recent controversies over hypnotic drugs, may I offer a simple suggestion to those medical men who find these drugs of use in practice. Frequently a small quantity of drug (say, "Dial, tablets 20") is ordered on a prescription. Unfortunately the prescription can be taken again and again to a chemist, and an unlimited supply of the tablets obtained. The chemist has the right in law to do this, providing, of course, that a record is kept of each transaction. Thus the patient goes on taking these drugs long after medical supervision has stopped, and usually takes far too much. It must be admitted that there is distinct danger in this state of affairs. The remedy is this. The doctor should write at the bottom of each prescription, "Not to be repeated," or "Kindly retain script." Either of these injunctions will be regarded by the chemist, unless he is entirely devoid of professional responsibility (I hope all good practitioners avoid such). I think it will be found that very few chemists will supply hypnotics without taking medical advice, even though they have a perfect right to do so under the Poisons and Pharmacy Acts (Part I).

Prevention of Colds in Schools

Dr. R. W. P. HALL (Windermere) writes: At the beginning of last term I had a talk with the head master of a boy's preparatory school which I attended, with regard to making a serious effort to keep the school clear of colds and influenza. We decided to exploit the antiseptic properties of the onion, and arrangements were made to give the boys one dessertspoonful of onion syrup night and morning throughout the term. The results speak for themselves. There were no cases of colds, coughs, or influenza among the whole-time boarders who were given the syrup regularly. On two occasions week-end boarders came back on the Monday with streaming colds, which went no further among the boys, but attacked two members of the teaching staff, who had not taken the syrup. On another occasion a visitor to the school saw two or three of the boys in a small room two hours previous to going to bed with influenza.

The Professional Classes Aid Council

The Professional Classes Aid Council exists to relieve distress among the professional and other highly educated classes. Founded in the emergency times of October, 1914, its work did not end with the war, and it continues to exercise its kindly functions of relieving immediate emergencies and enabling its beneficiaries to bridge over temporary difficulties while in the search for permanent employment. In its last annual report, which covers the twelve months ending April 30th, 1933, it is stated that expenditure on relief has increased by over £2,000, while the contributions have diminished by £600. Among those who received assistance were medical practitioners, dentists, veterinary surgeons, and officers of the Services and the Mercantile Marine. Details are given in the report of various cases relieved. Many students, including some for the medical profession, are being assisted to proceed with their studies. In some cases the grants take the form of a loan which is repayable. The British Medical Association is represented on the council by its Treasurer, Mr. N. Bishop Harcourt, F.R.C.S., and Lord Dawson of Penn is one of the patrons.

Book-keeping for the G.P.

In these columns on December 9th last we published a letter from Dr. W. H. Rowthorn of Sheffield on the subject of book-keeping for the general practitioner, in which he drew attention to his own simple method, the details of which were published in the *Journal* many years ago. We have now received from Dr. Rowthorn a small brochure setting forth the method he has devised. The general scheme is substantially the same as the earlier one, its success in application resting chiefly on the use of "slips," which take the place of day-book, prescription book, and waiting list. The only other "books" required are an ordinary double-entry ledger and a cash-book. The brochure may be obtained direct from Dr. Rowthorn, 52, Brocco Bank, Sheffield, 11, price 5s.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 47, 48, 49, 52, and 53 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 50 and 51.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 55.

SPONTANEOUS HYPOGLYCAEMIA ASSOCIATED WITH HEPATITIS

BY

HENRY MOORE, M.D., D.Sc., F.R.C.P.I.

PROFESSOR OF MEDICINE, UNIVERSITY COLLEGE, AND PHYSICIAN TO THE MATER MISERICORDIAE HOSPITAL, DUBLIN

W. R. O'FARRELL, L.R.C.P. & S.I.

PATHOLOGIST TO THE MATER MISERICORDIAE HOSPITAL, DUBLIN

AND

M. F. HEADON, B.Sc.

(With Special Plate).

In 1931 Moore, O'Farrell, Malley, and Moriarty¹ described a case of acute spontaneous hypoglycaemia associated with amylaceous dyspepsia, and reviewed the clinical literature up to date. The acute hypoglycaemia in that case was apparently superimposed upon a mild chronic hypoglycaemia, and the former condition seemed to be in some degree related to the amylaceous dyspepsia. This appears to be the only case recorded in the literature in which amylaceous dyspepsia and acute hypoglycaemia coexisted, and the subsequent history of the patient is described at page 227. At the time of that communication about twenty-four cases of acute spontaneous hypoglycaemia had been reported. Since then several others have been added, and Wauchope² has recently published an excellent critical review of the literature of the whole subject of hypoglycaemia.

PATHOGENY OF HYPOGLYCAEMIA

The regulation of the blood sugar level is believed to be largely due to the interplay of those internal secretions which regulate carbohydrate metabolism.

(1) *Insulin*, the most important of them, lowers blood sugar, but the mechanism of its action is not fully understood. There is evidence that hyperglycaemia itself directly stimulates the islands of Langerhans to produce insulin. Clinically, conditions which increase the amount of insulin in the circulating blood, whether by injection or by over-production from the islands of Langerhans, are important causes of hypoglycaemia. (2) *Adrenaline* causes a rise in the blood sugar level. It is said to act by releasing stored liver glycogen and converting it into glucose; possibly also it causes a transference of glycogen by way of lactic acid from the muscles to the liver. Its injection is often used therapeutically in hypoglycaemia, but has relatively little effect on the blood sugar level when the hepatic glycogen stores are exhausted—for example, in starvation. The interaction of insulin and adrenaline, in this respect, is believed to be controlled by a nervous centre in the pons, and it has been suggested recently that an increase in the blood sugar stimulates this centre and so causes an increased production of insulin from the islands of Langerhans through the vagus nerve. Conversely, it has been stated that hypoglycaemia possibly causes an increased output of adrenaline through the sympathetic system. (3) *Pituitrin* inhibits the action of insulin, but it also opposes the glycogenolytic action of adrenaline. It, too, is used as a therapeutic agent in insulin hypoglycaemia. The pituitary gland plays too complicated a part in the regulation of blood sugar to be further discussed here. Certain cases of pituitary tumours may be associated with hypoglycaemia and others with hyperglycaemia. (4) *Hyperthyroidism* is sometimes associated with a tendency towards hyperglycaemia, and myxoedema with hypoglycaemia. (5) *Hormones of other ductless glands* have been said to have effects on the blood sugar level, but, clinically, these effects are probably not commonly very important.

The liver is the main reservoir of glycogen from which sugar can be mobilized in the blood stream, and lack of the hepatic glycogen stores may be a factor in the production of hypoglycaemia.

The relation between glycogen, blood sugar concentration, and insulin is apparently a complicated one. Cori³ states that under post-absorptive conditions the organism depends

mainly on the liver glycogen for its supply of blood sugar, the muscle glycogen being apparently unable to contribute sugar to the blood directly; the final step in the process of sugar formation in the liver is hydrolysis of glycogen, and insulin and adrenaline are the most important factors influencing this transformation. That author points out that when insulin is lacking, hydrolysis of liver glycogen remains unchecked, this leading to disappearance of liver glycogen. The decrease in liver glycogen seen under certain conditions after insulin injection is believed to be mainly due to hypoglycaemia, which is a powerful stimulus to glycogenolysis³; the fall in liver glycogen in this case is not directly caused by insulin, but is a secondary phenomenon due to hypoglycaemia. Again, it is said³ that insulin facilitates the accumulation of liver glycogen in the normal animal, but how it does so is not clear. It appears to be settled that the level of blood sugar concentration is a factor influencing the rate of liver glycogen formation.

Mann and Magath⁴ showed that extirpation of the liver in dogs caused profound hypoglycaemia. There is considerable evidence in the literature that injury to the hepatic parenchyma may cause hypoglycaemia, presumably by interfering with the hepatic glycogenic function. Feigl and Luce,⁵ in 1918, demonstrated hypoglycaemia in four cases of acute yellow atrophy of the liver. Rabinowitch⁷ recorded a case of acute yellow atrophy of the liver, in which the hepatic parenchyma was almost completely destroyed, and in which there was marked hypoglycaemia (16 mg. per 100 c.cm.), no urea in the blood, and acute degenerative nephritis with fatty degeneration of the renal tubules. Bodansky,⁸ in 1923, brought forward evidence to show that hypoglycaemia occurs in dogs as a result of severe liver damage by chloroform, by phosphorus, and by hydrazine poisoning. Crawford⁹ described a case of marked hypoglycaemia apparently due to considerable destruction of the liver parenchyma by primary hepatic carcinoma, and Nadler and Wolfer¹⁰ recorded a similar case about two years earlier. McIntosh¹¹ reported a case of acute phosphorus poisoning in a boy of 16 months of age, with enlargement of the liver and hypoglycaemia; the patient recovered. Josephs¹² described two cases of hypoglycaemia in each of which the liver at necropsy was proved to be the seat of extensive fatty change. Cammidge¹³ suggested that many cases of recurrent attacks of vomiting, pernicious vomiting of pregnancy, and cyclical vomiting of children are attributable to hypoglycaemia due to hepatic dysfunction. Cross and Blackford¹⁴ reported a case of fatal hepatogenic hypoglycaemia following nearsphenamine injection.

It seems reasonable, therefore, to suppose that profound disease of the liver, by interfering with its glycogenic function, might cause hypoglycaemia. The case reported in this paper would seem to be capable of explanation on the basis of a degree of degeneration of the liver cells sufficient to interfere with the hepatic glycogenic function.

Wauchope summarizes the possible causes of hypoglycaemia as follows:

1. *Excess of Insulin*.—Therapeutic injections, tumours or hyperplasia of the islands of Langerhans, or functional hyperinsulinism (idiopathic or spontaneous hypoglycaemia).
2. *Lack of Opposing Secretions*.—Diseases of the suprarenal glands, pituitary tumours, or myxoedema.
3. *Lack of Glycogen*.—Destruction of reservoirs (diseases of the liver, wasting of muscles), abnormal excretion of sugar (renal glycosuria, lactation), active depletion of stores (muscular exercise), or failure to replenish stores (starvation).

4. *Interference with Regulating Centre.*—Nervous diseases affecting the pons, or overaction of the vagus.

In the case of the last (4), the clinical literature is too scanty for any definite conclusions to be arrived at; and Wauchope thinks that it is doubtful whether starvation alone can so lower the blood sugar as to cause symptoms of hypoglycaemia in perfectly normal persons.

CASE RECORD

The case now to be described was that of a married woman, poorly nourished, aged 40 years, who was admitted to the Mater Misericordiae Hospital on May 30th, 1933, about 6 p.m., in coma. She was referred to one of us by Dr. W. Hooper.

The pulse rate was 80 and the respirations 22 per minute; the temperature (axillary) was subnormal. The patient looked somewhat anaemic as she lay unconscious on the bed. She muttered occasionally and indistinctly, shrieked loudly now and then, and performed aimless movements with the arms. The blood pressure was 98/70, the knee-jerks were absent, and Babinski's sign was bilaterally negative, but the limbs were slightly spastic. The clinical physical examination was otherwise normal, and the urine (catheter specimen), which was normal in colour, contained no albumin, casts, sugar, or abnormal formed elements. The pupils reacted to light, although sluggishly, the eye grounds were normal, and the examination of the lungs revealed no evidence of disease. Unfortunately, neither a blood count nor a Wassermann test was done, but there was no special reason to suspect syphilis. The blood sugar registered only 25 mg. per 100 c.cm. (Folin-Wu technique). Glucose drinks and glucose enemata given during the night were not retained.

The following morning the patient was still comatose, but quiet; the temperature was 99.2° F., and at 8.30 a.m. the blood sugar was 29, and the blood urea 42 mg. per 100 c.cm. She retained some glucose by mouth during the morning, and at 1.59 p.m. her blood sugar was 31 mg. per 100 c.cm. At 2 p.m. an intravenous injection of 25 grams of glucose into the right median basilic vein was started; the injection took about ten minutes, and on its completion the patient had become sufficiently conscious to write her name, but mentally she was still rather sluggish in answers to questions, was a little indistinct in speech, and, although the eye movements appeared normal, she complained that she "saw crooked"; when a finger was held vertically before her eyes she said it was held obliquely. Just after the injection the blood sugar (left median basilic vein) was 238 mg. per 100 c.cm., she was able to sit up in bed and to retain glucose drinks, and examination then revealed no paralysis of the limbs or evidence of intracranial tumour. A little over two hours after the intravenous glucose injection the blood sugar had fallen to 94 mg., and two hours later it was 104 mg. per 100 c.cm. About 5.30 p.m. the patient became very listless and inattentive, and about 6 p.m. (blood sugar 104 mg.) again became comatose. An electrocardiogram taken at 7 p.m. was normal, and a little later vomiting started and no glucose was from then on retained by mouth or rectum. Coma gradually became deeper, and adrenaline injections were tried, but the patient died at 3 o'clock on the morning of June 1st.

The previous history was obtained from the husband after the death of the patient. The family history revealed nothing of relevant importance. Six healthy children are alive, and there were no miscarriages, abortions, or stillbirths. Slight chloroform anaesthesia was used at one birth in 1924, but at no other. There was no alcoholic history. The patient was quite well up to three years before admission (about one year after the second last delivery), when she became listless, and began to take less and less interest in life. During the last year appetite had gradually failed, attacks of vomiting had occurred, and these were often rather persistent, so that she lost some weight; she became more listless, and on two occasions, about a year before admission, she became dazed or semi-conscious for almost an hour, not recognizing her surroundings or relatives and having no memory of these attacks afterwards. On March 26th, 1933, she was delivered of healthy twins (which she never nursed), but the birth was followed by severe post-partum haemorrhage. She recovered from the latter, but vomiting was troublesome up to admis-

sion, and listlessness became progressively greater until she lost consciousness on the day of admission to hospital. She never had diabetes or received insulin, and she had never had jaundice.

Post-mortem Examination

Only a partial post-mortem examination was permitted nine hours after death, and this was limited to such organs as were accessible by opening the abdomen. The skull was x-rayed post mortem by Dr. J. A. Geraghty, and the picture of the sella turcica was normal. The gastro-intestinal tract showed no striking naked-eye or microscopical pathological changes. The liver was about normal size, its surface showed some pale and pink mottling, and on section its substance was reddish, soft, and almost diffuent. The spleen was slightly enlarged, its surface was congested, and it was almost diffuent. The pancreas, kidneys, and suprarenals appeared normal. The pancreas was cut up into small pieces in a careful search for tumours, but none were found.

A summary of the histological report on sections is given:

Liver: The characteristic lobulated appearance of the liver is almost lost, and the pattern is more cellular than normal. The existent individual liver cells are prominent, and in general are markedly separated from one another, but many cells have been destroyed, or are markedly degenerated with loss of nuclei; the destruction is of single cells or small groups of cells throughout the whole organ; a striking feature is, however, the prominence and variation in the size of the nuclei, a considerable number of which are large and hyperchromatic; a few liver cells show mitotic figures, and many contain two nuclei. These cellular changes are not limited to any special portion of the liver, nor to any special area of the liver lobule. The picture, therefore, is one of parenchymatous destructive and regenerative changes occurring side by side, the former being the more prominent. There is no fatty degeneration or infiltration, neither are there any haemorrhages, inflammatory reaction, or replacement fibrosis. The bile ducts are normal. Hepatic glycogen was not determined. Its estimation so long after death would probably give information of little value.*

Spleen: The spleen is congested, but does not show any marked cellular change.

Kidneys: The kidneys show some slight necrosis and desquamation of the epithelium of the convoluted tubules, but the glomeruli are normal.

Pancreas: The pancreas does not show any pathological change, and the islet tissue is normal.

Suprarenals: The suprarenals are normal.

Photomicrographs illustrating the liver changes are shown in Figs. 1 to 4 on Plate.

Conclusions

The main pathological changes in the organs examined are present in the liver, and are in the nature of a subacute parenchymatous hepatitis. Considerable reparative change is taking place in the liver parenchyma, as evidenced by the variation in the size of the cells and by hyperchromatism of many and mitosis of some of the liver cell nuclei.

Discussion

In considering the available data of this case the work of Mann and Magath* appears to be of fundamental importance. These authors showed that complete removal of the liver in dogs caused, within a few hours, muscular weakness, loss of reflexes, and flaccidity; later there was exaggeration of the reflexes, muscular twitchings, and convulsions, often with terminal vomiting and subnormal temperature, and death in coma in about twenty-four hours. Total removal of the liver was quickly followed by progressive decrease in the blood sugar level, until at death it was usually not in excess of 30 mg. per 100 c.cm. The development of the characteristic symptoms exactly paralleled the decrease in the blood sugar level. At least 85 per cent. of the liver had to be extirpated to produce hypoglycaemia. They suggested that a plausible explana-

*Owing to the unusual characters of this case we submitted a section of the liver to Dr. J. W. McNee of London for his opinion, giving him the relevant clinical details. Dr. McNee very kindly permits us to state that his view of the pathological process in the liver, arrived at independently, coincides with ours as stated above. We desire to thank Dr. McNee, who is a well-known authority in this field, for his courtesy.

tion of the decrease in blood sugar was that hepatectomy either removed the control of the blood sugar supply or interfered with sugar utilization by depleting the carbohydrate store or a substance concerned in carbohydrate utilization. Further, Mann and Magath² later showed that hepatectomized hypoglycaemic dogs, showing the above symptoms, could be immediately restored to a seemingly normal condition by the intravenous injection of 0.5 gram glucose per kilogram of body weight. Immediately after the glucose injection the blood sugar reached a high level, and then gradually fell. By repeated intravenous injections of glucose the animals could be kept alive and without the characteristic symptoms (which were apparently almost entirely due to hypoglycaemia) for about twenty-four hours, but then, notwithstanding a normal blood sugar level still being maintained, the animals suddenly became comatose and died quietly. The hypoglycaemic symptoms were thus different from the final picture, which was probably "dependent on some change in metabolism other than carbohydrate."

It is tempting to suggest that the case now reported is almost the clinical equivalent of the physiological experiments of Mann and Magath, that hypoglycaemia due to liver cell destruction from disease largely coloured the clinical picture, and that death was due to hepatic failure. It is interesting, also, in this connexion to note that signs of marked listlessness and slowing of mentality, with some flaccidity of muscles, began to reappear soon after the intravenous glucose injection, and that coma reappeared when the blood sugar was 104 mg. per 100 c.cm., four hours after the intravenous injection.

INTERPRETATION

As we were not permitted to perform a complete post-mortem examination, the exact aetiology of the condition is necessarily somewhat doubtful. However, taking into account the possible pathogeny, we suggest that, although a remotely possible cause was functional hyperinsulinism, the most probable one was disease of the liver interfering with its glycogenic function. Certainly no tumour of the islands was discovered in the pancreas, and if there was an excessive secretion by the cells of the islands of Langerhans, it must have been purely "functional." On the other hand, a definite alteration of the liver structure was found, and although this was an unusual condition, it is interpreted as being a subacute parenchymatous hepatitis. Although no determination was made of the liver glycogen content (it is doubtful whether this would yield information of great importance nine hours after death), it is quite probable that this structural change in the liver was consistent with an alteration of its function in carbohydrate metabolism. Consequently, we are inclined to the view that the cause of the hypoglycaemia in this case was parenchymatous hepatic degeneration; whether the latter condition has any relation to so-called acute yellow atrophy of the liver, and whether it had any connexion with pregnancy, we cannot say; from the information at our disposal its aetiology is obscure.

REFERENCES

- Moore, H., O'Farrell, W. R., Malley, L. K., and Moriarty, M. A.: *British Medical Journal*, 1931, ii, 837.
- Wauchope, G. M.: *Quart. Journ. Med.*, January, 1933.
- Cori, C. F.: *Physiological Reviews*, 1931, xi, 143.
- Mann, F. C., and Magath, T. B.: *Arch. Int. Med.*, 1922, xxx, 73.
- Idem: *Ibid.*, 1923, xxx, 171.
- Feigl, J., and Luce, H.: *Biochemische Zeitschr.*, 1918, lxxxvi, 48.
- Rabinowitch, I. M.: *Journ. Biol. Chem.*, 1924, lxxviii, 333.
- Bodlansky, M.: *Amer. Journ. Physiol.*, 1923, lxxvi, 375.
- Crawford, W. H.: *Amer. Journ. Med. Sci.*, 1931, clxxxi, 496.
- Nadler, W. H., and Woller, J. A.: *Arch. Int. Med.*, 1929, xlix, 700.
- McIntosh, R.: *Amer. Journ. Dis. Child.*, 1927, xxxiv, 595.
- Josephs, H.: *Ibid.*, 1929, xxxviii, 746.
- Cammidge, P. J.: *British Medical Journal*, 1930, i, 818.
- Cross, J. B., and Blackford, L. M.: *Journ. Amer. Med. Assoc.*, 1930, xciv, 1739.

ULTIMATE HISTORY OF A PREVIOUSLY REPORTED CASE OF ACUTE SPONTANEOUS HYPOGLYCAEMIA

BY

HENRY MOORE, M.D., D.Sc., F.R.C.P.I.

PROFESSOR OF MEDICINE, UNIVERSITY COLLEGE, AND PHYSICIAN TO THE
MATER MISERICORDIAE HOSPITAL, DUBLIN

W. R. O'FARRELL, L.R.C.P. & S.I.

PATHOLOGIST

M. A. MORIARTY

M.Sc., M.B., B.Ch.

ASSISTANT PHYSICIAN

AND

W. CREMIN

M.B., B.Sc.

HOUSE-PHYSICIAN

MATER MISERICORDIAE HOSPITAL

This case was fully described in the *British Medical Journal*¹ in 1931. The patient, a woman aged 27 years, was admitted to the Mater Misericordiae Hospital in May, 1930, in hypoglycaemic coma, the blood sugar being 35 mg. per 100 c.cm.; her limbs were rigid and the Babinski sign was bilaterally positive. She promptly recovered consciousness on the intravenous injection of 10 grams of glucose, the rigidity passed off, the Babinski sign became negative, the blood sugar rose to 111, and the coma never recurred during fourteen months of observation. The acute hypoglycaemia was associated with amylaceous dyspepsia, which was successfully treated; but, although acute hypoglycaemia did not reappear, there remained a mild continuous chronic hypoglycaemia (62 to 78 mg. sugar per 100 c.cm. of blood), upon which the acute hypoglycaemia causing coma was apparently superadded.

On November 19th, 1933, the patient was again admitted to the hospital in an unconscious condition; the clinical picture was, however, different from that seen on the first admission: there was no rigidity of the limbs; on the contrary, the muscles were flaccid; the tendon reflexes and Babinski's sign were negative; there was some resistance to forcing the eyelids apart, the conjunctival reflex was present, and the pupils reacted to light; loud bubbling rales were heard all over the chest, so that the heart sounds could scarcely be distinguished. No pulse could be felt at the wrists, but the right superficial temporal artery pulse rate was 84, and the blood pressure could not be determined over the brachial artery. There was no cough or sputum, and the clinical picture suggested post-influenzal pneumonia. The axillary temperature was 100° F. and the respirations were 44 per minute. The blood sugar, a couple of hours after admission, was 66 and the blood urea 84 mg. per 100 c.cm. The urine was normal. Twenty-five grams of glucose were given intravenously, after which the blood sugar rose to 217 mg. per 100 c.cm. Glucose was given by stomach tube and per rectum, but was not retained, and the patient died about twelve hours after her admission to hospital.

Inquiry from her husband revealed that she had felt quite well on the morning of admission and arose after breakfast. Feeling cold about 11 a.m., she went to bed again. She refused her dinner at 2.30 p.m., and vomited a little whisky taken about 5 p.m. At 6 p.m. she became unconscious, and at 8 p.m. was seen by Dr. L. Masterson, who noted the rales in the chest and referred her to one of us as he knew we were interested in the case. She had become comatose, without convulsions, about nine months previously for about two hours, but recovered without treatment. During the past two years she occasionally complained of staggering or giddiness, and

blurring of vision when reading; apart from constipation and frequent listlessness we could learn nothing further of significance.

POST-MORTEM EXAMINATION

Fortunately we were able to obtain, about two hours after death, a complete necropsy, of which the following is a relevant summary:

The body was well nourished, the pubic and axillary hair was scanty and short, the hair of the head was fine and rather sparse at the vertex. All the organs were carefully examined by the naked eye and microscopically, unless otherwise stated.

Abdomen.—The spleen weighed 180 grams; its substance was dark red and firm, and on microscopical examination there was venous engorgement. The kidneys were normal, except for venous congestion and slight fibrosis of the interstitial tissue. The suprarenals were normal macroscopically and microscopically. The pancreas was normal. It was carefully sectioned in a search for adenomata of the island tissue, but none were found; the cells of the island tissue appeared normal, and the islands did not seem to be increased in number or size. Sections from various parts of the pancreas showed a slight general fibrosis. The liver weighed 1,300 grams, its surface was smooth and pale; on incision it showed a slightly "marbled" appearance. Microscopical examination showed a general venous congestion, with some slight round-celled infiltration about the smaller bile ducts; there was slight fatty change, which was in the nature of an infiltration confined to a small zone about the intralobular veins; slices were fixed in alcohol, but no glycogen could be demonstrated. The stomach and intestines were normal on naked-eye and microscopical examination, and the gall-bladder, urinary bladder, and uterus and its adnexae were normal on naked-eye examination.

Heart and Lungs.—The pericardium contained about 110 c.cm. of pale fluid, the heart, which weighed 240 grams, was macroscopically normal, except for slight thickening of the mitral valve cusps and some flaccidity of the right ventricle. Both lungs showed bronchopneumonia. There were petechial haemorrhages under the visceral pleura. The substance of the lung felt "shotty," and incision showed numerous scattered, plum-coloured, consolidated patches of various sizes. A large consolidated area about the size of a tangerine orange was present in the central part of the upper lobe of the left lung. Pus exuded from the smaller bronchi in the consolidated areas. Microscopical examination showed bronchopneumonia, and Gram-Weigert stain showed pneumococci to be present.

Other Organs.—The thyroid was small, and weighed only 8 grams. Stained sections showed normal structure and no lack of colloid substance; there was slight flattening of the cells lining the alveoli, and there was no fibrosis. The brain and brain stem were normal on naked-eye section, but the brain surface was slightly congested and oedematous.

The pituitary gland was normal on naked-eye and microscopical examination. The thymus was absent.

BIOCHEMICAL INVESTIGATION OF LIVER

As it seemed important to learn, if possible, something about the carbohydrate and glycogen content of the liver, Professor E. J. Conway kindly undertook to investigate this question, and his report is as follows:

Considering that two hours had elapsed from the death of the subject to the time of excision of the liver, it was decided to estimate the total carbohydrate, and so obtain at least a maximum value for the ante-mortem glycogen content. It is well known, since the classical experiments of Claude Bernard, that a marked breakdown of glycogen into glucose takes place in the liver after death, and that in two to three hours the greater part of the pre-formed glycogen may have disappeared. The estimate of the total carbohydrate under such conditions, with subsequent calculation of the glycogen, supposes that none of the formed glucose disappears by glycolysis. That no appreciable glycolysis takes

place is shown by the early experiments of F. Rohmann, described in his *Lehrbuch der Biochemie* (Berlin, 1908), in which no marked diminution of the total carbohydrate had occurred in one and a half to two hours after death. The estimate of the total carbohydrate, according to the same worker, using acid hydrolysis, gives figures always in excess of that reckoned from the original glycogen and glucose content. The present results will state, therefore, only a maximum possible value for the original glycogen content of the sample provided, and are almost certainly higher than the true figure.

In the method used 10 grams of liver, cut into sections, were boiled in 50 c.cm. of distilled water for twenty minutes. From the stoppered flask—after remaining overnight—the liver substance was removed and carefully ground to a paste with the finest Merck's quartz sand, continued extractions with water being taken, and finally the whole made up to 100 c.cm. with water. The mixture was shaken for some time and filtered; 5 c.cm. portions of the filtrate were taken and, equal quantities of N/1 acid having been added, the mixtures were boiled for ten to thirty minutes. These were subsequently neutralized and made up to 100 c.cm. with water. The glucose content was then examined by the Hagedorn-Janssen method, using the precipitation stage of this method as well—it being necessary, however, to take upwards of 4 c.cm. of the fluid for analysis.

The results were certified by several repeats, controls, and blanks, and may be summarized as follows:

- (1) Glucose in liver sample examined, 0.9 per cent.
- (2) Total carbohydrate in liver sample examined (as glucose), 1.01 per cent.
- (3) Maximum value of glycogen in liver examined, 0.12 per cent.
- (4) Maximum value of glycogen in ante-mortem liver, 0.94 per cent.

In the calculation of the third and fourth items it is reckoned that 1 gram of glycogen gives 1.07 grams of glucose. The values given by Hammenstein for the glycogen content of the liver in the normal animal are from 1.2 to 4 per cent. Figures of 18 and even 20 per cent. have been obtained in experimental animals. The values given by Rohmann for upwards of twenty experimental animals receiving dietaries with normal food constituents (these being varied in different ways) show 1.69 as the lowest for a dog fed on meat alone. For two dogs fed on sugar and biscuits he obtained the surprising figures of 19.5 and 19.3 per cent. glycogen. The figures of Rohmann show that post-mortem glycolysis in the liver is practically negligible for two hours after death, although glycogenolysis is marked. Therefore one may conclude that the figures obtained suggest that the liver before death was poor in glycogen.

DISCUSSION

The interpretation of the case from the history and post-mortem findings is by no means clear. Apparently the acute hypoglycaemic coma was in some degree related to amylaceous dyspepsia occurring in conjunction with chronic hypoglycaemia, but the cause of the latter condition is still obscure. Possibly, in view of the small size of the thyroid gland, a mild degree of hypothyroidism might be held responsible, but, on the other hand, the thyroid, though small, did not, on microscopical examination, show any great departure from the normal, and there was no gross clinical sign of hypothyroidism. It is unfortunate in this connexion that the patient on her first admission refused to allow her basal metabolic rate to be estimated. However, it is difficult to believe that whatever degree of hypothyroidism the patient may have had would be great enough to keep the blood sugar down to the levels existing after the cure of the amylaceous dyspepsia. Again, liver disease could hardly be held definitely responsible for the chronic hypoglycaemia, because the pathological changes in the liver were too slight—the hepatic venous congestion must have been terminal. As regards the liver glycogenic function, the maximum possible ante-mortem

glycogen value for this liver was below what one might expect as normal, but normal control figures for the human do not seem to be readily available. All that can be said is that apparently this liver was poor in glycogen. But in the absence of further evidence, and remembering that the patient took or retained little food for twenty-four hours (apart from the intravenous glucose given about eleven hours before death), it would be rash on this score to attribute the chronic hypoglycaemia to a hepatic cause. To account for the chronic hypoglycaemia one is apparently driven, in the present state of knowledge of this complicated subject, for want of a better explanation, to consider absolute hyperinsulinism; but here again there is very little evidence to go upon. Finally, it is interesting to speculate as to whether the fulminant

course of the bronchopneumonia may have been determined to some degree by the chronic hypoglycaemia.

NOTE.—Since the above was written we have come across a case of apparently true hyperinsulinism, or what certain authors might call dysinsulinism. This was a man, aged 28 years, who complained of slight mental confusion, slight dimness of vision, and weakness about three hours after the heavier meals. The fasting blood sugar was only 80 mg. per 100 c.cm. After ingesting 50 grams of glucose the blood sugar in half an hour was 90, in one hour 135, in two hours 97, in three hours 64, in four hours 66, and in five hours 78 mg. per 100 c.cm. His physical examination was normal in all respects, and we could find no evidence to implicate either the ductless glands or the liver.

REFERENCE

¹ Moore, H., O'Farrell, W. R., Malley, L. K., and Moriarty, M. A.: *British Medical Journal*, 1931, ii, 837.

A CASE OF OVARIAN PREGNANCY*

BY

W. C. SPACKMAN, M.B., B.S.LOND., F.R.C.S.ED.

LIEUTENANT-COLONEL I.M.S.

PROFESSOR OF MIDWIFERY AND GYNAECOLOGY, GRANT MEDICAL COLLEGE, BOMBAY

(With Special Plate)

The following case of ovarian pregnancy appears worthy of record in view, first, of the great rarity of the condition, and, secondly, of the circumstances leading up to it.

Mrs. C., aged 38, a European, formerly a maternity nurse, consulted me privately on April 26th, 1933, for sterility.

Although married for only twenty months, in view of her age and the fact that her menstruation was becoming scanty she was anxious to become pregnant as soon as possible.

Menstruation.—Every twenty-six days, duration five days; latterly duration three and two days. Last menstrual period April 20th to 22nd.

Physical Examination.—Perfectly healthy type. Pelvic organs normal.

Advised a Rubin inflation of the Fallopian tubes about ten days after first day of each period for three or four months, and to take agomensin for a week before each period.

Treatment.—A Rubin inflation of the Fallopian tubes was carried out on May 1st; pressure 120, both tubes patent. The patient had sexual connexion two or three times in the following few days as advised, but it was later ascertained that she had also had connexion three days before the test was performed.

The patient took agomensin (two tablets three times a day) from May 11th, and was seized with severe lower abdominal pain on the 14th. The pain was so severe that she was admitted to a nursing home. I was out of Bombay, and so am unable to particularize further about this attack. She was given hyoscine. The pain subsided, and she left the home in two days.

She herself attributes the pain to the agomensin. The period expected at the middle of May did not appear. She came to see me again on May 31st. She then had a slight uterine haemorrhage, like a mild menstruation, but no pain. She stated that, since the pain of May 14th, she could not lie comfortably on her left side.

She was not examined, in view of the probability of the missed period indicating pregnancy and the slight haemorrhage a threatened abortion, but she was ordered rest and sedatives, and told to return again in a few days and to keep in touch with me meanwhile.

* This case was reported at a meeting of the Bombay Branch, held in the Grant Medical College, Bombay.

She returned on June 14th and reported that she had "miscarried" on June 8th. From her description of what she passed, and her experience as a nurse, I at first considered that this was probable, but on examining her I found the uterus anteflexed, normal in size, and a lump, situated behind and to the left of it, slightly tender, about the size of a plum, and firm in consistency. There was pulsation between this lump and the left side of the uterus. She had a slight blood-stained discharge, brownish red in colour, and slight pain in the lower abdomen. She was told that the condition indicated a possibility of extrauterine gestation, was cautioned to keep very quiet, to remain in communication with me, and to report any developments. In the event of any pain or feeling of illness she was instructed to go to the nursing home immediately and to ring up her doctor.

In the absence of such developments she returned on June 19th, when the following condition was found.

Slight uterine bleeding as before. Slight pain in the hypogastrium. Per vaginam, the lump was found to be nearly double the size noted on the 14th. She was ordered immediately into the nursing home as a case of extrauterine gestation, and I operated on the same day, assisted by Captain H. S. Waters, I.M.S.

On opening the abdomen, there was extremely little free blood in the peritoneum, but, on raising the sigmoid flexure of the colon, the left ovary was found enlarged to the size of a peach, deep red in colour, and with loose adhesions formed by blood clot to the lateral wall of Douglas's pouch, which was subdivided into two halves by oedematous appendices epiploicae. The right half of Douglas's pouch was quite normal. The left half, besides this enlarged ovary, contained a small amount of blood-stained serum. The ovary presented exactly the appearance of a twisted ovary, or ovarian haematoma, clearly limited to the ovary, except for a shell of blood clot on the outer side.

The left Fallopian tube was entirely normal throughout its length, its abdominal ostium being patent and entirely free from any swelling or blood. On freeing the ovary a small amount of this blood clot detached itself from the outer wall of Douglas's pouch, but the ovary remained adherent to the back of the left broad ligament by the ovarian ligament. In fact, the ovary maintained its normal relation to the unaltered mesosalpinx and corresponding tube.

The ovary was resected and the ovarian ligament tied off. The right tube and ovary were both normal. The patient had specially requested the operator to leave both tubes if possible (!), and, the operation being done under spinal anaesthesia, she kept inquiring as to the condition found; for these reasons the left tube, being entirely normal, was allowed to remain. The patient made a good recovery from the operation.

The specimen was immediately examined by the operators. On incising the ovary towards its outer side a gestation sac was found deeply embedded, and, on opening this, an ovum, 0.6 cm. in length, was demonstrated.

Pathological Report.—The specimen was sent for examination by Dr. P. V. Gharpure, professor of pathology, Grant Medical College, who reports as follows.

The specimen is approximately of the size and shape of a small hen's egg, or resembling a small truncated cone, elongated and tapering at one end, and broader at the other. Near the broader end on one of the faces is an oval rough area, 3 by 2 cm., indicating attachment of the ligament, by severing which the specimen has been removed at operation. The specimen measures 5.5 by 4.5 cm. On section it exhibits a non-homogeneous wall nearly uniform in thickness, with a number of blood sinuses and interstitial haemorrhages; the wall has an average thickness of 0.5 cm. It encloses a smooth, shining cavity, lined by a smooth membrane. Inside this cavity, towards the broader end, is attached a tiny white object by a slender pedicle. This is an embryo, 4 mm. at its broadest and 1 mm. at its longest part. It has lost its "C" shape, and has a broader middle and tapering posterior end. Stalks of appendages are recognizable. The embryo does not show any formation of a face. The age, by process of exclusion, is beyond completion of five weeks but before completion of the seventh week. Its internal anatomy has not been studied.

On microscopical examination the wall around the sac contains abundant vascular channels and well-formed chorionic villi, with proper cell content. Some sections show ovarian stroma in anatomical continuity with the chorionic tissue. No localization of a formed placenta can be made out. The entire wall surrounding the gestation sac shows uniform appearances.

COMMENT

This case of ovarian pregnancy satisfies Spiegelberg's¹ criteria, which are as follows:

1. The tube on the affected side must be intact.
2. The foetal sac must occupy the anatomical position of the ovary.
3. It must be connected with the uterus by the utero-ovarian ligament.
4. Definite ovarian tissue must be found in the sac wall. This case also satisfies an additional criterion, put forward by Whitridge Williams² in the original edition of his *Obstetrics* (but not included in the latest edition), that ovarian tissue must be present in several portions of the sac wall at some distance from one another.

Although the tube was not removed, and therefore was not examined microscopically, it presented no evidence of abnormality to one who is constantly examining normal and abnormal tubes *in situ*. In this connexion it would appear theoretically necessary to remove and examine both tubes to avoid possible cases where a fertilized ovum has been extruded from one tube, and has found a nidus on the surface of the ovary of the opposite side, such cases being inadmissible as true ovarian pregnancy.

It seems likely that ovarian pregnancy does not occur in a strictly normal ovary. Alternatively, a pregnant ovary undergoes certain histological changes in its structure, with disappearance of immature Graafian follicles. From an examination of the sections of the present specimen, as well as from published illustrations and descriptions of others, it appears that in cases of ovarian pregnancy the ovary itself may be very deficient in Graafian follicles. It is to be noted in the present case that menstruation was becoming less profuse than normal.

The mechanism by which ovarian pregnancy is possible is uncertain. Probably a follicle ruptures with a pinhole

orifice, or the tension of the liquor folliculi is below normal, so that the egg-cell contained in it is not detached. A spermatozoon penetrates, and the fertilized ovum, by the erosive action of its trophoblast, burrows deeply into the ovary. In the present case, as shown in the photograph, and I think in other typical cases, the ovum is found deeply embedded in the ovary and surrounded entirely by ovarian tissue.

Dr. Gharpure, in a recent discussion, has put forward the very interesting and, I think, original view (to which he has kindly permitted me to allude), that all cases of ovarian, and many of tubal, pregnancy may be explained by minute inclusions in these organs of endometrial tissue similar to what occurs in endometriosis; such inclusions or rests would exert a chemotactic attraction for the fertilized ovum. It is possible that careful histological study may afford support for this view.

From the estimate of this ovum being of six weeks' development, it appears that pregnancy followed shortly after the Rubin test. The suggestion that a fertilized ovum, free in its passage along the tube towards the uterus, was driven back by the insufflation, and settled on the ovary must be faced, but it appears improbable (1) because one would expect to find such an ovum on the surface of the ovary rather than in its interior, and (2) because the ovum would be somewhat more advanced, just over seven weeks. Ovulation, moreover, is held to occur about the fifteenth day of the menstrual cycle—that is, about May 5th in the present case, four days after the Rubin test was performed.

Professor Gharpure and myself would be glad to lend the blocks of the ovary from which sections were made to anyone interested.

REFERENCES

- ¹ Spiegelberg: *Arch. f. Gynak.*, 1878, xiii, 73.
- ² Williams, J. W.: *Obstetrics*, first edition, New York, 1903, p. 537.

The Codex Revision Committee of the Pharmaceutical Society of Great Britain has issued four subcommittee reports. That of the Pharmaceutical Chemistry Subcommittee gives a summary of the principal standards for chemical substances recommended by it, and accepted provisionally for inclusion in the *British Pharmaceutical Codex, 1934*. The Pharmacy Subcommittee has summarized the principal new or revised formulae recommended by this subcommittee for inclusion in the *Codex*. It advises also the restoration of a number of preparations from earlier pharmacopoeias which are not in the *British Pharmacopoeia, 1932*, but are still in more or less frequent demand. For many of the preparations tests have been worked out with a view to the constitution of a *Codex* standard, and alcohol limits for the concentrated infusions, spirits, and tinctures have been noted. The hope is expressed that it will be possible to obtain the permission of the Board of Customs and Excise to use methylated spirit in making preparations not taken internally, such as liniments, paints, and ointments. The report of the Action and Uses Subcommittee summarizes the descriptions and standards submitted for the inclusion of certain substances in the *Codex*, among which are antitoxins, toxins, and gland products. The Dressings Subcommittee proposes for inclusion in the *Codex* basic materials, such as jute, silk, and wool, descriptive monographs of their characters having been prepared. In the case of such dressings as phenol gauze and tow, no quantitative standard for the proportion of medicament present has been recommended. This subcommittee's report relates, therefore, to the more important dressings for which revised requirements have been prepared. It is hoped that this summary will prove particularly useful to manufacturers and others interested in the standardization of dressings. These four reports are published by the Pharmaceutical Society, 23, Bloomsbury Square, W.C.1, the first two costing 2s. 6d. each and the last two 1s. 6d.

DIABETES MELLITUS IN ASSOCIATION WITH DEGENERATION OF THE SUPRARENAL GLANDS

BY

R. W. BROOKFIELD, M.D., Ph.D., M.R.C.P., D.P.H.

HONORARY ASSISTANT PHYSICIAN, ROYAL SOUTHERN HOSPITAL,
LIVERPOOL; LECTURER IN PRACTICAL THERAPEUTICS,
UNIVERSITY OF LIVERPOOL

AND

H. V. CORBETT, M.B., ChB., M.R.C.S., L.R.C.P.

LATE HOUSE-PHYSICIAN TO THE HOSPITAL

(With Special Plate)

The association of diabetes mellitus with gross pathological changes in the suprarenal glands is uncommon, and is of great interest from the biochemical as well as from the clinical standpoint. The case of diabetes reported below is further noteworthy because of the unusually high blood sugar values recorded and the enormous doses of insulin required during the course of treatment.

CASE REPORT

The patient was a married woman of 61 years. She was said to have been in indifferent health for about a year prior to coming under observation. During the latter half of this period there had been noticeable loss of weight and some thirst and polyuria. Three weeks before she was admitted to hospital she had a shivering attack and frequency of micturition. The urine was examined at this time, and was found to contain no sugar, nor was any other abnormal constituent detected. Thereafter she appeared to be returning to normal health, until two days before admission she became drowsy, and ultimately semi-comatose. The urine was now found to contain much sugar.

On her admission to hospital on February 21st, 1933, at 11.30 p.m., she could be roused without much difficulty, and answered questions intelligently. Her breath smelled of acetone and the urine gave a strong Rothera reaction. The ocular tension was approximately normal, but her tongue was dry, and a subcutaneous saline, given shortly afterwards, was absorbed with great rapidity. Her state of nutrition was good, and physical examination failed to reveal the presence of any infective process. The heart was moderately dilated and the pulse of low tension, with a frequency of 104 per minute. The respiratory rate was 24, but respiration was otherwise normal in character. The temperature was 97° F. Insulin (30 units) was injected intravenously forthwith and the blood sugar estimated. The high value of 1,040 mg. per 100 c.cm. was obtained (Folin-Wu method). At 1 a.m. 100 units of insulin were given. At 4.30 a.m. the blood sugar was 935 and at 8.30 a.m. 844 mg. per 100 c.cm. These figures were verified by additional estimations on the same samples by another observer at a different laboratory. At 10 a.m. the patient received a further 100 units of insulin. At 12.30 p.m. the blood sugar figure was 608 mg., and at 1 p.m. 100 units of insulin were again given. At 3.30 p.m. the blood sugar had fallen to 400 mg., and at 6 p.m., after a further 100 units of insulin, to 200 mg. per 100 c.cm. By this time the urine was free from sugar and from acetone, the bowels had been well opened, and the liberal administration of fluid, with glucose, had completely relieved any dehydration originally present. At 8.30 p.m. the administration of 30 units of insulin was begun three-hourly, and by this means the blood sugar was kept within the limits 150-228 mg. per 100 c.cm. for the next three days. In spite of the apparent complete relief of the diabetic state, the general condition of the patient had improved but slightly. She was still drowsy and incontinent. The blood non-protein nitrogen was 39 mg. per 100 c.cm. and the Wassermann reaction negative. An attempt was made, with partial success, to maintain a fluid diet corresponding to six lines in R. D. Lawrence's scheme. On February 24th the temperature rose to 104.2° F., and the patient began to suffer from occasional rigors.

She was found to have a leucocytosis of 42,500. No other evidence of septic infection could be discovered, and the blood culture was negative. The urine contained a trace of albumin and a few leucocytes, but was otherwise normal. On February 25th the dose of insulin was reduced to 20 units three-hourly. On the 28th a blood sugar value of 75 mg. per 100 c.cm. was recorded, though there were no symptoms pointing to hypoglycaemia, and the dose of insulin was reduced to 15 units three-hourly. On the following day, however, the blood sugar had risen to 296 mg. per 100 c.cm., and the former dosage of 20 units of insulin was resumed four-hourly. The temperature of the patient continued to fluctuate between 98° and 104°, and her general condition slowly deteriorated. She died, apparently of cardiac failure, on March 3rd, ten days after admission to hospital.

Post-mortem Findings

A necropsy was performed, about six hours after death, by Dr. R. Howard Mole, pathologist to the hospital, to whom we are indebted for the details which follow.

The liver, spleen, alimentary canal, lungs, and heart presented no abnormality. At the site of a subcutaneous injection in the right pectoral region there was a sharply defined area of necrosis, with some subcutaneous emphysema, but little evidence of inflammatory reaction. *Ct. welchii* was isolated. The right kidney showed on its surface numerous haemorrhagic areas and a few milium abscesses. On section multiple areas of focal congestion were visible, and a few minute abscesses. Microscopically the organ showed widespread small-celled infiltration, congestion, and fibrosis. The left kidney, both renal pelves, and the bladder were normal. The pancreas was smaller than normal. Microscopically the islets of Langerhans showed hyaline and fibrotic changes.

Both suprarenal glands were cystic, having the appearance of small semi-collapsed balloons. On section each was found to have been converted into a thin shell, which enclosed a single cavity containing a little yellowish fluid. Microscopically (see Fig. on Plate) the capsule was thickened, and the cortex showed marked changes, involving particularly the fasciculate and reticulate layers. Considerable atrophy of the cell columns of the former was noted, the columns being attenuated and broken up into small cell groups. The intervening tissue had a necrotic appearance; cell boundaries were difficult to demarcate and nuclei were absent. There was some fibrosis. The boundaries of the reticulate layer and medulla were difficult to make out. Both showed much round-celled infiltration and fibrosis, and no normal medullary tissue was seen.

Discussion

Levy Simpson² has recently collected from the literature seven cases of diabetes in which lesions of the suprarenal capsules have been found at necropsy, and has added a further case of his own to this number. In four of the cases there were no adequate grounds on which a diagnosis of Addison's disease could be made during life. The present case must also be placed in this category. In spite of the existence of advanced disease of the suprarenal capsules, the classical symptoms of Addison's disease—pigmentation and vomiting—were not observed. The patient was asthenic and lethargic throughout, and though a sphygmomanometer reading was not taken examination of the heart and pulse suggested that the blood pressure was consistently below normal. A consideration of the biochemical and pathological data suggests that, apart from the suprarenal lesion, a fatal issue would hardly have been anticipated. The condition of the blood and urine after treatment indicates that the diabetic state was completely relieved. Renal function did not seem to be greatly impaired. The day after admission the non-protein nitrogen of the blood was 39 mg. per 100 c.cm., and a few hours before death it was 54 mg. Septic absorption from one or other of the foci of infection present may have been contributory to a fatal result, but neither the inflammatory process in the right kidney nor that in the pectoral region appeared to be of great severity, and the

condition of the organs in general did not suggest a severe toxæmia. It appears possible, therefore, that suprarenal inadequacy was an important factor in causing death.

The lesion is an unusual one. Brenner² has reviewed the literature of suprarenal fibrosis in some detail, but in none of the case reports collected by him is there any reference to a cystic condition resembling that encountered in this case. The presence of fibrous tissue argues the existence of pathological changes in the glands of some months' duration at least, and it may well be, as Levy Simpson has suggested in other cases, that the same toxic agent has produced fibrosis in both suprarenals and pancreas. It is highly probable that the cellular necrosis and the cystic condition developed acutely in glands already the seat of chronic pathological change, either as a result of the diabetic toxæmia or of toxic absorption from the inflamed areas. The presence of suprarenal inadequacy in diabetes mellitus is of particular interest in view of the antagonism which is stated to exist between the suprarenal glands and the pancreas. In uncomplicated Addison's disease hypoglycaemia is the rule (Wadi³). Figures as low as 70 mg. of glucose per 100 c.cm. are commonly obtained. Patients with Addison's disease are very sensitive to insulin, and a fatal result has been recorded after so small a dose as five units (Maranon⁴). This being so, it is not surprising to find that when the subject of Addison's disease suffers also from diabetes the control of the blood sugar by insulin presents considerable difficulties. In both Arnett's⁵ and Levy Simpson's² cases hypoglycaemic crises were very readily induced. In contrast, the present case showed a remarkably steady blood sugar value of about 200 mg. per 100 c.cm. once insulin control had been established, and it must be admitted that this possibly argues against there being serious lack of the suprarenal hormone.

There seems to be no explanation available of the exceptionally high blood sugar level before treatment was instituted. Still higher values, amounting to 1,400 and 1,490 mg. per 100 c.cm. respectively, have been recorded by Joslin⁶ in two fatal cases. The massive doses of insulin required to bring the blood sugar back to the normal level are almost certainly related to the high initial blood sugar value. In the first twenty-four hours of treatment 460 units were given, for the next three days 240 units daily, and thereafter approximately 160 units daily. On one day, when the dose was reduced to 120 units, the blood sugar again rose to 296 mg. per 100 c.cm., indicating that the doses previously given were not unnecessarily large. As there was no rise of temperature until the third day after admission to hospital, by which time the blood sugar had been reduced to 200 mg. per 100 c.cm., neither the high blood sugar nor the necessity for the large doses of insulin can be ascribed with certainty to the presence of infection.

SUMMARY

A case of diabetic coma is reported in which exceptionally high blood sugar values were encountered, necessitating the administration of enormous doses of insulin.

At necropsy an advanced degenerative lesion of the suprarenal glands was discovered, and the bearing of this on the course of the patient's illness is discussed.

REFERENCES

- ¹ Lawrence, R. D.: *The Diabetic Life*, seventh edition, Churchill, London, 1933.
- ² Levy Simpson, S.: *Quart. Journ. Med.*, 1932, i (N.S.), 99.
- ³ Brenner, O.: *Ibid.*, 1928, xxii, 121.
- ⁴ Wadi, W.: *Klin. Woch.*, 1928, vii, 2107.
- ⁵ Maranon, G.: *Presse Méd.*, 1925, xxxiii, 1665.
- ⁶ Arnett, J. H.: *Arch. Int. Med.*, 1927, xxxix, 698.
- ⁷ Joslin, E. P.: *The Treatment of Diabetes Mellitus*, third edition, Kimpton, London, 1924, p. 172.

REDUCTION OF FRACTURES OF THE SURGICAL NECK OF THE HUMERUS

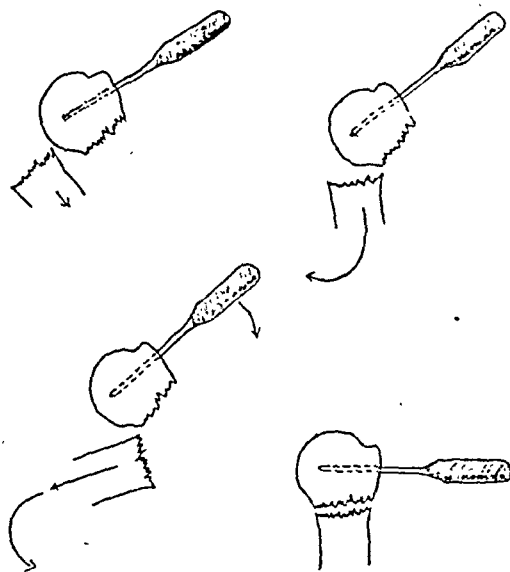
BY

H. MORTON ANDERSON, M.B., CH.B., F.R.C.S.ED.
SURGEON TO COVENTRY AND WARWICKSHIRE HOSPITAL, COVENTRY

(With Special Plate)

The reduction of fractures of the surgical neck of the humerus often presents considerable difficulty. Resort to open reduction may be necessary, but one is naturally unwilling to adopt such a procedure unless compelled to. The method here suggested is offered as an alternative worthy of trial in cases in which the ordinary methods of reduction have proved unsuccessful.

The chief difficulty in this type of fracture is in obtaining fixation of the abducted head during the manoeuvre of reduction, and if this can be attained manipulation becomes considerably simplified. It is possible to do this, however, by the simple method of partial



transfixion of the head of the bone by a bone-awl passed through a stab incision on the outer aspect of the shoulder.

The subsequent steps in the procedure are carried out under the screen in the x-ray department. These consist, in the first place, of traction of the limb in the adducted position in order to pull the lower fragment down to the level of the upper, and, while maintaining this pull, adducting the arm across the chest. The abducted or upper fragment is now adducted by depressing the handle of the bone-awl. It is then easy to engage the upper end of the lower fragment in the fractured surface of the upper. Lastly, the arm is slowly brought back to a slightly abducted position, where it is maintained by splints. Once accurate approximation of the two surfaces is obtained there is little tendency to slipping of the fragments.

The accompanying diagrams will perhaps make it easy to understand what has been described in the text. The manoeuvre is simple and very satisfactory, and its various phases can be completely controlled on the screen.

Photographs—before and after—of an actual case treated by this method, are shown in the figures reproduced on the photogravure plate.

CARCINOMA OF THE OESOPHAGUS

A METHOD OF TREATMENT BY MEANS
OF RADON SEEDS

BY

T. B. JOBSON, M.D., D.P.H.

SURGEON FOR EAR, NOSE, AND THROAT

AND

G. H. STEELE, M.S., F.R.C.S.

ASSISTANT SURGEON

ROYAL SURREY COUNTY HOSPITAL, GUILDFORD

(With Special Plate)

Apart from a few brilliant but unhappily isolated cases of radical excision, it is generally recognized that the successful extirpation of carcinoma of the thoracic oesophagus by operative measures is a virtual impossibility, and that the operative mortality is in the region of 100 per cent. It would be expected that these growths, being in the main typical squamous epitheliomata, would respond as well to radium treatment, as do growths of the tongue and lip; but this hope of cure has been in no way justified, although recent results from deep x-ray therapy have been very encouraging. It therefore remains to decide which of the various palliative measures will, with the minimum amount of discomfort, give the unfortunate patient the greatest relief from his symptoms for the longest period, and at the same time hold out a hope, however slight, of cure.

The outstanding symptom of carcinoma of the oesophagus, and the one calling most urgently for relief, is, of course, dysphagia. Before the advent of radium, gastrostomy was practically the only recognized treatment, although successful palliation was reported as a result of dilatation of the stricture, with or without the help of intubation. Patients with a well-performed gastrostomy can get along very well, and may have many months of comfortable existence to which to look forward, but obviously they are better off if the patency of the oesophagus can be restored.


USE OF RADON

The first applications of radium in cases of carcinoma of the oesophagus were made with the help of containers, with the appropriate dose of radium, lowered into position in the lumen of the gullet and subsequently removed. More lately, methods of thoracotomy and trans- or extra-pleural application of radium or radon to the outer surface of the oesophagus have been tried, with the obvious disadvantage of requiring a serious major operation in a debilitated patient in order that access may be had to the growth. The method about to be described is simplicity itself—direct implantation of radon seeds into the growth through an oesophagoscope. This necessitates a long seed introducer which will not interfere with the limited field of vision allowed by the oesophagoscope, and such an instrument has been designed by one of us (T. B. J.). It consists of an elongated trocar and cannula, with the handle conveniently attached to the side, the knob of the trocar being levelled off flush with the barrel of the cannula. The proximal end of the cannula is marked in alternate centimetre lengths of black and white, as an indication of the depth to which the point of the instrument has penetrated after contact with the growth, the distance being checked against the level of the proximal end of the oesophagoscope. There is no magazine for seeds, as this is unnecessary on account of the small average number of seeds used and would only complicate the instrument. The introducer can be made

in any length, but we find that it is most convenient to have three sizes, long enough to protrude 5 cm. beyond the mouth of (1) the long, (2) the medium oesophagoscope, and (3) the direct laryngoscope, respectively. A blunt-ended plunger with which to push home the seeds accompanies each introducer.

If the patient is in a really serious condition as a result of starvation, a preliminary gastrostomy is performed under local anaesthesia in order to feed him up and render him fit for the oesophagoscope. If he is reasonably well the gastrostomy is omitted. After x-ray examination of a barium swallow has been made to ascertain the level and extent of the growth, and to exclude conditions such as achalasia of the cardia, oesophagoscopy is performed under general anaesthesia; the use of an intratracheal catheter ensures a quiet anaesthesia unimpeded by the pressure of the oesophagoscope behind the larynx, and saves the operator from a continuous blast of anaesthetic in his face. Latterly we have used intravenous sodium evipan as the sole anaesthetic, and with very satisfactory results.

The oesophagoscope is passed down to the growth, which is easily recognized by its raised and everted edge, and a portion is removed for microscopical examination. Then, or later if it is desired to wait for the result of the biopsy, the cannula is pushed into the growth for a distance of 1.5 cm. and a seed inserted; the cannula is withdrawn 1 cm. and another seed deposited. This procedure is repeated at six equidistant points around the



lumen of the gullet, the object being to produce a double ring of seeds encircling the growth (see Plate, Fig. 1). The seeds used are of 1.5 millicuries, screened with 0.5 mm. platinum. The patient is x-rayed after operation, and it is usually found that nine or ten seeds are still in position, the missing ones presumably having been inserted back into the lumen of the gullet below the stricture. The patients suffer no post-operative discomfort, and need not stay in hospital for any length of time, being discharged as soon as they have recovered from the effects of the anaesthetic.

An obvious danger of this operation is that it is impossible to tell where the point of the instrument is when it has been introduced to the full extent. From the literature it appears that accidental rupture of the oesophagus by an oesophagoscope is almost invariably fatal; but that the danger of perforation by a small-bore cannula is of slight degree is shown by the fact that we have, to our certain knowledge, penetrated the oesophageal wall on four occasions without harm. Twice we have observed a strong spurt of blood from the proximal end of the cannula, and a spurt from an 80 mm. tube of 1 mm. bore can only have been produced by the point entering the aorta; and twice radon seeds have been demonstrated by x rays in the pleural cavity at a considerable distance (see Plate, Fig. 2); in none of these cases was any ill effect noticed. The only alternative to this apparently not very grave danger would be to introduce one ring of seeds at a depth of 1½ cm. only, in which case only about 1 cm. length of oesophagus would be irradiated instead of 2 cm., and in such a deadly disease any slight additional risk is worth taking if it is in any way going to improve the prognosis. It will also be contended that only a short length of gullet can be irradiated, but if the growth extends for more than 2 cm. the probability is that it has extended beyond the oesophagus, and no method will cure it.

RESULTS

Up to the present we have treated sixteen cases in this way, a total, of course, far too small from which to draw satisfactory conclusions. The growth is not visible or palpable in the whole of its extent, to allow of accurate dosage and placing of seeds, so that the treatment is largely empirical. But we are of the opinion that an operation of such slight magnitude is well worth performing, as gastrostomy or dilatation of the stricture resulting from the healing of the cancerous ulcer is always available as a second line of defence. So far, there have been no deaths resulting from operation, and the immediate results are sometimes little short of miraculous, the patient volunteering evidence of marked improvement in swallowing at the end of a fortnight or three weeks, although the dysphagia may return later. Other cases fail to respond from the start; but against this may be set off the fact that in a large number of cases the growth is so advanced as to shorten life as much by cancerous cachexia as by starvation, and has already extended beyond the wall of the gullet. In fact, one fairly healthy-looking man, with a six months' history of dysphagia, refused operation, and was dead a fortnight later; had he consented, he would, of course, have been classified as a bad result. Our best case is alive and well three years after operation, swallowing normally and gaining weight. Two others lived for fifteen and eighteen months respectively, with a degree of swallowing in one case approximating to normal, and in the other within the limits of comfort and sustentation of weight. Three patients were able to remove their gastrostomy tubes, which had been used previous to operation. One patient who was brought into hospital on the verge of death from starvation and thirst lived for fifteen months after removal of his gastrostomy tube following irradiation.

The question arises as to whether it is better to leave a gastrostomy tube once it has been inserted, in case the oesophagus closes up again, or to remove it if irradiation is successful and risk having to reopen the fistula. We have found it better to put it to the patient, and let him decide. In some cases the patients were submitted to further oesophagoscopy, and in each case the growth was found to have disappeared and to be replaced by a smooth scar; if there was a stricture, it was amenable to dilatation with oesophageal bougies under direct vision. We have had the opportunity of making a post-mortem examination on only two of our cases. One patient died nine months after operation from erosion of his aorta by the growth, which was found to have recurred extensively, together with a chain of secondary glands extending upwards into the neck; incidentally, this was not one of the cases in which the aorta had been penetrated by the introducer. The other died after two months, the growth having spread to the lung and involved the glands.

STATISTICAL SUMMARY WITH SHORT CASE RECORDS

Number of cases treated	...	...	...	16
Alive and well (three years)	...	...	...	1
Lived more than one year	...	...	...	2
Considerable temporary relief	...	...	...	11
Not relieved	...	...	...	2
Able to remove gastrostomy tube	...	...	...	3

Specimen Cases

R. A., 62. Three months' dysphagia. Biopsy: squamous epithelioma. Ten seeds to growth at level of D 7. Two years later: "Quite well, swallows ordinary food, has gained weight." Three years after operation: "Still swallowing well; at work."

W. S., 75. Three months' dysphagia. Admitted in the last stages of starvation and thirst, unable to swallow fluids for forty-eight hours. Gastrostomy. One month later radon to growth at level of D 8. In one week could swallow

liquids; in two weeks could take cornflour and gruel. Re-oesophagoscoped—healed scar. Refused dilatation, preferred to keep gastrostomy tube to supplement mouth feeds. Lived fifteen months.

J. F., 55. Two months' dysphagia. Fluids only. Gastrostomy. Radon to growth at level of D 4. Oesophagoscoped one month later—healed scar on left side, growth still present on right. Twelve more seeds. Gastrostomy tube removed one month later, because swallowing was so good. Died nine months later of erosion of aorta by growth, following reopening of gastrostomy.

R. S., 71. Four months' dysphagia, semi-solids only. Radon to growth at level of D 5. Six months later can swallow bacon and egg, which he seems to prefer for all meals. Oesophagoscoped—healed scar which dilates well with bougies. Is coming up again for further dilatation. The improvement in swallowing was not evident until a month after operation, and we were correspondingly despondent. It is much too early to be optimistic about this case, but the outlook at present is hopeful.

A. G., 68. Five months' dysphagia, soft solids only. Radon to growth at level of D 8. One month later could swallow cheese, bread-and-butter, and fish. Died four months later. This is a typical instance of the temporary improvement observed in the majority of cases.

S. M., 80. Four months' dysphagia, fluids only. Radon to growth at level of D 4. No improvement. Oesophagoscoped two months later; growth smaller in size, but not much altered in appearance. Stricture very tough, will not dilate up. Refuses gastrostomy.

A CASE OF VON RECKLINGHAUSEN'S DISEASE

BY

WILLIAM MARSHALL, M.B., CH.B.

HONORARY SURGEON, PETERBOROUGH AND DISTRICT MEMORIAL HOSPITAL

With a Note on the Psychology

BY

ALEXANDER W. WATT, M.B., CH.B., D.P.M.

(With Special Plate)

Below I append some notes on a complete case of von Recklinghausen's disease, occurring in a man who was also the subject of a right inguinal hernia, which required operation by an unorthodox incision.

He was an agricultural labourer, aged 57, who first noticed some nodules on his chest when he was 16. He could give no family history of a similar condition, but he had not kept in touch with his relatives. He had been twice married, and had a family of nine children, the two eldest of whom, girls of 20 and 15, were stated to have pigmented patches on the dorsum of the forearm.

The whole of the anterior and posterior aspects of his thorax and abdomen were covered with typical nodules—soft, with firm centres, sensitive to touch, and ranging in size from a pea to a hen's egg. There were also nodules on the face, and the scalp was covered with them. The arms and legs were affected to a lesser extent, and there were small nodules on the palms of the hands and the soles of the feet. "Blue spots" were numerous on the flexor aspects of the arms. There was a pigmented area 2 in. square on the medial aspect of the left thigh. There was well-marked bronzing of the skin, especially of the face. The hair of the scalp was markedly coarse. There was none on the chest, but the pubic hair was of the normal adult male distribution. There were no patches of adipose deposit.

Notes on the other systems affected are as follows:

Nervous.—There were no neurological signs or symptoms beyond a slightly increased left-knee jerk, and a left-sided deafness of the conduction type.

Endocrine.—The features were suggestive of the acromegalic type, and the supraorbital ridges were marked. The radiogram showed a definitely deepened sella turcica, but there was no

diminution of the visual fields. There was no glycosuria and no polyuria. Basal metabolic rate by Read's formula was +3. The condition suggested a dyspituitarism—an earlier increased function now being masked by hypopituitarism. The bronzing was not Addisonian—there was no asthenia, the mucous membranes were not affected, and the systolic blood pressure was 130. There was no obvious thyroid dysfunction.

Skeletal.—There was a well-marked scoliosis, convex to the left, extending from the sixth thoracic to the fourth lumbar vertebra. There was some expansion of the head of the left fibula without definite cyst formation.

Psychological.—I am indebted to Dr. A. W. Watt for the following notes, as well as for many helpful suggestions. "The patient is an introvert. Docile in disposition, and serene in temperament, he has no false modesty about his appearance, and no resentment against it. He is companionable, but not sociable, in that he does not actively seek the society of others, but, when included, enjoys their company and conversation, giving them his undivided attention and reasoning to the best of his limited intelligence, which is equivalent to that of a child of 15. Emotionally he is quietly

euphoric, and his attitude to life is stable, equable, and submissive. He expects little from the future, and is content with the past.

The patient was admitted because the dragging pain of his hernia was interfering with his work. The presence of the nodules ruled out any possibility of a truss. In view of the statement (Dick and Illingworth: *Textbook of Surgical Pathology*) that the nodules, if incised, tend to become malignant, the orthodox incision was out of the question. Fortunately the skin of the thigh had comparatively few nodules and was very elastic. An incision was therefore made 3/4 in. below, and parallel to, the inguinal ligament, and the skin retracted over the ligament to give access to the canal. The usual Bassini operation was performed. No nodules were discovered under the skin. Recovery was uneventful, except that the nodules on his back tended to become red with lying in bed.

I am indebted to the house-surgeon, Dr. J. Ivor Williams, for his careful note-taking and advice in posing the photograph.

HYPODERMOLITHIASIS

BY

J. PATERSON ROSS, M.S., F.R.C.S.

ASSISTANT DIRECTOR, SURGICAL PROFESSORIAL UNIT, ST. BARTHOLOMEW'S HOSPITAL

(With Special Plate)

The term "hypodermolithiasis" might be expected to refer to any deposit of stone-like material in the subcutaneous tissue, and to include gouty tophi, and calcification in tuberculous foci, cysts, and tumours in, or just beneath, the skin. There is a tendency, however, to limit the use of the term to cases in which subcutaneous calcareous nodules are formed in the absence of any such antecedent skin lesions.

Though calcareous concretions in the skin were described as long ago as the middle of the seventeenth century, the account of a case published by Weber,¹ a Swiss physician, in 1878, is commonly considered to be the earliest record. The close similarity between these concretions and the tophi of gout may be misleading, and it appears that Weber at first mistook calcareous for uratic deposits. The introduction of radiography has eliminated this error, for tophi are not opaque to x-rays. The incidence of hypodermolithiasis is difficult to estimate because it seems likely that the disease may sometimes go unrecognized. Five years ago Köhler,² who was evidently careful to exclude cases in which calcification occurred in the deep tissues as well as in the skin, could discover records of only twelve cases, but the number is being steadily increased, especially in the French literature, largely owing to the influence of Thibierge and Weissenbach.³ The present account is being published not merely to bring forward three more examples of a clinical and pathological curiosity, but in order to suggest a method of treatment which appears to be worthy of trial, though an opportunity of putting the matter to the test has not yet presented itself.

CASE RECORDS

Case I

A woman, 28 years of age, complained that her right thumb was becoming larger, her attention having been drawn to it because she was unable to buy gloves that would fit. She is a dispenser, and though she suffered no pain, yet as the swelling of the terminal phalanx of the thumb increased she became aware of slight awkwardness in handling large bottles. At a later date a firm lump appeared in the pad of the left middle finger. Her general health was excellent, but in childhood she had suffered severely from chilblains, and for many years cold had caused the fingers of both hands to "go

dead," an affliction which she had inherited from her father. The effect of exposure to cold was that all the fingers became very cold and pale from end to end, but even during the period of recovery they never became blue. Her sister's fingers reacted similarly, but as she took up cookery her employment provided the ideal conditions for counteracting this inherited tendency to "dead fingers." Dispensing, on the contrary, involves the handling of cold objects, and our patient noticed how the pressure exerted through the pad of her right thumb when grasping a large bottle would cause more intense pallor of this particular part.

On examination the radial pulses were equally full, and the arterial wall felt normal. When warm the skin of the fingers had the natural pinkish hue. It was soft and pliable, and there was no ulceration or scarring. The terminal phalanx of the right thumb was enlarged, owing to a firm, ill-defined swelling or induration on its palmar aspect. The induration seemed to lie immediately beneath the skin, but there were no signs of inflammation, nor were there any white spots visible on its surface. At the tip of the left middle finger there was a similar but much smaller indurated swelling, and at one point a hard, whitish substance seemed to be about to burst through the skin. There were no signs of disease elsewhere in the body.

A radiogram of the hands showed two very clearly defined aggregations of calcareous nodules, in the pad of the right thumb and at the tip of the left middle finger. The bone shadows were of normal density, and there was nothing to suggest a transference of calcium from within the bones (see Fig. 1 on Plate). Estimation of the calcium and phosphorus content of the blood gave normal figures—calcium, 9.9 mg. per 100 c.c. serum; phosphorus, 3.4 mg. per 100 c.c. plasma.

On March 20th, 1933, the nodules were excised, and it was found that they consisted of small collections of a gritty and cheesy white substance, embedded in tough fibrous tissue. They were examined by Dr. G. A. Harrison, who reported that they consisted of amorphous matter only, no sodium biurate or other crystals being present, and that they were composed of calcium phosphate with a trace of calcium carbonate.

I was at a loss to explain the condition until Dr. George Simon drew my attention to a paper by Twining and Addey,⁴ illustrated by a radiogram showing a precisely similar picture. The patient they described was a woman, 48 years of age, who had always suffered from a bad circulation, the hands and feet becoming cold and blue in cold weather, or when immersed in cold water. Twelve months previously she began to have pain at the tip of the middle finger of the right hand, and after six months a swelling appeared, showing through the skin as a yellowish "blister," which, when pricked, exuded yellowish-white matter. X-ray examination revealed calcified nodules in the index and little fingers as well

as at the tip of the middle finger. It will be noted that this patient's fingers became blue when exposed to cold, but the occurrence of pallor without cyanosis, as in our case, has been recorded by Scholefield and Parkes Weber.⁵ The early history of their patient, a woman aged 50, was exactly similar to that of ours, for as a child she had been subject to chilblains, and at about the age of 20 she began to be troubled by the fingers "going dead" in cold weather. The morbid anatomy was also identical, removal of one of the subcutaneous concretions proving a difficult matter "because it was firmly embedded in a dense meshwork of fibrous tissue." Since the age of 35 years the skin and soft parts of the fingers had been becoming harder and stiffer. The appearance of sclerodactylia is the only significant difference between Scholefield and Parkes Weber's case and ours, and may be explicable by the difference in their ages. The fact that our patient had the characteristic nodules while the skin and subcutaneous tissue elsewhere were of the natural texture may be of importance, because it seems to show that calcification can occur merely as a result of the vasomotor phenomena associated with "local syncope" and pallor of the skin. Scholefield and Parkes Weber inferred from the history of their patient that the process of calcareous deposition commenced about the same time as the sclerodactylia, but were inclined to think that calcification was really secondary to the sclerosis.

Case II

In June, 1933, Mr. R. C. Elmslie referred to us a patient with Raynaud's disease from whose fingers he had curetted out calcified nodules. She was 52 years of age, and had suffered from Raynaud's disease for thirty years, but as she had spent the greater part of her life in a warm climate the disability had been minimal. In November, 1929, and again in June, 1933, calcareous concretions had been removed from her fingers, but a radiogram showed that there were many smaller nodules still present (see Fig. 2 on Plate). Though the Raynaud's disease involved the feet also, x rays did not reveal any calcification in the toes, this observation being in agreement with other published reports.

Case III

A woman, 62 years of age, was referred to us by Dr. H. Morley Fletcher in October, 1933. For twelve years she had suffered from attacks in which her fingers and toes became blue and felt numb. The attacks were brought on by cold, and the pulse in the radial arteries was normal. In addition to these manifestations of Raynaud's disease, the fingers presented the appearance characteristic of sclerodactylia, the index and middle fingers of both hands being particularly indurated and stunted, with atrophic pads and with nails which curled over their tips. For five years she had noticed numerous firm lumps under the skin, which formed first in the fingers, then in the palm, and finally all along the ulnar border of the forearms, as far as the elbows. As they grew larger they became yellow, and when she pricked those which looked as though they were about to penetrate the skin, some cheesy white substance escaped. X-ray examination revealed calcified masses in all the digits, in the skin of the palm, and along the ulnar border of the forearm on both sides. Some of the terminal phalanges showed the bone destruction which is not infrequent in advanced Raynaud's disease, but elsewhere the bones showed no evidence of decalcification (Fig. 3 on Plate).

DISCUSSION

Subcutaneous calcareous concretions in Raynaud's disease have been recorded by Haldin Davis,⁶ in a woman aged 34, who had suffered from chilblains all her life, Raynaud's disease for many years, and nodules in the fingers of both hands for seven years; and also by Logan,⁷ in a woman 60 years of age, whose hands and feet had been unduly susceptible to cold for as long as she could remember, and whose symptoms for fifteen years had been severe enough to warrant the diagnosis

of Raynaud's disease. The patient described by Haldin Davis had nodules on the elbows also. Another case published by Hunter is quoted by Durham.⁸ The result of chemical analysis of the concretions is mentioned by Scholefield and Parkes Weber, and by Logan. The nodules were all composed of a mixture of calcium phosphate and carbonate, but whereas the former found chiefly carbonate, Logan's analysis seems to agree with ours, which showed that the nodules consisted mainly of calcium phosphate.

It will be noticed that the cases of hypodermolithiasis quoted above have certain features in common. The patients were all women whose peripheral blood vessels were unduly susceptible to cold, and the deposits of calcium phosphate occurred in the subcutaneous tissue of those portions of the upper extremity which are naturally the coldest. There is nothing to suggest a disturbance of calcium metabolism, and the condition appears to be purely a local disorder resulting from impaired blood supply and malnutrition of the subcutaneous tissue. This group must therefore be distinguished from the more widespread calcareous deposits which may occur when the metabolism of calcium is faulty. Even the calcareous concretions rarely found in scleroderma, which have been so fully studied by Durham,⁹ and those with which we are now dealing are probably not identical. The chemical reactions which underlie calcification are not perfectly understood, but it is a matter of experience that the tissues affected are almost always dead or dying, and the frequency of calcification as a senile change indicates the importance of feeble nutritive activity and a retarded blood stream as causative factors. It may be that carbon dioxide holds the earthy salts in solution in the blood and lymph, and that when the stream becomes greatly slowed carbon dioxide escapes from it and the calcium salts are precipitated. An alternative theory is that put forward by McGowan,¹⁰ who believes that all calcification is based upon necrobiotic degenerative changes in which the phospho-lipines are broken up, the phosphoric acid thus set free being neutralized by calcium from the blood and deposited as calcium phosphate. Whatever the true explanation of calcification may be, it seems necessary to postulate tissue degeneration, which, in the case of hypodermolithiasis, might well be the result of the local vascular disorder.

Bearing in mind the observation that the subcutaneous calcareous concretions are associated with some impairment of the peripheral circulation, it is not unreasonable to suppose that in an early stage the progress of the malady might be arrested by means of sympathetic ganglionectomy. This treatment has been advocated in Case I, but the patient feels that her disability is not sufficient to justify the operation. The vasomotor reactions would have to be carefully tested in order to forecast the result of sympathectomy in every case, and it is probable that patients who have extensive sclerodactylia and those with Raynaud's disease who have had repeated ulceration of the fingers might prove to be unsuitable. But if it be accepted that hypodermolithiasis signifies progressive tissue degeneration, then every effort should be made to improve the circulation early in the disease.

REFERENCES

- ¹ Weber, H.: *Corr. Bl. f. Schweiz. Aertze*, 1878, viii, 623.
- ² Kohler, A.: *Röntgenology* (translated by Turnbull), 1928.
- ³ Werresbach, R. J., Vignal, E. W., and Guillaumin, C. O.: *Bull. Soc. Franç. de Dermat. et de Syph.*, 1929, xxxvi, 910.
- ⁴ Twining, E. W., and Adley, W.: *Brit. Journ. Radiol.*, 1933, vi, 240.
- ⁵ Scholefield, R. E., and Parkes Weber, F.: *Brit. Journ. Derm.*, 1911, xxiii, 276.
- ⁶ Davis, H.: *Proc. Roy. Soc. Med. (Dermatol. Sect.)*, 1912, v, 99.
- ⁷ Logan, J. R.: *Arch. Radiol. and Electrol.*, 1923, xxviii, 55.
- ⁸ Durham, R. H.: *Arch. Int. Med.*, 1928, xlii, 467.
- ⁹ McGowan, J. P.: *British Medical Journal*, 1933, ii, 895.

Clinical Memoranda

A CASE OF MULTIPLE HYDATID DISEASE

(With Special Plate).

The following notes of a case of multiple hydatid disease are, we consider, worthy of publication.

A patient, aged 59, who had spent practically all his life at sea in all parts of the world, including the Far East, Australia, West Africa, and South America, consulted one of us in November, 1931, on account of dyspepsia. For some time he had been troubled with flatulence and pain in the epigastrium two to three hours after meals. His bowels were normal. He had lost about one stone in weight in the last few months. On examination his stomach was somewhat dilated, and a hard, palpable lump, which was dull to percussion and which moved on respiration, could be felt under the left costal margin. As a notch could be felt on its anterior border its position and shape suggested an enlarged spleen, particularly as he had suffered a lot from malaria while in West Africa. He was somewhat anaemic, though the blood picture did not disclose anything more than a secondary anaemia. Clinically his lungs were clear.

He was lost sight of until March, 1933, when he developed influenza. This was followed by a persistent, hacking cough, with copious expectoration, which eventually became blood-stained. Periodically he had slight attacks of haemoptysis. There was little in the way of physical signs in the chest, except some impaired resonance at the left base. The sputum was examined for tubercle bacilli and reported negative. He had lost 12 lb. in weight since first seen in November, 1931. The abdominal "tumour" had considerably increased in dimensions, and now extended almost to the middle line and downwards to the level of the umbilicus. The swelling was rounded and fluctuating, and a distinct thrill could be made out. It was now obvious that what we were dealing with was a hydatid cyst of the spleen. In May of this year, while coughing, the patient expectorated what he described as "a white skin," which was about two inches in diameter; this, in all probability, would be a small hydatid cyst.

Radiograms of the chest showed a rounded dense area situated in the upper and outer portion of the lower lobe of the right lung. In the left lung a similar shadow was seen in the upper lobe just below the clavicle. This shadow was of varying density, and suggested a lobulated cyst. A large shadow was seen involving the base of the left lung, and within it a smaller and denser shadow, suggestive of a cyst and daughter cyst (see figure on Plate). The level of the left side of the diaphragm was seen to be raised, as if pushed up by an intra-abdominal tumour or cyst. The oesophagus and trachea appeared to be displaced to the right. A barium meal was given, and the whole of the stomach was seen to be displaced to the right of the mid-line, and the position of the oesophagus, as seen in the screen examination of the chest, was confirmed. A dense area was seen in the upper and left part of the abdomen. The x-ray findings suggested multiple hydatid disease of the lungs, plus a hydatid cyst within the abdominal cavity, probably arising from the spleen.

The diagnosis of hydatid cyst was confirmed by operation. On July 5th, 1933, under spinal anaesthesia, laparotomy was performed by an incision through the upper part of the left rectus muscle. On opening the peritoneum a large globular swelling, surrounded by omentum, presented at the wound. The peritoneal cavity was packed off, and through a bloodless area a large trocar was inserted into the cyst, and almost three pints of a clear, homogeneous fluid were withdrawn. The puncture was enlarged, and eventually a large solitary mother cyst, about the size of a newborn child's head, was delivered. The cavity was swabbed with 1 per cent. formalin solution, and marsupialized to the abdominal wall. No daughter cysts were present, but examination of the lining of the cyst wall showed them in process of "budding." Convalescence after operation was normal, except for the presence of copious frothy expectoration and a slight evening rise of temperature. Sixteen days after the operation a rise in temperature to 103° was associated with the birth of a medium-sized cyst through the abdominal sinus. Three

weeks later the patient had a rigor, and next day another cyst was found projecting through the operation wound. Its removal was followed by a free discharge of purulent hydatid fluid.

The patient now made satisfactory progress until September 13th, when he had a severe rigor. He developed a rusty "spit," complained of acute pleuritic pain, and physical signs of a left basal pneumonia supervened. While expectorating on two occasions a small cyst was "brought up," each about the size of a ping-pong ball. He appeared to develop a crisis on the fifteenth day after the rigor, although the lower half of the left lung was then absolutely dull to percussion, with complete absence of breath sounds. By this time the abdominal sinus was almost healed. For eight days his temperature remained normal. On the ninth day after the crisis the temperature again commenced to swing, and the area of dullness increased, causing a good deal of dyspnoea. An exploring syringe was inserted, and thin yellow pus withdrawn to confirm the presence of an empyema. Under local anaesthesia, using 1 per cent. novutox, rib resection was performed. The pleural cavity appeared to be almost obliterated by adherent subjacent lung. On exploration the finger found its way into a large cavity—apparently in the lung substance. Almost immediately there was a copious discharge of pus by the mouth. On withdrawing the finger from the wound a small hydatid cyst came away, a quantity of fetid pus, and another enormous cyst wall.

The rapidity with which the abscess in the lung evacuated itself unfortunately produced symptoms of acute cardiac distress, and the patient succumbed soon afterwards.

GRAHAM W. CHRISTIE, M.C., F.R.C.S.Ed.

Ulverston. RICHARD FAWCITT, M.B., Ch.B.

A CASE OF OS INTERMETATARSEUM

(With Special Plate)

The following case is of interest in view of that published by Mr. Harold Dodd in the *Journal* of October 28th, 1933 (a case of "march foot"), in that it shows the architectural defect which he describes, associated with a rare example of accessory bone.

The patient, a hospital maid aged 23, had not complained of any foot trouble until two weeks before she was seen, when she was convalescent from an attack of influenza. Clinically she is a well-developed and healthy type. Both feet showed a degree of pes cavus, and an unusual mobility of the inner part of the foot in the region of the tarso-metatarsal joints was apparent on manipulation. The pain complained of was related to the inner aspect of the arch, and this was definitely tender on pressure, but there was no evidence of swelling. The x-ray appearance (see Plate) is an unusual and interesting one. The condition is bilateral, and identical on the two sides. The radiogram shows the same features as in Mr. Dodd's case—namely, apparent prolongation of the space between the bases of the first and second metatarsals through the first and second cuneiforms to the scaphoid. In addition to this, the case shows the presence of a small accessory bone lying in the proximal part of the first interosseous space. This I take to be an example of the os intermetatarsale which has been described by Köhler,¹ who gives a résumé of previous cases. The shape of the accessory bone is suggestive in that it shows a broad base, which articulates with the outer aspect of the base of the first metatarsal, and a narrow extremity, tapering towards the distal end. The condition is apparently a developmental abnormality of the nature of a vestigial accessory digit. In comparing this case with that reported by Mr. Dodd the question arises as to whether the condition he describes is a less well differentiated degree of a similar condition to the above.

REFERENCE

¹ The Borderlands of the Normal and Early Pathological in the Skiagram, *Röntgenology*, 1930, p. 87.

WILLIAM STEWART SHEARER,
F.R.C.S.Ed., D.R.Ed.,

Assistant Radiologist, Royal Albert
Edward Infirmary, Wigan.

Reviews

MENTAL DEFECT

In order to avoid any misunderstanding which might arise from its title, it should be stated that *Mental Defect*,¹ by Dr. LIONEL S. PENROSE, does not profess to be a systematic textbook on this subject. It is the first volume of a new series of textbooks on social biology edited by Professor L. Hogben, and it is written from this standpoint, being intended for medical and lay persons who desire to obtain information on some of the scientific problems associated with the study of mental deficiency. Dr. Penrose considers, very rightly, that among the most important of these problems are those relating to the nature and cause of mental defect. He therefore chiefly concerns himself with these, together with certain methods of scientific investigation and with a discussion of some current views. Considering the purpose of the book, less attention is naturally given to describing the various clinical types and to problems of treatment, although it is probable that sufficient is said under these headings for the reader for whom the book is intended.

The subjects of the causation and classification of defect are intimately connected, and the author discusses classification in some detail. This is rendered all the more necessary for the reason that, although the mental specialist has for long recognized the existence of many clinical forms of defect, each of which may possibly differ in its causation, the majority of lay persons, and perhaps even some medical men, are still under the impression that mental defect is a single entity and a clearly defined condition. As a matter of fact there is one type of primary amentia, designated by Lewis "subcultural," which, strictly speaking, may not be pathological at all, but merely the tail end of a normal variation.

The author's predilections, not unnaturally, have caused him to pay more especial attention to certain aspects of the subject than to others. Unfortunately, this tends to result in his presentation being somewhat one-sided and lacking in balanced proportion. Thus, while eleven pages are occupied with a discussion as to the relationship between size of head and intelligence, to reach the conclusion that the correlation is on the whole too small to be of any practical diagnostic value, the more important and fundamental question of the relationship between cerebral architecture and intelligence is dismissed in a very cursory manner. To state that "our knowledge of the relationship between the structure of the cerebral cortex, as revealed by the microscope, and the intelligence, as ascertained by mental tests, is extremely limited," is to give an inadequate and erroneous impression of the value of the researches in this field which have been made by J. S. Bolton and other workers. Further, it is surely unjustifiable to make the somewhat sweeping assertion that "if histological examinations were carried out systematically on the brains of mental defectives with I.Q. above 50, it seems highly improbable that any large proportion would show characteristic pathological changes." Our knowledge of the cerebral histology of amentia is still very incomplete; and this is all the more reason why systematic investigations should be made; but it is unscientific to attempt to forecast the results until this has been done. It is quite possible that such investigations might throw at least as much light upon causation as do genetical and statistical inquiries.

With regard to these latter, to which the author devotes a considerable amount of space, the results are at present

far from conclusive. While there is no doubt that inheritance plays an important part in the production of mental defect, we really know very little as to either the nature of the underlying germ mutation or the mode of transmission. This being so, the really scientific method should be the collection of as complete data as possible regarding the patient's make-up as revealed by the fullest inquiries into his family history; we are consequently unable to accept Dr. Penrose's dictum that "the value of the family history depends on the completeness with which the individuals in a given generation are studied. It is far more useful to have accurate knowledge of the sibship and parents of the patient alone than to have any amount of information about cousins and grandparents."

The book is pleasantly written and very readable, although the absence of a subject index is a disadvantage. There is much in it which should prove of interest to the general reader; yet on the whole it is somewhat disappointing. It may be that we expected too much; for the biological problems presented by mental defect are probably too great and too complicated to be explicable entirely in terms of genetics and mathematics. But we cannot help feeling that the author might perhaps have been wiser to defer publishing his views until further research into the many aspects of this very intricate subject enabled him to do so in a more conclusive and comprehensive manner.

PATHOLOGY OF THE HEART AND VESSELS

The tenth section of the new treatise of medicine published by Masson et Cie consists of two volumes, entitled the *Pathology of the Heart and Vessels*.² Professors ROGER, VIDAL, and the late Professor TEISSIER are the editors. The matter has been prepared by numerous authors. The result is two large and heavy tomes of some 1,700 pages in all. All aspects of cardiovascular disease are considered, as well as the pathology. The first volume deals with the methods of examination of the heart, the study of different syndromes, and the action of drugs on the heart; the second volume, with the various diseases of the heart; and the third, yet to appear, with diseases of vessels.

On the whole the orthodox lines of teaching are followed, and a mere catalogue of the contents of this work can serve no useful purpose. In books of this kind, however, authors are apt to allot to subjects of particular interest to themselves more space in relation to other matters than their importance warrants. Or it may be that they consider such subjects to be insufficiently stressed in the ordinary textbook. For example, in the section on auscultation in the first volume the editors have given twice as much room to functional murmurs as they have to those of organic origin. The radiological examination of the heart has been covered in as few as some twenty pages: there is no illustration of the enlarged left auricle in the right anterior oblique position, and its relation to the oesophagus is not mentioned. Nothing is said about the x-ray findings in coarctation of the aorta. Electrocardiography is fairly comprehensively treated, though its presentation leaves much to be desired. Bundle-branch block is included as an arrhythmia, and extrasystoles appear under the heading of "Arrhythmies Hsiennes." The section on heart failure is unnecessarily complicated. Subacute infective endocarditis is discussed in connexion with right heart failure; then follow sections on left heart failure and auricular failure. It seems out of place to introduce into this part of the book

¹ *Mental Defect*. By L. S. Penrose, M.A., M.D., Research Medical Officer, Royal Eastern Counties Institution, Colchester. London: Sidgwick and Jackson, 1933. (Pp. xi + 183; 4 plates and 2 figures. 8s. 6d. net.)

² *Nouveau Traité de Médecine*. Fascicule X. *Pathologie de l'Appareil circulatoire (Cœur et Vaisseaux)*. Tome I and II. Cœur. Publiée sous la direction de MM. G. H. Roger, Fernand Vidal, et P. J. Teissier. Paris: Masson et Cie, 1933. (Tome I: Pp. 992, 512 figures, 135 francs; Tome II: Pp. 778, 123 figures, 115 francs.)

details of the morbid anatomy of pulmonary and renal infarction. The conclusion is reached that excessive effort can strain a healthy heart. The chapters on shock, collapse, and syncope make interesting reading, though it is questionable whether such an elaborate classification of syncope is really helpful.

In the second volume, on diseases of the heart, further space is given to subacute endocarditis, no fewer than eleven types being distinguished. Coronary artery obstruction and infarction of the myocardium do not receive the attention they deserve, and there is no reference to the effects of thyrotoxicosis on the heart. Although there is in the two volumes a vast quantity of information, some of which it would be difficult to find elsewhere, it cannot be said that they will be of much value to English and American readers. The work suffers from the usual defects of similar French publications: there is no index; there are very few references; there is the customary disregard of other European and transatlantic authors. The type, however, is clear, and the paper of good quality.

"ROSE AND CARLESS"

Thirty-five years ago the first edition of Rose and Carless's well-known *Manual of Surgery*² was published, and since that time it has been the surgical guide of countless students the world over. There could be no better evidence that it still retains its popularity than the fact that a new (fourteenth) edition is called for but three years after the last. The editorship remains in the hands of Mr. C. P. G. WAKELEY and Mr. J. B. HUNTER, while the chapters upon "special" subjects are all sponsored by well-known exponents. The greatest change since the last issue is undoubtedly the production of the whole book on a surfaced paper, which has added to the clearness of the illustrations in general and, in particular, has enabled the radiograms to be placed in their proper position in the text, instead of being collected together in an appendix at the end of the book. Nothing can be more irritating than a frequent reference to illustrations out of their context, and we feel that this improvement alone enhances the value of the work considerably. The paper has been very carefully chosen, for, while allowing good reproductions of radiograms (notoriously difficult at all times), it is nevertheless not so surfaced as to render reading difficult on account of high lights. Three hundred new illustrations have been added in the text, and the plates brought up to twenty-four; nevertheless, the size of the book has not been increased.

On the purely technical side, a short but adequate description of the physics of radium is given, and also an account of the use of radium in the treatment of cancer of the various organs. The value of "sympathetic surgery" in the treatment of vasospastic and other conditions also receives notice, although in this regard we are surprised to see the statement retained that "thromboangiitis obliterans is a condition met with chiefly in Russian and Polish Jews who are heavy cigarette smokers." Buerger's original cases were perhaps of this type for geographical reasons, but the large number of cases now recorded in this country in non-smoking gentiles seems to prove that this disease has no racial restrictions. Böhler's methods of treating fractures are mentioned, and also the Winnett Orr treatment of infected bones. The newer methods of thoracic surgery receive attention, particularly in the case of empyema, and the student will derive sufficiently up-to-date information from this source regarding any treatment which

may be said to have received general acceptance and usage; it is obviously not the function of a student's textbook to deal with surgery in the experimental stage.

Although the constant change in surgical outlook renders it necessary to add fresh material in each edition, it is not primarily on account of its up-to-dateness that "Rose and Carless" has remained one of the most popular of all textbooks, but rather because of its sound teaching on general matters and the maintenance of a good balance. We are pleased, therefore, to note that the present editors have not altered the main characteristics of the work, so that it may still be regarded as one of the best general-textbooks on the subject, and one to which the student may turn with confidence.

PHYSICAL DIAGNOSIS OF DISEASES OF THE CHEST

The fifth edition of *Diseases of the Chest and the Principles of Physical Diagnosis*,⁴ by G. W. NORRIS and H. R. M. LANDIS, has been published rather more than two years after its predecessor. New material has been added, including an account of the use of the bronchoscope in the diagnosis of respiratory affections. The physical methods of diagnosis in diseases of the chest are as important to-day as ever, and a comprehensive and detailed exposition such as this cannot fail to be of great service so long as it is kept well up to date. To this end revision has been undertaken at roughly two-yearly intervals, and some increase of size is inevitable. Illustrations in the form of photographs and diagrams have been used freely, and the pathological appearances are portrayed by clear reproductions of frozen sections. The book has a primarily practical outlook, and the various steps in conducting a complete examination of the heart and lungs are described in detail, every opportunity being taken to reinforce the verbal descriptions by photographs. Special attention is paid to the part played by acoustics in diagnosis; the origin of sounds heard, and the reasons for their transmission in certain directions and for their variation, are expounded at unusual length. The authors believe that such considerations are essential if full value is to be gained from percussion and auscultation. The normal findings are given in each case, and the explanation of the changes induced by different anatomical and pathological modifications is set out at length. The authors have achieved their expressed purpose of compiling a book which shall indicate how very large a part must be played in diagnosis by careful and instructed physical examination.

HISTOPATHOLOGY OF THE UTERINE MUCOSA

The histopathology of the uterine mucosa presents peculiar difficulties, partly because of the normal cyclical variations which occur in it, and partly because so much of the material which reaches the laboratory is damaged by the curette. Professor DEELMAN had the happy inspiration to provide a book to aid the gynaecologist and the pathologist in the study of this difficult terrain.⁵ It contains 248 illustrations, most of them photomicrographs, and the standard magnifications depicted are 10-15 and 100-180. The book, of 247 pages, is divided into eight sections, dealing respectively with the endometrium of pregnancy and its pathological changes, hydatidiform mole and chorion epithelioma, endometritis, atypical sections,

² *Rose and Carless' Manual of Surgery*. Edited by C. P. G. Wakeley, D.Sc., F.R.C.S., and J. B. Hunter, M.C., M.Ch., F.R.C.S. Fourteenth edition. London: Baillière, Tindall and Cox. 1933. (Pp. vii + 1,487. 30s., published in one or in two volumes.)

⁴ *Diseases of the Chest and the Principles of Physical Diagnosis*. By G. W. Norris, A.B., M.D., and H. R. M. Landis, A.B., M.D., Sc.D. Fifth edition. London: W. B. Saunders Company. 1933. (Pp. 997. 50s.)

⁵ *Die Histopathologie der Uterus-mucosa*. Von Dr. H. T. Deelman. Leipzig: G. Thieme. 1933. (Pp. 247; 248 figures. M.22; Geb. M.24.)

uterine polypi and other benign growths, carcinoma of the uterus, hypertrophy and glandular hyperplasia of the endometrium, and the pathology of the endometrium during the climacteric. The author has tried not to advance any original views, but to illustrate and describe pathological conditions which he has met with in the vast amount of material he has handled during the last ten years. Most writers of textbooks illustrate any given pathological condition with pictures from a typical section, and it is the common experience of the student looking down the microscope that typical sections are rarely encountered. Professor Deelman has attempted to provide as many different pictures of each condition as possible, and has not hesitated to include photomicrographs of sections from which he was only able to make an alternative diagnosis. It is encouraging to realize that such an authority is unable in some cases to decide between carcinoma and chronic inflammation. The illustrations are good, and for the most part depict what the author describes—and he is economical in the use of words.

Professor Deelman is to be congratulated, not only on adequately accomplishing a difficult task, but on initiating a new type of book. We know of none other that possesses anything approaching the same value to the gynaecologist desirous of studying the histology and the pathology of the uterine mucosa.

Notes on Books

Calcium Metabolism and Calcium Therapy,* by Dr. A. CANTAROW, first appeared in 1931, and a second edition has now been published. The fact that this has been required so soon indicates that the monograph has been found very useful by the medical profession. A full account of existing knowledge about calcium metabolism and therapy was given in the first edition, and in consequence the author has not now found it necessary to make any extensive changes. Calcium metabolism presents many problems of peculiar difficulty, and our knowledge on many points of fundamental importance is still very incomplete. The amount of research in this subject is considerable, and steady progress is being made, but no very striking advances have been recorded. A perusal of the volume shows that the author has included a full account of all the more important work that has been published since the appearance of the first edition. It gives as clear and concise a presentation as is possible of a difficult subject, and can therefore be recommended.

The fifty-third volume of *The Transactions of the Edinburgh Obstetrical Society*† comprises the work of the session 1932-3, and opens with the presidential address to the society delivered by Dr. James Young in November, 1932, the subject being the medical schools and the nation's health. The obstetrical contributions deal with the x-ray diagnosis of placenta praevia, delayed labour due to haemangio-lymphangioma of the foetal neck, recent views on the physiology of the gravid uterus, bilateral cortical necrosis of the kidneys occurring during pregnancy, the sodium morrhuate treatment of varicose veins in pregnancy, and a review of the maternity mortality problem, with special reference to the work of William Smellie. Gynaecological articles relate to the application of radiotherapy in gynaecology, risks attached to uterine curetting, post-menopausal haemorrhage, oestrin in the treatment of functional secondary amenorrhoea, pruritus vulvae treated by A.B.A. (a mixture of amido-benzoic acid-ethyl-ester, benzyl alcohol, and ether in an oily medium), and neuritis of the broad ligament. An index is supplied, and the volume is illustrated by photographs,

Dr. LOGAN CLENDENING's book, entitled *Behind the Doctor*,* is a popular work on the history of medicine, containing in narrative form an account of the most important discoveries in physiology and medicine. Though primarily intended for the layman, the book will provide attractive reading to practitioners who are not specially interested in medical history. The text is liberally interspersed with portraits and other illustrations.

The fourth edition of *Nursing Homes*† includes a special section devoted to establishments undertaking the care of tuberculosis patients. Another feature, and one which should increase the usefulness of this yearbook to the medical profession, is the indication by means of an asterisk of those nursing homes which are prepared to supply nurses for outside work. The directory, which forms the main portion of the volume, contains details of nearly 3,000 registered nursing homes.

The story of the medical missions of the London Missionary Society has been told in a little illustrated book entitled *The Doctor Abroad*‡ by ERNEST H. JEFFS. The author's aim is to awaken, or to confirm, in those who read his pages, admiration for the men and women pursuing that vocation. We may take this opportunity to mention also a publication of the Church Missionary Society, in its Africa and the East Series, entitled *Hospitals Overseas*§.

* *Behind the Doctor*. By Logan Clendenning, M.D. London: William Heinemann (Medical Books) Ltd. 1933. (Pp. xxi + 458; 147 figures. 21s. net)

† *Nursing Homes*, 1934. London: Benn Bros., Ltd. (Pp. 2-23, 61.)

‡ *The Doctor Abroad*. By E. H. Jeffs. London: The Livingstone Press. 1934. (Pp. 80. 1s.)

§ *Hospitals Overseas*. London: Church Missionary Society. 1933. (Pp. 88. 1s. net)

Preparations and Appliances

HOOK FOR REMOVAL OF PROSTATIC FRAGMENTS AFTER ELECTROTOME RESECTION

Mr. F. MCG. LOUGHNANE, F.R.C.S. (London, W.), writes: In the operation of prostatic resection with the McCarthy visual prostatic electrotome it often happens that one or more pieces fail to come away when the loop and telescope are withdrawn from the sheath. Failure may be due to the fact that: (1) the piece resected is too large to engage easily in the sheath; (2) the inflow instead of the outflow tap may be open at the time, thus allowing the piece to be washed back into the bladder; (3) the loop may be operated too quickly, thus minimizing coagulation and adherence of the piece to the loop.

Sometimes with repeated irrigation some of the retained pieces may wash out, but often one or two fail to do so. If these pieces are left behind complications may ensue. These are: (1) sepsis, or aggravated cystitis; (2) blocking of the indwelling catheter with retention, and, if there is bleeding, clot formation; (3) pain and strangury if the piece is passed naturally along the urethra, or retention if the piece becomes impacted.

It is thus readily understood how necessary it is to be certain that no pieces have been left behind in the bladder at the end of the operation. Pieces can, of course, be removed with forceps through an operating cystoscope, but this entails the use of another instrument, and the method is not always simple or easy.

To effect easy and rapid removal of retained pieces I have devised a hook, as illustrated. It is made of steel, and has two terminal bent prongs. The shaft is the size and shape of that of the loop. To use it the loop is removed and replaced by the hook. The hook is operated by the rack and pinion, and the loose pieces, easily located, are raked back into the sheath and withdrawn. It is advisable to inflow two or three ounces of fluid into the bladder before operating, and care must be taken not to catch the points of the hook in the bladder mucosa. If this happens advancing the hook will release it.

I have to thank Mr. Schranz of the Genito-Urinary Manufacturing Company, Ltd., for the manufacture of instrument.

Therapy. By A. Cantarow, H. Kimpton 1933. (Pp. 252. 12s. 6d. net.)

† *Transactions of the Edinburgh Obstetrical Society*. 1932-3. Vol. lii. Edinburgh: Oliver and Boyd. 1933. (Pp. 176.)

THE SERUM TREATMENT OF LOBAR PNEUMONIA

A REPORT OF THE THERAPEUTIC TRIALS COMMITTEE OF THE MEDICAL RESEARCH COUNCIL

During the last three years the Medical Research Council have assisted an inquiry at different centres in Great Britain into the therapeutic value of specific sera for lobar pneumonia, following the great development of similar work in the United States. When the Council appointed a *standing Therapeutic Trials Committee* in 1931 the investigation was placed under the control of that committee, and the present report summarizes the evidence obtained.

The work has been laborious; for it was little more than a critical testing for practical use of methods which were already in common knowledge, and it involved the close consideration of a very large number of cases of pneumonia. The Council wish to express their gratitude to the workers who so willingly undertook this prolonged study, and brought their results together for joint consideration.

Interest in the treatment of pneumonia has for many years been felt more keenly in Scotland, where the disease is perhaps more prevalent in the winter months, than in England. For evidence used in the present report the committee are indebted to workers in Aberdeen, Edinburgh, Glasgow, and London. The observations at Edinburgh were made by Professor D. Murray Lyon and the other physicians to the Royal Infirmary; those at Aberdeen by Professor Stanley Davidson, Dr. J. B. Ewen, and Dr. R. J. Duthie, in the City Hospital, Woodend; and those in London by Dr. R. R. Armstrong and Dr. R. Sleigh Johnson in various London County Council hospitals and also at St. Bartholomew's Hospital. The Glasgow inquiry under Dr. John Cowan, Dr. A. W. Harrington, and Dr. R. Cruickshank was developed independently with support from the Scottish branch of the British Red Cross Society, but permission has kindly been given for the use of their results. Separate reports have been, or will be, published independently by these various workers. The present summary expresses opinions agreed upon at all four centres. The practical conclusions are based directly on the evidence obtained there, but it will be evident to anyone familiar with American work that they are not widely dissimilar from those accepted in New York and Boston.

During the two winter seasons 1931-2 and 1932-3 a total of 773 cases of lobar pneumonia between the ages of 20 and 60 years were studied at Aberdeen, Edinburgh, and London. Of these, 530 belonged to either Type I or Type II, and 241 were treated by serum. The figures for Glasgow for 1930-3 were 602 cases from 20 to 60 years old, of which 434 belonged to Type I or II, and 107 were treated by serum. It will be noted from what follows that a large series of cases is required in order to demonstrate fairly any beneficial action of the serum.

Typing of the Pneumococcus

This was generally done on the fresh sputum, selecting that which was of a glairy (rusty) "pneumococcal" appearance rather than purulent expectoration. Lung puncture was rarely used. Sputum up to twenty-four hours old may be employed, but it is less satisfactory and was never employed in the present series.

The rapid method recommended by Armstrong of immediate typing from the sputum itself on a microscope slide was employed tentatively. This offers great advantages, not only in speed, the test requiring less than half an hour, but still more in that it can be used in places which are not licensed for experiments on animals. But it may be unsatisfactory with the horse sera that are usually provided for type testing, and most workers are

agreed that a clear result under the microscope is more often obtained when rabbit sera are employed. The Glasgow observers, however, have compared the results with concentrated horse serum and with rabbit serum, and conclude that these are equally reliable, provided that the serum, whether of horse or rabbit, has an agglutinin titre of, say, 1 in 160 to 1 in 320.

In every instance in the present series, excepting a few of Dr. Armstrong's group, the final typing was recorded on the result of animal tests, Sabin's method of examining the peritoneal exudate four hours after inoculation into mice being generally used, and if that failed the examination being completed later when the mouse was dead or moribund. Whatever the method used, some special experience is required for accurate results, and it should be ascertained that the diagnostic sera are reliable. More than one specimen of sputum should be examined to confirm the type.

Serum Used

The therapeutic antisera were those made for the market either by the Lederle Antitoxin Laboratories, or Messrs. Parke, Davis and Co., or Messrs. Burroughs Wellcome and Co. The Council and the investigators are indebted to these firms for special facilities given in the supply of the sera. Almost all the observations were made with concentrated serum, the power of which to protect mice had been measured in the American Felton units.

It is clearly desirable that any further evidence as to the value of anti-pneumococcal sera shall be based on dosage expressed in stable and generally accepted units. During the progress of this investigation, action to facilitate such uniformity of notation in this country has been taken by the Standards Department of the National Institute for Medical Research. Suitable anti-pneumococcal sera of both Types I and II have been dried and are preserved under conditions ensuring permanence, the value of each having been measured in terms of the Felton unit, unofficially current in the U.S.A., by comparison with samples supplied for this purpose by Dr. Felton himself. Of these provisional British standards, that for Type I serum has for some time been on regular issue to the manufacturers of anti-pneumococcal sera for sale in this country, and a similar distribution of the Type II standard will shortly follow. Pending an international decision, and subsequent official action, this voluntary distribution should ensure that data relating to the dosage of anti-pneumococcal sera from different sources should be strictly comparable both here and in America, where a similar voluntary adoption of the Felton units is effective.

The serum has been given intravenously in all the cases under review. Intramuscular injection was found by some workers to cause painful swelling, and has the theoretical disadvantage that the antibodies may not be absorbed into the circulation as quickly as is desirable.

The beneficial action of serum, which is so conclusively evident in mice, is believed to be sharply specific for each type of pneumococcal infection. American evidence on this point was accepted, and accordingly no attempt was made in this inquiry to learn whether the benefit produced in the human patient might not be equally well obtained by treatment with simple horse serum or with a non-specific type of antiserum.

The treatment with serum was begun as early as possible, though in some instances the patients were first allowed several hours' rest in hospital to recover from the exhaustion caused by transport. If the infecting pneumococcus could be typed without many hours' delay no serum was given until the answer enabled treatment to be started at once with the appropriate antiserum. Otherwise a preliminary dose of 20,000 units of Type I, together with 20,000 units of Type II, was given; and subsequent treatment adjusted to the proper serum or abandoned in accordance with the type of pneumococcus ultimately found. The routine injection of the single specific serum was usually 20,000 units repeated about every eight hours or at least twice in a day. If the patient showed no clinical improvement after forty-eight

hours' treatment with serum, it was generally found to be useless to continue with it. But some severe cases which were beginning to improve but had not yet reached safety received more prolonged treatment. The total dosage of serum varied from 50,000 to 120,000 units in different cases; Type II cases seemed on the whole to require a larger dosage than Type I. After the fifth day of the illness it was generally felt, though not proved, that serum had no further useful action.

Very few instances of immediately harmful reaction to the serum were ever observed either at Glasgow or at Aberdeen. When these occurred they took the form of slight dyspnoea with tachycardia; the dyspnoea was immediately relieved by adrenaline. In both winter seasons there were at Edinburgh and in London several instances of alarming, though not fatal, reactions to the first injection of a few batches of a mixed I and II serum. These ill-effects were rigors, or dyspnoea and increasing cyanosis, or general collapse with a feeble pulse. Such reactions were considered to be "toxic" rather than "anaphylactic," for they were seen in several patients treated with a particular batch of serum, rather than in an occasional sensitive individual; they were worse the larger the amount of serum injected, and they were not alleviated by adrenaline. When a particular batch of serum was once known to be clinically "safe," it could be used on any patient with no further precaution than that of slow injection into the vein.

Delayed serum reactions were rare and slight with the concentrated sera. During the recent winter Dr. Armstrong, in London, used an unconcentrated "Wellcome" serum of high titre, which was one-third less costly. This unconcentrated serum was also tried to a small extent at Glasgow. Neither it nor the concentrated "Wellcome" serum ever caused severe immediate reactions, but the use of the unconcentrated product was more frequently followed by late effects such as rashes, swollen joints, and pyrexia. The unconcentrated serum appeared to be as effective as the concentrated form in controlling the pneumonia, provided that the same number of Felton units were given.

Taking the market price of the concentrated serum as 30s. for a phial of 20,000 units, the treatment of an ordinary case of lobar pneumonia with 80,000 units would cost £6.

Selection of Cases for Treatment

The good results of insulin on patients with diabetes or of liver treatment in pernicious anaemia are so constant that the trial of these remedies in a very few cases was enough to establish their value. With the antiserum treatment of lobar pneumonia the conditions are very different. The action of the serum is only that of a partial factor for good, and its influence may be overwhelmed by an infection that has been allowed several days to establish its dominance in the patient, or by other complicating factors that weaken the patient's resistance. In order to measure precisely what this partial benefit may be it would be necessary to take two groups of cases of identical severity and initial history and compare the sickness and the fatality in each, the one being treated with serum and the other serving as a control. But this is impracticable, for few cases, even of "Type I" lobar pneumonia, are quite alike, and a sufficient number of similar cases could never be got together under one observer and under similar conditions. Some American workers have sought to avoid this difficulty by using a special system of ratings for the various harmful features of the disease, thus expressing each patient's numerical value in reference to a common standard. Such differentiation seemed too intricate, and perhaps too much a matter of personal judgement, for the present inquiry. If a straightforward comparison of treated cases with controls, under the average conditions whereby patients succeed one another in the wards of a hospital, could not reveal any advantage for those treated by serum, then common sense would conclude that the use of this remedy should be disregarded in the routine

of practical medicine. The method consequently agreed upon for London, Edinburgh, and Aberdeen was that alternate cases of lobar pneumonia, taken simply in the order of their admission to hospital, should be used respectively for serum treatment and controls. So far as possible both were treated in the same wards and under the care of the same physicians. In the independent inquiry at Glasgow, however, the "serum" cases were treated in the Royal Infirmary, and a series of patients of the same social stratum, admitted during the same period to the Belvidere Isolation Hospital under the care of one physician, served as the control group. It is clear that there may be serious fallacies in any system which contrasts a group of serum-treated patients with a control group drawn from a different stratum of the population, or with a control group in a previous year, when the severity of the prevailing pneumonia might have been different.

Certain principles of selection were laid down so as to make the data derived from the centres homogeneous, and to exclude from the comparison patients in whom the serum could not be expected to have any effect. For the latter reason all patients admitted later than the fifth day of illness were excluded from the inquiry. Also all patients dying within twenty-four hours of admission to hospital were then taken out of the series, though the evident severity of their illness would not have prevented their inclusion at first, either in the control or in the serum group. No case of pneumonia complicated by other obvious disease, such as gross nephritis, advanced heart disease, diabetes, etc., was accepted for either group. All forms diagnosed as bronchopneumonia were also excluded. That these limitations were desirable was agreed upon by all the workers at a preliminary conference on the subject. It will be appreciated, however, that, with such restrictions, it was difficult in three years to obtain fully adequate data for statistical purposes; thus, to take the Aberdeen figures as an example, 450 patients with pneumonia were admitted to the City Hospital, Woodend, during the period under review, but with the agreed limitations the number was reduced to 188, of which seventy were Type I cases, giving a total of only thirty-five available for treatment with Type I serum.

Sex was disregarded, but the question of age was too important to be neglected. Table II from the present series illustrates afresh the well-known fact that the fatality of lobar pneumonia tends to be much greater over the age of 40 than in younger persons. The fortuitous inclusion of a few more elderly patients in one group than in the other might influence unfairly the final figures for comparison. It was therefore decided to omit from the series all patients under the age of 20 and over the age of 60, and to classify the remainder into broad age groups. It will be noted that this plan still left altogether unregulated the chance scatter of distribution of patients with severe or mild pneumonia into either the serum or control groups, and also of those admitted for treatment early or relatively late in the progress of the disease. It was thought better not to attempt a deliberate sorting of cases in respect of mildness or severity, but to trust that the distortion of chance scatter would become almost negligible in a fairly large number of cases. Reference to a possible influence of the "severity factor" on the results is, however, made later in the report.

Statistics of Results

Subject to the criteria mentioned above, patients at London and Aberdeen were placed in the groups for serum treatment, or for control, alternately in the order of their admission to hospital without selection as to age or severity. At Edinburgh the same general rules and criteria were observed, and there was no selection of cases for serum treatment. But in some wards of the Royal Infirmary serum was not used throughout the whole period of the inquiry, and consequently the patients from these wards overload the number of controls. In the other wards the alternate case plan was maintained to the end. At Glasgow the alternate case plan was not

used, but patients in one hospital were treated with serum and those in another hospital served as controls. Hence it is only at Aberdeen and London that the serum-treated cases equal the control cases in number.

TABLE I.—Type Incidence in Lobar Pneumonia for Cases of the Special Series

	1931-2	1932-3	Totals
Aberdeen:	per cent.	per cent.	per cent.
Type I ...	26 = 29.2	44 = 44.4	70 = 37.0
" II ...	20 = 22.5	16 = 16.2	36 = 19.0
" III ...	17 = 19.1	6 = 6.1	23 = 12.0
Other types ...	26 = 29.2	33 = 33.3	59 = 32.0
	83	99	188
Edinburgh*:	per cent.	per cent.	per cent.
Type I ...	54 = 28.0	15 = 20.0	69 = 25.0
" II ...	88 = 45.5	51 = 68.0	139 = 52.0
" III ...	9 = 4.7	2 = 2.7	11 = 4.0
Other types ...	42 = 21.8	7 = 9.3	49 = 18.0
	193	75	268
London:	per cent.	per cent.	per cent.
Type I ...	54 = 33.7	88 = 55.0	142 = 45.0
" II ...	48 = 30.0	26 = 15.6	74 = 23.0
" III ...	3 = 1.9	0 = —	3 = 1.0
Other types ...	55 = 34.4	43 = 27.4	98 = 31.0
	160	157	317

Totals for 1930-3

Glasgow:	per cent.
Type I ...	205 = 34.0
" II ...	228 = 38.0
" III ...	22 = 4.0
Other types ...	145 = 24.0
	602

* In this table the data from Edinburgh, though not from the other centres, include patients dying within twenty-four hours of admission to hospital: hence there are two more Type I and eight more Type II cases in this table than in Table III.

The variability of the type incidence from season to season and from place to place shows how epidemics of pneumonia may differ bacteriologically, but, on the basis of these and other published figures, it may be assumed that two-thirds of all cases of lobar pneumonia in Great Britain belong to types which are suitable for treatment by the sera now available.

That the fatality of lobar pneumonia is influenced by the type of infecting pneumococcus as well as by the age of the patient is confirmed by the following table for the Type I and Type II cases from the present series.

TABLE II.—Fatality in Different Age Groups for Cases Treated Without Serum

Totals for Aberdeen, Edinburgh, Glasgow, and London

	Ages: 20-60			20-30			30-40			40-50			50-60		
	Total	Lived	Died	Total	Lived	Died	Total	Lived	Died	Total	Lived	Died	Total	Lived	Died
Type I	301	256	45	119	111	8	105	88	17	52	37	15	25	20	5
	(15% died)			(6.7% died)			(16.2% died)			(23.8% died)			(20% died)		
Type II	305	223	82	116	94	22	78	56	22	74	47	27	37	25	11
	(26.9% died)			(18.9% died)			(28.2% died)			(35.5% died)			(29.7% died)		

Effects of Serum Treatment

These may be judged by considering changes—(a) in the fatality rate (Table III), and (b) in the duration of illness among survivors in the series.

TABLE III.—Effects of Serum Treatment on Fatality
TYPE I: Totals for the Four Centres

Age Group	Controls			Serum			
	Cases	Deaths	Fatality per cent.	Cases	Deaths	Fatality per cent.	Expected Deaths*
20 to 40 ...	224	25	11.2	140	8	5.7	16
40 to 60 ...	77	20	26.0	44	10	22.7	11
					18		27

TYPE I: Individual Centres.

Age Group	Controls		Serum			
	Cases	Deaths	Cases	Deaths	Expected Deaths Based on Local Controls	Expected Deaths Based on Controls for all Centres
Aberdeen:						
20 to 40 ...	22	3	25	1	3	3
40 to 60 ...	13	6	10	0	5	3
				1	8	6
London:						
20 to 40 ...	47	2	58	5	2	6
40 to 60 ...	23	6	14	6	4	4
				11	6	10
Edinburgh:						
20 to 40 ...	31	5	19	1	3	2
40 to 60 ...	9	2	5	1	1	1
				2	4	3
Glasgow:						
20 to 40 ...	121	15	38	1	5	4
40 to 60 ...	32	6	15	3	3	3
				4	8	7

TYPE II: Totals for the Four Centres.

Age Group	Controls			Serum			
	Cases	Deaths	Fatality per cent.	Cases	Deaths	Fatality per cent.	Expected Deaths*
20 to 40 ...	194	44	22.7	111	14	12.6	25
40 to 60 ...	111	33	34.2	53	19	35.8	18
					33		43

TYPE II: Individual Centres.

Age Group	Controls		Serum			
	Cases	Deaths	Cases	Deaths	Expected Deaths Based on Local Controls	Expected Deaths Based on Controls for all Centres
Aberdeen:						
20 to 40 ...	13	3	15	2	3	4
40 to 60 ...	4	2	4	1	2	1
				3	5	5
London:						
20 to 40 ...	22	6	25	3	7	6
40 to 60 ...	15	1	12	1	1	4
				4	8	10
Edinburgh:						
20 to 40 ...	45	11	38	8	9	9
40 to 60 ...	32	11	16	5	5	5
				13	14	14
Glasgow:						
20 to 40 ...	114	24	33	1	7	7
40 to 60 ...	60	24	21	12	8	7
				13	15	14

* The "expected deaths" are those which would have been recorded if the serum-treated groups had died at the same percentage rates as the corresponding controls.

From the combined figures from the four centres it would appear that serum treatment is capable of reducing the fatality from Type I and Type II pneumonia, but that the improvement is limited to patients under the age of 40. It is unfortunate, from the point of view of statistical analysis, that the number of patients over the age of 40 who were available for treatment was so much smaller than the number of younger patients. Nevertheless, on this evidence, it would seem that the life-saving effects of serum treatment are mainly, if not wholly, restricted to the ages at which natural resistance to the disease is ordinarily high. Looked at broadly the results do show a favourable influence on the fatality rate in the younger patients with Type I and also with Type II antisera. But a closer inspection of the separate results from each centre reveals anomalies that demand further analysis.

Aberdeen showed a fatality rate in Type I pneumonia which was reduced with serum from the expected figure of six to only one in thirty-five cases. London, on the other hand, found the fatality rate in Type I slightly increased with serum, whereas that in Type II was reduced to four from the expected figure of ten deaths. The aggregate London figures are the more surprising, because Dr. Armstrong himself had in his first winter's experience been vividly impressed by the benefit obtained with serum in Type I cases, and it was contrary to all his expectations when the figures of the second year swung the balance away in the opposite direction. In commenting on the change he observed that eighteen of his treated Type I cases were clinically classified as "severe," compared with only seven "severe" cases among his controls. This raised the question of the chance scatter of patients with poorer prognosis from any cause into either the serum or the control group preponderantly. But the case records at the other centres were carefully revised from this point of view, and there was no evidence of the control groups having been unduly weighted by the chance occurrence of severe cases among them.

Apart from clinical judgement, the severity of an individual case may be estimated by the results of blood culture and by measuring the leucocytosis. The latter method was used in routine examination at Aberdeen and Glasgow, though not at the other two centres. An initial leucocytosis below 15,000 per c.mm. carries a relatively unfavourable prognosis. Examination of the records from Aberdeen shows that on the whole the initial leucocyte counts were higher in the cases which happened to be treated with serum than in the controls, but there was no great inequality in this respect. Nor was the explanation to be found in an unequal incidence of early bacteraemia. Table V indicates that there were as many cases of early bacteraemia in the serum as in the control groups. The variation in the results at the different centres cannot be explained, but they show the difficulties in the way of accurately evaluating a treatment of this nature on the basis of small numbers of cases.

Bacteraemia

At Aberdeen blood cultures were systematically taken throughout the inquiry; they were made on every patient and early after admission, but only once. Positive blood cultures were obtained in nineteen out of sixty-six consecutive cases (28.8 per cent.) by the method finally adopted of withdrawing blood by a syringe and injecting it directly into glucose broth. The earlier technique of using citrated blood in "venule" tubes for transference to broth gave a lower proportion of positive results. At Glasgow blood cultures were taken from all but twelve of the serum cases, and from 138 consecutive controls between the ages of 20 and 60; the cultures were made as soon as possible after admission, and the method of directly injecting the blood into glucose broth was adopted throughout. Table IV gives the total figures submitted from these two centres without distinction between the early and later methods of culture used at Aberdeen.

It would appear from the results shown in the table that serum treatment has little influence on the total fatality rates of cases with bacteraemia.

TABLE IV.—Incidence of Bacteraemia in Type I and Type II Cases (Serum and Controls) at Aberdeen and Glasgow

Type	Serum					Controls				
	Cases Examined	Positive	Deaths	Negative	Deaths	Cases Examined	Positive	Deaths	Negative	Deaths
I	81	28 (17.9% of positive cases)	5	56	0	95	23 (17.4% of positive cases)	4	72	11
II	65	18 (38.5% of positive cases)	7	47	7	93	22 (50% of positive cases)	11	73	8

Effect of Serum Treatment on Duration of Illness in the Surviving Cases

Here, if anywhere, it should be possible to show clearly the favourable action of antiserum. In a series of one hundred patients there may be twenty so heavily infected that they would normally die, and only a few of these twenty are in a state where reprieve from death is possible by the use of serum. The eighty potential survivors must all be patients with less severe infection: they are mostly well inside the zone at the edge of which serum could just show its efficiency by saving a few cases from death. It is helpful to visualize this by a rectangular diagram in which a black area shows the 20 per cent. of massive and fatal infection, while the remaining 80 per cent. of progressively lighter tint includes all those in whom the infection was below the intensity needed to kill. Antiserum may push the black band a little further back, to 15 per cent. or less, and then it meets a final barrier. But through all the great area of survival cases it should also be effective in lightening the grey tint of illness.

There has been too little attention given to the action of serum on surviving cases. This is partly because it is less easy to make an exact analysis of such clinical improvement than to record the simple fact of death or survival; and partly because physicians are chiefly concerned with the hope of saving the life of a patient with pneumonia, knowing that if only this can be achieved convalescence is usually rapid, whether the pneumonia had been severe or mild. But the survivors offer for study a field where the effect of the serum should be more easily demonstrable, since they are presumably in that state of relatively light infection where the serum can act to full advantage.

At all four centres the experience was alike—namely, that the serum treatment of Type I and also of Type II cases lessened the duration of the fever and diminished the number of cases in which fever ended irregularly by lysis.

Aberdeen reported:

Type I pneumonia; average time of crisis:

In serum-treated cases, 33.8 hours after admission to hospital.

In control cases, 101 hours after admission to hospital.

Type II pneumonia; average time of crisis:

In serum-treated cases, 36.6 hours after admission to hospital.

In control cases, 104 hours after admission to hospital.

Edinburgh and Glasgow used a different measure for the recovery, but the improvement was equally evident. The percentages of cases in which the fever ended on or before the fifth day of the disease, disregarding time of admission to hospital, were:

Edinburgh:

Type I pneumonia: serum-treated, 36.4 per cent.; control, 8.3 per cent.

Type II pneumonia: serum-treated, 34.2 per cent.; control, 10.9 per cent.

Glasgow:

Type I pneumonia: serum-treated, 72.1 per cent.; control, 9.5 per cent.

Type II pneumonia: serum-treated, 34.1 per cent.; control, 5.3 per cent.

Dr. Armstrong in London found that the time of crisis occurred on the average two and a half days earlier in the illness in his serum-treated Type I cases, and two days earlier in his serum-treated Type II cases, than in the controls. The Glasgow workers also found that the average times of crisis in the serum-treated Type I and Type II cases were respectively two and a half and two days earlier than in the corresponding controls. Dr. Armstrong's table may be quoted in full, because it illustrates this clinical improvement in the survivors, despite a failure to influence the death rate in Type I cases (Table V).

TABLE V.—Effect of Serum Treatment on the Course of the Illness in Survivors (London)

	Type I				Type II			
	Treated		Control		Treated		Control	
	Cases	Av. day	Cases	Av. day	Cases	Av. day	Cases	Av. day
Crisis	47	4½	35	7½	25	4½	19	6½
Lysis	12	7	26	9½	7	7½	11	9½
Continued fever ...	2	—	1	—	0	—	0	—

Data with regard to the convalescence were generally unreliable, because most of the patients were granted a routine time for recovery, and often a holiday before they were advised to resume full work.

In view of its effect on the course of the illness in Type I and Type II pneumonia, it might be expected that serum treatment would lessen the incidence of complications in patients who recovered from the initial infection. The total numbers of individual complications in both the serum-treated and the control groups at the four centres were, however, too small to enable fair comparisons to be made, except in the case of the important local complication empyema. There was a suggestion from the total figures that the liability to this complication was reduced by serum treatment in both Type I and Type II pneumonia. The figures submitted from the four centres showed that empyema occurred in four serum-treated Type I cases, against an "expected" figure of nine, and in one serum-treated Type II case, against an "expected" figure of three; in each case the expected figure was calculated from the incidence of empyema in the corresponding control group. The percentage incidence of this complication in the serum-treated and control groups for Type I and Type II pneumonia was as follows:

Type I: serum-treated, 2.4 (166 cases); control, 5.5 (256 cases).
Type II: serum-treated, 0.8 (131 cases); control, 2.7 (223 cases).

The evidence of the inquiry at the four centres is therefore in favour of the serum treatment, although with certain limitations. The inconveniences to the patient are little more than those of repeated intravenous injections. Fatality was reduced in the younger patients in this series by roughly half of the expected deaths. Thus in 140 serum-treated cases, aged 20 to 40, of Type I pneumonia there were eight deaths instead of the expected sixteen; and in 111 serum-treated cases of Type II there were fourteen deaths instead of the expected twenty-five. Also, the duration of illness among survivors tended to be shortened by from two to three days, curtailing just that period near the end of a pneumonia where anxiety grows as the fever persists; and was a suggestion that the incidence of empyema was lessened by giving serum. These benefits were obtained with both Type I and Type II cases of lobar pneumonia. On the other hand, the data obtained in this investigation suggest that serum treatment has little or no power to decrease the fatality from Type I or Type II lobar pneumonia in patients over 40, or in the severely ill cases with bacteraemia.

On clinical impressions the workers were all agreed that the appropriate antiserum frequently produces striking symptomatic benefit in cases of Type I and Type II lobar pneumonia, and that the best results are obtained with very early treatment. There was a con-

sensus of opinion at the four centres that it is probably useless to give serum later than the fifth day of the disease.

Summary

1. Concentrated antiserum for Type I pneumococcus reduced the fatality in Type I cases of lobar pneumonia in adults between the ages of 20 and 40; from the total figures of the present inquiry, however, the treatment appeared to have little, if any, effect on the fatality in older patients (aged 40 to 60). The treatment seemed definitely to reduce the average duration of fever and illness in patients who recovered, and there was a suggestion that it also decreased the liability to empyema among survivors.

2. Similar effects were seen when Type II antiserum was used for cases of Type II lobar pneumonia.

3. Immediate serum reactions of a dangerous nature were rarely seen in the present series of cases, except that one or two batches of a particular concentrated mixed serum did cause rigors and collapse at both the centres where they were used. There were no unpleasant late anaphylactic results with the concentrated serum. On the whole, a good serum seemed to be devoid of disturbing effects on the patient, and on these grounds there need be no hesitation in the use of the treatment.

4. The benefits from serum are not so emphatic as to make it desirable that all severe cases of lobar pneumonia, irrespective of the type of the infecting pneumococcus, should be treated with Type I and Type II antiserum on the chance that they might belong to a type which is favourably influenced. Moreover, the special technique required for repeated intravenous injections, and the cost of the serum, make the treatment unsuitable for universal application. Each case must be typed as soon as possible, so that the appropriate serum may be used in the optimum dose; the use of the serum is not recommended except under conditions where typing of the pneumococcus can be obtained.

5. If accurate typing of the sputum can be done in five or six hours, serum should be withheld until the type is known, and then a dose of 20,000 Felton units of the specific serum given. But if more time is required for the typing, then a preliminary dose of 20,000 Felton units Type I, together with 20,000 units Type II, should be given, and the specific type serum, either I or II alone, continued when the nature of the infection is known. Treatment is continued by injection of 20,000 units at a time, twice a day, with approximately an eight-hour interval. Usually a total dosage of 80,000 units, with variation from 50,000 to 120,000 units, of the single specific serum is required, Type II cases, on the whole, needing a larger dosage than Type I. If no obvious clinical improvement occurs in the first forty-eight hours of serum treatment it is probably useless to continue with it.

6. The serum should be given intravenously. There is no satisfactory preliminary test for any peculiar sensitiveness of the patient to horse serum. The first injection should therefore be made cautiously and slowly, 1 c.cm. being introduced into the vein in a minute or two, and the total being injected in ten or fifteen minutes. Adrenaline solution 1 in 1,000 must be ready beforehand, and 1/2 or 1 c.cm. of this should at once be injected subcutaneously if the patient reacts unfavourably with collapse and failure of the pulse or urgent dyspnoea. Second and subsequent injections of serum may be given with less precaution. In addition to anaphylactic sensitiveness of the individual, there is the chance that the serum supplied by the manufacturer may contain protein substances which are toxic to most individuals, as occurred in a few batches used in the present inquiry. To safeguard against this, 1 c.cm. of the serum may be injected intravenously, and the remainder of the dose slowly injected half an hour later, provided that no untoward symptoms have occurred. This precaution is unnecessary if the batch of serum is known to be harmless, either from other experience or because the manufacturers state that it has already been tested from this point of view.

7. No data were collected in this inquiry with regard to the use of the serum in children, or in patients over the age of 60, or in cases of bronchopneumonia.

British Medical Journal

SATURDAY, FEBRUARY 10th, 1934

DIET AND THE TEETH

The investigations into the influence of diet on the teeth which Mrs. Mellanby has prosecuted during the past sixteen years are well known, and indeed have already modified profoundly our conceptions regarding the causation of dental caries. The first full report on this work, published in 1929 (Medical Research Council, Special Report Series No. 140), dealt with the effect of diet on the development of the jaws and the teeth of young dogs. In this the author showed that lack of vitamin D caused defective formation of the teeth and jaw bones, while lack of vitamin A paved the way for infection of the alveoli of the teeth and produced a condition resembling pyorrhoea alveolaris. The second report (No. 153 of the same series, 1930) traced the influence of diet on the teeth of mammals other than the dog. A brief interim report appeared three years ago (No. 159, 1931) on the influence of diet on caries in children's teeth. Mrs. Mellanby has also published a number of shorter communications on the results of her work.

A full report on the influence of diet on dental structure and disease in children has now appeared,¹ and this publication completes Mrs. Mellanby's account of her long-continued researches. Dental caries is the commonest permanent disability that affects our population, and this document has naturally aroused wide interest, not only in the medical profession, but also among the general public. The argument therein set out rests on three main theses. In the first place, the author demonstrates that the average tooth is a poorly developed structure, highly susceptible to decay, but that greatly improved development can be brought about by a better choice of food. Secondly, experimental evidence is presented showing that the incidence and progress of dental caries in children can be checked or even arrested by suitable modification of the diet. Thirdly, the author shows that dental caries is most capricious in the extent to which it afflicts communities, that certain populations are nearly free from this disease, and that freedom of communities from caries is correlated with special dietary habits. The experimental work indicates that the diet most effective for ensuring normal tooth development and freedom from caries is one rich in fat-soluble vitamins and with a low cereal content. A diet of this type is found in certain fishing communities who live chiefly on fish and potatoes. Dental caries is therefore regarded as a deficiency disease that can be checked by special dietary precautions. Mrs. Mellanby has shown that the teeth need for their formation adequate supplies of calcium

and phosphorus, and an ample supply of vitamin D to ensure that these are put to proper use. Her studies of the nutritional factors that control the laying down of secondary dentine indicate that these same factors are necessary for the teeth throughout life, and especially for the recuperative process of which all teeth are capable and upon which the arrest of dental caries depends.

These findings are of great sociological importance, and the work will very properly be subjected to close scrutiny and criticism. In order to get the matter into perspective we must bear in mind the scope of the inquiries upon which the conclusions rest. The work on animals and children has been prosecuted continuously for sixteen years, and the conclusions regarding human teeth are based on histological examination of sections of some 2,000 teeth amplified by careful inspection *in situ* of some 30,000 teeth. The dietary experiments involved a total of over 400 children, and had an average duration of about two years. These researches are therefore on a scale quite unusual both in extent and in duration. From one point of view this is a disadvantage, because, since it requires several years of highly specialized and laborious research to produce evidence of any value in this field, it will therefore take a long time for independent confirmation or disproof of these important conclusions to be obtained. Put very briefly, the general lesson that emerges from Mrs. Mellanby's work appears to be that a civilized community can have good teeth at a price, but that the price is a thoroughgoing change in ordinary dietary habits. The regular administration of cod-liver oil will effect a considerable improvement in the dentition of children, but in order to ensure perfect dentition we must also cut down the cereal intake, for cereals she regards as the most powerful ally of caries. Their tendency, judged by the outcome of her experiments in Sheffield and Birmingham, is to neutralize the action of vitamin D, essential to the proper metabolism of calcium and phosphorus.

This report deals with studies commenced in 1917, and during the past ten years Mrs. Mellanby's work has attracted general attention and has already brought about a change of attitude towards the causation of dental decay. This, then, is an opportune moment to note the fundamental importance of her inquiries. When they began, caries was regarded as a simple problem of bacterial invasion which could be combated only by oral hygiene, while the tooth was assumed to play a passive part in the process. Mrs. Mellanby's work has provided the conception of teeth as living organs which can resist decay if their development and structure are normal. This new view has gradually gained acceptance in the last decade, and to-day there is some danger of forgetting how great has been the change in outlook caused by the researches under review. Even if some may think that she makes by inference too little of the factor of oral hygiene, we must all congratulate Mrs. Mellanby on the rounding off of a remarkable piece of work in experimental therapeutics.

¹ Medical Research Council, Special Report Series No. 191. *Diet and the Teeth: an Experimental Study. Part III. "The Effect of Diet on Dental Structure and Disease in Man."* By May Mellanby, D.Sc.(Hon.). London: H.M. Stationery Office. 1934. (5s. net)

HENRY MOORE AND W. R. O'FARRELL: SPONTANEOUS HYPOGLYCAEMIA ASSOCIATED WITH HEPATITIS

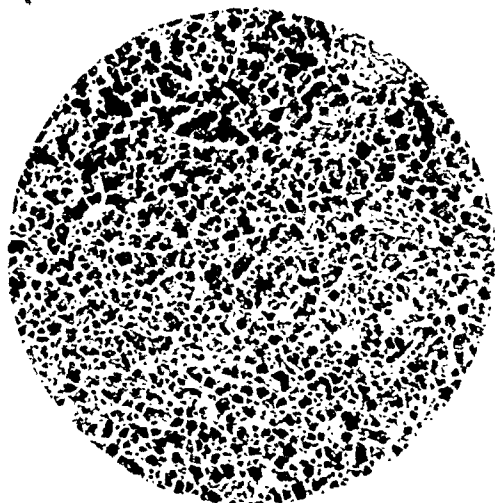


FIG. 1.—Section of liver. Showing necrotic cells which stain faintly and considerable dissociation of the liver cells. ($\times 130$.)

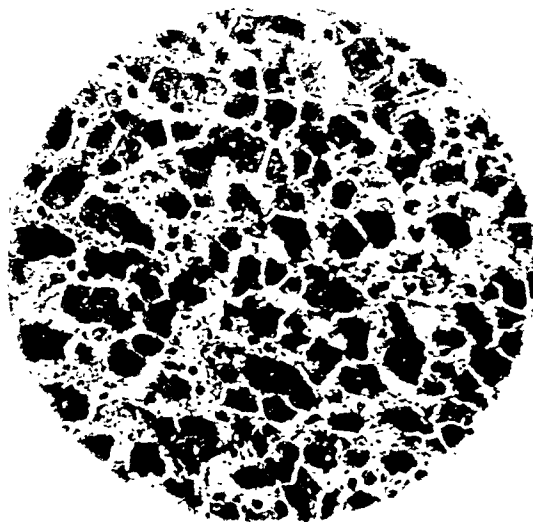


FIG. 2. Section of liver. Showing dissociation of the liver cells; some cells show double nuclei, and several show necrosis. ($\times 320$.)

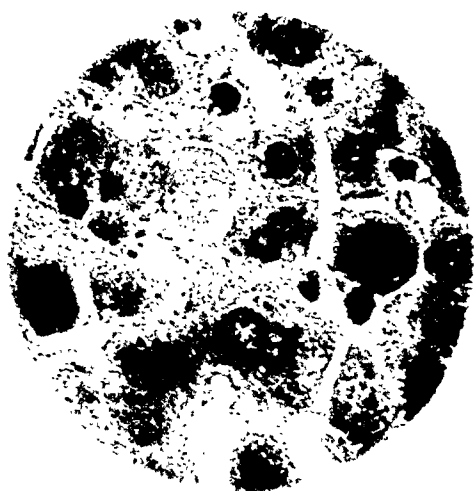


FIG. 3.—Section of liver. Showing dissociation and necrosis of cells. The large cell just below the centre of the field is apparently about to divide. ($\times 850$.)

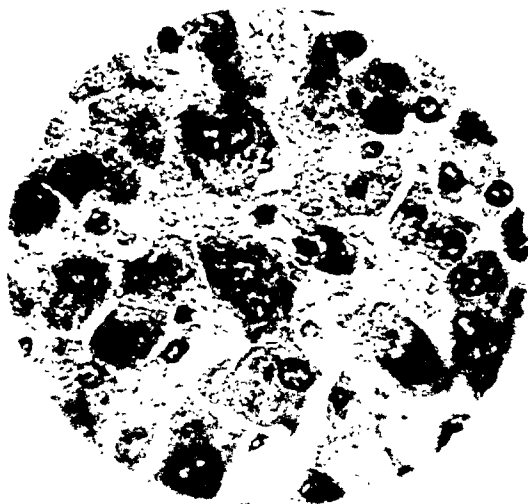


FIG. 4.—Section of liver. Showing dissociation and necrosis; some cells with double nuclei are seen. ($\times 700$.)

W. C. SPACKMAN: OVARIAN PREGNANCY

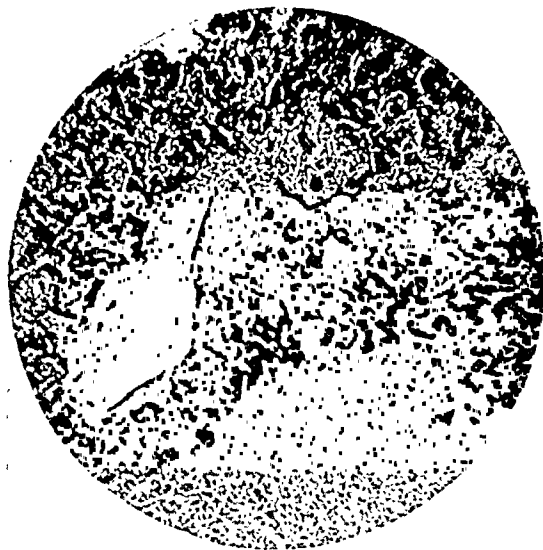


FIG. 1.—Embryo in situ in centre of ovary.



FIG. 2.—Reverse view showing resection through hilum of ovary.

R. W. BROOKFIELD AND H. V. CORBETT:
DIABETES WITH DEGENERATION OF SUPRARENALS



Photomicrograph of suprarenal gland showing thickened capsule and marked cellular changes in cortex (see text).

H. MORTON ANDERSON: METHOD OF REDUCTION OF FRACTURES OF THE SURGICAL
NECK OF THE HUMERUS



FIG. 1.—Before reduction.



FIG. 3.—Position on fourteenth day.



FIG. 2.—Immediately after reduction, showing bone awl in position.

T. B. JOBSON AND G. H. STEELE: CARCINOMA OF OESOPHAGUS, TREATMENT BY RADON

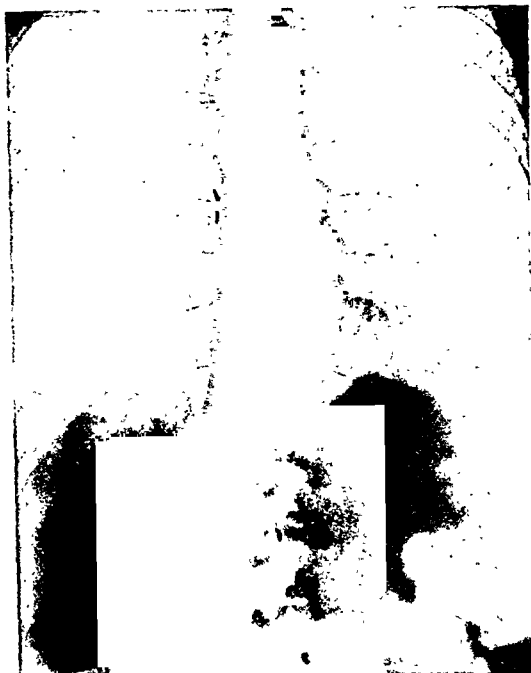


FIG. 1.—Antero-posterior view, showing a double ring of radon seeds encircling the lumen of the gullet in the region of the growth.

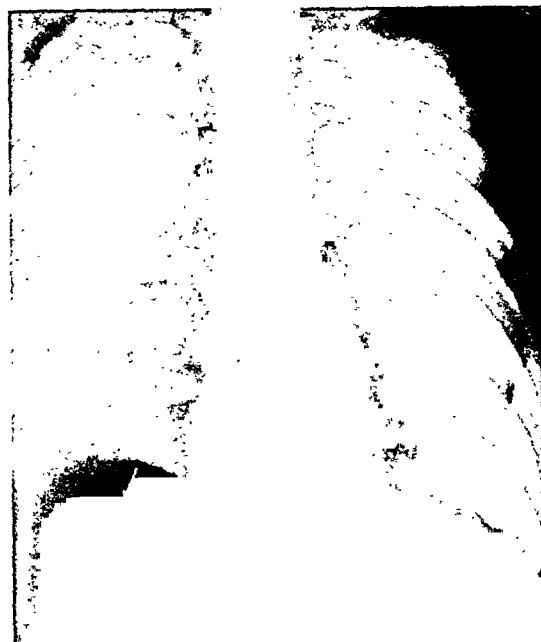


FIG. 2.—Similar case. Note pair of radon seeds have wandered from site of growth to pleural cavity (see arrow).

WILLIAM MARSHALL AND ALEXANDER W. WATT:
RECKLINGHAUSEN'S DISEASE



GRAHAM W. CHRISTIE AND RICHARD FAWCITT:
MULTIPLE HYDATID CYST



Radiograph showing three hydatid cysts in lungs

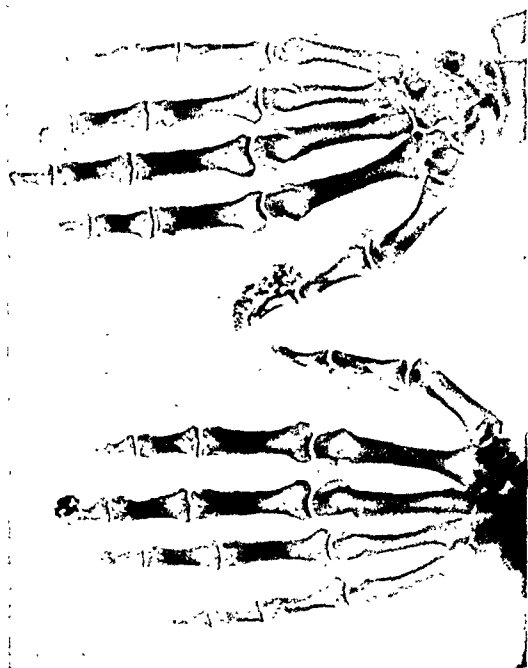


FIG. 1.—Calcareous concretions in the right thumb and left middle finger of a woman of 28 who suffered from "dead fingers" for many years.

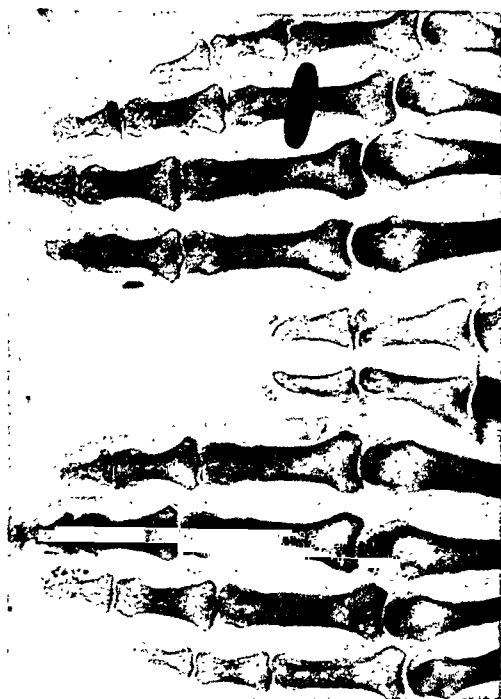


FIG. 2.—Calcareous concretions in the fingers and thumbs of a woman of 52 who had suffered from Raynaud's disease for thirty years.

WILLIAM STEWART SHEARER: OS INTERMETATARSEUM



X-ray showing space between first and second metatarsals apparently prolonged as far back as scaphoid. Accessory bone adjoins base of first metatarsal in first interosseous space.

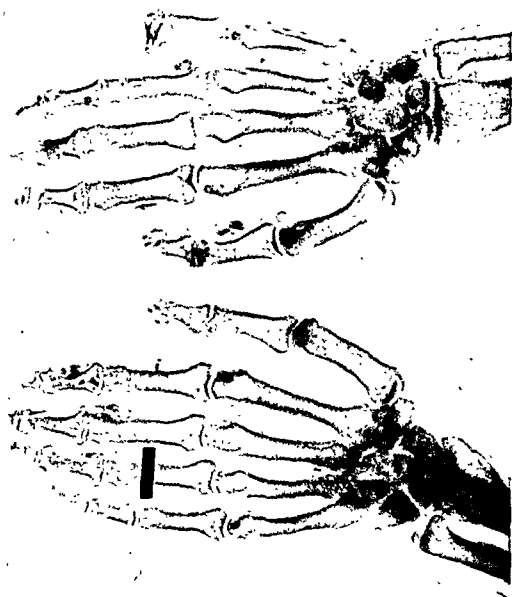


FIG. 3.—Showing calcareous concretions in the hands and forearms of a woman of 62 who had suffered from Raynaud's disease for twelve years.

FORTY YEARS IN PUBLIC HEALTH

The retirement this month of Sir George Seaton Buchanan from the Ministry of Health, at which, and at the Local Government Board before its creation, he has served in the medical department for nearly forty years, cannot pass unnoticed. In public health he, like his father (Sir George Buchanan, F.R.S.), who was medical officer of the central health department before him, has represented during all these years the type of effective and unobtrusive work for the community which is done by our Civil Service when at its best. His record has been one of great variety. It began, as can be seen by anyone who consults the reports of the Local Government Board from 1895 onwards, with work over the whole range of public health as understood at the end of last century: field studies of infectious disease outbreaks; water supply and sewage disposal questions; housing—a report by him on the Border town of Alnwick in 1898 was a notable pioneer effort at slum clearance—and many other subjects which have now become so specialized that their medical element is almost submerged and the original medical initiative forgotten. Always ready to seize opportunities for administrative reform, Buchanan took advantage of the public demand for a new Government outlook on food supplies and health occasioned by the outbreak of arsenical poisoning from beer in the Midlands and Lancashire in 1900, and of Lord Kelvin's Royal Commission on the subject. For some six years he was the head of the food inspection subdepartment then set up. During that time a system of control over the wholesomeness of imported foods first came into being, and many contentious questions, such as the definition of whisky and the use of preservatives, were dealt with one by one, on lines accepted by the hygienist and considered reasonable by the trade interests concerned. His war services will be remembered by many, particularly by those on the Eastern fronts, at Gallipoli, Macedonia, and Mesopotamia, who came into contact with the Medical Advisory Committee in which he took part with Dr. William Hunter, the late Sir Andrew Balfour, and others. The post-war generation has chiefly realized his services (or rather, in consequence of departmental practice, has had the benefit of them without personal association) when it has been necessary to look to Ministry of Health reports or publications for judicious summaries of knowledge about infectious or other diseases and their prevention.

Sir George Buchanan's task at the Ministry of Health has been that of an intelligence officer as well as an epidemiologist of exceptional experience and judgement, and his influence in preventive medicine has made itself felt not only in the British Empire but also, and conspicuously, in foreign countries. Buchanan was one of the small body of men of different nationalities which since 1919 has insisted on the opportunities of medicine in the field of international co-operation. It comes often as a surprise to realize the directions in which official work in this country now depends on, or is

at least related to, formal engagements between different nations on health matters. Only last week a list was issued by the Ministry of Health of some 750 ports throughout the world operating the International Agreement of Brussels, 1924, relating to venereal disease, which, initiated by the British delegate at the Office International d'Hygiène Publique in Paris, has made it possible to provide special facilities for the modern and gratuitous treatment of merchant seamen of all nationalities. So, again, when we consult national mortality statistics, we find them dependent on an international official agreement on nomenclature which is negotiated and revised decennially. And, if we have occasion, we realize how regular and rapid is the system of mutual communication about infectious disease incidence between the health departments of the Governments of the world which has grown up in the last ten years, based first on the pioneer work of the Health Section of the League of Nations, and then on the essential International Sanitary Convention of 1926. That Convention has gone far to modernize and rationalize quarantine practice all over the world, and not before it was time; the different departments in the United Kingdom have now consolidated and revised all their port sanitary orders in accordance with it. A striking example of the quiet efficiency of this work was shown last year, when public alarm was aroused at the possibility of yellow fever being carried by the new air routes from parts of Africa, in which it is endemic to the east of that continent and to India. It was only then that many people realized that this and other questions relating to the conveyance of infection by aircraft had been worked out in detail at the international health office in Paris for three years, and that the Hague International Sanitary Convention on Aerial Navigation, 1933, already provided a mechanism by which, so far as willing international co-operation can effect it, this yellow fever danger will be met.

No one is likely to suppose that such business, any more than the British participation in all the useful work which has been done by the Health Organization of the League of Nations since its inception, has been just put through automatically; we have in these days only too much evidence of the prickly character of international discussions and the dangers of international formulae which mean nothing in practice. If Sir George Buchanan has been successful in their negotiation, it has been the result of unsparing labour and an acquired sense of national and international realities, gained by many conferences and missions and travels. For all this a tribute is due to him on his retirement. Last year he was honoured by being elected by the representatives of fifty nations to the office of President of the Permanent Committee of the Office International d'Hygiène Publique in Paris, which carries with it the vice-presidency of the Health Committee of the League of Nations. In leaving the British Government service he will continue to hold these international appointments until the end of next year—a trust with continued satisfaction and success.

THE BLADDER AND ITS SPHINCTERS IN SPINAL CORD LESIONS

The lack of successful attempts to record the function of each of the two vesical sphincters during micturition in man had left a large gap in our understanding of disturbances in the mechanism of micturition. There have been various speculations as to the mechanism of normal micturition, and knowledge concerning functional disturbances of the bladder and its sphincters has had to be built upon this uncertain basis. The pioneer work of Mosso and Pellacani in 1882 on records of intravesical pressure established the presence of waves of vesical contraction during voluntary effort to micturate, and observations on the pressures obtaining in various diseased states have shown the differences between the atonic, relaxed bladder in the state of retention, and the intolerant, powerfully contracting bladder found after some spinal lesions. The relation of vesical pressure to the actual process of micturition has been assumed to lie in the uncertain parallel between the tonic activity of an organ and its phasic function.

Dr. Gordon Holmes has recently published¹ a series of observations on the human bladder during the recovery of vesical function consequent upon complete spinal injuries sustained in warfare. By charting the intravesical pressure during distension of the bladder he traces the emergence of vesical contractility from the state of complete atonicity due to the depression of spinal shock. The tonic resistance of the wall of the bladder to increasing volume of contents becomes gradually more powerful. When fully developed the heightened tone is varied by periodic, powerful, abrupt rises of vesical pressure, which often lead to evacuation of the bladder. He found that such oscillations of pressure arise spontaneously without reference to flexion movements of the limbs, and he doubts the association of vesical contraction and the "mass reflex" of Head and Riddoch. In the same journal² Dr. Denny-Brown and Dr. Graeme Robertson attempt a fuller analysis of micturition in stationary and long-standing complete spinal lesions in man by means of continuous records of vesical pressure. They have succeeded in recording the activity of the internal and external sphincters. Their method, which they have fully described in an earlier communication³ dealing with normal micturition, reveals that the periodic active incontinence eventually established after complete lesions of the cauda equina or spinal cord is an automatic process which depends primarily upon the activity of the local vesical plexus. The detrusor muscle reacts to distension by contraction. The authors believe that this is a local autonomic reflex, for which the adequate stimulus is increasing stretch of the bladder wall. They find that the bladder reacts to a brief stretch by a small, short contraction, which they compare to the tendon jerk in striped muscle. The contraction of the bladder is the more strongly stimulated the more rapid the distension. The

internal sphincter relaxes in a degree proportionate to the amount of contraction of the detrusor, presumably by the same local nervous mechanism. The resulting rhythmical discharge reflects the waves of activity stimulated by distension. Following lesions of the cauda equina such discharge, when fully developed, can secure almost complete micturition by more prolonged contractions and reciprocal-relaxations of the internal sphincter. Patients in this state can usually pass urine by abdominal straining. This faculty makes for progressive recovery from the stage of initial depression with retention, and the authors have demonstrated that it depends on the presence of the above contractile mechanism, which increases the laxity of the internal sphincter.

In the stage of recovery of the spinal reflexes following higher complete lesions of the spinal cord the local mechanism is altered in two ways. The reaction to distension proceeds to much more powerful prolonged waves of vesical contraction; these are interpreted as the effect of a true spinal reflex, which is elicited by a certain degree of development of the local process of reaction to distension. This reflex excites the detrusor to its strongest contraction. The external sphincter is tonically contracted except during reflex micturition, when it is inhibited in the course of contraction of the bladder. Further, it is shown that the external sphincter functions as a rapid and effective means by which micturition is suppressed by other spinal reflexes. The flexion reflex abruptly terminates micturition by concurrently contracting the external sphincter. The clinical facilitation of micturition by perineal stimulation is found to be a reflex effect from the sacral skin segments. This very detailed analysis establishes micturition as a highly co-ordinated nervous process, which primarily depends on distension of the bladder. The hypogastric nerves, which form the sympathetic nervous supply to the bladder, have recently claimed increasing attention in the design of operations to relieve abnormal vesical and pelvic conditions. Denny-Brown and Robertson find that the nerves do not take part in the mechanism of micturition. Their analysis of vesical sensation shows that the hypogastric nerves serve as an inconstant pathway for the pain produced by powerful vesical contraction but that they do not convey the sensation of normal desire for micturition.

The fourth annual report of the National Smoke Abatement Society covers the twelve months ending June 30th, 1933, during which there was a slight increase in financial support and an extension of activities. A larger sale of literature, and better publicity through the general Press, suggest that interest in the subject is growing. The report contains notes of various meetings held in Great Britain. The society republished in the year under review John Evelyn's *Fumifugium*, which first appeared in 1661; more than 2,000 copies have been sold. The proceedings of the conference held in Newcastle in 1932 were subsequently issued in volume form, with papers and discussions in full—a new departure, which has been repeated this year in respect of the annual conference at Sheffield. The offices are at 23, King Street, Manchester.

¹ *Brain*, 1933, lvi, 383 ² *Ibid.*, 1933, lvi, Part 4, 397.

³ *Ibid.*, 1933, lvi, Part 2, 149

AN ANTISERUM FOR PFEIFFER'S BACILLUS

There are bacterial infections of such severity as to demand the most energetic possible treatment, for which, nevertheless, no specific remedy is yet available. The reason for this may be the rarity of severe forms of the infection, which precludes adequate therapeutic trial of a serum and lowers the demand for serum to a commercially unattractive level, or it may be some difficulty in producing a consistently effective serum, which often results from the diversity in serological type of the micro-organism concerned. The first of these obstacles distinctly applies to the case of meningitis due to *Haemophilus influenzae* (Pfeiffer's bacillus); the second does not, since it has been shown that almost all strains of this organism recovered from cases of meningitis belong to a single serological type. Pittman,¹ of whose forty meningitis strains thirty-seven belonged to this type, describes the properties of a serum obtained by the prolonged immunization of a horse with these organisms. In mice and rabbits inoculated with living culture the administration of serum reduced or abolished bacteraemia, but an actual curative effect does not appear to have been demonstrated conclusively. The serum also prevented the inflammatory reaction which follows intracutaneous injection of living cultures in rabbits, provided that the dose of culture used was small; this effect is suggested as a means of estimating the activity of a serum. The clinical results obtained closely resemble those of the animal therapeutic tests: of eighteen patients with *H. influenzae* meningitis treated only one recovered, although in six cases the bacilli in the spinal fluid were reduced in numbers or disappeared, and of five cases with bacteraemia the blood became sterile in four. Of all possible manifestations of an infection meningitis is among the most difficult to treat successfully by this or, indeed, by any means; to illustrate this we need only compare the recorded effects of serum treatment in pneumonia with its almost invariable powerlessness to avert a fatal issue in pneumococcal meningitis. To expect a serum, even of the highest attainable efficiency, to exert a curative effect in this disease is therefore optimistic.

RESECTION OF THE STOMACH AND PERNICIOUS ANAEMIA

The hypothesis that pernicious anaemia is associated with, or perhaps even due to, a deficiency in the proper gastric digestion of protein suggests at once that resection of the stomach ought to be followed in greater or less degree by manifestations similar to this disease. No diagnosis of pernicious anaemia can be considered fully established if the stomach secretes free hydrochloric acid, but it is not true to say that all cases of achlorhydria are potentially cases of pernicious anaemia, although microcytic anaemia associated with achylia gastrica is described (Faber). Animal experiments have shown that total gastrectomy leads to anaemia, but not of the macrocytic type. Twenty years ago Moynihan described the onset of anaemia following gastric resection, even when there was no suggestion of malignant disease. From time to time, however, cases are reported in which resection of the

stomach for gastric ulcer appears to be followed by pernicious anaemia, but the general consensus of opinion seems to be that achylia as such does not lead to this type of anaemia. This view is supported by the recent work of Lottrup and Roholm,¹ who made haematological examinations of twenty-three cases in which circular resection of a gastric ulcer had been performed during the period 1909-31, from one to eighteen years having elapsed since the operations. As these authors find the normal average size of red cells to be 8.2μ , they classify cells of 9μ as megalocytes. In no instance was there an unequivocal picture of pernicious anaemia, but 35 per cent. of cases showed a mild anaemia and 20 per cent. a somewhat more severe form (4 to 4.4 million red cells). Some degree of megalocytosis was observed in cases in which free HCl was absent, but it was not associated with colour indices above unity. The authors rightly conclude that resection of the stomach alone does not lead to pernicious anaemia. In the one case in which they considered that some probability of pernicious anaemia existed the blood picture was as follows: haemoglobin 73 per cent., red cells 4.1 millions, colour index 0.88, megalocytes 18 per cent., only slight anisocytosis, and no poikilocytosis. Free HCl was absent. Considerable nervous symptoms were observed, but there were no signs of subacute combined degeneration. In three other cases, in which there was a tendency to megalocytic change, there was no evidence of pernicious anaemia, even many years after the operation.

ALCOHOL AND ACCIDENTS

In a recent article J. Hindmarsh gives an account of investigations conducted by himself and P. Linde in Stockholm.² Every accident case brought to the Maria Hospital between April 1st, 1932, and March 31st, 1933, was investigated for a possible alcoholic factor. The clinical examination was systematized in such a way that the examiner filled in a special form, and in each instance the concentration of alcohol in the blood was estimated according to Widmark's test. The patients were asked to state how much, if any, alcohol they had taken, and when. They were almost invariably willing to comply with this invitation, but, as a rule, the measures they indicated were underestimates. Only those persons aged over 15 who came to hospital within five hours of an accident were thus examined. The average interval between accident and examination was one and a half hours. Among the 283 patients so examined there were 115 (41 per cent.) in whose blood alcohol was demonstrable. Among the 283 were 113 patients suffering from traffic accidents. In fifty of these cases the blood test was positive. All the victims of tramway accidents gave a positive blood reaction, but only half of those who had travelled by motor car or were on foot at the time of the accident. The blood test was positive only in about a third of the patients who had been on a bicycle or motor cycle when injured, and it was invariably positive in persons who had fallen off other vehicles. It is not claimed for this investigation that it gives numerical proof of the degree to which accidents are caused by the misuse of alcohol. A case is, however, made out

¹ *Journ. Exper. Med.*, 1933, lviii, 683.

² *Acta Med. Scand.*, 1933, lxxx, 243.

³ *Scenska Läkarsällskapets Föreläsningar*, November 30th, 1933, p. 515.

for assuming that there must be some causal relation between alcohol and accidents, judging by the frequency with which consumption of the former, often in large quantities, precedes the latter.

MAGIC, MEDICINE, AND QUACKERY

Many hard things have been said about unqualified practitioners, but their motives have seldom been subjected to detached scrutiny. Dr. John Rickman, in his address from the chair to the medical section of the British Psychological Society on January 24th, made an interesting contribution to the study of quacks and quackery from the standpoint of psycho-analysis. The search of medical men for truth has, he explained, led towards progressively greater objectivity, the highest goal being the purely objective attitude. The mind, in its struggle to master the excitement generated by the instincts, appropriates external objects to represent its own spiritual potentialities and attaches them to the ego, so as to spread the excitement over a wider field and bear it more easily. In primitive magic the medicine man treats a case by taking the evil demon out of the patient into himself and there attacking it by the aid of his own ancestral spirits. The priest, representing a notable advance in this evolution, never identifies himself with the spirits, but stands, as it were, between the patient and the powers above and below, acting as an interpreter. In magic the spiritual elements of the mind, like the forces of Nature, are related to one another by violence; in religion their relations are more developed—they behave more like real people, organized and well-disposed human beings, and their nature carries more possibility for progressive sublimation. The Greek physicians, as early representatives of scientific medicine, came much nearer towards objectivity through the passionate love for the human body which characterized the Greeks and which was perhaps the most important factor in the early development of the healing art. Among the Greeks injury and disorder of function induced pity instead of stirring up belief in demons. They had learned to guide their own energies on to the outer world in a constructive way. The modern scientific medical man achieves the same or a greater objectivity. He has learnt to train and use his primitive instincts; he therefore no longer feels the inner anxiety that comes from failure to harness instinctive functions, and so he has arrived at a sense of the unity of the personality, and, as a corollary, a sense of the unity of the outer world. His work is as little as possible subjective and exciting to his emotions; he patiently matches one set of symptoms with another until he can see a clear picture, with points of resemblance and difference, of two sets of objective facts. The wish to heal others is the product of a complicated series of early fantasies, including the wish to cut up and explore the insides of other people, to stop them from having children, to make children oneself, to regulate the breathing, eating, and sleeping of oneself and others in magical ways. Between the quack and the doctor lies not so much difference in learning as difference in the way in which each controls these wayward fantasies. Crude impulses are controlled by the building up of a super-ego or ideal by an internal discipline of the emotional life. The model for the process may be an admired person

or an abstraction such as "the profession." Quacks, as defined by Dr. Rickman, are persons who refuse to submit to the discipline of a profession while claiming the privileges of a professional man. The discipline of the medical curriculum is not a guarantee that the qualified man will not revert to magic, but it trains him to control his crude fantasies. Patients generally go to quacks because the neurotic factor in their troubles has not been recognized and their treatment has been incomplete. In this department of its work the medical profession and its curriculum as a whole have fallen short of objectivity, and the remedy is to include in the curriculum a study of neurotic factors.

THE LEAGUE AND NARCOTIC DRUGS

Whatever may be the future of the League of Nations, and even if it were to disintegrate, some provision will have to be made for carrying on such work as that which the League has organized and supervised for the limitation of the traffic in dangerous narcotic drugs to medical and legitimate purposes. The successive Conventions on that subject have transferred the question from the national to the international field, and the machinery thereby established, through more than fifty ratifications of, or accessions to, these conventions, has created a record among the League's activities. The Assembly of the League has noted with satisfaction these measurable achievements, and is satisfied that the quantities of the scheduled narcotics manufactured by the licensed firms during recent years approximate to the quantities required for legitimate consumption. On the other hand, the Assembly was greatly concerned with the danger arising from the development by international traffickers of clandestine manufactories at the very time when the control of legitimate commerce was showing such marked improvement. The Permanent Central Opium Board, at its recent eighteenth session, was impressed by the large stocks of opium held by the Government of India, and instructed its president to ask for information on the subject from the Indian representative on the Opium Advisory Committee. The accumulation of considerable stocks of narcotic drugs in Hungary also demanded investigation, while the increasing number of seizures of contraband drugs in France was held to be due to the greater strictness exercised by the newly established "French Narcotics Bureau." A proposal has been considered by the Assembly to define by Convention a new international crime, on the lines of the Counterfeit Currency Convention, whereby punishment for acts not all committed in the same territory could be inflicted, and extradition facilitated. Slow progress was reported in preparation for the proposed conference for limitation of production of the opium poppy and the coca shrub, a problem which is clearly essential to any radical restriction of the raw materials of narcotics to strictly legitimate usage. It will be remembered that the League, on the advice of its Health and Opium Committees, came to the conclusion that the world requirements for medical and scientific purposes were: of morphine 9½ tons, of heroin 2 tons, and of cocaine 5½ tons. The newly constituted Supervisory Body, set up under the Limitation Convention of 1931, has recently reported on the estimates which have been submitted by forty-five countries of their requirements

of these drugs during the current year. In the case of twenty-three countries which failed to furnish estimates the Supervisory Body has itself framed the estimates. The figures of world requirement for the five principal drugs, based on these estimates, are: morphine 40 tons, heroin $1\frac{1}{2}$ tons, codeine 26 tons, dionine $2\frac{1}{4}$ tons, cocaine $5\frac{1}{2}$ tons. It must, however, be remembered that heroin, codeine, and dionine are derivatives of morphine, and although the two latter have not hitherto been brought into the same conventional control as the others, the morphine required for their manufacture is included in the total estimate of 40 tons of that alkaloid. The amount required for conversion into heroin, codeine, and dionine is stated to be $29\frac{1}{2}$ tons, of which about 28 tons are for the production of codeine and dionine alone. These two alkaloids have been claimed to be "not habit-forming drugs," although they are convertible into such. Codeine was indeed included in the original draft of the Hague Convention of 1912, but was struck out at the instance of the German delegation. If the amounts for "conversion" are subtracted from the 40 tons of morphine—the total estimates thereof for 1934—it will be seen that the world requirements for this year do not differ widely from the standards laid down by the League of Nations. The statement now issued by the Supervisory Body represents an organization, on a world-wide scale, of the narcotic drug industry and the trade in and consumption of such drugs. In the case of the manufacturing countries the estimates furnished determine the maximum limits within which manufacture may take place under the conditions laid down in the Convention, and the extent to which the parties to the Convention may export narcotic drugs, not only to each other, but also to States not parties to the Convention.

THERAPEUTIC PROPERTIES OF SNAKE VENOM

In a recent survey of the present position of snake venom as a therapeutic agent Dr. A. Ravina¹ points out that the analgesic properties of this substance were recognized by the homoeopaths long ago. Two lines of research, one experimental, the other clinical, are now being pursued in Paris with some curious results. The late Professor Calmette and his assistants have worked with a dried preparation obtained from the Pasteur Institute at Saigon. Their experimental animals were mice inoculated with a particularly virulent adenocarcinoma. Whether this new growth was spontaneous or grafted the injection of the snake venom directly into it was sometimes followed by its breaking down and a discharge, after which recovery took place in certain cases. The early death from septicaemia of some of the mice reacting most favourably to this treatment obscured the issue; and, while some of the results appear promising, these experiments can certainly not be described as convincing. As regards the investigations conducted at the Salpêtrière in Professor Gosset's service, the 115 cases about which reports have been issued form a very mixed collection, including many patients with advanced malignant disease. Some were inoperable, and in others various therapeutic agencies had already proved futile. But though in most of them there was little or no sign of

cure, it was often noted that considerable relief from pain followed the injections, which were given every third to every fifth day. As the cobra venom is administered in Paris in doses provoking neither suppuration, nor a general reaction, there is the more reason to pay attention to the isolated cases in which this treatment is followed not only by relief of pain, but also by cicatrization and other signs of healing. There is, for example, the case just published by A. Orticoni,² whose patient, between 70 and 80, was suffering from an epithelioma of the rectum. A few hypodermic injections of cobra venom changed the general and local conditions for the better. Peck and Goldberger³ have found that snake venom has a beneficial effect in cases of uterine haemorrhage which had proved refractory to other methods of treatment.

SALESMANSHIP

"Salesmanship" is defined in the *Oxford Dictionary* as "the condition or character of being a (good) salesman," and two quotations are given from novels of the 'eighties. Perhaps a closer definition of the word to-day would be "the faculty whereby one person induces another to buy something he does not want." Tradition abounds with examples of this particular branch of the commercial art, for is it not safe to assume that the answer to the question "D'you want to buy a vatch?" is seldom "Yes"? Again, a contemporary humorist tells us of a customer who, visiting an old clothes shop in a certain London district in quest of a pair of golf trousers, found himself compelled to buy also a patent putter, a fireman's helmet, and a bowl of goldfish. An example of salesmanship on a larger scale is afforded by the recent practice of persuading simple-minded doctors to put their names down for an encyclopaedic work of reference. In this way several of our readers have found themselves committed to paying some £20 for a set of volumes which, on mature reflection, they find they do not want. Likely customers are approached in person or by letter, or by both methods, busy surgery hours being generally chosen for the personal interview. Too often the preoccupied doctor puts 30s. down and signs a printed form "not subject to cancellation" which contains a promise to pay the balance in monthly instalments. A circular letter emphasizing the value of the offer, and the singular good fortune of the prospective buyer in being chosen to receive it, includes the phrase "this is not philanthropy, but approved modern business procedure." To those wholly unfamiliar with American business methods such candour may be disarming, but we like to think that the majority of British practitioners, even under the spell of salesmanship, will refrain from purchasing goods, however excellent, for which they have no real use.

The Prince of Wales has consented to become Patron of the London School of Hygiene and Tropical Medicine, with which is incorporated the Ross Institute. This announcement was made at the staff and students' dinner by Sir Austen Chamberlain, chairman of the Court of Governors.

¹ *Presse Médicale*, January 20th, 1934.

² *Amer. Journ. Obstet. and Gynecol.*, June, 1933.

³ *Presse Médicale*, January 3rd, 1934.

DIET IN RELATION TO DENTAL STRUCTURE AND DISEASE

The Medical Research Council issued last week a report¹ that completes Mrs. May Mellanby's account of her important researches into the influence of diet on the teeth. The scope of this survey is indicated by its title: *Diet and the Teeth: an Experimental Study. Part III. "The Effect of Diet on Dental Structure and Disease in Man."* Its appearance is a noteworthy event, and it has already received much attention in the public press. The significance of the main conclusions arrived at by Mrs. Mellanby is discussed in a leading article at page 246.

The report consists of 180 pages of letterpress, with 46 plates and 56 tables. The first half is devoted to an account of the structure and development of human teeth. The author shows that the tooth structure which has generally been accepted as normal, and which is indeed the structure usually seen, is markedly defective when compared with the teeth of healthy animals or with the best human teeth. The following subjects are dealt with in turn: normal development and structure; abnormal development and structure; dental caries; the relation between structure and dental caries; and the defensive reactions of teeth.

Mrs. Mellanby next gives an account of the influence of diet on the incidence of caries in children, and in this chapter are summarized the results of a series of large-scale dietary experiments which she conducted in Sheffield and in Birmingham. The report concludes with an account of the racial distribution of caries, which shows that dental caries is very widespread and has been prevalent in many communities since the dawn of history, but that, on the other hand, there are a number of populations living under primitive conditions which are almost free from caries. Incidentally it is clear that this immunity to caries is not a racial characteristic, because primitive races develop caries when they adopt the diet of civilization, while certain white communities living under primitive conditions are free from caries.

PRINCIPLES OF NUTRITION

Her advice to civilized people if they want to have good teeth may be summarized in four sentences: Breast-feeding up to a year or more, so long as a supplementary diet, including some iron and vitamin C, is given after about the sixth month. More milk, eggs, cheese, animal and fish fats, and vegetables, and less cereals. No cereals at all for the very young. Cod-liver oil, or some other source of the fat-soluble vitamins A and D, to be given to all infants and children.

"It has been shown that perfectly calcified and regularly arranged teeth can be produced by including in the maternal diet during pregnancy and lactation, and in the diet of the offspring at the time of dental development, substances containing much fat-soluble vitamin, calcium, and phosphorus such as milk, egg-yolk, fish, and animal fats; the vitamin D can also be obtained by exposure of the skin to sunlight or other sources of ultra-violet radiation; that cereals, especially those rich in embryo such as oatmeal, tend to produce badly developed (hypoplastic) teeth and call for a correspondingly larger supply of calcifying foods for good development. It has been further established that the teeth of the majority of children in the British Isles are imperfect in structure and have a roughish surface; that dental caries is more likely to attack such teeth than perfect teeth with normal enamel and dentine and a comparatively smooth surface; that the resistance of teeth to caries can be increased independently of their original structure by giving a diet of high calcifying activity; and, on the other hand, that the resistance can be decreased by a diet rich in cereals and of low calcifying properties.

"Another outstanding feature of the experimental work was the demonstration that a deficiency of vitamin A or carotene played an important part in the development of the periodontal tissues and in the control of the onset of periodontal disease, including pyorrhoea. Up to the present time these observations have not been extended to man, but that they can be so extended is strongly supported by the distribution of this disease in different races."

NORMAL DENTITION IN CIVILIZED PEOPLE

There is one consideration arising from the statistical results that may appropriately be mentioned here. Table IV shows the state of deciduous teeth from varying sources. The most satisfactory teeth were a group obtained from private sources, and in these the incisors were satisfactory, since 72 per cent. were classed as normal; on the other hand, only 23 per cent. of the canines and 10 per cent. of the molars in this same group were found to be normal in structure, while 50 per cent. of the second molars were classed as very hypoplastic. It appears very doubtful whether this group could be looked upon as representing a true average of middle-class children, for the teeth are most likely to have been obtained from families possessing more than the ordinary knowledge of diet and taking a particular interest in dietetic problems. On this assumption the results would suggest that the deciduous molar teeth are structures which are showing definite signs of degeneration in white races. Such an idea gains support from the well-known fact that no small proportion of third permanent molars show gross signs of maldevelopment. Considerations of this kind raise a certain doubt as to whether a dentition that is normal according to Mrs. Mellanby's standard is a possible average attainment under any conditions of to-day, or whether we now have to deal with degenerating structures that can only be kept in a moderately satisfactory state by means of special dietary precautions.

DENTAL CARIES A PROBLEM OF NUTRITION

The first of Mrs. Mellanby's larger reports on diet in relation to dental structure and disease, dealing with the jaws and teeth of puppies, was reviewed in the *British Medical Journal* of February 15th, 1930 (p. 292), the second, on the teeth of other mammals, was reviewed on March 21st, 1931 (p. 502), and a short interim statement, on diet and caries in children, on October 3rd, 1931 (p. 615). These documents, together with the survey now published, constitute a most remarkable monograph on the physiology and pathology of the teeth of animals and man.

In the work described in this concluding volume of the series the experimental results set out in the first two reports were extended to children, with a view to determining whether dental disease, and especially dental caries, was also in the main a problem of nutrition, and, if so, whether this scourge of civilization could be prevented by eating and absorbing the right kinds of food.

Her earlier work went to show that susceptibility to dental caries depends in the main upon dietary factors operating at the time the tooth is first formed; that ill-formed teeth are those most vulnerable to bacterial attacks; and that throughout life, but particularly during the first months and years, certain articles of food favour resistance to decay while others act in the opposite direction. By the light of these and later investigations she has been able to lay down general principles of human nutrition whose aim is "the formation of more perfect teeth and surrounding tissues, more regularly arranged in well-grown jaws. With better structure of dental tissues and increased resistance to bacterial invasion there is every reason to believe that both dental caries and pyorrhoea will cease to be the scourge they are at the present time."

¹ Medical Research Council, Special Report Series No. 191. H.M. Stationery Office. 1934. (5s. net.)

THE HEALTH OF THE ARMY

REPORT FOR 1932

The report on the health of the Army for 1932¹ reveals a highly satisfactory position. Not only was the admission to hospital rate (412.5 per 1,000 of the strength) the lowest on record, but the invaliding and constantly sick rates (7.92 and 21.56 per 1,000 respectively) and the average individual period of sickness (7.89 days) were the lowest recorded since the war. All the more important diseases, including malaria, influenza, dysentery, tonsillitis, sand-fly fever, dengue, and venereal diseases, participated in this decline. Definite factors in this improvement were undoubtedly the increasing attention paid to preventive measures, and the interest taken by officers of the Army Medical Services in the scientific side of medicine.

ANTIMALARIA MEASURES

The malaria incidence has fallen from 99.8 per 1,000 in 1921 to 28.4 in 1932; but in India, it has to be admitted, this infection still continues to merit its designation as the scourge of the Army. In 1932 the admissions to hospital of malarial patients formed 14.5 per cent. of the total admissions, and this represents hospitalization only; it does not include out-patient attendance, nor indicate the degree to which the disease adversely affects the general physical efficiency. While the fact that there are between four and five thousand annual admissions for malaria out of a strength of 55,000 is disturbing, it is reassuring to note that the steady, if slow, improvement of recent years is being maintained. This was especially evident in 1932 in the case of the Northern Command in India, where malaria plays more havoc among the troops than in any other area in that country. Here the admission rates fell from 138.4 in 1931 to 91.5 in 1932, a noteworthy contrast with such years as 1925-7, when the figure was always over 200. The lowest record as regards malaria before 1932 was reached in 1928, and for various reasons it had been expected that the year under review would prove to be definitely worse. Climatic conditions had militated against the disease in 1928, but had favoured its spread in 1932. Financial restrictions in the latter year had brought new antimalaria engineering work to a standstill, and civil disturbances in various places had subjected the troops to very hard work under adverse weather conditions and in circumstances which greatly hindered antimalaria measures. The factors which outweighed these hostile agencies are recorded as follows. Steadily increasing interest in malaria field work has resulted in officers performing their duties in this respect with enthusiasm and hopefulness, even though hampered by lack of funds and the pressure of other duties. In this connexion a warm tribute is paid to the value of the instruction courses held annually at the Ross Field Experimental Station at Karnal.

The more extensive and skilful employment of plasmoquine in 1932, as compared with that in 1928, is believed to have played a very considerable part in reducing the incidence and morbidity due to malaria. Accumulating clinical and statistical evidence supports this view, but only a tentative opinion to this effect is advanced in the present report because the full results of the first year's systematized administration of this drug are not yet to hand. The whole question of the prevention and treatment of malaria is discussed in detail. With a view to greater accuracy in the differential diagnosis of "fresh" and "relapse" malaria, a circular on diagnosis was issued from Army headquarters to all medical officers. The prophylactic value of quinine is rather doubted on the whole by Army experts; evidence in favour of plasmoquine was obtained, but the lower doses were ineffective, and the toxicity of higher doses led to doubts about the value of employing this drug on a large scale. As a therapeutic agent, however, plasmoquine established its position during the course of 1932. The average relapse rate for India during the quinquennium 1927-31 was 277 per

1,000. Figures for 1932 in the case of plasmoquine-treated patients ranged from 20 to 47 per 1,000, and it is hoped confidently that the admissions for relapses during 1933 will show a very pronounced reduction, with a correspondingly far-reaching effect on the health of the Army. This drug was usually administered with quinine, and sometimes with atabrin, the new therapeutic agent which is winning favour. Atabrin is generally held to be as powerful in action as quinine, but slower in getting to work. No toxic sequels of any importance have yet been reported, even when it was employed in combination with plasmoquine. The Army practice is to administer the drugs consecutively, not simultaneously. Tribute is paid to the clinicians and epidemiologists who have given particularly valuable help during the year. An adaptation of the peace mosquito net for use in the field has been approved, and the provision of mosquito-proof tents is now possible. Experimental trials of an outfit designed for the field diagnosis of malaria and dysentery are now nearing a successful conclusion.

HYGIENE AND NUTRITION

The Army's need for a higher, and therefore more expensive, standard of sanitation than is thought necessary in civil life is particularly apparent in connexion with the prevention of respiratory infectious diseases, which constitute one of the chief causes of sickness and inefficiency. Their predisposing causes are accentuated in communal military life in a way which is rather exceptional in a civil community. The barrack rooms are alternately scrubbed and swept, giving at one time a humid hot or cold atmosphere and at another time a dust-laden atmosphere, the dust eventually settling on the pillows and sheets and eating utensils, to be later inhaled or swallowed by the occupants of the rooms. The heating of the barrack rooms is differently effected by open fireplaces round which the men congregate, and spray each other with whatever organisms they may be carrying in their respiratory tracts. The prevention of these conditions, it is remarked, would check the spread of infectious respiratory diseases. It comprises the provision and adoption of modern cleaning methods by the use of vacuum apparatus, and the adequate warming of barrack rooms by central heating. Both these procedures are recurring sources of expense, unfortunately, but it is believed that they would not be more expensive than the loss of man power and the deterioration in health which at present occur as the result of their not being employed. The Army food ration, judged from the civilian standpoint, is considered to be adequate as regards its constituents; the problem of utilizing it to its full value is almost entirely one of good housekeeping by the unit. The number of courses of instruction at the Army School of Cookery is insufficient to maintain an adequate flow of regimental cooks, and an increase in the establishment of the school is under consideration. The decline in the purchasing power of the troops has been countered by the introduction of a measure whereby the messing cash allowance now moves on a sliding scale which is regulated by the official index figure governing the cost of living (food). A mild-cured bacon has replaced the previous hard-cured salt variety, a change which has proved most popular, even in semi-tropical countries, but issues of dried milk were unfavourably received by the troops.

Special attention was directed to the high incidence of tonsillitis, the second greatest cause of admissions to hospital among officers, and the third greatest cause among other ranks, the average figures being 14.6 and 31.5 per 1,000 respectively. The Joint Medical Services Committee appointed a subcommittee of the three services to study the situation from statistical, environmental, and aetiological standpoints. A detailed report eventuated which is now under consideration. The desirability is suggested of attempting to obtain evidence by mass investigation as to the relative importance of dormitory infection, methods of washing messing utensils (the saliva theory), and nutrition. A comparative study was made of such service schools as those at Shotley and St. Vincent (Royal Navy), Chepstow (Army), and Halton (R.A.F.), and some light

¹ H.M. Stationery Office. 1934. (2s. 6d. net.)

was thrown upon the problem of infection. While evidence was obtained that tonsillectomy diminished greatly the incidence of local throat diseases, it appeared also that it increases the susceptibility of the patient to some other diseases. Further investigation is recommended in respect of the possible association of dental and oral sepsis with respiratory infections, and of the relation of disease to growth rates and nutrition. There was a suspicion of vitamin deficiency in all the dietaries.

HEALTH OF COMMANDS AT HOME AND ABROAD

The present report contains the usual statistical information about the health of the various commands at home and abroad. Judged by the average sick time to each soldier, the commands with the highest ratio of inefficiency were Aden (14.51 days), China (12.15 days), Jamaica (11.69 days), and Ceylon (11.47 days). Those with the lowest ratios were Malta (7.6 days), Mauritius (6.46 days), and Bermuda (5.62 days). The number of invalids discharged from the Army in 1932 was 1,439. The amount of venereal disease again fell most satisfactorily, including this time the incidence in China, where there are special difficulties in the way of its prevention. The steady annual growth in the number of admissions for scabies, as compared with an almost equally steady decrease of venereal disease, led to an inquiry in commands as to possible reasons for this change. It was found that most of the infestations occurred in men returning from leave; that the condition was more prevalent in the civil population heretofore; and that, whereas the decrease in venereal disease was due to the education of the soldier and the public in methods of prevention, these methods did not apply to scabies. Although there was an increase in the admissions for nervous diseases (1,283, a ratio of 7.1 as compared with 6.6 last year), the numbers of invalids sent home and of invalids finally discharged were substantially reduced. An investigation of cases of mental disease at Netley confirmed the view that the causes of insanity in the Army are the same as those in civil life, and that military service in itself has no direct bearing on the causation of mental disorder.

THE CAUSE OF SILICOSIS

A debate on silicosis in the mining industry took place at a meeting of the Institution of Mining and Metallurgy on January 25th. It was opened by Mr. W. R. JONES, D.Sc., of the geological department of the Royal School of Mines.

Dr. Jones described his investigations of the mineral residues obtained from twenty-nine lungs, each lung being from a person whose death had been certified as due to silicosis; five of these were from workmen in the pottery industry and twenty-one from underground workers in British collieries. The dust obtained from every one of these lungs consisted of minute acicular fibres of sericite—a hydrated silicate of aluminium and potassium, sometimes called secondary white mica. The mineral was abundantly present in all the rocks and materials which gave rise to the inhaled dust causing silicosis in these cases. Silica in the uncombined state, as quartz, was also present in these residues, but numerically the fibres of sericite predominated very greatly over the quartz particles. He submitted that silica in the uncombined state was not the chief cause of silicosis in the cases described, but that the presence of fibrous minerals, chiefly sericite, in aggregates which during the impact of drilling, blasting, or crushing became freed into the atmosphere as individual fibres, enabled sufficient material in course of time to enter the lungs to cause the disease. Whether the minerals acted as mechanical irritants causing the growth of fibrous tissue or induced chemical changes, as maintained by certain pathologists, was beyond his province.

Professor J. S. HALDANE dissented most emphatically from some of Dr. Jones's conclusions. To his mind the perfectly clear evidence which incriminated uncombined silica had never depended on the nature of the dust found

in the lungs at death, but on the history of prolonged exposure to dust containing a high proportion of silica in the uncombined or free state. Dr. Jones had given instances of cases in which he believed that undiluted dust of highly siliceous rock or even perfectly pure free silica was breathed without harm resulting, provided that no sericite was present. Professor Haldane thought that in every one of these cases he was entirely mistaken. The dangers of crushing pure quartz without scrupulous precautions against inhaling the dust had long been known, and it was the success of the precautions enforced by law, and most certainly not the harmlessness of the dust, that was shown by the safety with which quartz was now crushed. He also protested emphatically as a physiologist against the idea that the lungs might be regarded as a sort of geological dust trap which simply accumulated dust. Through the activity of living phagocytic cells and ciliary action dust was continuously removed from every part of the lungs, but when dust mainly of pure silica was breathed there was a breakdown of the normal cleaning process, and at the same time the lungs became very susceptible to tuberculous infection.

Dr. HERBERT H. THOMAS, petrological expert to the Home Office, confirmed Dr. Jones's opinion of the mineral he had found in the silicotic lungs. The residues were definite foreign mineral particles of mica-like material, having a refractive index, by-refrindex, and all the other physical properties consistent with the mineral sericite. Sericite was possibly the primary or even the sole cause of the silicotic condition.

Professor E. H. KETTLE of St. Bartholomew's Hospital said that he was not very much impressed with Dr. Jones's negative evidence—the fact that silicosis did not occur in situations in which sericite was not present. One reason for his scepticism was that he knew too much about death certificates to place very great reliance on the Registrar-General's returns. As an experimental physiologist he thought he had ample proof that crystalline silica, flint, pure quartz, and substances other than sericite were capable of producing lesions in the body which he recognized as characteristic of the silica reaction. On the other hand, he had had far greater success in producing experimental lesions with kaolin than he had had with pure quartz or other forms of pure silica. In his own experience in this country pure silicosis was a rare disease. He was more and more impressed with the infective factor in the production of this condition. The specimens sent to him were nearly always those of infective silicosis, and the infecting organism most commonly the tubercle bacillus.

Dr. E. L. MIDDLETON, medical inspector of the Home Office, said that he would not place any reliance on a hypothesis based on the assumption that dust particles must be of a certain shape in order to reach the alveoli. He had collected many samples of atmospheric dust in manufacturing processes, and it appeared quite possible to have high concentrations of dust of quartz with particles under two microns in size, any or all of which could reach the ultimate recesses of the lungs. It was important to realize that quartz dust was capable of reaching the pulmonary alveoli as well as sericite, and even along with it. There was need, he added, for a comprehensive investigation into the mineral composition of the materials which gave rise to dust wherever cases of silicosis were known to occur.

Sir JOHN FLETT, director of the Geological Survey, a medical man, declared that finely divided silica was a very dangerous substance. It was not, in his belief, the nature of the mineral that determined its dangerous character, but the shape of the particles. These fine, metal-like acicular particles were especially dangerous, because, with the movement of the bronchi and alveoli of the lungs, it was very difficult for them to come to rest. He had examined a large number of coal miners' lungs, but the coal particles tended to be cubical or rounded in shape, and therefore were less dangerous than the pointed particles of sericite and asbestos. Flints, especially when heated, also tended to break up with very fine needle-like points.

Many more experts were eager to continue the discussion, which was adjourned until February 15th.

Scotland

Incapacitating Sickness in Scotland

A report¹ dealing with incapacitating sickness among the insured population of Scotland during the year July 1st, 1931, to June 30th, 1932, has been issued by the Department of Health for Scotland. The data from which this is prepared are derived from the records of approved societies periodically furnished to the Department, and include tables of the incidence and duration of various disorders, as well as conclusions drawn from these. The statistics do not show any very marked divergence from those for the previous year. There was a slight fall of 2.1 per cent. in the total duration of incapacitating sickness in the insured population as a whole, but while there was a decrease for men amounting to 6.1 per cent., there was an increase of 4.6 per cent. for women—that among single women being 5.1 per cent. and among married women 3.2 per cent. There was also a slight drop in the incidence of sickness represented by the number of completed cases of incapacity. For the whole insured population the decline amounted to 5 per cent., caused chiefly by a diminished incidence among men amounting to 8 per cent., although for women there was a rise of 1 per cent. With regard to the average duration of incapacity, there was an increase of 3.1 per cent. for the total insured population. The decline in sickness was chiefly due to a diminution of respiratory diseases, accidents, skin conditions, gastritis, and anaemia; on the other hand, an increased amount of incapacity had been ascribed to tuberculosis, malignant tumours, heart disease, gastric ulcer, appendicitis, hernia, and kidney disease. During the year the number of completed cases of incapacity was 359,811, including 228,030 men and 131,781 women. The total duration of incapacity for these cases amounted to 16,705,885 days, including 10,024,155 days for men and 6,681,730 days for women. The incapacities during the year were equivalent to 20 per cent. of the total insured population, that of men (189 per 1,000) being lower than that of women (234 per 1,000). The average duration per completed case of certified incapacity was 46.43 days, the female average being higher than the male. For the year 1930-1 the number of completed cases of incapacity was 378,742, so that the diminution as represented by the figure for 1931-2 was equivalent to 5 per cent. This diminution was due to a decline of incapacity among men represented by 19,883 cases, or 8 per cent., as against an increase of 1,195 cases, or 0.9 per cent., among women. The increased incidence among women occurred in the unmarried group. The total period of time lost (16,705,885 days) was 357,838 days less than in 1930-1, or a decrease of 2.1 per cent. There was a greater relative decline in the number of cases than in the total days of sickness, so that the average duration per completed case was greater in the year 1931-2 than it was in 1930-1, the average duration having increased from 45.05 to 46.43 days. A table of the certified causes of sickness shows that the chief incapacitating factor was diseases of the respiratory system, accounting for 39.1 per cent. of all the cases. This was followed by diseases of the locomotor organs, accounting for 11.34 per cent., and diseases of the digestive system, 10.66 per cent. Violence accounted for 9.3 per cent., and skin conditions (chiefly suppurative and inflammatory diseases) for 8.84 per cent. With regard to incidence rates in the two sexes, the greatest relative divergencies were found in anaemia,

debility, nervous disorders, infectious diseases, and appendicitis, the incidence rates being much higher in females than in males. On the other hand, hernia, gastric ulcer, accidents, malignant tumours, cerebral haemorrhage, and septic skin conditions were appreciably more numerous in men than in women. In single women as compared with men higher incidence rates with lower average durations were found for anaemia, debility, and neurasthenia, and a higher incidence with also a higher duration in infectious diseases, diseases of the respiratory tract, and appendicitis. In married women as compared with men a higher incidence and higher average duration were found for tuberculosis, pernicious anaemia, goitre, and heart disease. The relation subsisting between average duration of incapacity and age was well defined in the male sex, for at ages under 20 the average duration of incapacity was twenty-three days, and in each succeeding age group the duration increased in amount, reaching 136 days in the last age period of 60 to 64. The same relation with minor variations was observed among the female insured. Some interesting facts are given regarding the geographical variations of sickness. The incidence of incapacity in the burghs was found to be 201 cases per 1,000, while in the counties it was 203. On the other hand, the average duration was substantially higher in the burghs than in the counties. The highest rates for incidence of incapacity were found in Airdrie, Hamilton, Kilmarnock, Perth, and Falkirk, where the numbers were equivalent to at least one out of every four insured persons; the lowest were found in Greenock, Inverness, and Clydebank, with rates respectively of 142, 161, and 162 per 1,000 insured. The duration of sickness per person was lowest in Greenock, Ayr, and Edinburgh, and greatest in Airdrie, Arbroath, and Perth. Neither the incidence of incapacity nor its duration appears, therefore, to have any relation to the industrial character of a district. By dividing the country into three belts of north, central, and south, it was found that incapacity was most frequent in the central industrial belt, lowest in the north, with the southern border district intermediate, but the average duration of incapacity was in the reverse order, that for the central region being lowest.

Education Health Service in Glasgow

The annual report, by Dr. G. Arbuckle Brown, on the medical inspection and treatment of school children for the year ended July 31st, 1933, has now been issued by the public health department of Glasgow. Details are given of the routine medical inspection of 46,683 children, mainly at the age groups of 5, 9, and 13. In addition 1,455 children in special schools for physical and mental defectives were examined. The balance of 122,226 medical inspections during the year was made up of 14,840 examinations of children specially presented by the teachers on account of suspected defect, the re-examination of 23,275 children found to be "abnormal" on a previous occasion, and 35,943 special inspections for various purposes. The heights and weights of the children compared favourably with previous records; the averages for the last quinquennium of children of various ages were in nearly every case higher than the corresponding figures for the three other five-year periods, omitting the war years, since 1910. The following conditions were in 1933 as good as, or better than, any records since 1919: clothing—in need of repair 0.3 per cent., dirty 0.2 per cent.; verminous head, 0.2 per cent.; dirty body, 0.4 per cent.; verminous body, 0.3 per cent.; nutrition—bad 3.6 per cent., very bad 0.1 per cent.; good visual acuity, 77.4 per cent.; rickets, 2.5 per cent.; Such percentages tend to vary slightly from year to year, but, the report states, only occasionally have the figures for 1933 been improved upon. An analysis of the physical condition of the children based on the records of the

¹ Report on Incapacitating Sickness in the Insured Population of Scotland during the year 1st July, 1931, to 30th June, 1932. H.M. Stationery Office, 120, George Street, Edinburgh. (9d. net.)

routine medical inspection of 32,495 children shows that 94.4 per cent. were free from any irremediable defects, 4.5 per cent. suffered from acquired irremediable defects, 1 per cent. had congenital irremediable defects, and 0.1 per cent. had other irremediable defects, or combinations thereof. The number of children receiving medical treatment at the school clinics has increased since 1932; the total seen, and, for the most part treated, included the following: diseases of the ear, 4,689; diseases of the eye, 5,152; skin, 18,856; other minor diseases, 14,335; artificial light treatment, 478; defective vision, 9,230; defective teeth, 20,797; tonsil and adenoid operations, 1,374; deformities (exercises, massage, appliances, etc.), 955. This work involved 472,211 attendances of children at school clinics. Although these figures indicate an increase of between 3 and 4 per cent. over the figures for the previous year, there was no evidence of any real increase of disease or defect among the children. Throughout this section of the report there is evidence that the more serious conditions from which children attending ordinary or special schools suffer are diminishing, and that the increase in the treatment figures is due to minor conditions now receiving attention in the school clinics because of the adverse economic circumstances of the parents.

Edinburgh Medical Missionary Society

At the annual meeting of the Edinburgh Medical Missionary Society Dr. R. A. Fleming said that the society now had a greater number of students in training than ever before. There was a deficit on the past two years' working amounting to over £1,700, but owing chiefly to a legacy this had been reduced to about £800. The society, however, required increased financial support. Referring to the training of medical students for mission work, Dr. Lasbrey said that the supply was by no means equal to the demand, and many societies were urgently in need of men and women doctors at the present time. Dr. Taylor emphasized the need for better equipment of hospitals in the mission field, and gave as an example of the difficulty of medical work in India the fact that in the district where he worked there were less than ten doctors, with some thirty or forty other persons partly trained in medical work, for a population of about one million.

Ireland

Welfare Work for the Blind

Professor T. G. Moorhead, in the course of a long and interesting lecture outlining the work that is being done for the welfare of the blind in Great Britain and Ireland, stated that there were about six million blind people in the world, including about 63,000 in Great Britain, and in the Irish Free State certainly not less than 4,000, or one in every 800 of the population. It had been calculated that at least one blind person in every three was capable of working and earning a livelihood, so that, if blind people were given the opportunity, about 20,000 in England would cease to be a drag on the community, while over 1,200 in the Free State would be able to contribute to their own maintenance. To Dr. Armitage belonged the great credit of realizing the capabilities of many blind people, and their power not merely to interest themselves, but to support themselves in many professions and occupations. He was born in 1824, and, as a medical student, suffered from some trouble with his eyes. At the age of 36 he was compelled to abandon the practice of a London consultant owing to increasing dimness of his vision. As far as Ireland was concerned little welfare work on behalf of the blind was done until 1911. In that year an Irish solicitor, Mr. Rochford

Wade, became blind, and at once started to work on behalf of his fellow-sufferers, using his office in Lower Gardiner Street, Dublin, as a centre. He founded the Hibernian Blind Association, and in 1913 a branch of the National Institute for the Blind was established in Dublin, with Mr. Wade as secretary. The Hibernian Blind Association ceased to exist in 1925, and there was a gap in welfare work until 1931, when the National Council for the Welfare of the Blind of Ireland was established through the energy and initiative of Miss Armitage, daughter of the Dr. Armitage already referred to. This Council, Dr. Moorhead continued, was endeavouring to organize blind welfare work throughout the entire country. Already it had started four county branches—in South Tipperary, Waterford, Kilkenny, and Clare—and it was hoped before long to have a branch in every county in Ireland. In Dublin a home visitor had been appointed, and a group of voluntary lady visitors had been secured. A scheme for providing wireless for the blind had been inaugurated, entertainments organized, and the sale of goods had been helped—in fact, every branch of blind welfare work was being undertaken. But the Council required further support if it was to continue its work. Many people had given up subscribing to hospitals since the sweepstakes started. This was a mistake; the hospitals still required financial support, and, above all, the interest of the public in their work. To those, however, who had determined not to subscribe to the hospitals at present he could recommend this blind welfare work as a genuine and most deserving charity. In conclusion, Dr. Moorhead appealed to the public to support the movement to provide wireless sets for the homes of the blind.

Workmen's Compensation Bill

In the report stage of the Workmen's Compensation Bill (Irish Free State) Sir Edward Coey Bigger, in the Senate, moved the insertion in the Bill of a new section which provided that, where compensation was payable under the Act, the court might direct payment to the medical practitioner, out of that compensation, of such sum as it considered reasonable. The House agreed to consider at the same time an amendment on the same subject, proposed by Mr. Foran, which provided that the medical fees payable should be in addition to the compensation. Sir Edward Coey Bigger said that to leave such an amendment as his out of the Bill was tantamount to saying to the employer and the employed that it was not necessary to pay medical fees at all. Mr. Comyn suggested a compromise on the amendment, which would provide that out of the compensation any sum not exceeding £5 would be payable to the medical practitioner, and for any sum exceeding this figure the medical practitioner would stand in the same position as other creditors in reference to the balance of his claims. Mr. Foran contended that the employer should pay for medical attendance; he agreed with Sir Edward Coey Bigger provided the workman was assured of his full compensation. Mr. Lemass, Minister for Industry and Commerce, said that, on a former occasion when the matter was discussed, he was against special provision being made for doctors' fees. Since then he had met a deputation of the Medical Association, which had told him that it was not the practice of doctors to recover fees by law, and that where the fees were due in respect of workmen's accidents there was failure to secure payment in over 99 per cent. of the cases. They could adopt the course either of paying whatever fees the court deemed reasonable, or—as Sir Edward Coey Bigger suggested—of deducting fees from the compensation. Whichever course was adopted there was not likely to be a reduction in doctors' fees; these were more likely to go up. Individual doctors would play fair, but they had to base their legislation on the assumption that

original sin still operated in humanity. He would propose, therefore, that a section be enacted which would provide payment by the employer of doctors' fees, due by the workmen for treatment, to the maximum of £5. without depriving the doctor of his right to recover the balance from the workman. The amendments were, by leave, withdrawn, and permission was given to the Minister to introduce a new section on the lines suggested next week.

Local Services (Temporary Economies) Bill No. 2

At a recent meeting of the medical practitioners in South Tipperary the Local Services (Temporary Economies) Bill, No. 2, 1933, was discussed so far as it affected medical practitioners in the employment of local authorities. The meeting protested strongly against the proposed reductions, and stated that: (1) the work thrown on Poor Law medical officers as the result of the abuse of the term "poor person" to meet the economic depression had increased threefold; (2) private practice had decreased as a result of this abuse and the economic depression more than 50 per cent.; (3) Poor Law medical officers were on duty the entire twenty-four hours of the day, and had to deal with emergency calls at all hours of the day and night; (4) costs incidental to the discharge of the duties of their offices, such as road and petrol taxes, and compulsory insurance under the Traffic Act, had increased considerably, and all of them had to be found out of an already inadequate salary. The meeting also considered a proposed scale of fees forwarded to Health Boards by the Department of Local Government and Public Health, and all the members present pledged themselves not to accept less than £1 1s. for the administration of an anaesthetic. At a recent meeting of County Galway medical practitioners holding offices under local authorities the circular letter received from the secretaries of the Irish Medical Committee was considered clause by clause. Proposals in the circular letter were approved, and Drs. M. G. O'Malley and T. B. Costello were appointed to attend the meeting of delegates to be held in Dublin on a date not yet fixed. Deputy delegates were also appointed.

England and Wales

New Middlesex County Mental Hospital

The first section of what is claimed to be, in design, furnishing, and scientific provision, the most up-to-date mental hospital in the country was opened to patients on February 5th at Shenley, near Radlett, in Hertfordshire. It is the new mental hospital provided by the Middlesex County Council, and has been in process of building since the middle of 1931 on an estate, much of it wooded, covering 500 acres. The entire scheme provides for a mental hospital to accommodate 2,000 patients, with the necessary staff, and the first section now opened has room for 1,046 patients, and also comprises the whole of the administrative offices, as well as a hospital for bed cases, pathological laboratory, x-ray department, operating theatre, dental clinic, dispensary, and provision for light and other treatment. The hospital buildings are on a twin plan about a central axis line, with one side for male and the other for female patients. The villa system has been followed in the design, and numbers of small villas have been erected, approximating as far as possible in their furnishing to home conditions. All the buildings face south, and there are large verandas which can be used by the patients for rest by day or night when conditions are favourable. A feature is to be made of occupational therapy. The estate includes a farm where many men may be congenially employed,

and for others there is provision for handicrafts, including weaving, rug-making, leather work, simple joinery, printing and bookbinding, and basket and brush-making. The kitchen, laundry, and sewing departments will provide occupation for the women. A large recreation hall has been built to accommodate 1,000 persons, and fully equipped for stage productions, concerts, and talking pictures. Cricket and football fields and tennis courts have been reserved in the grounds. The kitchen is of such dimensions as to permit of cooking for 2,500 people daily. With regard to services, the institution is as far as possible self-contained. Water is pumped from a well on the estate into storage reservoirs, and underground conduits distribute the steam heating, domestic hot water, and electrical, telephone, and wireless services throughout the hospital. A number of press representatives and other guests were received at the hospital two days before the informal opening, when Sir William Lobjoit, chairman of the Mental Hospitals Committee of the Middlesex County Council, spoke of what the institution was intended to achieve. It was emphasized that provision was made for the treatment of voluntary and temporary patients suffering from mental breakdown, who can leave on recovery without the stigma of ever having been certified. The medical superintendent at Shenley, Dr. G. W. Shore, with the standing subcommittee of the hospital, is to be congratulated on the work so far accomplished. The total cost of the project will be over half a million pounds.

Darlington Health Services

The staff of the health office at Darlington met on January 23rd to say farewell to Dr. Andrew McFarlane, who recently resigned on his appointment as medical officer to the Scottish Board of Health. The presentation took the form of an easy chair. Expressions of appreciation of Dr. McFarlane's four years' service with the department were voiced by Dr. Dawson, the new medical officer of health, representatives of the sanitary inspectors, health visitors, and clerical staff. Miss Flora Kinnear, matron of the fever hospital, on behalf of the staff presented to Dr. and Mrs. McFarlane a travelling rug and cutlery as a souvenir of their happy relations. The co-ordination of the health services in Darlington is now completed with the following appointments: Dr. G. A. Dawson, medical officer of health, school medical officer, and medical officer to the Public Assistance Committee; Dr. W. L. Hartston, deputy medical officer of health and venereal diseases medical officer; Dr. Isobel C. Brown, assistant medical officer for schools and toddlers; Dr. Elizabeth S. Walker, maternity and child welfare medical officer and public vaccinator; Dr. J. H. Weir, assistant medical officer for tuberculosis and public assistance; Mr. J. L. Liddell, L.D.S., dental officer for corporation health services. The recent purchase of the general hospital by the Corporation has advanced the co-ordination scheme, and it is hoped that the services will be under one roof in the course of the next six months.

Science and Pure Water

The annual report of the Water Pollution Research Board, issued by the Department of Scientific and Industrial Research,¹ draws attention to the fact that although the water supplies of the country are in general much safer than those of some years ago, largely as a result of systematic research and the application of scientific methods, the need for even greater vigilance is occasionally emphasized by outbreaks of water-borne disease. The enteric fever outbreaks at Malton and Denby Dale are cases in point. The report also refers to the outbreak of paratyphoid at Epping in 1931, which, without the constant and careful watch maintained by the Metropolitan

¹ H.M. Stationery Office. (1s. net.)

Water Board, might have spread rapidly, and become extremely serious. The troubles at Malton, Denby Dale, and Epping emphasize the importance of preventing, as far as possible, the pollution of our rivers and other sources of water supply. In many cases, however, the condition of rivers cannot be improved to the necessary extent until satisfactory methods of reducing the quantities or improving the composition of various domestic and trade effluents have been devised. In view of the importance in many industrial processes of adequate supplies of soft water, and of the fact that several water supply authorities are softening their water before it reaches the consumer, investigations are being carried out on the base-exchange process of water softening. Other important work in progress deals with the contamination of water by lead. A survey of the existing knowledge of the subject will shortly be published, and will include sections dealing with the lead content of drinking-water, difficulties of diagnosis of lead poisoning from water, protection of consumers, the action of water on lead, electrolytic action, etc. The survey has revealed many divergent and contradictory opinions regarding the effects of various conditions on the plumbo-solvent action of different waters and the amounts of lead which must not be exceeded in drinking-water if risk of poisoning is to be avoided.

Child Guidance Council

Lord Blanesborough took the chair at the annual general meeting of this council, held at the Westminster Palace Rooms on January 22nd. He paid tribute in his address to the generosity of the Commonwealth Fund and of Mr. Harkness, who had not only enabled the movement to be started in this country but, notwithstanding the stringency of financial conditions in America, had never diminished their bounty. Lady Snowden said that she hoped to see a child guidance unit attached to every school or small group of schools in the country. Dr. William Moodie, in an admirable exposition of the methods and aims of the council, said that during its five years of work the general public antagonism to it had largely given place to sympathy, curiosity, and understanding. Clinics had been opened in many centres; each was staffed by a three-specialist team—a psychiatrist in charge, assisted by an educational psychologist and a social worker. Training clinic workers was an important part of the council's activities, for a high level of special competence was necessary. Problems were approached on a practical level, and the findings and reports were couched in simple language. The clinic rarely advised parents; it stated the child's problem, and the parent usually co-operated willingly. A representative of the Home Office testified to the great interest which the Government took in the work and the unexpected enthusiasm of education authorities all over the country in questions affecting child welfare. The council would do invaluable service in assisting the new juvenile courts set up under the Children and Young Persons Act, 1933.

The Marriage Bar

The standing order of the London County Council whereby women employees have to resign their posts on marriage has been suspended in the case of a woman medical officer who has been engaged for the last two years at the central pathological laboratory of the Mental Hospital Department. It is stated that the research which she has been undertaking, on the functioning of the nervous system, has so far had encouraging results, but will not be completed before the end of five more years, and that it will be interfered with gravely if her services are terminated. Accordingly she has been retained for as long as may be necessary up to the end of 1938.

Reports of Societies

RESPIRATION

At a meeting of the Anaesthetics Section of the Royal Society of Medicine, on February 3rd, with the president, Dr. H. P. FAIRLIE, in the chair, a discussion took place on respiration.

Professor SAMSON WRIGHT, dealing with normal breathing, discussed first the situation of the respiratory centre, concluding that it was unnecessary to postulate a series of centres controlling each other from above downwards. One "centre" acting normally as a co-ordinated unit, he held, would explain the fact that when parts of it were cut off the portion left could no longer control breathing normally. Continuing, Professor Wright mentioned the inherent rhythmical activity of the centre, and described the mechanical regulation of the depth of breathing. He then gave a brief outline of the purposes served by breathing as an approach to the subject of its regulation. Pulmonary ventilation, other things being equal, was proportional to the metabolic rate, and it also varied with the reaction of the blood. Breathing was also influenced by the heat-regulating mechanism of the body and by the level of the arterial blood pressure. Oxygen lack, if severe, also stimulated respiration in certain circumstances. Professor Wright then discussed the part played by carbon dioxide in the regulation of breathing, mentioning the effects of excess and of diminished amounts of this gas in the blood. Changes in the hydrogen-ion concentration of the blood due to causes other than increased carbon dioxide formation in the tissues also affected the centre. Oxygen lack, said Professor Wright, had a complex effect upon breathing. When abrupt and excessive, diminished oxygen intake produced rapid failure in respiration. If less severe some increase in breathing might occur, but compensation in this way was unsatisfactory. Usually an increased rate rather than an increased depth of respiration occurred from oxygen lack. Professor Wright pointed out that, while oxygen lack directly depressed the isolated respiratory centre, it stimulated breathing reflexly through the sensory nerve endings in the carotid sinus and aortic arch. Finally, the speaker referred to the part played by the vagi in the regulation of respiratory rhythm, describing how distension of the lungs produced a reflex expiration.

Dr. ALAN MONCRIEFF, discussing failure of respiration, mentioned first the occurrence of this in the newborn, and urged that anaesthetists were especially well qualified to help in resuscitation of the infant from their experience with intratracheal intubation. He said that respiratory failure at this age period was caused by obstruction in the respiratory tract, delayed expansion of the lungs, narcosis, failure of circulation, intracranial damage, and failure or delay in the function of the respiratory centre. He discussed the use of a combined suction and air-delivery unit to deal with failure due to the first two causes on this list, stressing the value of inhalations of 5 per cent. carbon dioxide in oxygen to stimulate the respiratory centre. Dr. Moncrieff then set out a classification of respiratory failure in general, and referred first to some of the causes of central failure, due mainly to impaired nutrition and poisoning of the controlling nervous mechanism. Under the heading of peripheral failure the speaker described first the mechanical effects of a reduction in vital capacity, pointing out, however, that this alone did not necessarily indicate the degree of failure of the lungs as ventilating organs, since there was a large degree of reserve available. Hence, he said, the need for studying the efficiency of pulmonary ventilation. Some help could be obtained, continued Dr. Moncrieff, from a consideration of the ventilation in relation to oxygen intake, but of more importance was a study of the exact amount of air actually reaching the alveoli. This involved a consideration of the so-called "dead space," and it was shown that efficient ventilation obtained when this was kept to as small a proportion of the tidal air as possible. The speaker then mentioned the importance of the integrity of the alveolar epithelium and of the

circulation through the lungs. Finally, discussing the treatment of respiratory failure, he laid stress on the importance of carbon dioxide in oxygen, and said that tracheal intubation or the use of a mask was preferable to any other form of artificial respiration as a measure of resuscitation.

The PRESIDENT inquired about the normal reaction to breathing carbon dioxide, as to what concentrations and what length of time were required before distress arose. Dr. C. A. KEELE pointed out that in the treatment of respiratory failure drugs would be likely to fail, as carbon dioxide failed, if the circulation was not able to carry them to the centre. Dr. J. GNOSI mentioned the effect on breathing of paralysis of the respiratory muscles as might occur in spinal anaesthesia. He asked if this affected the working of the respiratory centre, and also what was the effect upon central control of an open thorax. Dr. J. D. RUSSELL asked why, if artificial respiration might have had effects by the washing out of carbon dioxide, the Drinker apparatus, which produced such efficient ventilation, was advocated. Dr. E. FLETCHER gave an account of cases of respiratory failure due to filling of the lungs with lipiodol. He wondered why the accumulation of carbon dioxide in the blood in such cases did not stimulate the respiratory centre. In investigating early disease of the respiratory organs, such as bronchitis without any infiltration of the pulmonary tissue, he had found a striking decrease in the reserve air. Dr. R. J. MINNITT referred to some experiments he had made in which there was a fall in the carbon dioxide content of the venous blood during anaesthesia, except where this gas had been inhaled at some time during the experiment. Dr. W. HOWARD JONES mentioned the effects of prolonged restriction of oxygen intake during the administration of nitrous oxide.

TREATMENT OF OTITIS MEDIA

At a meeting of the Section of Otology of the Royal Society of Medicine on February 2nd, with Dr. W. J. HARRISON presiding, a discussion took place on the treatment of chronic catarrhal otitis media (excluding otosclerosis) and of deafness and dry suppurative otitis media.

Mr. W. M. MOLLISON said that the treatment of chronic catarrhal otitis media was, even in these days, a poor thing. The name of the condition had a gloomy sound, and the prognosis was gloomy—a few kind words to the patient, and advice about some sort of aid. Dry suppurative otitis media was a contradiction in terms; it related to a condition remaining in the middle ear when suppuration had been brought to an end. Early treatment of all ear infections was the only efficient method of preventing subsequent deafness. Sir William Milligan had been accustomed to claim that correct treatment of the acute ear condition should always result in normal hearing; the lesson was at last being learned, and there was less deafness as a result of acute middle-ear suppuration than formerly. The non-suppurative cases were a real difficulty. From the point of view of deafness it was better to have a suppurating ear than a catarrhal one. Aurists knew what considerable degrees of deafness in children escaped the notice of parents and teachers. Once established in children, a catarrhal otitis media led to increasing deafness, compensated for in early years, but becoming worse with time. Mr. Mollison had noticed this among persons of 20 or 30, who stated that they were experiencing much deafness, though there had been nothing immediately to account for it, and, on going back into their history, some trouble of this kind in childhood was elicited. The speaker quoted from the writings of James Hunter, sixty years ago, on missed diagnosis and ineffective treatment, and said that apart from the recognition of adenoids and sinus infection there had been little progress since Hunter's day. Asking whether exudative otitis media ever passed the antrum and mastoid cells as in suppurative cases, Mr. Mollison described a case under his care which suggested this possibility. He did not know when acute catarrhal otitis media became chronic; physicians found some mystic

significance in a period of three months, but he did not think aurists would fix arbitrary time limits. In children one need not despair of the recovery of hearing even after long periods of the acute condition. Sources of infection must be removed from both nasopharynx and sinuses. In adults inflation was not always easy, but the passage of the bougie was often helpful. Various fluids and gases had been recommended for blowing through the catheter—iodine vapours, hot air, and the like. Local treatment of the membrane might be attempted, and vibratory massage had its vogue. Ionization was reported to have been helpful, but he could not speak from experience; nor could he speak of the Zünd-Burguet electrophonoide method. [Six cases illustrating alleviation of deafness and tinnitus by this method had been shown earlier in the meeting by Dr. GEORGE CATHCART.]

Mr. C. P. WILSON said that Mr. Mollison had put forward the orthodox views as to treatment of this condition. Unfortunately, progress in this field had been very slow. The treatment of any condition, unless it was to be purely empirical, must be founded on a true appreciation of the underlying pathology, and the ideas of pathology current were those which had been accepted from the old teachers almost without question. A good deal was heard of atrophy of the tympanic membrane, and so forth. The only cases he had seen pathologically where it might be expected to find atrophic changes had all shown the presence of otosclerosis. It was his firm opinion that the cases of old catarrhal deafness with atrophic changes of the tympanic membrane had also the otosclerotic condition, and when a case had reached that stage he knew of no really effective treatment; furthermore, any active local measures were more likely than not to increase the rate of progress of the disease. The treatment of these cases was purely educative, and designed to improve hearing from the social point of view. With regard to earlier cases of catarrhal deafness he suggested that the anatomy of the Eustachian tube was a factor of much more importance than was usually considered. The normal tube was long and narrow, but a small percentage of persons had a short, relatively wide tube, and these were more vulnerable to the spread of infection from the nasopharynx. People with Eustachian tubes of this type often had attacks of mild subacute catarrh, with very little associated pain, but the recurring attacks of mild infection might leave them with an infiltration of the mucosa of the middle ear, leading to fibrosis and contraction, and an indrawing of the tympanic membrane, or might result in the general onset or acceleration of an otosclerotic process, with atrophy and degeneration of the mucosa of the middle ear. Lately it had been said that the deafness in these cases was due to thickening of the mucosa around the stapes, and this condition had been allied with otosclerosis. This again was a theory without any definite pathological foundation. Treatment in these cases must never be local; manipulative treatment could not be of any use, and might increase the fibrosis. Where an otosclerotic element was present the treatment should be preventive, and directed to the nasopharynx and pharynx. Adenoids were a common cause of trouble. The removal of tonsils, in the presence of a chronic infection of the nose, did more harm than good. If the tonsils were removed and the nasal infection persisted there was always an increase of lymphoid tissue on the wall of the nasopharynx. The nasal infection must be cleared up first. If the tonsils were so infected as to be incapable of recovery they might be removed later, but on no account should the tonsils be removed until the nasopharynx was tackled. If Eustachian catheterization showed the tube to be clear, or if on section no fluid could be drawn from the ear, then local treatment must be stopped. Patients with long, narrow Eustachian tubes had fewer attacks of infection from the nasopharynx, but the attacks they did get were associated with Eustachian obstruction. These people were the subjects of catarrhal infection plus Eustachian obstruction, and it was in this group only that, he thought, local treatment was of any value. Mr. Wilson added that otosclerosis was a much more common complication of chronic catarrhal deafness than was usually realized. Catheterization should

be undertaken only if definite improvement in the hearing was achieved. For these cases he regarded the Politzer method of inflation as unsound and unsafe.

Dr. ALBERT GRAY said that adhesions might occur in an early stage after an acute or subacute middle-ear inflammation which had proceeded to suppuration; the most common sites for these adhesions were the head of the malleus and the body of the incus. Adhesions might also occur after a drying up of chronic middle-ear suppuration; sometimes these bound down the remains of the tympanic membrane to the promontory. In another condition newly formed fibrous tissue might be found in the middle ear without any preceding inflammation or exudation. In this there was a very slow increase in the connective tissue in the muco-periosteum of the middle ear.

Mr. LOWNDES YATES spoke of a method of aspiration which he had found useful in the kind of cases under discussion—the displacement of 3 c.cm. of liquid paraffin, with the patient in the recumbent posture. It was not always good practice to inflate the ear, especially if the Eustachian tube contained pus, as this might be blown up into the ear. Mr. THACKER NEVILLE said that anything which dilated the blood vessels of the inner ear in chronic catarrhal deafness seemed to help. A rheumatic patient who had histamine treatment found that her hearing was improved by it, and demanded it for her deafness. The speaker used diathermy as a routine in all his cases of catarrhal deafness. Spa treatment for these ear conditions was more neglected in England than in other countries.

Dr. A. R. FRIEL said that Eustachian obstruction and catarrhal otitis media in children were usually accompanied or preceded by rhinitis. Any treatment which was effective for the rhinitis was a preventive or curative agent for the ear condition. Such a treatment was devised by Gautier of Paris, and was called diastolization. It consisted in the introduction of soft rubber hollow bougies along the floor of the nose into the space between the inferior turbinal and the septum. This mild stimulus caused contraction of the blood vessels in the turbinal, and the latter shrank, and so the passage became open. With the recovery of this part the Eustachian congestion also subsided. The speaker had also found useful a weak solution of nitrate of silver, applied by Yankauer's applicators. To restore the position of the drum membrane, as well as to open the Eustachian tube, politizerization was employed. Mr. T. B. LAYTON said that for many years it had been the custom to consider the changes in the middle ear as the physical basis of deafness, and the changes in and around the mastoid antrum had received scant notice. The mastoid bone was part of the muscular system of the body, and was the remote part of a diverticulum, and Mr. Mollison had taught him that if a person with otitis media and some suppuration had undue deafness it was certain that that infection had spread into the mastoid or its associated cells.

Mr. E. WATSON-WILLIAMS stressed the great variations met with in tympanic membranes, and how little the appearance and condition of the tympanic membrane were correlated with the degree of deafness. In his experience the condition of the tympanic membrane was as often misleading as it was helpful in putting one on to the cause of deafness in a particular case. He had seen a number of cases with marked degeneration of mucous membrane associated often with chronic degeneration of the nasopharyngeal and nasal mucous membrane, and he thought many of these patients were subjects of iodine deficiency. Mr. HAROLD KISCH remarked that one was often faced with the problem whether submucous resection or other operation ought to be performed to help cases of chronic deafness. A useful step towards that decision was to test the hearing before doing any manipulation, and then to spray the nose with a solution of cocaine and adrenaline. In a proportion of cases the hearing was improved by this procedure, and in these he found operation was of use. Mr. J. F. O'MALLEY thought that a better understanding of the physiology of air movements in the middle-ear cavity was needed, because all the lines of treatment had a bearing on alteration of the air pressure in the middle ear.

IMMUNIZATION AGAINST YELLOW FEVER

At a meeting of the Royal Society of Tropical Medicine and Hygiene on January 18th, with the president, Sir LEONARD ROGERS, in the chair, Dr. G. W. M. FINDLAY read a paper on immunization against yellow fever.

Dr. Findlay said that rapidity of travel had been greatly increased by the application of the internal combustion engine to transport on land and in the air. As a result, a further extension of the areas infected with yellow fever was within the bounds of possibility, since many countries which already harboured the mosquito vector of yellow fever could now be reached by a traveller from an endemic focus well within the incubation period of the disease. Some method not merely of controlling but of eradicating yellow fever was thus of the greatest importance. Such eradication could be brought about only by destruction of either the vector or the virus, and since the vast areas in Africa and South America now known to be infected with yellow fever rendered it impossible to annihilate the mosquito vector, a practical method of immunization would be of inestimable value. Although Carlos Juan Finlay suggested the possibility of immunizing against yellow fever forty years ago, no safe or efficient means of employing the ordinary virus of yellow fever could be found. In 1930, however, Max Theiler made the important discovery that yellow fever could be transmitted to mice by intracerebral inoculation. Mice thus inoculated did not develop viscerotropic lesions similar to those found in rhesus monkeys and man, but died from an encephalitis. Intraperitoneal inoculation was only fatal in young mice, in which the virus rapidly became localized in the central nervous system. After serial passage the virus lost its power to produce viscerotropic lesions in monkeys, though when inoculated intracerebrally it produced an encephalitis in all species of monkey. So far as monkeys and rodents were concerned all efforts to reconvert the fixed neurotropic virus into the viscerotropic strain had failed. The use of this neurotropic fixed virus for immunization removed many of the difficulties arising from the ordinary viscerotropic strain, more especially when human yellow fever immune serum was also injected. In their original experiments Sawyer, Kitchen, and Lloyd (1932) immunized fifteen persons by a single injection of a dried mixture of living yellow fever virus, fixed for mice, and human immune serum with separate injections of enough additional serum to prevent detection of virus in the peripheral blood stream. One person was similarly immunized by injecting immune serum and dried virus separately.

In this country up to the end of 1933, continued Dr. Findlay, 200 persons (152 men and 48 women) were immunized by injections of neurotropic mouse-fixed yellow fever virus and human yellow fever immune serum. Those immunized included civil and military officials, medical officers, and nursing sisters of the West African Medical Service, missionaries, traders, and wives of officials proceeding to the West Coast, as well as laboratory workers. They were divided into three groups, according to the relative amounts of immune serum and virus injected. Group I (forty persons) was inoculated subcutaneously in the abdomen with from 0.3 to 0.5 c.cm. of human immune yellow fever serum per kilogram of body weight, followed four to six hours later by from 0.25 to 0.5 c.cm. of a 10 per cent. suspension of virus in normal human serum injected subcutaneously in the arm. Twenty-five (62.5 per cent.) of those inoculated by this method developed febrile reactions with a rise of temperature above 99° F. Group II (110 persons) was inoculated intradermally in the abdomen with 1 c.cm. of human immune yellow fever serum, followed two hours later by from 0.1 to 0.5 c.cm. of 10 per cent. suspension of virus injected into the same area. Forty-six (41.8 per cent.) of those thus inoculated developed febrile reactions. Group III (fifty persons) was inoculated intradermally with 1 c.cm. of human immune yellow fever serum, followed two hours later by intradermal injection of from 0.00625 to 0.05 c.cm. of 10 per cent. virus, together with the subcutaneous injection of 5 c.cm. of human immune yellow fever serum. Fifteen (30 per cent.) of those thus inoculated developed febrile reactions. The reactions consisted for the most

part of headache, aching in the limbs and back lasting for from twenty-four to forty-eight hours, accompanied by a leucopenia and slight bradycardia. In no case did there develop any encephalitis or "paralytic accident," and in only a very small number was the reaction severe.

The sera of 115 persons were examined for the development of immune bodies after immunization. Immune bodies began to appear in the blood stream seven to eight days after inoculation, and attained their maximum titre in from three to four weeks. Ten to eleven months after immunization the immune body titre decreased, but protective immune bodies could still be detected up to at least sixteen months after inoculation, and probably for much longer periods. So far the complete success of immunization against yellow fever had only been demonstrated in laboratory workers, for among these since the introduction of prophylactic immunization there had been a complete absence of the accidental infections which were at one period so common.

Colonel S. P. JAMES said that the complete cessation of laboratory accidents after inoculation by this method constituted definite proof of its efficacy, and it could now be regarded as a sure prophylactic measure for all colonial officers and others going to endemic zones of yellow fever. In aeroplane traffic the real practical risk was limited to human cases incubating the disease, and this danger could now be eliminated by the inoculation of the personnel of aircraft and all intending passengers. Colonel James then demonstrated by means of a spot map that there were great areas in a continent like Africa where the people possessed immunity to yellow fever, though clinical yellow fever had not been reported there. Such areas had been designated "silent" regions by Dr. Sawyer; the speaker suggested that in yellow fever, as in small-pox, non-virulent strains existed which caused little illness, but immunized against the virulent type of virus.

Dr. HAMILTON FAIRLEY said that unfortunately personal experience had made him realize the importance of the new prophylactic inoculation introduced by the Rockefeller workers, as some little time ago two of his own laboratory staff had contracted yellow fever during haematological and biochemical examinations, and one had died. Skin abrasions were absent, and evidently infection had resulted from contact with microscopic quantities of blood. In the past doctors and nurses must have contracted this disease when taking routine blood smears from febrile cases during the first two or three days of yellow fever, or even during the incubation period, and in endemic areas gloves should be worn whenever blood was being collected. In addition, prophylactic inoculation would now be available for both medical and nursing staff.

Dr. CARMICHAEL LOW stated that in the West Indies in the old days during an epidemic mild cases of fever and albuminuria did occur, and had a protection test been available it would undoubtedly have shown them to be yellow fever; variations in the severity of cases were due to variation in individual resistance. Dr. Findlay had said that the experiments of Stokes, Bauer, and Hudson demonstrated the ultra-microscopic nature of the virus; this he did not think quite fair to the early American commission, as it had shown the virus was a filter-passer.

Dr. MANSON-BAHR inquired whether the virus of yellow fever had any power of stimulating latent malaria, and, if so, might it not be used as a test to reveal latent infection? He asked also whether the virus of yellow fever might not eradicate filarial infection; he had seen two cases in which embryos had disappeared after an attack of yellow fever. Dr. R. A. O'BRIEN said that natives of West Africa appeared to possess some natural immunity, since the disease in them was generally mild and difficult to diagnose, whereas in Europeans it was typical and generally fatal: he had, however, seen epidemics in which the mortality was as high among natives as among Europeans. Dr. FELIX mentioned certain similarities between typhus and yellow fever. Killed typhus virus as it existed in some fluids of the body and blood was incapable of producing any immunity, but killed virus obtained from blood-sucking insects, such as the louse and red flea, was quite different, since it could produce active immunity. He wondered if

the killed yellow fever virus from the mosquito would immunize.

Dr. FINDLAY pointed out, in reply, that while the American commission had shown the virus of yellow fever to be filterable, it had not proved it to be ultra-microscopic. The terms were not synonymous: suspension of certain spirochaetes, for example, gave filtrates which were infective.

CORRESPONDENCE

The Tuberculosis Problem

SIR,—I have read with interest the illuminating letter by "A. R. F." under the above title in your issue of February 3rd. He is perfectly right when he says: "Can any tuberculosis clinic afford to spurn the use of (a) repeated sputum examinations, (b) an x-ray apparatus, (c) careful and repeated clinical examination, and (d) tuberculin, especially in the case of children, as aids to early diagnosis?"

I thoroughly agree with what he says about the tuberculosis clinic. The following recommendations¹ to bring about the improvement, which is rightly held by "A. R. F." to be so necessary, were made by the Tuberculosis Group of the Society of Medical Officers of Health:

"The efficiency of the Tuberculosis Service varies widely in different districts, but backward areas are being improved by wise stimulation from headquarters. This supervision should not be used so as to hamper individual initiative, or impede experimental methods."

"The chief factor in success is the personality and ability of tuberculosis officers and superintendents of sanatoriums, and to secure this, remuneration sufficient to attract good men is all-important. An indifferent officer fails to obtain the confidence and esteem of the general practitioners, on whom so much depends. It is better to have fewer and better paid officers with larger areas than a large number of poorly paid men of mediocre capacity."

"Rural areas of 250,000 population and urban areas of 350,000 can be managed by one whole-time officer with adequate medical and clerical assistance, and would provide sufficient remuneration. The service should be graded so that those who had acted as assistants might become higher salaried whole-time consultant tuberculosis officers or senior sanatorium superintendents. Superannuation schemes should be generally adopted or so arranged that an officer does not lose by transference to another district."

"The tuberculosis officer and sanatorium superintendent should have at their disposal facilities for diagnosis, such as an x-ray outfit, and for special forms of treatment, such as light and artificial pneumothorax. Each tuberculosis officer should have hospital beds."

"Dispensary and sanatorium officers should be first and foremost clinicians, but should have a public health outlook. Facilities to attend post-graduate courses are of the highest importance. In certain circumstances it may be advantageous for the medical superintendent of a sanatorium to be responsible for clinical work in the vicinity of his institution."

"The practitioners' sense of responsibility in the prevention and treatment of tuberculosis must in no way be impaired, and it is the first duty of dispensary and sanatorium officers to ensure this. One of the most helpful qualifications for these officers is to have been themselves in private practice."

With regard to the second suggestion in the letter, "Is there any system of inspection of such organizations, and is any attempt made to keep them well equipped and to standardize their functions?" it is to be regretted that the Ministry of Health are still withholding the publication annually of Memorandum 131/T (analysis of work done during the year under the schemes of local authorities for the treatment of tuberculosis, as shown in the returns furnished in accordance with Memorandum 37/T). —I am, etc.,

G. LISSANT CON,

Preston, Feb. 5th. Central Tuberculosis Officer, Lancashire County Council.

¹ Printed as an appendix to the report of the Joint Tuberculosis Council on "Improvements in the Tuberculosis Service," published in 1932; copies obtainable from the honorary secretary, 123, Torquay Road, Paignton Devon.

Artificial Pneumothorax for Tuberculous Children

SIR,—In view of the acknowledged comparative rarity of pulmonary tuberculosis of the *adult* type in children, the large number of cases (132) reported by Dr. Reade in the *Journal* of February 3rd (p. 214), as having been treated by him at High Wood Hospital by artificial pneumothorax since 1926, invites some questions.

1. On what evidence was the diagnosis of pulmonary tuberculosis based?

2. In what percentage of cases were tubercle bacilli found in the discharges?

3. Assuming bacilli were not discovered in many of the cases, having regard to the excellent outlook for the great majority of children with *primary* infection, in the absence of interference of any kind, what advantage does Dr. Reade claim for collapse therapy in this particular group?

All three children whose cases I reported in the *Journal* of January 6th, as undergoing artificial pneumothorax treatment, had tubercle bacilli in the sputum. There was nothing very remarkable about any of them, except perhaps the fact that together they happened to be in hospital about the same time. Many tuberculosis physicians must have treated similar cases in children, from time to time, on much the same lines.

Dr. Jessel (consultant tuberculosis officer, Lancashire County Council) reported in the *Lancet* of December 16th, 1933, the case of a boy, aged 8 years, with tubercle bacilli in the sputum, whose cavity he had closed by artificial pneumothorax. Dr. Macdonald of Battersea Tuberculosis Dispensary tells me that he is at present treating by the same means a girl, aged 5, with a positive sputum. But there must be few practitioners who have had experience of such a number of cases in children as Dr. Reade mentions in his letter. Perhaps, some time, he will be good enough to publish full details in another communication.—I am, etc.,

Oxford, Feb. 4th.

WILLIAM STOBIE.

Otitis Media

SIR,—I have read with interest Dr. Douglas Guthrie's paper on the "acute ear" in your issue of January 6th. I like the comparison of the "acute ear" with the "acute abdomen" if only for the emphasis which it gives. The acute abdomen, however, is becoming less common. I can go months now without seeing one, but acute and chronic ears are as abundant as ever. So far as I know, none of the school medical officers or the Ministry of Health has drawn public attention to the prevalence and devastating effects of otitis media. Hardly a day passes but I see a new case or the active recurrence of an old one. It seems to be quite common for an old otitis media to have periodic outbursts practically throughout life. In addition to the cases of frank otorrhoea one sees many cases of earache which, as the result of treatment or of superior resistance, proceed no further.

The treatment of both the acute and the chronic ear is not very satisfactory as far as methods applicable in the home go. I have notes of a good many, all of which I have tried without being able to feel that one is better than another, or that there has been any real advance in the last thirty years.

In the acute case I have never incised the drum and have never seen it done. I worked for some fifteen years for other doctors. None of them ever did it, and most of them admitted they had never done it. Yet I am sure otologists would not advocate early incision unless

they believed that it would go a long way to reduce the number of chronic ears and of serious complications. The trouble about incising the drum is the need for a general anaesthetic. The general practitioner avoids it owing to lack of time and the necessity of finding a colleague to be present or give the anaesthetic. The public, at least in their own homes, are not prepared to consent to a general anaesthetic for what they regard as a trivial condition.

Is it not possible for the otologist to find out a means of doing the operation under local anaesthesia of some kind? There is rarely any difficulty in getting a good view of the drum in children, provided one goes about the business with patience and care, and I imagine the further step of incising the drum could be done without the child being aware of it, provided he felt no pain. The objection used to be made, and may still be made, that local anaesthetics are not very effectual in suppurative conditions. It may be true in the case of the drum, but it is certainly not true for suppurating fingers and breasts, both of which I operate on frequently under novocain infiltration without causing any pain whatever.

I plead guilty to inflicting a long letter upon you, Sir, but the subject is very important and deserves wide consideration.—I am, etc.,

Edinburgh, Jan. 31st.

JOHN M. DEWAR.

Mind and Body

SIR,—As medical superintendent of a mental hospital of approximately 1,400 beds, may I be allowed to express my congratulations and thanks to Professor Arthur J. Hall for his paper on "Bodily Diseases in Mental Disorders," published in your issue of January 27th. All his observations are most pertinent, and demonstrate the close relation of mind and body, a subject which I think is impressed upon nurses trained in mental hospitals more than is done in those trained in other hospitals. Any physical illness, no matter how slight, has its mental accompaniment, just as most mental states have their physical counterparts.

Professor Hall's article will do much to point out to our confreres in the profession the difficulties we have to contend with in the psychiatric field of work, and in my opinion he deserves the thanks of all so occupied. I hope all interested in mental hospital work will read and preserve the same.—I am, etc.,

RICHARD EAGER, O.B.E., M.D.

Devon Mental Hospital, Exminster, Feb. 5th.

Some Factors which Regulate the Uterus

SIR,—Interesting though the remarks of your annotator in the *British Medical Journal* of January 6th, and subsequently those of Mr. Jeffcoate in a letter on January 20th (p. 122), are, it may be that both writers have ignored certain facts which bear on the activity of the uterus and may be important in the explanation of those factors which determine the onset of parturition.

To Reynolds, I think, belongs the credit of showing that the administration of oestrin to the living animal is followed, within a comparatively short latent period, by increased uterine contractions. Now it must be remembered that such an effect is not necessarily due to a direct action upon the uterine muscle in the same way as, for example, histamine might act when administered, but may depend upon any of the following mechanisms: (1) the substance may indeed directly act upon the muscle fibres and bring about contraction of these; (2) the substance, though having no direct action upon the muscle, may

cause a contraction indirectly—for example, by an alteration of the blood supply; (3) the substance may bring about the liberation or increased production of some other substance in the body, which then in turn causes contraction of the uterine muscle; (4) the substance may bring about alterations in the properties of the uterine muscle which may lead to increased contractions dependent upon changes in the intrinsic contractile mechanism; (5) the substance may exert such an action upon the uterine muscle that it will become excitable to other substances which are otherwise ineffective.

Before we can determine the part which oestrin may play in the control of the physiological uterine activity, especially during gestation and parturition, it is necessary to try to analyse the mechanism through which this activity is exerted. The evidence available is all against the view that oestrin directly stimulates the uterine muscle to contraction. Not only is the latent period of its effects, when administered *in vivo*, too long to support such a hypothesis, but the direct *in vitro* investigations (Marrian and Newton, 1932) also afford strong evidence against it. On the whole, we can definitely dismiss this as a possible important factor in parturition. The possibility that oestrin may influence uterine activity through an effect in the blood supply, too, has not as yet been investigated, though Barcroft and his co-workers (1933) have shown that certain very interesting alterations in the vascularity and metabolism of the uterus and its contents take place during gestation. The possible relation of these changes to the activity of the sex hormone may prove a fruitful field for investigation. The view that oestrin causes a stimulation of the posterior lobe of the pituitary was originally put forward by Dixon and Marshall, but their findings have not been substantiated by later investigators. At present the evidence does not warrant the conclusion that this is an effective mechanism in parturition.

We are therefore left with the possibilities that oestrin may influence the uterine activity either by an effect upon the intrinsic mechanism which controls the rhythmic contractions of the organ (and whose nature is unknown) or by acting upon the uterine muscle so as to render it excitable to the action of substances which otherwise have no effect upon the organ. The hormone may, of course, exert both types of effects. Now there is considerable evidence to show that the uterine muscle at parturition attains a certain definite state in regard to its reactivity to oxytocin, and that this state is different from that observed at any other time before or following parturition. Moreover, by the action of oestrin it is possible to induce in the uterine muscle of the non-pregnant animal a state similar to that observed at parturition. These findings, in general, apply not to one particular animal, as so many studies on uterine activity do, but to species as widely separated as man, the rabbit, and the mouse. In all these the state of reactivity of the uterine muscle at parturition can be given in certain very definite terms which are, within the limits of experimental error, exactly the same in all three. In other words, at parturition a concentration of oxytocin of 0.001 to 0.01 unit per 100 c.cm. will cause contraction of the uterine muscle, while considerably larger amounts of that posterior lobe hormone are necessary to give a similar effect during pregnancy and during the puerperium (the latter statement applies only to the rabbit and mouse, the reactivity of the human uterus during puerperium having not yet been accurately studied). Further, the injection of crystalline trihydroxy- or keto-hydroxy-oestrin into the ovariectomized rabbit and mouse will bring about such changes in the uterine muscle that it becomes reactive to doses of oxytocin varying from 0.001 to 0.01 unit per 100 c.cm.—that is, doses exactly similar to those effective at parturition. It is noteworthy that clinical evidence supports the view that the

uterus attains its greatest reactivity to oxytocin at parturition.

What the factors are which presumably, through the medium of oestrin, control those changes in the reactivity of the uterine muscle which culminate in parturition is at present unknown. That the corpus luteum cannot play, in all animals studied, a determining factor, is definitely established. The possibility that the placenta may secrete a substance having an effect similar to the inhibitory luteal hormone cannot be excluded, nor is it impossible that the gonadotropic hormones may possess such properties. Further studies of these questions are, however, necessary. It is interesting to note, however, that if the uterine contents are removed even during the later stages of gestation then the high reactivity of the muscle to oxytocin characteristic of parturition never develops; on the contrary, large doses of the posterior lobe hormone are necessary to cause contraction of the muscle. This finding suggests that the uterine contents may ultimately play a decisive part in determining those changes in the uterus which culminate in parturition.—I am, etc.,

Edinburgh, Jan. 29th.

J. M. ROBSON.

Infectivity of Scarlet Fever

SIR,—I would like to ask if authorities can ascertain how long the infectivity of the organism of scarlet fever lasts in a case that has clinically cleared up.

A. B. and C. D. were admitted to a convalescent home on October 24th and November 7th, 1933, respectively. They had both had scarlet fever during July and August. There was no evidence of infectivity on admission, though A. B. had one tonsil slightly enlarged, and C. D. had a bad habit of explosive talking into the faces of others. E. F., a delicate little boy with an unhealthy mouth, developed the disease on November 19th. He was afterwards found to be carrying Klebs-Löffler bacilli. G. H. cut his knee, and on December 1st developed a scarlatinal rash. I. J. developed a mild attack on December 16th. As far as possible the contacts were isolated, and there have been no more cases. I have no doubt that C. D. or A. B., or both, were carrying the organism.

Is it the practice in London or elsewhere to undertake throat-swabbing and cultivation of the haemolytic streptococcus in cases convalescent from scarlet fever, as we do in cases of diphtheria for Klebs-Löffler bacilli? Scarlet fever appears to be somewhat prevalent at present, and return cases are not infrequent. Accidents like this much interfere with the work of convalescent homes and schools.—I am, etc.,

HUGH M. RAVEN, M.R.C.S., L.R.C.P.

Broadstairs, Feb. 4th.

The New Cancer Problem

SIR,—Many readers of Mr. Hastings Gifford's letter in the *Journal* of January 20th (p. 121) will find in it a reflection of their own thoughts. In the reports of the Imperial Cancer Research Fund a clinician seeks in vain for help in his own problems at the bedside. Outside this "official" literature, however, there is much which to the physician is both reasonable and practical—for example:

1. Sampson Handley's *Genesis of Cancer*, stressing lymph stasis and proliferation of lymphocytes.

2. Cherry's experiments on mice, also stressing the lymphocyte as an essential link in the production of cancer.

3. Shaw-Mackenzie's theory and practice, built on the deficiencies of pancreatic enzymes in cancer cases.

4. The oft-mentioned familial character of cancer. (Shaw-Mackenzie published an extreme instance where the father was alcoholic and the mother and six of their children died of cancer. I have mentioned in your columns a family where both parents and five of their children died of cancer of the stomach.)

There is a common disease which satisfies all the criteria suggested by the above, and of which only one aspect has so far been studied in any detail. It is a lymphophilic disease of great chronicity, affecting the pancreas and liver in the great majority of cases, the only common truly familial disease, and already clearly implicated as the cause of cancer in certain organs. The causative organism has a life-cycle of which only the active spiral phase has received full attention. The chronic granular phase awaits, and deserves, the close study of research workers who are also clinicians. Is it not time, Mr. Editor, to discard the complacent smile which so often greets the word syphilis?—I am, etc.,

Camravan, Jan. 30th. GRIFFITH EVANS, D.M., F.R.C.S.

Colonic Irrigation

SIR,—During a discussion on mucous colitis at the Section of Physical Medicine of the Royal Society of Medicine, reported in the *Journal* of January 27th, several speakers referred to its treatment, at the spas and elsewhere, by colonic irrigation. Dr. Geoffrey Holmes's detailed description of the method employed at Harrogate was greatly appreciated. Neither he nor any of the other speakers raised a point which they—quite rightly—regarded as outside the province of that meeting—namely, the qualifications of those responsible for its administration. It will be of interest to know precisely what amount of training is expected on the part of those who carry out the treatment. Are they State-registered nurses, members of the Chartered Society of Massage and Medical Gymnastics, or bath assistants who have acquired a knowledge of the correct procedure by constant practice?—I am, etc.,

London, W.1, Feb. 1st.

M. B. RAY.

Inheritance of Mental Deficiency

SIR,—The letter of Dr. Ian D. Suttie (*Journal*, January 27th, p. 170) is a fair example of the bias which can be introduced into the discussion of a case of feeble-mindedness when an effort is made to avoid at all costs the imputation of inheritance. It is obvious that on the data available regarding this incestuous family nothing can be proved, so it becomes a case of adopting the most reasonable interpretation.

The original grandparents were mentally normal and produced a large family, of whom two sisters were mentally defective, and a brother finally developed general paralysis and dementia. The union of this brother and one of his sisters produced three children, two of whom were mentally normal at ages of 17 and 7 years. Now I know of no authority on the subject who denies that recessive factors are often involved in the inheritance of feeble-mindedness. Dr. Penrose certainly does not. Which is then the more reasonable—to assume that this explanation, which fits all the known facts, is applicable to this pedigree, or to make the highly improbable assumption that a feeble-minded mother and a father suffering from paralysis and dementia would create a better home environment than two normal parents? The question has only to be asked. The answer is sufficiently obvious.—I am, etc.,

King's College, London, Jan. 31st.

R. RUGGLES GATES.

Symbols in Pedigrees

SIR,—As I have received a few inquiries as to the meaning of the symbols used in my article "The Menace of Hereditary Blindness" in the *British Medical Journal* of January 20th I send the following explanatory key:

- = Normal female.
- = Normal male.
- = Defective homozygous female.
- = Defective homozygous male.
- ⁺○ = Normal carrier (heterozygous female).
- ⁺□ = Normal carrier (heterozygous male).
- ⊙ = Died.
- ✕₅ = Died defective at age 5 years (female).
- ✕₃ = Found defective at age 3 years (male).
- = Miscarriage.
- ⊙ = Four normal females.
- ⊠ = Six normal males.
- ⊞ = Four children (normals) sex unknown.
- ■ ○ □ = One eye only defective.

—I am, etc.,

London, W.1, Jan. 30th.

J. MYLES BICKERTON.

The Services

DEATHS IN THE SERVICES

Major William McElrea Snodgrass, M.C., R.A.M.C., of Lifford, County Donegal, died at the Royal Victoria Hospital, Netley, on February 1st, aged 42, of infection received while performing an operation on a Service patient. He was born on December 10th, 1890, and was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., and B.A.O. in 1915. Subsequently he took the special diploma of the English Colleges in laryngology and otology in 1927. He joined the Special Reserve of the R.A.M.C. in 1915, as soon as he had qualified, and went to France with the Third Division before the end of the year. He served in the long-drawn-out battle of the Somme in 1916, when he was wounded, and received the Military Cross. In March, 1918, he was sent to Iraq, and then went to Persia and India. He took a permanent commission in the R.A.M.C., with the rank of captain, on December 18th, 1918, and became major on May 30th, 1927. He served in the Waziristan campaign in 1920 and returned to England in 1922. From 1925 to 1931 he served in Egypt, and on his return home was posted to Netley as oto-rhino-laryngologist. He leaves a widow and two children. The honorary secretary and treasurer of the Southampton Division of the British Medical Association (Dr. John Clayre) writes: Major Snodgrass had a charming personality, and was popular with all in the Service and his fellow-members of this Division. He was a keen sportsman and all-round athlete, and had played Rugby for Dublin University. Deep sympathy is felt for his widow and family.

Major Ram Chandra Malhotra, O.B.E., Indian Medical Service, died in India on December 22nd, aged 49. He was born on November 19th, 1884, and was educated at Edinburgh University, where he graduated M.B., Ch.B. in 1911. He also studied at University College, London, at Charing Cross Hospital, and in Dublin, and took the D.P.H. at Cambridge in 1914. After filling the posts of clinical assistant at the Brompton Chest Hospital and casualty officer at Charing Cross Hospital, he took a temporary commission in the I.M.S. as lieutenant on May 15th, 1915, and got a permanent commission on November 1st, 1920, being ranked as captain from May 20th, 1917. He attained the rank of major on October 18th, 1927. He served in the war of 1914-18, was mentioned in dispatches in the *London Gazette* of August 15th, 1917, and June 3rd, 1919, receiving the O.B.E. He recently held the appointment of assistant director of public health at Rawal Pindi.

Obituary

A. A. MONTAGUE, M.B.LOND., F.A.C.S.

Past President, Fiji Branch

All those who have, at any time during the past thirty years, lived in the Colony of Fiji will learn with deep regret of the death, on January 30th, of Dr. Aubrey Montague, formerly chief medical officer of the Colony. Aubrey Alfred Montague, who was 61 years of age, was born at St. Margaret's, Twickenham. He was educated at the City of London School, and then entered St. Thomas's Hospital. He qualified M.R.C.S., L.R.C.P. in 1896, and took the London M.B. in 1898. In 1925 he was made a Fellow of the American College of Surgeons. After holding an appointment as house-surgeon at Wolverhampton General Hospital he joined the Colonial Medical Service, and was appointed a Government medical officer in Fiji in 1898. In 1912 he was made senior medical officer, a position which carried with it the positions of resident medical superintendent of the Colonial Hospital and superintendent of the public lunatic asylum. On several occasions he acted as chief medical officer, and in 1922 he was appointed to this post, and made chairman of the Central Board of Health. A few months later he was nominated a member of the Legislative Council. After his retirement in 1930 he resided in Oakham, where he died after a month's illness, borne with great patience and fortitude.

Dr. Montague was for many years the outstanding figure in the medical profession of Fiji. He was president of the Fiji Branch of the British Medical Association from 1922 to 1930. He was devoted to his profession, and was very popular with his patients and with his colleagues. Many of the present staff of native medical practitioners were trained by him during his time at the Colonial Hospital, and during his term of office as chief medical officer the Central Medical School was greatly enlarged and improved. Dr. Montague was a man of sterling worth, and his simple, unassuming manner endeared him to all who knew him. His name will long be remembered in the Colony to which he gave his life's work. He leaves a widow and one son, who is now in the Government Medical Service of Fiji.

THE LATE SIR WILLIAM HARDY

The Regius Professor of Physic, University of Cambridge, writes:

It has been pointed out to me that amid the chorus of praise for the man and his work hardly anything has been said of Sir William Hardy's researches on leucocytes, and that I should repair this omission. I do so the more gladly because I was working under him at the time, and well remember the infectious enthusiasm with which those researches were pursued. He had already worked at the blood of invertebrates when Ehrlich's methods of staining the granular leucocytes appeared. He was quick to appreciate the value of this new aid to research, and, in conjunction with Kanthack, applied it first to working out the details of phagocytosis and then to the role of eosinophilia in bacterial infections and intestinal digestion. As I wrote in 1932, this work passed into undeserved oblivion, though the study of asthma, urticaria, and other allergic states has independently confirmed the accuracy of their views. But I remember that Hardy was rather nettled by Michael Foster's scepticism, though I believe that this scepticism caused him to re-examine the methods, and this led him to suspect that some of the histological appearances were artefacts, and thus, as Sir Gowland Hopkins has said, to his pioneer work on colloids. Kanthack's early death, at the age of 35, deprived pathology of a genius, but his partner was spared to enrich science in many ways, and not least by his magnetic power of inspiring a whole-hearted devotion to research in his pupils. Like his colleague Gaskell, he scattered ideas with a lavish hand for others to reap later, while he went on to fresh fields. To him life was always a great and exciting adventure.

W. LANGDON BROWN.

Medico-Legal

DUSTMAN'S DEATH: WIDOW'S APPEAL FAILS

The appeal by Mrs. Ada Edith Pattenden from a jury's verdict and judgement of Mr. Justice Horridge in the King's Bench Division (reported in the *British Medical Journal* of October 21st, 1933, p. 760) was dismissed by Lords Justices Scrutton and Maugham and Mr. Justice Talbot in the Court of Appeal on January 31st. In her action she claimed damages against Dr. Charles Beney in respect of the death of her husband, Henry Thomas Pattenden, alleged to have been caused by the exploding of a carbon dioxide gas cylinder.

Mr. J. D. Cassels, K.C. (for the widow), in the course of his argument, referred to Murray's Dictionary for a definition of the word "explosion." Mr. Cassels said his case never had been that the container burst. It was that there had been some failure of the article which caused the screw cap to come off with great violence, and so to injure the man holding it that he died.

Lord Justice Scrutton, in his judgement, said the Court could not interfere with the findings of Mr. Justice Horridge that the cylinder was not dangerous, and that there was no danger in handing it over to the dustman. With that finding the whole case for the plaintiff broke down. One had no reason to suppose that extraordinary treatment would be applied to cylinders handed over to dustmen in such circumstances. It rather looked as if the man had been trying to knock the cylinder cap off. "When you get to knocking off a cap, possibly with another cylinder, all sorts of things may happen that do not appear to be the natural result of handing these things over to be taken away by the dustmen." The appeal failed, and would be dismissed with costs. The other members of the Court concurred.

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on January 18th the degree of B.M. was conferred on J. A. Boycott.

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

The tenth biennial Sydney Ringer Memorial Lecture will be delivered by Dr. A. S. Parkes, F.R.S., in the lecture theatre of University College Hospital Medical School on Friday, February 23rd, at 5 p.m. His subject will be "The Co-ordination of the Reproductive Processes," and Professor Herbert R. Spencer will be in the chair. The lecture is open to all qualified practitioners and medical students.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE, NEWCASTLE-ON-TYNE

With reference to the announcement in the *Journal* of January 27th (p. 176) of the special course of post-graduate instruction, the time of commencement of the course dealing with pulmonary tuberculosis and infectious diseases should be 3.30 p.m., and not 6.30 p.m. as stated.

UNIVERSITY OF GLASGOW

The Senate announces that Professor Andrew Hunter, M.A., M.B., B.Sc., has been elected dean of the faculty of medicine for the year 1934.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At the quarterly meeting of the council, held on January 29th, with the president, Dr. J. S. Fairbairn, in the chair, the following were elected to the Membership of the College:

Margaret Anderson, G. S. Brown, F. W. Budder, Charlotte Douglas, G. Griffiths, Kathleen Harding, L. G. Higgins, Gladys Hill, H. Leaver, J. C. H. Leicester, Jocelyn Moore, H. K. Pacey, P. Peltz, J. M. Scott, A. J. Wrigley.

Dr. Lucien de Zilwa (Ceylon) was admitted a Foundation Fellow (*in absentia*) and the following were admitted to the Membership (*in absentia*):

A. B. Nash, D. J. Malan, G. M. White, B. H. Watson.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Further discussion of the Unemployment Bill occurred in the House of Commons this week. Other discussions concerned disarmament and safety on roads. The British Hydrocarbon Oil Production Bill and the Mining Industry (Welfare Fund) Bill were down for second reading. The House has passed the North Buckinghamshire Joint Hospital District Bill, and has sent the Wirral Joint Hospital District Bill to a Committee. Consideration of the Dye-stuffs (Import Regulation) Bill has begun in Committee. The London County Council (General Powers) Bill and other corporation Bills have received a second reading. On February 2nd the second reading of the Matrimonial Causes Bill was moved by Mr. Holford Knight and Dr. C'Donovan moved its rejection, and the debate was adjourned.

Drugs of the Barbituric Group

Sir JOHN GILMOUR told Dr. Howitt, on February 1st, that drugs of the barbituric group were included in Part I of the present poisons schedule, and were therefore subject to the full restrictions imposed by the Pharmacy Act, 1868, upon the sale of poisons. The question whether any further restrictions were desirable would be considered by the Poisons Board recently established under the Pharmacy and Poisons Act, 1933. Mr. D. GRENSELL asked if there was any system of inspection, and whether the Home Office had any officers to see that the Act was properly administered. He added that there were widespread complaints against the ease with which these drugs could be obtained. Sir JOHN GILMOUR replied that the law made certain provisions. The new advisory board would investigate whether further steps were required. Sir FRANCIS FREMANTLE asked when the House would receive some report from the Poisons Board. Would there be an early report on this disturbing feature? Sir JOHN GILMOUR asked for notice of this question.

Preponderance of Silicosis in South Wales

On February 6th Mr. E. BROWN, replying to Mr. D. Grenfell, said he was informed by the Home Office that since June 1st, 1931, when the coal mining industry first came within the scope of the General Medical Board under the Silicosis Compensation Scheme, 432 men in the industry had been certified by the Board to have been disabled or to have died from silicosis or from silicosis accompanied by tuberculosis; and that 385 of these cases occurred in the South Wales coalfields. Earlier comparable figures were not yet available. This extraordinary preponderance of cases in South Wales presented a very difficult problem, and no satisfactory explanation could as yet be given. As regarded the more highly siliceous rocks, it was already compulsory to take dust-prevention measures in drilling operations, while, as regarded other Coal Measure rocks, drilling machines were not used to any substantially greater extent in South Wales than in other coalfields. The application of a general measure of the kind proposed to drilling in all kinds of stone would not appear, therefore, to be an appropriate remedial measure.

Mr. E. BROWN told Mr. Tinker, on the same day, that the greatest depth at the Parsonage Colliery, Leigh, Lancashire, at present was about 3,850 feet. No complaints by workmen had been brought to the notice of his Department. As a result of intensive study it had been possible to effect some improvement of the working conditions in the district where the temperatures were highest, and all possible efforts would continue to be made to effect further improvement. As regarded the question of amending legislation, he referred the hon. member to previous replies.

Blood Test in Drunkenness.—Sir JOHN GILMOUR told Captain Erskine-Bolst, on February 1st, that he doubted the value of the new blood test system in cases where drunkenness was an element in a criminal charge. He had no power to require any person to submit to it.

Prices of Insulin.—Replying to Mr. D. Grenfell, on January 31st, Mr. SHAKESPEARE said that throughout 1933 the price per 100 units to the consumer of two of the three brands of British insulin was 2s., of the third 1s. 8d., and of the principal imported brand 1s. 5d. He had no information on the quantities sold. On January 11th, 1934, the price of two British brands was reduced to 1s. 10d., and of the third to 1s. 5d., with corresponding reductions in wholesale prices. There had been no change in the price of imported insulin since the additional import duty was imposed. Colonel COLVILLE told Mr. Leckie, on the same date, that the position with regard to prices of insulin was being closely watched.

Cost of Mental Deficiency Service.—On February 5th Mr. SHAKESPEARE informed Sir Basil Peto that the total cost falling on public funds in respect of the Mental Deficiency Service might be taken as having been approximately £1,875,000 in 1931-2. Exact information as to the amount included in this figure in respect of institutional treatment was not available.

Poor Relief Recipients.—Sir HILTON YOUNG told Mr. McEntee on February 1st that the total number of men, women, and children in receipt of poor relief in England and Wales, excluding rate-aided patients in mental hospitals, persons in receipt of domiciliary medical relief only, and casuals, on January 13th, 1934, was 1,406,076. The corresponding figure for the same date in 1933 was 1,391,185.

Medical Defence Service Recommendations.—Mr. MORE-BELISHA informed Captain Elliston, on February 6th, that he regretted that, owing to the time required for necessary consultation with the Government of India on the report of the Warren Fisher Committee, he was not yet in a position to announce the decisions of H.M. Government on the recommendations in reference to the Royal Army Medical Corps and other medical services of the defence forces. He hoped, however, that it would be possible to do so at an early date.

Accommodation for Hop-pickers.—Replying, on February 2nd, to Mr. Alan Todd, Sir HILTON YOUNG said he had seen a report of the Staffordshire County Council's Education Committee on the conditions obtaining in the hopfields in Herefordshire and Worcestershire. He was communicating with the Staffordshire County Council for the hitherto undisclosed names of the farms about which complaints were made. The responsibility for supervising the accommodation provided for hop-pickers rested with the local sanitary authorities. His officers inspected the more important hop-growing areas from time to time. Any serious defect in the arrangements made for hop-pickers was brought to the attention of the local authority responsible.

Asphyxia from Oxy-acetylene Heater.—Replying, on February 1st, to Captain Erskine-Bolst, Sir JOHN GILMOUR said that the death of William McDonald of Limehouse was due to asphyxia after being in charge of operations with an oxy-acetylene super-warmer in a ship. An account of the death would be published in the series of notes on industrial accidents, which had a wide circulation among firms likely to be affected. This account would draw attention to the danger now revealed and the necessary precautions. He would consider whether any other action was needed.

Deaths at British Celanese Factory.—On February 6th, replying to Mr. Emrys-Evans, Sir JOHN GILMOUR said he was advised that it could now be stated that the particular chemical responsible for the deaths of the workmen employed at the British celanese factory at Spondon was diethylene-dioxide, otherwise known as dioxan. Investigations were proceeding as to the degree of toxicity of this substance with a view to determining under what conditions, if any, it could safely be used.

Experiments on Animals.—Mr. DUFF COOPER, on February 6th, told Captain Erskine-Bolst that no dogs or horses were used for poison gas experiments at Porton, Cambridge, or elsewhere in Great Britain, in 1932 or 1933. During 1932 83 animals were used at Porton for chemical defence experiments and 190 for experiments in connexion with the subject of safety in industry. The corresponding figures for 1933 were 72 and 343 respectively. No experiments on animals were carried out elsewhere in connexion with chemical defence.

Noise Offence Prosecutions.—In reply to Mr. McEntee, on February 1st, Sir JOHN GILMOUR stated that preliminary figures showed that, during 1933 in England and Wales, 9,653 noise offences of all classes in connexion with motor vehicles were dealt with by prosecution. The Minister of Transport was taking up the matter with the manufacturers in order to secure an abatement of this nuisance.

Indians and University Courses.—Sir S. HOARE has informed Sir W. Davison that it is for the authorities of the Indian universities and not for the Government to decide whether any limitation shall be imposed on the numbers of Indians taking a university course with the object of obtaining a degree. He doubts whether it will serve any useful purpose to obtain a report from the French Colonial Office, which for some time has limited the output of college-trained men.

Small-pox in British India.—On February 6th Sir SAMUEL HOARE told Mr. Groves that the number of registered deaths from small-pox in British India for the last twenty years for which final figures were available were as follows: 1911, 58,535; 1912, 89,357; 1913, 98,155; 1914, 76,590; 1915, 83,282; 1916, 60,642; 1917, 62,277; 1918, 93,076; 1919, 136,077; 1920, 101,329; 1921, 40,446; 1922, 40,836; 1923, 44,084; 1924, 53,380; 1925, 85,986; 1926, 117,066; 1927, 118,197; 1928, 96,123; 1929, 72,884; and 1930, 72,813.

Housing in Scotland.—Mr. SKELTON states that the recommendations of the Departmental Committee on Scottish Housing, including the proposal to set up a Scottish Housing Corporation, are receiving careful consideration, but the Secretary of State is not yet in a position to make any announcement on the matter.

Notes in Brief

During 1933 a total of 67,246,032 meals were provided by local education authorities in England and Wales for children in schools. The percentage of free meals was 80.6. During December, 1933, 277,918 children were fed.

Since a Select Committee reported in 1930 on the abolition of the death penalty there have been twenty-nine executions in England and Wales, all the offenders being males.

Medical News

At a meeting of the Pharmaceutical Society of Great Britain, to be held at 17, Bloomsbury Square, W.C., on Tuesday, February 13th, at 8.30 p.m., a lecture on "The Influence of some Nutritional Factors in Disease" will be given by Dr. Edward Mellanby, F.R.S., secretary of the Medical Research Council and lately professor of pharmacology in the University of Sheffield. Members of the society are invited to bring friends.

A meeting of the Paddington Medical Society will be held at Great Western Royal Hotel, Paddington, W., on Tuesday, February 13th, at 9 p.m., when Dr. Robert Forbes, Deputy Medical Secretary of the British Medical Association, will give an address on "Medical Ethics," followed by a discussion.

At the annual general meeting of the Institute of Heating and Ventilating Engineers, to be held on Wednesday, February 14th, at the London School of Hygiene and Tropical Medicine, Keppel Street, at 2 p.m., Sir Leonard Hill will read a paper on infra-red rays and comfort.

A meeting has been arranged by the National Council for Mental Hygiene for Wednesday, February 14th, at 5 p.m., at 11, Chandos Street, W., when Dr. Doris Odlum will read a paper on mental hygiene in the changing world.

Sir Frederick Hobday will give a lecture, illustrated by lantern slides and films, on "Our Animal Friends as Patients" at the Princess Elizabeth of York Children's Hospital, Glamis Road, Shadwell, E., on Friday, February 16th, at 8.45 p.m., when Brigadier-General Sir Hill Child will be in the chair. Visitors are invited.

A post-graduate course in industrial diseases will be held at the medical faculty of Halle University from February 26th to March 3rd. Further information can be obtained from Professor Clausen, Augenklinik, Halle.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the fifth lecture-demonstration at 11, Chandos Street, by Dr. Clark-Kennedy, on February 13th, at 2.30 p.m., will deal with constipation; the subject of the sixth lecture, on February 20th, will be diarrhoea. Four ante-natal demonstrations will be given at the Royal Free Hospital by Dame Louise McLroy, on Fridays at 5 p.m., from February 16th to March 9th. Six demonstrations on the interpretation of pyelograms will be given by Dr. Mather Cordiner at 8 p.m. on Tuesdays and Fridays, from February 13th to March 2nd. A whole-day course in medicine, surgery, and the specialties will be given at the Prince of Wales's Hospital from February 19th to March 3rd. A demonstration on the treatment of recent and old fractures will be given by Mr. Alan Gairdner at St. George-in-the-East Hospital, on February 27th, at 2.30 p.m. Other forthcoming courses include medicine, surgery, and gynaecology at the Royal Waterloo Hospital, March 5th to 24th; proctology at the Gordon Hospital, March 5th to 10th; week-end course in clinical surgery at the Royal Albert Dock Hospital, March 10th and 11th.

The annual dinner of the Hospital Almoners' Association was held on February 3rd at the Hans Crescent Hotel. Miss C. Morris, chairman of the Association, presided, and the guests included: Miss Lloyd Still (matron, St. Thomas's Hospital, and president, International Council of Nurses); Miss Louisa Martindale (senior honorary surgeon, New Sussex Hospital, Brighton); Mrs. Rendel Wyatt (joint warden, Manchester University Settlement, and late secretary, Institute of Hospital Almoners); Dr. Ian Grant, medical superintendent, Royal Infirmary, Glasgow; and Mr. H. M. Hallsworth, professor of economics, Armstrong College, Durham University.

At the monthly meeting of the Central Midwives Board for England and Wales held on February 1st approval as lecturers was granted to Dr. Percy Vernon Davies, Kingston and District Hospital, Dr. Beatrice Mary Joly, Cheltenham District Nursing Association, and Dr. Robert Watson, F.R.C.S.Ed., Walton Hospital, Liverpool.

Dr. W. J. Turrell, physician in charge of the electrotherapeutic department of the Radcliffe Infirmary, Oxford, ex-president of the Electrotherapeutic Section of the Royal Society of Medicine, and honorary Fellow of the American Electrotherapeutic Association, has received at the hands of Dr. Norman E. Titus of New York, who is now visiting London, the "Gold Key" awarded to him at the last annual meeting of the American Congress of Physical Therapy. This distinction is the highest award in the United States for original research and distinguished services in the field of electrotherapy. Among other recipients have been Professor Dr. Arsonval, the doyen of French specialists in electrotherapy, Professor Harvey Cushing, for electrotherapy in brain surgery, Professor Claudius Regaud of the University of Paris, and Dr. Gustav Bucky of New York. The presentation to Dr. Turrell was made at a dinner offered to Dr. Norman Titus by Dr. Howard Humphris, to whom the award was made by the congress of 1932. Among those present at the dinner were Sir Henry Gauvain, Sir Leonard Hill, Sir William Willcox, Dr. R. King Brown, Dr. J. B. Mennell, and Dr. Franz Nagelschmidt.

The Lord Chancellor has recently added the name of Dr. Louis C. S. Broughton to the Commission of the Peace for the County of Worcester.

The King has granted Major A. G. Biggam, O.B.E., R.A.M.C., authority to wear the Insignia of Commander of the Order of the Nile, conferred on him by the King of Egypt in recognition of valuable services rendered as professor of clinical medicine in the Egyptian University.

The World Congress of Milk will be held in Rome on April 30th, when sixty countries will be represented.

A bronze bust of Professor Einthoven of Leyden, who died in 1927, has recently been unveiled at Bad Nauheim.

Dr. William His, professor of internal medicine at Berlin University, has been awarded the Goethe medal by President von Hindenburg.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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QUÉRIES AND ANSWERS

England's Debt to Scotland

Dr. J. H. McCulloch (Colvend, Dalbeattie, Scotland) would be grateful for biographical or other information bearing upon contributions of Scotsmen, past and present, to medical science in England.

Treatment of Chronic Herpes

"**VESICLE**" (Norfolk) writes: I wonder if any readers could give me advice as to the treatment of a lady, aged 60, with chronic herpes frontalis. The original attack was five years ago. Since then the pain has been constant, with repeated outbreaks of spots on the head. Her life is made unbearable, and no treatment seems to be of any avail.

Threadworms and Printers' Devils

Corrigendum

A grotesque blunder was made last week in our printing office, for which apologies are due to readers in general and to Colonel W. P. Macarthur in particular. At page 224, in a footnote to one of the letters making suggestions for the treatment of threadworms, Colonel Macarthur was misquoted as recommending "the use of two grains of santonin and half an ounce of calomel by mouth." We feel sure that this will have been recognized by every reader as a misprint for *half a grain*.

Income Tax

Production of Bank Pass-book

"**JUNUS**" has been asked by the inspector of taxes to produce his bank pass-book for scrutiny. Can this request be enforced?

* The inspector has himself no statutory authority to require evidence in support of a taxpayer's return, but if the return is not accepted and an assessment in excess of the amount of the return is made, the taxpayer's only remedy is to appeal to the Commissioners, and that body has a very wide discretion as to what evidence it requires for the purpose of the appeal. It may be worth while pointing out that the pass-book forms part of the material which a professional accountant would commonly expect to be available to him when preparing accounts for a practice, so that its relevance on an income tax matter must, in general, be admitted.

Contribution to Superannuation Fund

"**I. T. X.**" obtained relief from 1921 to 1928 on that portion of the premiums (in connexion with a university superannuation fund) which had been borne by her. Since 1928 she has borne, and has had allowed for income tax, the whole amount of the premiums. The authorities now say that those allowances were incorrect, and are seeking to adjust the allowances for the last five years.

* There is no allowance for premiums paid in respect of deferred annuity policies parallel to that in respect of life

assurance. There is, however, a partial form of relief governed by Section 32 of the Finance Act of 1921, which provides for the allowance of payments made by employees to approved superannuation funds. "**I. T. X.**" was evidently entitled to relief while an employee of the university concerned, but if she left that employment in 1928 her subsequent payments would not be allowable for income tax.

LETTERS, NOTES, ETC.

Prescription of Hypnotic Drugs

Dr. G. NESBITT-WOOD (Hastings) writes: I am afraid "Pharmacist's" suggestion (*Journal*, February 3rd, p. 224) for the limitation of hypnotic drugs of the barbitone group—namely, marking the prescription "Not to be repeated"—is of little use so long as a number of lesser chemists are prepared to sell them over the counter like so many sweets. A patient of mine during a long illness received sodium barbitone, and, unknown to me at the time, developed a perfect passion for the drug. One night I was called to find her in a coma, and the whole matter came out. Secreted round her room were eighty tablets of sodium barbitone, each of 5 grains, which she said she had bought from the same chemist in the space of three days. When I visited this man he blandly showed me his book recording the sale of twenty tablets only, and as it was his word against the patient's I could take the matter no further than request him not to serve her again. I was later informed that when she again tried to obtain supplies at his shop he suggested that she should change her doctor and so obtain official sanction for more. Since then I have had a two years' struggle with her, and she has never again divulged the name of the chemists from whom she gets her tablets, but I know that she visits Eastbourne, Brighton, Lewes, Rye, and other places, and gets supplies at all of them, and from time to time gets them in this town. She says some chemists have offered to send her all she needs by post. Her husband caught out one chemist in Brighton, who was as cool as you like over it. "If we refused you, our rivals would not," was the gist of his remarks. As this woman has made four attempts on her life with sodium barbitone (she is perfectly sane), it would appear that regulations such as those governing morphine might be advantageous. I must, of course, state that my patient admits that all the first-class pharmacies in this town have refused her point blank when she could not produce a proper prescription.

Disclaimer

Dr. W. H. D. CROOK (Wonford House, Exeter) writes: In a recent issue of a Sunday newspaper there is an article containing a statement about me which is not only completely inaccurate but physically impossible. At the end of the article is what appears to be an interview with me. This "interview" consisted of a telephone trunk call, in the course of which I particularly asked the newspaper concerned not to publish my name, and emphasized the fact that I wanted no publicity whatever. I had no idea that they intended to report any part of this conversation.

Solute for Foot Baths

"**OTIUM**" (Liverpool) writes: Frequently one orders a foot-bath containing sodium carbonate for tired and swollen feet, and for arthritis of the tarsus or ankle. For some time I have used, instead of the carbonate, the well-known soap powder "persil," one tablespoonful to the gallon, and have found it to be more efficacious than the former, and much less severe on delicate skins. In like proportion a full bath can be taken in cases of lumbago, sciatica, and various suitable arthritic conditions, with most beneficial results.

Raised Intraocular Tension

Corrigendum

The second sentence of Dr. Victor Purvis's letter under this heading (February 3rd, p. 215) contained a superfluous word which changed his meaning. The phrase should read "but, from an ophthalmological point of view."

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 40, 41, 42, 43, 46, 47, and 48 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 64.

THE HUNTERIAN ORATION

Delivered before the Royal College of Surgeons of England on February 13th

BY

SIR CUTHBERT WALLACE, K.C.M.G., C.B., F.R.C.S.

CONSULTING SURGEON TO ST. THOMAS'S HOSPITAL

As a member of the Court of Examiners to this College I have on many occasions sat in the Council Chamber before the portrait of John Hunter while examining a candidate. It was natural in the circumstances that the question should arise as to what Hunter would have thought of the knowledge displayed by the candidates. Would he have been astonished at the ignorance or pleased with the knowledge displayed? Would he have been amused or irritated when the examinee expressed total ignorance of John Hunter and the work that he did? Such musings led me to wonder what would have been Hunter's opinion of our present-day education. From there again my thought turned to a comparison of the circumstances and conditions under which medicine is learnt and practised to-day and one hundred and fifty years ago. It is on this subject I would offer a few reflections to-day.

The life of Hunter and that of the surgeon of the present day can each be divided into three similar periods. The first is that of education or preparation, the second a period spent in war service, and the third a period of practice and fulfilment.

HUNTER'S EDUCATION

Hunter, when a youth, was uncouth and ill-tempered. He refused to be educated in the orthodox way. Instead of attending school he roamed the countryside. This time was not altogether wasted; he was even then pondering the reason for the things he saw about him. It is probable that to this obscure period of his life can be traced the origin of the Earl's Court menagerie, and those letters to Jenner demanding all sorts of queer things, such as bats, eels, cuckoos, fossils, and salmon spawn. These letters show better than anything else the nature and diversity of the man's interests. Hunter referred to this period of his life in the following words, which seem to sum up the motive of his life:

"I wanted to know all about the clouds and the grasses, and why the leaves changed colour in the autumn. I watched ants, bees, birds, tadpoles, and caddisworms. I pestered people with questions about what nobody knew or cared anything about."

Towards the end of this period, and shortly before he left for London, Hunter paid a visit to a brother-in-law, who was a cabinet-maker. Whether Hunter ever actually practised the trade is immaterial at the moment. Jesse Foote, Hunter's detractor, intending to say something nasty, turned this visit to his purpose, and declared that Hunter was a carpenter who had deserted the *chisel*, the *rule*, and the *mallet*, to take up the *knife*. This is a gibe that could not be levelled against the present-day surgeon, certainly not against those that practise our most comprehensive specialty. If surgery has become more scientific it has in some directions become more mechanical. It is not, perhaps, to be wondered at that Foote seized his opportunity, but it is curious that great pains have been taken to prove that Hunter had never acquired the art of the carpenter. Surely there is nothing derogatory in a knowledge of the proper use of tools, a knowledge that is one of the things that distinguish man from the brute beasts.

When I came across this passage in Foote's book it made me ask myself how the manual skill of any surgeon, or perhaps I had better say how my skill, compared with that of a joiner or fitter? Despite what one reads in books and the daily press of the manual dexterity of the surgeon, I came to the conclusion that I had better refrain from pushing the comparison, and took refuge in the thought that the power and worth of the surgeon lies more in his judgement than in his technical skill: the science is greater than the art.

With all that is happening in medicine, I think we are apt to forget the magic that Nature exercises when in the course of a few days she turns the primitive joinery of the surgeon into the thin, firm, and supple scar. Perhaps it was this process which Hunter had in mind when he said, "Original inflammation constitutes a part of the animal economy and is probably inexplicable." Even to-day we imperfectly understand the stimulus that starts the healing process.

MEDICAL EDUCATION

Hunter's medical education commenced in 1748, when, at the age of 20, he joined his brother and commenced to dissect. He at once shed his waywardness, and commenced a life which was a monument of diligence: the round peg had found a round hole.

His medical studies extended over some nine years, but were discontinuous, and, in addition, interrupted by periods of ill-health. In the summers of 1749 and 1750 he studied under Cheselden at the Military Hospital at Chelsea. In 1751 he put in some time at St. Bartholomew's under Pott. In 1754 and 1756 he took a course of surgery at St. George's, and in the latter year was appointed house-surgeon, which post he held for five months. Between the two courses of surgery at St. George's Hospital he went to Oxford, but soon decided that a classical education was not for him. In 1760 Hunter may be described as having qualified, as he was appointed staff surgeon in His Majesty's Army. During all these years he was working in his brother's school.

To understand the opportunities that the times offered to a student of surgery one has to recall the nature of the medical education of the period. It was almost entirely of the apprenticeship system, a great part of which system remains to this day in England. The student usually served a matter of five or seven years, after which, if he wished to practise in London, he had to be admitted into a corporation. To do this he had to obtain the recommendation of somebody of position, or undergo a viva voce examination, which was apt to be more brutal than efficient.

Although there were differences between the hospitals, there was little or no systematic instruction given at these institutions. The lectures that were available and open to the student were delivered by various people at the halls or as private ventures on their own premises. The courses, which varied much in length, were often given late in the afternoon or early evening, at a time when the present-day student expresses himself as tired and mentally unreceptive. The lectures were apparently open to the public, thus showing that the laity were even then interested in medicine.

Some courses were devoted to single subjects, but others, to our present-day ideas, seem a strange jumble of subjects, consisting as they did of anatomy, comparative and human, animal economy or physiology, operative technique, fractures and dislocations, midwifery, and bandaging.

Anatomy was taught by diagrams, models, and sometimes by preparations. It is to be remembered that William Hunter improved the teaching by affording opportunity for the actual dissection of the body. It was part of John's business to arrange for the bodies. Bandaging seems to have been considered important and interesting; nowadays it is beneath the dignity of a student. Thus we have an interesting example of the changing value of subjects in medical education, of which we are rather apt to lose sight.

Even with all this variety of subjects the lectures were considered to require a little spice, as we find that the demonstration of a monster was sometimes added as a special attraction. John Hunter was very interested in monsters, and recognized that they fell into different classes; he also knew that the prenatal period was a history of ancestors.

When Hunter became a surgeon to St. George's Hospital he tried to arrange that lectures should be delivered at the hospital to the pupils and apprentices. He was strenuously opposed by his colleagues, who asserted that lectures were of little use, thus expressing an opinion which, after a hundred and fifty years, is again being freely stated. Hunter, however, hinted that the reason lay in another direction, and that the real cause of the opposition was the fear of the staff to expose their own ignorance. He carried the battle further and accused his colleagues of taking money from their pupils and apprentices and doing nothing to earn it.

This effort of Hunter, though at first abortive, helped the movement that was gaining ground to take medical education out of private hands and establish it at the great hospitals. He appears at last to have converted his colleagues, as in 1793 we find that they complained that the students had to go for their anatomy to Windmill Street, for their midwifery to Golden Square, for their chemistry, *materia medica*, and practice of physic to Leicester Fields, and thus lost considerable time. The recognition of the disadvantage of spreading medical education over several institutions is interesting in the light of developments that are taking place to-day.

EDUCATION IN 1760 AND 1934

Hunter never served an apprenticeship, so that his education may be described as less controlled than was usual even at that time. The instruction he received seems very fragmentary and discontinuous; in fact it might almost be described as an interlude to his work in his brother's school. One must remember, however, that in this school Hunter must have been brought into contact with many men and listened to their opinions and conversation. He thus was undergoing all the time a type of education that was really suitable to a man who was receptive, independent, and capable of being his own tutor. Some might take the view that Hunter succeeded in spite of his disadvantages, but to me it seems more the truth that the method of education suited the man.

Although the length of medical education was not dissimilar to that of the present day the circumstance of that education was very different. On the one hand we have an education where everything depended on the student's own perseverance, receptiveness, and determination; no ordered course of study; the man chose his own teachers and hospitals, and very often went abroad for a time. At the present time all is ordered and ordained. First of all a certain standard of general education is

demanded; then a course in which the subjects, the sequence in which they are to be taken, and the length of time devoted to each, are accurately defined, even in some cases to a matter of hours. There are signs, too, that there will be further subdivisions of this time, so that in the end there will be but little opportunity for self-education, mental digestion, or reflection. In fact, we are moving away from the academic and to trade-school ideas of education. It seems also possible that even after graduation or qualification the curriculum will still maintain its grip upon the individual to the time of his death.

A short while ago, when the increasing complexity of subjects demanded more time, and it was evident that the proportion of man's life devoted to medical education could not be increased, an attack was made on the time usually given to general education in the secondary schools. To judge by the ability of many students to put their ideas clearly and succinctly on paper, and remembering Hunter's defect, this seems a mistaken policy, and that it would be wiser to let the schoolmaster conduct his own business in his own way.

No one will deny that medical education has benefited by the guidance of a central body. On the other hand, a common curriculum has some disadvantages. It is a compromise and, as such, has been and probably always will be a subject of criticism. It tends to produce a sameness in the schools and universities. It takes no heed of individuals.

It is possible that, in the desire to improve the standard of medical education, we have gone too far in centralization of control. A common curriculum means that no one education authority is doing what it really desires or believes best. Would it not be better to allow greater discretion so that individual schools could develop different characteristics?

WAR PERIOD

Hunter resigned his house-surgeonship at St. George's in 1756, apparently on account of ill-health. In 1759 he had inflammation of the lungs at a time when he was studying the lymphatic system. In 1760 he was appointed staff surgeon in the Army, and in 1761 sailed for Belleisle as surgeon on the staff. The reason of his going is not clear; probably it was a question of health or money rather than of adventure. He took part in the capture of the island and in the bloodless campaign in Portugal in the following year.

The total wounded were about 500, and, as the care of these was divided among the surgeons of the expedition, the number that came under Hunter's charge must have been moderate. In fact, we find that he soon had spare time and spent this studying "life" or "animal economy," and later on in Portugal he made observations on geology.

He arrived in Belleisle with some definite opinions as to the proper way to treat wounds, though whence he had acquired that knowledge is not clear. He lost little time in expressing disapprobation of his colleagues' treatment as well as of his colleagues themselves. Whether this outburst was the result of Hunter's rather irritable nature or of an attempt to assert himself, or whether it was justified, it serves to remind us that the war of 1914 was similar to the war of 1761, in that it was productive of criticism of one's colleagues.

Hunter prepared nothing about his war experiences for publication until many years had passed, thus showing at all events a remarkable literary continence for a surgeon who had seen active service. This work, which was not published until 1794, in the year following his death, states that the war had given him the opportunity of studying inflammation, about which he says he had constantly thought during the years which had elapsed.

If one substitutes "infection" for "inflammation" the problem that interested Hunter and the surgeons in the Great War was remarkably similar. Even to the end of the Great War the surgeon was without the means of combating established infection, though by the rough-and-ready way of excising the wound while still only contaminated he succeeded in preventing infection.

This pamphlet, like much of Hunter's writings, is a difficult document to read and to understand. One wonders why it never saw the light till so many years had elapsed. It contains nothing very arresting. I doubt if it was of great use to the surgeons that went to the war which was again starting, but it contains matter which is of interest to a generation that has known a great war. Just as in the Great War, amputations and the opening of wounds were exercising the minds of the surgeons.

It was debated whether an amputation should be done while the patient was "hot from the fight" or as a secondary procedure. Hunter supported the latter; it was given a trial, but eventually abandoned on account of a high mortality. The second point of dispute was whether the almost universal practice of opening all wounds should be continued. Hunter made the very good remark that it should only be done if there were an object to be gained, but did not indicate clearly what this object was except to say that it was not necessary to search for foreign bodies. His influence apparently led to wounds being only opened when inflammation had set in. In the South African War the wounds were for the most part left untouched and did well. In the World War the opening of the wounds was the situation of the matter. From this it would appear that it is largely wrong to enter upon any war with a fixed idea as to the proper treatment.

Hunter also made the interesting remark that there was nothing peculiar about war wounds; they were simply confused wounds. He expressed the opinion that it was a pity that they were regarded as something apart. The term "military surgery" is, I think, an unfortunate one. There is only one surgery—namely, the best that the time has produced. The only difference between surgery in peace and surgery in war is that in the peace you are enabled to do what is right and in war you have to struggle in adverse circumstances, to do what you know is right that is, to approximate your practice to that of civil life.

EFFECT OF THE WAR ON SURGERY

It does not seem that Hunter's war had any material effect on the art of surgery or on the conditions under which it was practised. The number of surgeons, the number of wounded, were small, and Hunter published nothing at the time.

In like manner, turning to the war of our generation, I should say that it introduced little improvement in the practice of the art. It is true that it gave rise to much ingenuity in mechanical contrivances and that it popularized methods and apparatus already in use. It revived, for a time, the early days of the antiseptic period, and gave us a whole rainbow of coloured antiseptics, but finally proved the Listerian principle that the best way to combat infection was to prevent the lodgement in the body of the infective agent.

A large number of doctors were taught a specialized kind of surgery, and, working under supervision, acquired considerable dexterity. This led to the idea that surgery was a matter of technique rather than of judgement. In the departments of medicine that affect surgery the war emphasized the value of prophylaxis in tetanus; it gave rise to the serum treatment of anaerobic infections, and

it demonstrated the value of restoring the blood volume and gave the birth of the chemical theory a shock.

One hundred and fifty years ago medical science was represented almost entirely by the physician, the surgeon, and the general practitioner. Since that date medicine has split into many branches, some concerned with the actual practice of the art and others with subjects more or less allied, and lastly, others that only here and there touch the healing art. Necessity and the stimulus of the war brought all these branches again into contact. This coming together again of the sciences which had grown out of medicine was the most important effect of the war; it was a union which, in a humble way, was represented in the person of John Hunter.

EFFECT OF WAR ON ENVIRONMENT OF SURGERY

Apart from the influence of the Great War on the art of surgery and the stimulus that it gave to research, it may have a great future effect on what may be called the machinery or administration of medicine. It emphasized what had obviously long been a fact—that a disease might be a mischance that could no longer be diagnosed and efficiently combated by the knowledge and skill of one individual. It demonstrated what could be done by co-ordination of effort, when there was a good directorate and the workers were willing to subordinate themselves. It led to the thought that if a great army could be so efficiently kept in health or treated when sick, why should not a nation in peace be kept in health and treated when sick by a similar organization? And lastly, the advantages of a salaried post over the continual struggle and anxieties of private practice began to loom large in the minds of many.

PERIOD OF PRACTICE

Hunter returned to England in 1763 and found himself with only his half pay and no private practice. From this time his life was one continual labour. Astley Cooper said of him: "He was the last in the laboratory or study at night, and the first there in the morning, allowing himself very little time for repose." The daily programme was something as follows. Up before five in the morning and engaged in dissection or study. Then the care of his private practice and attendance at the hospital. Dinner in the late afternoon, a short sleep followed by a lecture, and again work in the laboratory until the small hours of the morning.

Such a day would be beyond the powers of most men, but when a terrifying disease brought no cessation, one's admiration goes out to such determination and bravery. He was elected a Fellow of the Royal Society in 1767, and was appointed surgeon to St. George's Hospital and a member of the Corporation of Surgeons in 1768. About 1772 he abandoned anatomy and commenced his lectures on the theory and practice of surgery.

Hunter's life at this time was very similar to that of many young surgeons after the Great War, in that his life was divided between hospital duties, teaching, investigations, and what private practice came to hand. Hunter accomplished an immense amount of work, but it has to be remembered that hospital duties were very light, consisting only of one or two visits, and there was no teaching.

Although operations are not the whole of surgery, and less in those days than now, some idea of the amount of time demanded by a hospital appointment may be gathered from their number. I have no direct evidence of the number in Hunter's time, but a computation can be made by some figures quoted by Godlee in his life of Lister. According to these figures, in the era immediately preceding Lister the number of operations in the large

hospitals was about one a day, and about one-fifth of these were amputations. It is probable that they were less in Hunter's time.

It is interesting also to try and picture the scope of Hunter's surgery and the relative importance of the different subjects. Samuel Sharp, F.R.S., a pupil of Cheselden and a surgeon to Guy's Hospital, wrote a book on operative surgery which went through ten editions. The seventh edition, published in 1758, contains 288 pages. The first 54 pages are devoted to the treatment of wounds, inflammation, abscesses and ulcers; 20 pages to hernia; 69 pages to genito-urinary diseases, 43 of which are given up to lithotomy; 26 pages to the trepan; 20 pages to the eye; and 20 pages to amputations. The other subjects mentioned are empyema, encysted tumours, scirrhus of the breast, bronchotomy, extirpation of tonsils, nasal polypi, hare-lip, wry-neck, paracentesis, fistula-in-ano, aneurysm, inoculation. None of these receive more than nine pages. In Jonathan Bell's *System of Surgery*, published about the same time, one finds a very similar distribution of interest, but considerable space, almost a third, is devoted to injuries. This list shows the scope of surgery and where the chief interest lay. It also shows that the field was limited, although it included subjects now the domain of the specialist.

All that Hunter did and wrought and the admiration he aroused in his disciples is a matter of history. There is no doubt that his ideal of experimental investigation led eventually to modern medicine. One may, however, try and gauge what immediate effect his work produced on his art; was it at all comparable to that produced by Lister?

This can be done to a certain extent, at all events, by a study of the books and lectures in the years following his death.

Astley Cooper, the surgeon to Guy's Hospital, delivered a series of lectures at St. Thomas's Hospital. The date of these lectures must have been just before the year 1825, at which date Guy's and St. Thomas's dissolved partnership. A study of these lectures shows no great alteration in scope of surgery or in relative values, with one exception, and that was the adoption of the Hunterian ligature. Cooper affords striking evidence of the utility of this operation as he says in one of the lectures that formerly any patient who had been cured of a popliteal aneurysm could always gain a living by showing himself at a hospital, but now Mr. Hunter had deprived these lucky ones of their means of livelihood.

In 1847, South, a surgeon to St. Thomas's Hospital, brought out a carefully annotated edition of Chelius's *Surgery*. In this work Hunter is referred to again and again: in point of fact, in an index of subjects on which authorities are quoted the space devoted to Hunter far exceeds that given to any other person. A perusal of this book again fails to show any striking alteration in the interest of the surgeon. The early editions of Erichsen's *System of Surgery*, published about 1860, tell much the same tale, though the trend of thought is more modern.

The reason that surgery made no great bound after Hunter as it did in Lister's time can, I think, be explained. In the first place Hunter left behind him no one at all comparable to himself. In the second place a very large part of his work was the study of normal processes. In this connexion I may again quote Astley Cooper:

"Physiological knowledge is of the utmost importance to the professor of surgery; this gives you knowledge of the healthy functions, and thus enables you better to understand the nature of diseased action. This was the rock on which Hunter stood, admired by the wise and abused by the ignorant."

Though, as Cooper says, such knowledge is necessary for the proper understanding of disease it cannot in itself explain the departure from normal. Again, a great deal of Hunter's labours were purely biological, and could not be applied to medicine.

The problem of inflammation was one that interested Hunter more continually than any other, and was one that closely touched medicine. It was recognized that inflammation was the agent of repair, and therefore a process inherent in the individual, but the inflammation that arose apart from this was the crux that caused pages of involved language, and in the end remained unexplained.

There is a third reason. To one educated in the post-Listerian period it is almost inconceivable that a system of medicine unpeopled by bacteria, moulds, or protozoa, and unilluminated by a knowledge of the cellular nature of the body, could advance with rapidity. It is not to be expected, therefore, that the years that came immediately after Hunter would show a great forward movement. It seems as if medicine was awaiting the advent of Virchow to produce his cellular pathology, of Pasteur to solve the riddle of many diseases, of Lister to free the surgeon's hands, and of anaesthetics to diminish the fear of operations. It may be said that Hunter prepared the way to a new medicine rather than that he created a new world of surgery.

SPECIALISM

The problem of specialism and of the specialist, either from a practical or from an educational point of view, was not acute. Whether the physician or surgeon was to be considered as specialist depends on the individual point of view. The modern enthusiast for specialism would say that the general physician and surgeon are interesting relics of an honourable past; while the modern student, I expect, regards medicine, surgery, and obstetrics as natural divisions of medicine rather than specialties. The Ministry of Health regards them as the three bases of the healing art.

In those far-off days there were apothecaries, physicians, and surgeons. Some of the surgeons were possessed of special skill in lithotomy and couching for cataract, and to that extent were specialists, but, with these exceptions, the modern specialisms were still unseparated. The surgeons were taking their places alongside the physicians largely owing to the influence that Cheselden and Pott exerted, but even as late as 1825 we find Astley Cooper complaining of the interference of the physicians. This protest was caused by the prescription of a cathartic by a physician for a case of compound fracture which was under the care of Mr. Cooper. Obstetrics were passing from the midwives into the hands of those that confined themselves to that branch. It is interesting to note that there was a complaint that the instruction of students in this subject was defective.

Of late years specialism has grown apace. The old specialisms had their origin in the necessity for the possession of a special skill in the treatment of a special part. The later specialisms tended to be founded on special knowledge of a particular organ or a special disease, and the latest specialisms have origin in none of these things. Specialism has come to stay if only for the reason that the public demands it and the authorities that rule our education recognize it.

Specialism is a form of division of labour or of knowledge, and as such should lighten the burden of the student working for a qualification. Unfortunately the opposite is the case, and the advent of a new speciality means a new burden. This will continue until it is recognized that specialism is a post-graduate function. It can even be said that general practice is a speciality, not because medicine and surgery as practised in hospital

are different from those in general practice, but for the reason that the conditions under which they are practised are so different. It might be helpful if a hospital could arrange with some of its sons to take qualified students for a limited period as apprentices, thus returning, in a way, to an old custom. It is a curious thing that medicine is the only profession where a recently qualified man is spoken of as a finished product. In the Church you have to be a deacon before a bishop, and in the Army a subaltern before a colonel.

QUACKS AND QUACKERY

The definition is difficult, but everyone knows what is meant by a quack. Nothing since the days of the Hunters has altered so little as this question. William Hunter was apprehensive that he might be judged one; John Hunter had no objection to meet them, and on one occasion tried unsuccessfully to induce the owner to part with a secret prescription of an ointment. Lettsom waged a war against them, but was beaten in the end. Some were complete impostors; many worked in the realms now ruled over by specialists, treating a class of case which the doctors for one reason or another were unwilling to undertake.

The borderline between regular and irregular practice was ill defined, because there was no easy means of finding out whether or no a person had had a medical training. To distinguish a registered from an unregistered practitioner is now easy, but the facilities offered by the *Medical Register* have not in any way diminished the quacks; in fact, they are as flourishing as ever, and in some instances have copied the doctor and established a curriculum and a register. The high and low in the land seek their advice.

It is apparently impossible to persuade the public that the doctor is disinterested in his attitude toward irregular practice. Only recently I heard an individual high up in the academic world, who was discussing the subject, express the view that he had taught too many undergraduates to have any opinion of the value of the letters after a man's name. Under these circumstances would it not best become the profession to take its stand on the preamble of the Medical Act, and only ask to be clearly distinguished from those who have not had its medical training?

RESEARCH

Hunter demonstrated the fruitfulness of the experimental method, both in medicine and in biology; he also gave an example of the pitfalls that surround this method. If he were to come back and survey the field of medicine nothing would, I think, astonish him more than the position that research occupies to-day. He would wonder at the progress of medicine, but this feeling would be nothing to that inspired by the expansion of the effort to get forward and lay bare the secrets of Nature. In his time investigation was a simple matter. To-day, though there is still work to be done by a man with no special training, research, in many instances, requires a special education, a laborious study of the subject, and a skilfully thought-out plan.

The difference that exists between the times may perhaps be best brought out when we compare the rather simple investigations of Hunter's with those of Laidlaw and Dunkin for the *Field Distemper Fund*. These two investigators, starting with a disease of which the clinical symptoms had to be determined, worked for ten years, and expended £55,000 before they brought the disease under control. Research now works in a framework of careful organization. In fact, the organization has become a profession in itself. Here I would pay a tribute to Walter Fletcher, a man of great attainments, of far vision

and foresight, a man who devoted his great powers to help the worker.

In those days there was little or no aid for the worker, who was self-supporting, and had to look to his own pocket to provide the means for investigation or experiment. John Hunter spent his fortune on his museum. To-day, partly by private beneficence and partly from Government grants, there are large sums of money available which not only help the part-time worker, but support a small army of men who devote their whole time to their work.

Connected with research is the diffusion of knowledge. At the present time this is rapid, even to the ends of the earth; there are many professional societies and periodicals without end. In those days knowledge had to spread in the main by personal contact or communication. There was the Royal Society, but no exclusively medical associations except in Edinburgh and Paris. The naval surgeons seem to have been the first to supply the need in 1748. This society received original communications, which it bound and distributed to members. It also invited well-known people to lecture before it. Both William Hunter and Samuel Sharp did so. It is to its credit that it recognized a tendency to prolixity in medical matters, and instituted a censorship of the material it published.

In 1783 Hunter and Fordyce founded the Society for the Improvement of Medical and Chirurgical Knowledge, which lasted for a few years. This was followed in 1785 by the *Lycæum Medicinæ Londinense*, which met in the New Museum in Carter Street, and seems to have been in the nature of a research club. In 1773 Lettsom and a group of friends had founded the Medical Society of London, which, after many early struggles, has come down to our times.

THE FUTURE

It is impossible to stop the progress of Medicine, but progress may be helped or hindered by the conditions under which medicine works. In Hunter's time the profession consisted of individuals very loosely governed as regards education or conduct. It had very little contact with the State. The Elizabethan Poor Law was still in existence, and the State paid little heed either to preventive or to therapeutic medicine. To-day we find a highly organized profession; and organization, while it offers the possibility of resistance, also facilitates negotiations. The State controls a highly efficient preventive and therapeutic medical service; it is taking a greater and greater interest in education. There are some 20,000 doctors in receipt of public money. The war produced within the profession a considerable body of opinion favourable to a still greater control of medicine by the State. In the years to come we may be individuals linked together by a desire to stamp out or cure man's ills or we may be a swarm of workers in a national hive. In either case let us hope that the diligence, the curiosity, and the energy of John Hunter will be our guide.

The annual report of the National Institute for the Blind for the year 1932-3 is characterized by special attention to the excellent results obtained through special treatment and education. Illustrations are given of the extent to which independence in living can often be achieved, and there are many examples of the various activities which have an economic as well as a moral significance. The massage department records a very successful year, and there is now an advanced course in electrotherapeutics, comprising diathermy and high-frequency work. The new electrical clinic has assisted students training for the medical electricity examinations, and has been of great benefit to hospital patients.

INFLUENZA: ITS SEQUELAE AND TREATMENT*

BY

JAMES TORRENS, M.D., F.R.C.P.,

SENIOR PHYSICIAN, ST. GEORGE'S HOSPITAL

It is obvious that in one evening's discussion only the fringe of so large a subject can be touched upon, and I am faced at the onset with the very real difficulty of deciding not so much what to say as what to leave out in the short time at my disposal. I have therefore thought that it may make for simplicity if I restrict my remarks to some general considerations on what we understand by the term "influenza," and how this disease behaves to the community at large as well as to the individual sufferer from it.

Influenza, then, is an infective disease capable of producing an infinite variety of clinical manifestations and differing in severity within the widest possible limits; it is always present in a sporadic and usually mild form, but it tends to assume epidemic proportions at frequent intervals. Such epidemics may occur in the winter months, when the clinical manifestations are for the most part catarrhal and respiratory, or they may occur in the summer months, when there seems to be a greater tendency to implication of the nervous or alimentary systems. When epidemic proportions are reached—and this happens every year or two—there seems to be a tendency for a similar clinical type to develop in the great majority of cases of that particular epidemic, but this is not invariable, and in every considerable epidemic we find examples of an entire household struck down within a few days, each member of which may exhibit a different clinical picture of disease. In addition, however, to the constant mild sporadic cases (the so-called influenza cold), and the frequent more severe but not too serious epidemics, influenza gathers its forces together every thirty to forty years, exalts its virus, and sweeps a continent, or even the entire globe, like a veritable destroying angel. These pandemic visitations spread with the precise speed of human intercommunication, and their range is only limited by the movements of humanity, so that at the present time, with aeroplane and other transport facilities, no part of the earth is likely to escape the malign "influence." When once a populated area has been exposed to infection the spread throughout that area is extremely rapid, till within three or four months every susceptible person has been laid low and the pestilence has moved on. Unfortunately, influenza—in marked contrast to measles and poliomyelitis—does not seem to provide any lasting degree of immunity to its victims, though there seems to be enough immunity persisting to prevent a second attack during the same epidemic; but countless individuals have undoubted influenza, though often of widely differing clinical type, every year throughout twenty or thirty years or longer.

HISTORICAL

Records show that there have been some fifteen major epidemic visitations of pestilence to Europe in the last 500 years, and that, although the clinical types have varied greatly, each of these would, or should, now be recognized as influenza. There is no reason to suppose that such epidemics have only been manifest for some 500 years. Indeed, there is every reason to believe that they have occurred throughout the ages, but have been limited in extent by the relative lack of intercommunication between one populated area and another which obtained in bygone centuries. Thus the epidemic agues

and the sweating sicknesses of the Middle Ages, as well as certain so-called epidemic dengues, can fairly be regarded as influenzal, while the "trousse-galant" which swept through France in 1529 appears to have been a form of encephalomyelitis developing a few months after all Europe, except France and Italy, had been subjected to the fourth epidemic of "sweating sickness." This name was translated into English as "stup-gallant," and used later for the fifth epidemic of "English sweat." The malady known as "coqueluche" was widespread throughout France during the months of February and March, 1510, and again several times during the sixteenth century, and seems to have been a form of epidemic influenza, which we still see, characterized by an absence of catarrhal symptoms but an intolerable pain in the head, back, and shoulders. The actual name "influenza," as also "la grippe," seems first to have been used about 1745. It was used by the Italians much in the same sense that it was used by Job in the Old Testament—"Canst thou bind the sweet influences of Pleiades, or loose the bands of Orion?"—save that the "influence" was far from sweet.

EPIDEMIOLOGY

An important point in connexion with the major epidemics of influenza is the fact that they are preceded and followed by lesser outbursts of epidemic disease for several years, and that such lesser outbursts are not of the same clinical type as the pandemic visitation when it does arrive. Further, it would seem that before and after a major influenzal epidemic there are seen in epidemic form various diseases of the nervous system, of which the most consistent seem to be poliomyelitis, cerebro-spinal meningitis, and encephalomyelitis (lethargic or spasmodic). It is stated that cerebro-spinal meningitis and encephalitis follow the influenza after an interval of a year or more, while poliomyelitis is more often seen a year or two before the influenza, but this is by no means invariable. In this connexion it is interesting to note that Hippocrates described a serious epidemic of paraplegia occurring one year at Thiasus in the winter months, and followed with the commencement of spring by an epidemic of "burning fever" or influenza. This suggests that influenza was behaving in very much the same manner 2,500 years ago as it is to-day. I wonder if Hippocrates failed to observe and note accurately any single manifestation of disease that came within his purview!

If we consider the epidemic happenings in the few years before and after the pandemic of 1918-19, it is possible to see how accurately the events of those years conform to the epidemic concept briefly described above. For example, there was a considerable epidemic of gripe through the United States in 1915. This was closely followed by a notable epidemic of poliomyelitis in and about New York. In 1915-16 there was a considerable incidence of purulent bronchitis with heliotrope cyanosis in the Army at home and abroad. In the spring of 1918 there was a widespread, but not severe, epidemic of febrile disease associated with a rash, and generally thought to be influenza, in Europe, while in the autumn and winter of 1918-19 the pandemic visitation occurred. A year later there was a considerable amount of much less severe influenza, and the first cases of encephalitis lethargica were described. These persisted till 1924-5, and then gradually died away. There was then a period of relative rest from influenza and kindred manifestations until 1929. It is interesting to note here that just as the influenzal encephalitis in the early 'nineties was thought to be due to botulism, so were the earliest cases of lethargic encephalitis in 1919 given the same name. Similar mistakes have very often occurred before. If we accept as correct this picture of influenza and its habits in relation to the community as a whole, it is easy to

* A paper read before the Westminster and Holborn Division of the British Medical Association, December 14th, 1933.

forecast that somewhere between 1945 and 1955, if not before, there will be another pandemic visitation, which will afflict the entire world. And unfortunately, in view of our present ignorance concerning the causation of influenza, there is very little we can do to prevent this catastrophe.

INFLUENZA AND THE INDIVIDUAL

I have tried to sketch briefly the epidemic course of influenza and to show that, if you consider it in sufficiently large a pattern, it repeats its programme with considerable uniformity at approximately regular intervals. I will now turn for a moment to the way in which influenza affects its individual victims; there is no disease so protean in its manifestations, and it is only because these different manifestations have been so clearly connected with epidemic waves of disease that it has been possible to recognize them all as manifestations of the same fundamental malady. At the same time three main types can be distinguished—respiratory, gastrointestinal, and nervous. These may merge the one into the other, or they may be utterly distinct. A great majority of all cases show catarrhal affections to a greater or less extent; but such are by no means necessary, and the symptoms of influenza may be strictly confined to the nervous system, with no vestige of catarrh from start to finish. In the absence of an epidemic the difficulties of diagnosis of the less common variants of influenza are very great, and it is not uncommon to suspect such widely different conditions as cerebral tumour, tuberculous or other forms of meningitis, enteric fever, food poisoning, and acute or subacute rheumatism when the cause is really one of influenza; conversely, in the presence of an epidemic, these various diseases may quite well be labelled influenza, and their real nature overlooked until it is too late. I do not think that detailed consideration of the clinical course of an influenzal attack comes within the scope of this discussion, but I think it is important to try and arrive at some idea as to the nature of the infection which is such a scourge to industrial humanity—an infection which can vary in intensity from that of an innocuous cold in the head to that of a pestilence which kills in a few hours, which confers so transient an immunity, and which can present so diverse a clinical picture.

It has been suggested, if I understand rightly the views of the late Dr. Crookshank, that no single bacillus or no single virus can be found or postulated to fulfil the requirements of this disease, and that influenzal pandemics may depend on telluric or cosmic happenings, the nature of which we cannot even guess at, whereby from time to time humanity as a whole is rendered liable to invasion by various secondary infections, streptococcus, pneumococcus, Pfeiffer's bacillus, etc., against which there is for the time being a greatly lessened power of resistance; but it does not seem necessary to invoke witchcraft or celestial influences to explain influenza. It is, of course, true that the actual and ultimate cause of death in influenza is usually one or other of these secondary organisms, but the spread of an epidemic, and its posting character—limited in scope and rapidity only by the facilities of human travel—and its extraordinary power of case-to-case infective transmission when once it has reached a new area, strongly suggest to me the existence of a basic communicable specific infective agent. I shall never forget watching influenza spread from bed to bed round two wards full of cases of gunshot wounds of the chest in 1918 in France, immediately following the admission of a new patient who had influenza as well as a trifling wound of the thorax; no man escaped in these wards, and half the total number perished. Within a fortnight the entire hospital of 2,000 beds was ravaged, and from twenty to thirty deaths were occurring daily.

The relative immunity of the medical and nursing staffs was striking, as showing the influence of general hygiene and ample fresh air in limiting case-to-case infection.

THE CAUSAL AGENT

A vast amount of work has been done on the bacteriology of influenza, though for many years the work of Pfeiffer and the discovery of his bacillus in 1892 was accepted as indicating the true cause of influenza; but Pfeiffer's bacillus is not the cause of influenza, despite the dictum of Wassermann, "Wo Influenza da Influenzen bazillen"—a remark which only serves to show the danger of dogmatic utterance in the realm of medicine. If Pfeiffer's bacillus were the cause of influenza, it would be found in a very high percentage of epidemic influenza cases either before or after death, just as *B. typhosus* can be demonstrated post mortem in every case of fatal typhoid fever. Neither in life nor after death can Pfeiffer's bacillus be found in as many as 40 per cent. of any large number of cases of influenza, while in many series of cases it is not found at all. Further, Pfeiffer's bacillus is known to exist in saprophytic form in many tuberculous cavities and other lesions, or in perfectly healthy persons, though undoubtedly it can at times assume a state of high pathogenicity. Neither has any other single organism been found present with sufficient constancy in different influenza epidemics to justify it being labelled as the cause of influenza. It is hard to believe that, if influenza is due to any microscopically visible bacillus or coccus, it would not have been identified with reasonable certainty by now, considering the numerous investigations into this question during the last forty years.

In view of the frequency with which the haemolytic streptococcus is found in the blood stream, or in the lesions of fatal cases of influenza in certain major epidemics, it might be thought that influenza is merely a variant manifestation of the streptococcus; but again many fatal cases do not show any streptococcus infection—in some it is a pneumococcus, in others, a mixed infection with Pfeiffer's bacillus in predominance, while simple uncomplicated influenza does not seem to show any special tendency to streptococcal associations. One is thus forced to conclude that the occurrence of these demonstrable bacteria, although causing the death or serious symptoms of the individual, is really only a secondary and complicating infection, the way for which is paved by the incidence of an unidentified primary influenzal infective agent. That death in influenza epidemics is not due to the influenza itself but rather to a secondary and complicating infection has been believed for many years, and Broussais in 1837 wrote in the *Paris Lancette*: "What have necropsies shown? With regard to the entity of la grippe they have shown nothing. When the sick man dies of it, it is no longer la grippe, it is a complication! But how can you say that this man would have had this affection of which he has died, if he had not had la grippe?" Broussais was tilting at the morbid anatomist Andral, who, because post mortem he could find nothing characteristic *per se* of influenza, declared that the disease only existed in the imagination of the physician. Nevertheless, Broussais' view expresses very much what is thought to-day: "You do not often die of influenza itself; you die very often in times of epidemic influenza of complicating infections that you would not have acquired but for the fact that you were first afflicted with influenza."

If, then, the cause of influenza is not to be found among the microscopically visible bacteria, we must proceed to search for it among the ultra-microscopic filter-passing viruses, which would bring it into line with measles, poliomyelitis, and probably many other diseases.

Recent work by Smith, Andrewes, and Laidlaw is highly suggestive that this may be the true solution of the problem. These workers have succeeded in producing influenza in ferrets and from ferrets to ferrets thereafter by the nasal route, using bacteria-free filtrate from nasal washings from influenza patients. Ferrets were not infected by similar material from non-influenzal persons or from persons who had a cold in the head. Serum from convalescent humans protected other ferrets from infection for several months.

A PLEOMORPHIC VIRUS ?

If influenza is a virus disease, is it not possible to assume that the virus may be of several types, just as the pneumococcus and the meningococcus are of several "types," and that the different clinical forms of disease may depend on which type of virus is the predominant infecting agent, or even that the virus may exhibit mutation from one type to another, or again that there may be several allied viruses in the sense that typhoid and the various paratyphoid bacilli are allied but yet sufficiently different, in that they do not confer cross-immunity the one to the other? This might help to explain the rather anomalous questions of post-influenzal immunity as, for example, the apparent clinical fact that people who had suffered from influenza in 1890 and who were alive in 1918 for the most part escaped infection in that year. In contrast with this we find that annual influenzal attacks are a commonplace. May it not be that this hypothetical virus attacks by preference the mucous membranes or the nervous system, and that at times of epidemics the virus is more deadly, and so damages the mucosae, or so impairs the balance between the sympathetic and parasympathetic nervous systems, or other parts of the central nervous system, that invasion by secondary pathogenic organisms is made easy, and resistance to these invaders is made difficult or impossible by reason of upset and damage to the nervous and metabolic processes which regulate the healthy protective mechanism against bacterial invasion?

It has been suggested by Smith Jelliffe that many of the clinical phenomena of influenza—the headache, the sweats, the pains, the bradycardia, the depression, and the tendency to exudate formation in the lungs and elsewhere—may be explained by a profound disturbance in the balance between the autonomous and sympathetic nervous systems. It seems reasonable. Certainly many cases of post-influenzal bradycardia so marked as to suggest heart-block have been shown by the electrocardiograph to be due merely to vagus over-activity, though in other cases true heart-block and other such disturbances of rhythm as flutter and fibrillation may occur with obvious myocardial damage. May not the apparent connexion between poliomyelitis, cerebro-spinal meningitis and encephalitis, and influenza be explained by the possibility that the one prepares the ground for the invasion by the other, and vice versa; or may not the factor of symbiosis explain some of the secondary invasions and differences in virulence? Hamer has shown that on one occasion when a cerebro-spinal fever epidemic followed closely on an influenzal epidemic the incidence of the cerebro-spinal meningitis was ten times greater among those who had had influenza than the statistical expectation warranted, while Brorström in 1910 emphasized the relation between poliomyelitis and influenza.

TREATMENT AND PROPHYLAXIS

It remains but to say a very few words about treatment. Here I am on difficult ground. The treatment of the attack of influenza is peculiarly the province of the general practitioner; the number of different remedies

that have been extolled shows clearly that there is no specific. All are agreed that early and prolonged rest in bed is all-important, and most of us have our pet prescriptions, usually based on aspirin and caffeine, whereby we hope to relieve the more intolerable of the symptoms; but few of us, I fancy, claim in any way to cure influenza. The prospect of doing good by the use of convalescent serum is attractive but beset with difficulty. We have done a little work in this direction within the hospital, and hope to do more when the opportunity offers. At present it can only be said that research in this direction offers at least a possibility of some day providing a valuable therapeutic agent. The only other question that occurs to me is the possibility of doing good in times of epidemic influenza by wholesale prophylactic vaccination against the secondary invaders. I myself am convinced that therapeutic vaccination when the secondary invasion has occurred is utterly useless, but I feel that the secondary invasion might perhaps be avoided if the individual were protected by a previous course of mixed vaccine against the potential invaders.

THE EPIDEMIOLOGY OF SCARLET FEVER IN A LANDWARD AREA

BY

JOHN RIDDELL, M.B., Ch.B., D.P.H.

ASSISTANT MEDICAL OFFICER OF HEALTH, COUNTY OF STIRLING

The recent publication by the Medical Research Council of an *Epidemiological Study of Scarlet Fever in England and Wales since 1900*, by Hilda M. Woods, raises many points of great interest and importance. Perhaps the most striking conclusion to be drawn is that the present low mortality rate is probably only temporary, and that a recurrence of the more malignant type of scarlet fever may be expected. In view of this it would appear wise to concentrate our efforts now on elucidating any factors which might affect the incidence or mortality of the disease, in order that we may be prepared for, and, if possible, prevent, this future source of anxiety. It is hoped that this study, while making no pretension to be exhaustive, may lead to speculation and possibly further investigation into some unexplored aspects of the subject.

The cases dealt with comprise all the notifications of scarlet fever in the landward area of Stirlingshire during the ten years 1921-30. As mentioned in the Medical Research Council's report,¹ notifications do not, of course, form an infallible basis for statistical conclusions, owing, in a landward area especially, to the number of missed cases and other causes, but in a study such as this the effect of these errors can at most only be slight.

PERIODICITY

In the ten years covered no decision can be reached with regard to the periodicity of the disease in this area, but it would appear to conform to the usual five to seven years. In order not to break up the periods of greatest incidence, each year has been taken as commencing on July 1st and ending on June 30th succeeding. Table I shows a minimum incidence in 1922-3, rising to a maximum in 1925-6, and falling to a minimum again in 1927-8—that is, a period of five years between the two minima.

If the cases are now subdivided into age groups—corresponding roughly to pre-school children, school children, and adults—the interesting fact emerges that there is less annual variation in the incidence among adults, and that there is also a tendency for a "lag"

to occur—that is, the minimum incidence comes a year later, the maximum a year later, and the following minimum two years later, than in the case of children.

TABLE I.—Annual Incidence

	Period Covered											
	Jan., 1921, to June, 1921	July, 1921, to June, 1922	July, 1922, to June, 1923	July, 1923, to June, 1924	July, 1924, to June, 1925	July, 1925, to June, 1926	July, 1926, to June, 1927	July, 1927, to June, 1928	July, 1928, to June, 1929	July, 1929, to June, 1930	July, 1930, to Dec., 1930	
All cases	277	180	149	207	381	449	429	217	260	253	117	
Ages 0 to 4 yrs. 11 mos. ...		51	40	57	93	128	107	52	59	56		
Ages 5 yrs. to 13 yrs. 11 mos. ...		101	84	126	225	268	243	111	156	163		
Ages 14 years and over ...		28	25	24	58	53	79	54	45	39		

TABLE II.—Seasonal Incidence

	Month											
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
All cases	153	219	275	342	270	275	322	284	205	202	177	185
Ages 0 to 4 yrs. 11 mos. ...	38	52	73	91	63	65	63	81	45	55	49	55
Ages 5 yrs. to 13 yrs. 11 mos. ...	95	134	172	212	172	159	195	159	104	110	112	105
Ages 14 yrs. and over ...	25	25	30	41	35	62	64	44	56	37	26	24

Taking all cases reported two peaks are evident—one in October and another in January. If, however, the cases are divided into age groups as before, there is found to be a variation. The pre-school children and school children show a maximum incidence in October, with minor peaks in February and January respectively. There is here no evidence of mass infection among the school children due to resuming school at the end of August. The adult group shows only a very slight increase in October, but a maximum incidence in December and January, with another peak in March. The period of maximum liability to infection among adults would thus appear to follow that of children by two to three months. Both annual and seasonal incidence, therefore, vary with age.

It has been shown by the Registrar-General² that the maximal seasonal incidence of mortality in scarlet fever appears to be changing from October and November to January, and that "whereas October is the last month of increasing notifications, increase of deaths continues until January, and until May the proportion of deaths remains much higher than that of notifications." Hilda Woods, dealing with London-Eastern Hospital cases from 1905 to 1914,¹ points out that there was a greater tendency for deaths to occur in cases arising in April, May, and June. She also shows that the fatality rate declines with age until adolescence is reached, but tends to rise in adults, and that the relative importance of mortality in later life is becoming progressively greater. This was also found by Pope.³ Can later seasonal incidence and increased spring mortality be explained by the fact that the average age of incidence of scarlet fever is becoming progressively greater, possibly due to better housing conditions and earlier and more general segregation of cases?

VARIATION OF INCIDENCE WITH SIZE OF HOUSE

Annual and seasonal incidence do not vary with size of house; total incidence and age and sex incidence do. Table III gives, first, the absolute number of cases in each size of house, then this number stated as a percentage, and then the percentage of the general population, resident in each size of house. These latter

percentages are calculated from the 1921 and 1931 census figures. The cases are then divided into two groups according to age—those under 14 years and those 14 years and over. In the case of the children the population at risk is taken as the number of children in the 2,859 houses from which all the cases were drawn, and in the case of the adults the number of adults in those houses. These numbers are taken as samples in the absence of figures relating to the housing and age distribution of the general population.

TABLE III.—Effect of Size of House on Total and Age Incidence

No. of Apartments	All Cases			Cases 0 to 13 Yrs. 11 Mos.			Cases 14 Yrs. and Over		
	No.	%	% Pop.	No.	%	% Pop.	No.	%	% Pop.
I	211	7.3	6.3	197	8.1	6.9	14	3.2	4.9
II	1,508	52.7	45.3	1,341	55.4	57.4	167	38.1	49.2
III	562	19.7	25.1	470	19.0	19.6	102	23.4	21.5
IV	239	8.4	10.1	193	8.0	7.3	46	10.6	8.5
Over IV ...	339	11.9	15.2	231	9.5	8.8	108	24.7	15.9

It is seen from the figures for all cases that the smaller the number of apartments in the house the greater the relative incidence of fever. When we consider the adults alone, however, we see that the reverse is the case, and when we take the children under 14 years we find an intermediate stage. Had it been possible to obtain figures for the age groups 0 to 4 years 11 months and 5 years to 13 years 11 months separately, would this have shown the younger group as causing the increased incidence in the small houses, with the school children an intermediate group? Increased chances of infection and of acquired immunity in the smaller apartment house would suggest that this would be likely.

That earlier infection does occur in the smaller house is shown in Table IV, where the average ages of the cases under 14 years in each size of house are given. In calculating the ages all children in each year group were taken as being concentrated at the centre of the group—for example, all between 3 and 4 years were counted as 3 years 6 months. These findings agree with the results of Halliday in his investigation of measles cases.⁴

TABLE IV.—Size of House, Overcrowding, and Age Incidence

No. of Rooms	I	II	III	IV	Over IV
Average age of cases	6 yrs. 1 mo.	6 yrs. 7 mos.	7 yrs. 1 mo.	7 yrs. 1 mo.	7 yrs. 7 mos.
Persons per apartment					
Cases	3.7	2.3	1.6	1.1	0.8
General pop.	3.2	2.3	1.6	1.2	

The question now arises, Is the earlier age incidence in the small apartment house due to overcrowding? In Table IV are given the persons per apartment in the case of all the notifications, and corresponding figures for the general population, calculated from the 1921 and 1931 census returns. Except in the case of the one-apartment house there is no more overcrowding in the houses in which scarlet fever occurred than in the corresponding houses of the general population.

As regards sex variation (Table V), a larger percentage of the cases among girls under 14 years comes from the smaller type of house than is the case with boys. Assuming that the sex constitution is the same in each size of

house, this would suggest that in the smaller type of house girls are more liable to infection than boys, while the reverse is the case in the larger houses.

TABLE V.—Size of House and Sex Incidence in Children

	No. of Rooms	I	II	III	IV	Over IV
Percentage number of boys		7.8	53.3	20.1	8.0	10.8
Percentage number of girls		8.5	57.2	18.0	7.8	8.5

VARIATION OF INCIDENCE WITH SEX AND AGE

TABLE VI.—Sex and Age Incidence

Sex	0 to 11 months	1 yr. to 11 mos.	2 yrs. to 11 mos.	3 yrs. to 11 mos.	4 yrs. to 11 mos.	5 yrs. to 11 mos.	6 yrs. to 11 mos.	7 yrs. to 11 mos.	8 yrs. to 11 mos.	9 yrs. to 11 mos.	10 yrs. to 11 mos.	11 yrs. to 11 mos.	12 yrs. to 11 mos.	13 yrs. to 11 mos.	14 yrs. and over	Totals
M.	8	38	72	110	130	145	129	117	83	69	81	44	46	39	186	1,303
F.	17	40	67	114	139	157	163	138	119	111	86	63	64	59	231	1,621

With the exception of the age group 2 years to 2 years 11 months, there is seen to be an excess of female cases throughout. This shows a true increase in susceptibility, because in the general population of this area there is an excess of males over females at all ages under 20, and also in the general population above that. The fact that a larger proportion of girls than boys come from houses with few apartments, and that the age incidence is earlier in these houses, would suggest that the age incidence in girls should be earlier than in boys. Such is not the case, however, as is seen from Table VI, where 56.6 per cent. of the boys are under 7 years, and only 52.1 per cent. of the girls. Also, in the case of boys the age of maximum incidence is in the fifth year, whereas in girls it is in the sixth year. The excess of female cases and the maximum age incidence at 5 to 6 years are the commonly accepted findings.

SUMMARY

1. The periodicity of scarlet fever in this area appears to be one of about five years.
2. Adults have an annual variation in incidence separate from that of children, and following that of children at about one year's interval.
3. While the maximum seasonal incidence in children is in October, with a smaller increase in January and February, the maximum in adults is in December and January, with a following increase in March.
4. The fewer the number of apartments in the house the higher the incidence of fever among children, but the lower among adults.
5. The smaller the house the earlier the average age of infection among children. This does not appear to be due to overcrowding *per se*.
6. Females are more liable to infection with scarlet fever than males, but girls are not affected until a later age than boys, though a larger proportion of their cases come from small apartment houses.
7. The maximum age of incidence for boys is 5 years, and for girls 6 years.

REFERENCES

- ¹ Woods, Hilda M.: *Epidemiological Study of Scarlet Fever in England and Wales since 1900*, Medical Research Council, Special Report Series No. 180, 1933.
- ² Annual Report of Registrar-General, 1925, p. 97.
- ³ Pope, S. A.: *Amer. Journ. Hyg.*, 1926, vi, 389.
- ⁴ Halliday, J.: *An Inquiry into the Relationship between Housing Conditions and the Incidence and Fatality of Measles*, Medical Research Council, Special Report Series No. 120, 1928.

THE AETIOLOGY OF HEART DISEASE

BY

C. BRUCE PERRY, M.D., M.R.C.P.

ASSISTANT PHYSICIAN, BRISTOL GENERAL HOSPITAL

An analysis of the cases of organic heart disease seen by the late Dr. Carey Coombs in the wards of the Bristol General Hospital during the years 1918 to 1929 showed that acute rheumatism was the aetiological factor in over 55 per cent. Further, a three-year survey of the incidence of acute rheumatic heart disease in Bristol and the surrounding counties¹ provided strong evidence that the incidence of this disease was very much higher in the city than in the counties. For these reasons it appeared desirable to Dr. Coombs that an attempt should be made to assess the part played by rheumatism in the causation of heart disease in other parts of Great Britain. The trustees of the R. L. St. J. Harmsworth Fund interested themselves in this investigation, and by their help it has been possible to obtain the figures of the cardiac cases admitted to various hospitals of Great Britain for the year 1932. Information has been received from the following: Royal Infirmary, Aberdeen; Royal Victoria Hospital, Belfast; General Hospital, Birmingham; General Hospital, Bristol; Royal Infirmary, Bristol; Royal Infirmary, Cardiff; Western Infirmary, Glasgow; National Hospital for Diseases of the Heart, London; Royal Infirmary, Liverpool; Middlesex Hospital; Royal Victoria Infirmary, Newcastle; Norfolk and Norwich Hospital, Norwich; and Royal Hospital, Sheffield.

The classification adopted was as follows:

1. Congenital heart disease.
2. Rheumatic heart disease. In this group were included not only cases of heart disease with a history of rheumatism, chorea, tonsillitis, or scarlet fever, but also cases without any such history, yet conforming in type to the rheumatic pattern—namely, cases of (a) ventricular enlargement with mitral incompetence under the age of 40; (b) mitral stenosis with or without incompetence; (c) aortic incompetence with or without stenosis under the age of 30; and (d) acute fibrinous pericarditis. The inclusion of such cases in this group was, of course, conditional on the absence of any alternative aetiology.
3. Ulcerative endocarditis. In this group were placed all cases of infective lesions of the endocardium not already included under rheumatic or syphilitic; thus it included all cases of acute, subacute, and chronic bacterial endocarditis, endocarditis lenta, etc.
4. Cardiac syphilis. This group comprised cases of aortic incompetence, aneurysm, aortitis, and angina with a history of syphilis, positive Wassermann reaction, or the presence of signs of other syphilitic lesions such as tabes dorsalis.
5. Thyrotoxic heart disease. In this group were placed all cases with physical signs or symptoms of heart disease with evidence of past or present thyrotoxicosis.
6. Hyperpiesis. Systolic blood pressures of 200 mm. Hg and over, even if only reported on one occasion, qualified for admission to this group, whether the patient also exhibited signs of arterial degeneration or not.
7. Senile cardiosclerosis. This term covered all cases of arteriosclerotic or "senile" heart disease, even though the "senility" was premature. The word "decreased" was considered, but rejected for various reasons. This group, of course, included the majority of cases of coronary thrombosis.
8. Functional. All cases of heart disease with no ascertainable organic basis were placed in this group, which included such diseases as "D.A.H.," paroxysmal tachycardia without organic lesion, sino-aortic block, etc.

9. Various. This group comprised cases with a definite organic change yet of a kind which did not fit in with the other groups. Such conditions as auricular fibrillation, congestive failure and heart-block with no ascertainable aetiology, heart failure secondary to chronic pulmonary disease, diphtheritic myocarditis, and terminal pericarditis were included.

The results of the investigation are given in the table. It must be borne in mind that these figures deal only with patients of the hospital class in Great Britain, and further that, with the exception of those from Liverpool, they refer only to patients admitted to hospital.

might be expected in the case of a not very common disease. The average incidence for the whole group is 2.3 per cent. of all heart cases. If it is assumed that in a general hospital one in five of the medical admissions is suffering from some form of heart disease (a fair average), this incidence approximates closely to Horder's estimate—that bacterial endocarditis is found once in every 200 medical admissions. It is interesting to note that the hospital with the highest incidence of rheumatic heart disease (Cardiff Royal Infirmary) also showed the highest percentage of cases of ulcerative endocarditis; but the correlation between the two diseases holds no further than this.

	Aberdeen	Percentage	Belfast	Percentage	Birmingham	Percentage	Bristol General Hospital	Percentage	Bristol Royal Infirmary	Percentage	Cardiff	Percentage	Glasgow	Percentage	Heart Hospital	Percentage	Middlesex Hospital	Percentage	Newcastle	Percentage	Norwich	Percentage	Sheffield	Percentage	Liverpool	Percentage	Total for All Centres	Percentage
Congenital ...	0	0	0	0	8	3.4	2	0.9	2	1.9	3	6.8	1	0.2	2	0.6	1	0.5	3	1.2	2	1.7	1	0.8	6	3.5	31	1.1
Rheumatic heart disease ...	47	29.2	100	28.2	72	30.6	85	42.5	45	42.8	22	0.0	195	43.5	160	47.6	33	16.5	95	40.9	41	36.1	53	44.1	71	41.6	1,020	38.4
Ulcerative endocarditis ...	1	0.8	9	2.5	6	2.5	8	3.9	6	5.6	3	6.8	3	0.6	7	2.0	3	1.5	8	3.4	2	1.7	4	3.3	2	1.1	62	2.3
Syphilitic ...	15	12.5	26	7.6	20	8.5	10	4.9	6	5.6	5	11.3	40	8.8	21	6.3	3	1.5	27	11.6	3	2.5	5	4.1	3	1.75	184	6.5
Thyrotoxic ...	7	5.8	54	15.2	14	5.9	32	15.8	15	14.2	1	2.2	23	6.2	16	4.7	68	34.0	6	2.5	32	27.6	12	10.0	2	1.1	287	10.7
Hyperpietia ...	13	10.8	43	12.1	35	14.8	18	8.9	7	6.6	2	4.5	58	12.9	38	11.3	64	32.0	8	3.4	12	10.3	35	29.2	10	5.9	343	12.7
Senile cardiosclerosis ...	31	25.8	108	30.5	52	22.1	31	15.3	14	13.2	4	9.1	101	22.4	42	12.5	8	4.0	71	31.0	5	4.2	8	6.6	37	22.0	512	19.1
Functional ...	4	3.8	3	0.8	17	7.2	5	2.4	4	3.8	2	4.5	6	1.3	22	6.5	2	1.0	6	2.5	4	3.4	—	—	29	17.2	104	3.8
Various ...	2	1.6	11	3.1	11	4.6	10	4.9	6	5.7	2	4.5	16	3.5	28	8.3	18	9.0	8	3.4	15	12.8	2	1.6	8	4.7	137	5.1
Total number of cases ...	120		354		235		202		105		44		448		336		200		232		116		120		168		2,680	
Hyperpietia and senile cardiosclerosis	44	36.6	151	42.6	87	36.9	49	24.4	21	19.8	6	13.6	159	35.3	89	23.8	72	35.0	79	34.4	17	14.5	43	35.8	47	27.9	855	31.8

CONSIDERATION OF THE VARIOUS AETIOLOGICAL GROUPS

Congenital.—The figures in this group undoubtedly give no true indication as to the incidence of congenital cardiac defects. In the first place, many of the patients with severe malformations die in early infancy, and admission to hospital is rarely considered. In the second, many of the cases of less severe forms of congenital heart disease—for example, patent ductus arteriosus—present few or no symptoms, and in the absence of any engrafted infection or intercurrent disease would not need in-patient hospital treatment.

Rheumatic Heart Disease.—This was responsible for over 35 per cent. of the cardiac cases admitted to ten of the thirteen hospitals concerned. The maximum incidence recorded was 50 per cent. of the total heart cases at Cardiff Royal Infirmary, and the minimum—16.5 per cent.—at the Middlesex Hospital. This latter figure is rather surprising and difficult to explain, since the corresponding figure for the National Hospital for Diseases of the Heart, London, was 47.6 per cent.—one of the highest in the series. It may be related in some way to the very high incidence of thyrotoxic and hyperpietic heart disease at the Middlesex Hospital, due to the fact that special investigations were being made on these two types of heart disease. Another factor which may influence the figures is that very few heart cases are admitted to the children's wards, and Dr. Keele suggests that this may be in part due to the proximity of the Middlesex Hospital to the children's hospital in Great Ormond Street. The large part played by rheumatism in the causation of heart disease is shown forcibly by the fact that 38.4 per cent. of the cases in the whole series fell into this category. It is noteworthy also that the incidence of rheumatism at the different centres varied less than any other single aetiological group, with the exception of the Middlesex Hospital, which has already been discussed.

Ulcerative Endocarditis.—The figures for this disease vary quite considerably (from 0.6 to 5.6 per cent.), as

Cardiovascular Syphilis.—The variations in the incidence of this type of heart disease found at the various centres are most surprising and difficult to explain. It would appear likely that the incidence of syphilis must be roughly the same in all large cities, and yet we find the incidence of heart lesions varying from 1.75 per cent. of all heart cases in Liverpool to 12.6 per cent. in Aberdeen.

Thyrotoxic Heart Disease.—From the well-recognized influence of geographical conditions on diseases of the thyroid gland, the large variations in the incidence of heart disease from this cause might have been expected. However, there appears to be no very close geographical relation between the places with a high incidence or between those where the incidence is low. Part of the wide variation may be due to the fact that in some hospitals such cases are admitted to medical wards and in others to surgical ones.

Hyperpietic Heart Disease and Senile Cardiosclerosis.—There are wide variations in both of these groups. It is possible, however, that there may have been some confusion in the sorting of these two types of heart disease. If the two groups be added together there is much less variation in the incidence of the combined groups, although even then the figures by no means show an even incidence.

Functional Heart Disease.—The incidence of functional heart disease was high at Liverpool, where such cases formed rather a high percentage of the whole (17.2 per cent.). This is almost certainly due to the fact that the figures from all the other centres dealt only with hospital in-patients, whereas for Liverpool all patients attending Professor John Hay's clinic were included.

It might be argued that the marked variations noted in the different types of the disease merely served to show that such a study as this was worthless and the information gained unreliable. However, against this must be set the figures obtained from the two Bristol hospitals, where the cases are seen and diagnosed by two

quite distinct groups of physicians; these show a very marked parallelism.

The most obvious fact that emerges from this study is the strikingly constant and high incidence of rheumatic heart disease among hospital patients. It thus serves to show, if any further evidence is needed, the urgent necessity for further study into the aetiology of acute rheumatism and into methods for its prevention and relief. In view of the variations in the incidence of other types of heart disease, which are evident in this investigation, it would appear very desirable that such inquiries should be continued at different centres throughout Great Britain along similar lines for a longer period of time, so that it may be ascertained whether such variations are constant, and what local features are responsible for them.

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REFERENCES

- ¹ Savage, W. G.: *British Medical Journal Supplement*, 1931, ii, 37.
- ² Horder, T.: *Quart. Journ. Med.*, 1909, ii, 230.

B. PYOCYANEUS MENINGITIS WITH RECOVERY

BY

J. F. D. SHREWSBURY, M.D., D.P.H.

The following case of *B. pyocyaneus* infection appears to be of sufficient general interest to warrant its publication, partly because it points a moral, and partly because the precise pathogenic status of *B. pyocyaneus* for the human adult is still, somewhat doubtful. *B. pyocyaneus* has long been recognized as a secondary invading microbe in wounds and sinuses in man, but many authorities consider that it can only fill the role of a primary invader in infections of children and debilitated adults. Wilson¹ states, however, that the bacillus can produce in adults a generalized infection resembling typhoid fever, and that in the course of such an infection the bacillus may attack the meninges. He mentions that cases have been recorded of *B. pyocyaneus* meningitis resulting from the injection of contaminated cocaine solutions for anaesthetic purposes.

CASE REPORT

The patient, a married woman aged 34, was originally admitted to the surgical wards of the Queen's Hospital, Birmingham, under observation for presumptive attacks of gall-stone colic. This condition, however, bears no relation,

and she vomited several times. Her temperature, which was normal on admission, rose precipitately to 100° F., and her pulse rate increased from 65 to 80.

There is a hiatus in the clinical record for the next fifteen days, but apparently she returned home, where she was confined to her bed and was attended by her own doctor. She was admitted to the medical wards of the Queen's Hospital on September 6th, 1933, and on the following day the examination of a sample of her cerebro-spinal fluid established the bacteriological diagnosis. The fluid was frankly purulent, and contained large numbers of a small, extracellular, actively motile Gram-negative bacillus, which proved to be *B. pyocyaneus* on cultural investigation. Between September 7th and October 10th seven samples of cerebro-spinal fluid were examined bacteriologically and biochemically, and the laboratory findings on these fluids are tabulated below.

On admission the patient presented the picture of a subacute meningitis. She was febrile (102° F.), with a slow pulse (60), and was vomiting at frequent intervals; she had a severe left-sided headache, with a tendency to localization in the occipital region, a coarse nystagmus to the right, and a considerable degree of neck rigidity. Kernig's sign, however, was negative, and her fundi were clear. The clinical condition fluctuated considerably during the succeeding four weeks. On some days she had little or no headache, and the meningeal symptoms were inconspicuous; at other times she was prostrated by an intolerable headache, and the meningeal symptoms were obvious. For example, when she was examined by Dr. Neale on September 16th he was unable to detect

Date	Bacteriological			Biochemical				
	Cytology	Concremulum Formation	Presence of <i>B. pyocyaneus</i>	Sugar mg. %	Chlorides mg. %	Total Protein mg. %	Globulin	Colloidal Gold Curve
			M = microscopical C = cultural					
7.9.33	Frank pus. Exclusive polymorphonuclear reaction	Massive	M. +++ C. +++	21	668	175	Excessive	Luetic
8.9.33	1,235 cells per c.mm. Exclusively polymorphonuclear	Heavy	M. ++ C. +++	11	653	300	"	Meningitic
9.9.33	4,670 cells per c.mm. Chiefly polymorphonuclear	Heavy	M. + C. ++	32	671	150	"	Luetic
12.9.33	Purulent. Blood also present ...	—	M. 0 C. 0	Specimen not examined				
18.9.33	Purulent. Polymorphonuclear cells predominate	Heavy	M. 0 C. 0	16	670	250	Excessive	Luetic
4.10.33	1,600 cells per c.mm. Polymorphonuclears = 70 per cent.	Present	M. 0 C. 0	27	655	200	"	Meningitic
10.10.33	1,070 cells per c.mm. Polymorphonuclears = 71 per cent.	Present	M. 0 C. 0	33	676	220	"	Luetic

other than an accidental one, to the meningeal infection; she had no symptoms or signs of meningitis at this time. Shortly after her admission to hospital, as part of the general surgical examination of her complaint an injection of 10 c.cm. of percaïne was given intrathecally, prior to a pelvic examination being carried out per vaginam. On the following day the patient complained of a very severe, generalized headache,

any appreciable abnormality in her condition, but two days later she had a severe recrudescence of headache and vomiting, and exhibited the signs of an acute meningitis. This recrudescence persisted, with slight fluctuations, until October 4th, from which date a rapid improvement set in, which progressed to a complete recovery without any further interruptions. The fluctuations in the clinical condition could

not be correlated with any similar fluctuations in the chemistry or the cytology of the cerebro-spinal fluid.

The patient was discharged cured on October 17th, 1933, after a stay of practically six weeks in hospital. Since her discharge she has had no recurrence of meningeal involvement, and at the present time she is able to undertake her normal household duties, and seems to be enjoying good health. She has not, apparently, experienced any recurrence of the original attacks of presumptive gall-bladder trouble, which first brought her to the Queen's Hospital.

The significant treatment consisted in the complete drainage of the cerebro-spinal fluid by repeated lumbar puncture, and the rectal injection of four ounces of a 25 per cent. solution of magnesium sulphate, morning and evening, for the first eight days after admission.

DISCUSSION

It would appear to be certain that the meningeal infection was connected with the intrathecal injection of the spinal anaesthetic. The patient exhibited no signs or symptoms of any intestinal infection when she was first examined, and the complete absence of fever and her general good condition negative any likelihood of a pre-existing generalized infection with *B. pyocyaneus*. At no time, also, had she any signs of a middle-ear or nasal sinus infection.

The exact source of the infection has not been established, but contamination of the percarine is a more likely event than contamination of the syringe or needle used in the intrathecal injection; especially in view of Wilson's observation, to which I have already referred. Unfortunately, the sample of percarine was not submitted for laboratory examination, and, in the absence of bacteriological proof of the contamination of the percarine with *B. pyocyaneus*, the exact source of the infection remains a matter for conjecture. This case, however, has several educational bearings—notably, the low virulence of a *B. pyocyaneus* infection of the meninges in a previously healthy adult, and the warning that it provides of the need for scrupulous asepsis and absolute sterility in the use of medicaments and apparatus for therapeutic purposes. Had the infecting agent been *Staphylococcus aureus* or *Streptococcus pyogenes* the final result would certainly not have been so favourable.

I wish to record my indebtedness to Dr. A. V. Neale, honorary assistant physician to the Queen's Hospital, under whose care the patient recovered in the medical wards, for his kind permission to publish the clinical notes of the case, and to Dr. H. I. Coombs, Ph.D., biochemist to the Queen's Hospital, for his kind permission to include the chemical findings on the cerebro-spinal fluid.

REFERENCE

- ¹ Wilson, W. J.: *A System of Bacteriology*, 1929, iv, 334.

H. W. Siemens and J. H. Broekema (*Nederl. Tijdschr. v. Geneesk.*, January 13th) state that Holland is one of the European countries in which favus is most frequent. In Germany the disease is almost unknown, as is shown by the fact that in Munich only four cases were seen in the course of a year, in Kiel ten cases in eight years, and in Hamburg four cases in six years. In the Leyden district, on the other hand, 250 fresh cases were seen in less than four years. The prevalence of favus in Holland is attributed to the fact that a large proportion of the patients refuse treatment owing to their ignorance of the risks connected with the disease. Moreover, many Dutch physicians are said to be ignorant of the principles of the modern treatment of favus. The authors maintain that the disease can only be eradicated by enlightenment of the public, which could be effected by the formation of a special association. In the meanwhile it is desirable that favus should be added to the list of diseases infection with which debars children from attending school.

A FURTHER INVESTIGATION ON EXCRETORY TUBERCLE BACILLURIA

BY

J. MENTON, L.R.C.P. AND S.I.
BACTERIOLOGIST TO THE COUNTY OF STAFFORD

Despite the progress of modern research in the elucidation of many aspects of renal function, authorities still differ on the apparently simple question as to whether or not micro-organisms can pass through the healthy kidney. This problem has a clinical as well as a scientific interest. It has from time to time engaged the attention of various workers, so that the lack of unanimity is not due to want of interest.

Wyssokowitsch¹ (1836), using various micro-organisms, found renal lesions essential for transmission. Others who have agreed with this view, with the organisms on which they have based their conclusions, are: Boccardi² (1888) (anthrax bacilli); Pernice and Scagliosi³ (1892) (*Staphylococcus aureus*); Sherrington⁴ (1893) (various organisms); Cotton⁵ (1895) (*Staphylococcus aureus*); and Lepper⁶ (1921) (coliform organisms). On the other hand, Sittmann⁷ (1894) concluded that the staphylococcus could pass through a healthy kidney. Great disagreement exists also on this question in regard to the tubercle bacillus. Kiellenthermer⁸ (1914) obtained negative biological results in guinea-pigs with the albumin-free urines of thirteen advanced tuberculous patients, whereas three of eleven specimens showing albumin, and taken from similar patients, were positive, although these three patients revealed no post-mortem evidence of genito-urinary tuberculosis. He therefore concluded that tubercle bacilli could not pass through a healthy kidney, but might do so through an impaired organ, although no actual renal tuberculosis was present. Medlar and Sasano⁹ (1924), after examining 30,000 serial sections of the kidneys of twelve tuberculous guinea-pigs and four tuberculous rabbits, formed the opinion that renal tuberculosis was present in every instance in which tubercle bacilli were found in the urine during life, and that there was no evidence to suggest the excretion of these organisms by a normal kidney. Bumpus and Thompson¹⁰ (1930) did not think it was possible for a normal kidney to filter tubercle bacilli from the blood stream into the urine. Rieder¹¹ (1931) found urogenital tuberculosis by operation, or post mortem, in all the eleven instances in which he had recovered tubercle bacilli from the urine. The present writer¹² (1932) found only one urine positive out of seventy-six single specimens from seventy-six patients with advanced pulmonary tuberculosis, and repeated examinations revealed persistent albuminuria in this instance. On the other hand, Foulerton and Hillier¹³ (1901) obtained six positive urines from six tuberculous patients without being able to find any post-mortem evidence of genito-urinary involvement. Churchman¹⁴ (1914), Brown¹⁵ (1915), Geisinger¹⁶ (1917), Caulk¹⁷ (1921), Hobbs¹⁸ (1923), Smith¹⁹ (1924), Ekehorn²⁰ (1923), and many other authorities, including Calmette, have expressed themselves in favour of the possible occurrence of excretory tubercle bacilluria. More recently, Ramel²¹ (1932) formed similar conclusions, believing that he had encountered six instances of transitory tubercle bacilluria; but this authority like some of the others expressing similar opinions, seems to have laid undue stress on normal renal function tests, and it is not clear if he cut serial sections to exclude active genito-urinary tuberculosis.

PRESENT INVESTIGATION

A healthy young adult rabbit excreting normal urine received 66.5 mg. of living human tubercle bacilli intravenously. Twenty-four-hour specimens of urine were tested chemically, microscopically, and biologically from the first to the sixth day inclusive. No abnormality and no evidence of the excretion of tubercle bacilli was found, despite the fact that the guinea-pigs inoculated with the urine were kept alive for several months. The rabbit, killed late on the sixth day, showed no macroscopic

changes, and serial sections of the kidneys failed to reveal tubercle bacilli, although significant collections of round cells were found scattered sparsely throughout these organs.

A second healthy rabbit was given 163 mg. of living human tubercle bacilli intramuscularly, and twenty-four-hour specimens of urine taken from the first to the third day inclusive did not show any chemical, microscopical, or biological abnormality. The animal was killed at the end of the third day. No tubercle bacilli were found in the kidneys; collections of round cells were present, but to a less extent than in the first rabbit.

Ten forty-eight-hour specimens of apparently normal urine from ten guinea-pigs with advanced tuberculosis were tested on ten healthy cavies with three positive results. None of the original animals showed frank tuberculosis of the kidneys microscopically, the brunt of the disease falling on spleen, liver, and lymphatic system. These kidneys, however, could not be considered normal, as they showed degeneration of the tubular epithelium, cellular foci in the interstitial tissue, and other changes which could be attributed directly or indirectly to the toxæmia and other constitutional effects resulting from the presence of tubercle bacilli in large numbers in the other organs. It is noteworthy that the three tuberculous cavies showing tubercle bacilli in the urine exhibited these renal changes more extensively than the remaining seven animals.

As previously seventy-six single samples of urine had been tested from individual patients, it was now thought advisable to do repeated tests on a smaller number of infected people to exclude the possibility of periodicity in excretion. Any patient showing albuminuria or other gross change indicative of renal abnormality was discarded. One hundred specimens of urine were tested biologically, this number being taken from twenty-two patients, ten suffering from advanced pulmonary tuberculosis with positive sputa, and twelve showing surgical tuberculosis in an active state—mainly of the bone and joint variety. Of the hundred samples, eighteen were twenty-four-hour specimens—twelve from the surgical and six from the pulmonary patients. One sample only, the fourth single specimen from a man suffering from advanced phthisis, gave a positive biological reaction, and ten further samples, including one twenty-four-hour specimen, failed to repeat this result, but all the later specimens of urine showed hyaline and granular casts, which had not revealed themselves in the first four specimens: if they had, this patient would not have been included in the investigation. At the time of writing the casts persist, but there is no albuminuria, and the renal function tests are normal.

DISCUSSION

The fact that the rabbit's urine did not show tubercle bacilli after the intravenous administration of such a large dose seemed to afford strong evidence against excretory bacilluria. One must remember, however, that the rabbit has a comparatively high resistance to human tubercle bacilli, and the possibility of rapid destruction of the majority of the micro-organisms by autolysis or other means at once arose; for the collection of round cells in the kidneys appeared to indicate that tubercle bacilli had reached these organs, and the failure to find them suggested that they had been destroyed. Comparatively few tubercle bacilli were found in the spleen and liver, and a large proportion of these organisms were held up in the lungs. Additional experiments confirmed this finding, which was first suggested by Mr. Sworn of Stafford as a possible explanation of the paucity of tubercle bacilli in the abdominal organs and in the arterial blood after intravenous inoculation. Further work is being done on this aspect. The fact remains, however, that although some of the organisms gained access to the general circula-

tion, probably even in greater numbers than in natural human infection, none were excreted in the urine.

The three cavies showing positive urines presented a different set of circumstances. Their urines were tested when they were in an advanced stage of disease caused by an organism to which they are highly susceptible—that is, the bovine tubercle bacillus. Their kidneys, although not obviously tuberculous, were subject to the strains of toxæmia and altered metabolism. Consequently, these results cannot be claimed as evidence of excretory bacilluria by the normal kidney, but can be put forward in support of the idea that tubercle bacilli may escape from a distant focus through this organ when it is impaired from causes other than renal tuberculosis.

The human positive urine can be similarly explained. The casts were few, but they were sufficiently persistent to point to abnormality.

CONCLUSIONS

The results of this investigation do not confirm the opinion that tubercle bacilli can pass through a normal kidney, but they support the contention that these micro-organisms may gain access to the urine in the absence of renal tuberculosis when the normal action of the kidney is impaired, either indirectly as the result of extensive tuberculosis elsewhere or in consequence of independent renal disease.

My thanks are due to Dr. J. Stevenson and Miss M. Mulvein for their kindness in securing the necessary specimens and for supplying the clinical details of the patients, and I acknowledge my indebtedness to Mr. B. R. Sworn of Stafford and Dr. T. V. Cooper for supplying me with some of the original references.

REFERENCES

- ¹ Wyssokowitsch: *Zeit. f. Hyg.*, 1886, i, 3.
- ² Boccardi: *Rif. Med.*, 1888, p. 121.
- ³ Pernice and Scagliosi: *Deut. med. Woch.*, 1892, xviii, 761.
- ⁴ Sherrington: *Journ. Path. and Bact.*, 1893, i, 258.
- ⁵ Cotton: *Kl. Kais. a. d. Wirsensch. zu Wien*, 1895, cv, 453.
- ⁶ Lepper: *Journ. Path. and Bact.*, 1921, xxiv, 192.
- ⁷ Sittmann: *Deut. Arch. f. klin. Med.*, 1894, liii, 323.
- ⁸ Kiellenthaler: *Presse Méd.*, 1914, p. 177.
- ⁹ Medlar and Sazano: *Amer. Rev. of Tuberculosis*, 1924, x, 370.
- ¹⁰ Bumpus and Thompson: *Amer. Journ. Surg.*, 1930, p. 545.
- ¹¹ Rieder: *Schweiz med. Woch.*, 1931, j, 61, 4 vom 24. 1.
- ¹² Menton: *British Medical Journal*, November 26th, 1932.
- ¹³ Poulerton and Hillier: *Ibid.*, 1901, ii, 774.
- ¹⁴ Churchman: *Amer. Journ. Med. Sci.*, 1914, cxlviii, 722.
- ¹⁵ Brown: *Journ. Amer. Med. Assoc.*, 1915, lxiv, 886.
- ¹⁶ Geisinger: *Amer. Journ. Med. Sci.*, 1917, cliv, 883.
- ¹⁷ Caulk: *Journ. Urol.*, 1921, vi, 97.
- ¹⁸ Hobbs: *Tubercle*, 1923, v, 57, 105.
- ¹⁹ Smith: *Edin. Med. Journ.*, 1924, xxxi, 125.
- ²⁰ Ekehorn: *Tubercle*, 1923, iv, 393.
- ²¹ Ramel: *Zeit. f. Urol.*, 1932, xxvi, 377.

With the title of "What the City is Doing for the Public Health," Dr. G. H. Masson, medical officer of health for Port-of-Spain, Trinidad, has published a health week address, delivered at the Royal Victoria Institute, Port-of-Spain, on October 2nd, 1933. It reviews the various activities of the municipal council, including scavenging, removal of house refuse, water supply, sewerage and sewage disposal, slaughtering, markets, and food protection. The lack of attention paid to tuberculosis comes in for acid comment, most of the education work in respect of its prevention being undertaken by the Association for the Prevention and Treatment of Tuberculosis, with the tuberculosis dispensary as its centre of activity. There are tuberculosis wards at the Colonial Hospital, which play a useful part by housing open cases, but there is no sanatorium for the early and curable cases. The prevalence of this disease is attributed to the extent of bad housing and overcrowding. A tabulated comparative summary of vital statistics for the years 1922 and 1932 reveals the progress in the diminution of disease which has been achieved, and this simple and humorously written statement of the work of the public health department should enable future advances to be made, thanks to the creation of a more interested and more instructed public outlook.

Clinical Memoranda

RUPTURE OF THE DUODENUM

The following case would appear to be worthy of record in view of the rarity of recovery after this lesion. According to Schumacher¹ the mortality of this injury is 90 per cent., and Miller² has found only one successful case of operation for extensive rupture of the third part of the duodenum. Doubtless other cases of recovery have been reported since, but further references are not available at the present time.

A girl, aged 20, was involved in a motor accident on the night of July 9th, 1933. On admission to hospital she was found to be suffering from severe shock, and showed signs of a grave intra-abdominal injury; she had also sustained a severe wound of the left thigh, as well as multiple bruises and abrasions. It was decided to operate without delay, and, rigidity being most marked in the right upper quadrant of the abdomen, laparotomy was performed through a right upper paramedian incision with open ether anaesthesia. The peritoneal cavity was full of blood, and on further exploration a large rupture was found in the third part of the duodenum. The tear was approximately $1\frac{1}{2}$ inches long, diagonal in direction, and ran round the upper surface of the viscus. Duodenal contents were free in the peritoneal cavity, and there was also a small tear of the pancreas with much haemorrhage into all the surrounding tissues and into the lesser sac of the peritoneum. The tear in the duodenum was sutured transversely in two layers, the peritoneal cavity mopped as dry as possible, and drainage tubes inserted—one in the lesser sac through the operation wound, one from the area of rupture through the right flank, and one in the pelvis through a suprapubic incision. The wound was then closed, and the patient, who had received intravenous saline throughout the operation, was given a blood transfusion of 500 c.cm. The wound in the leg was cleaned and plugged with flavine, and paraffin and antitetanic and *B. welchii* serum were administered. The patient stood the shock of the operation well. Eserine, 1/30 grain, and 1/2 c.cm. pituitrin were given alternately every three hours until the bowels acted with an enema on the second day.

The following day the patient's condition was reasonably satisfactory, all tubes draining blood-stained serum freely. On July 12th the discharge from the lesser sac and the pelvis began to decrease rapidly, but that from the tube in the flank became more profuse and lighter in colour. During the next two or three days this discharge was so copious that special drainage measures were required, and a continuous suction apparatus was devised. The discharge showed the appearance and characteristics of pancreatic fluid, but little bile was present. On the 13th the patient became jaundiced, but this passed off in two or three days. On the 17th the discharge in the flank began to lessen, and by the 22nd had almost ceased, but signs of a duodenal fistula appeared at the drainage hole in the operation wound. This flow continued for some days, but eventually dried up. On the 20th a serum reaction with marked urticaria occurred.

The patient manifested an intermittent pyrexia for over a month, but a good deal of this could be accounted for by the condition of the wound in the thigh, which suppurated. This gradually cleared up, however, and the patient was discharged from hospital on August 22nd suffering from occasional slight attacks of indigestion, but otherwise apparently well.

I am indebted to the Director of Medical and Sanitary Services, Kenya, for permission to publish this case, and to Dr. J. A. Carman for valuable assistance in the contrivance of various types of drainage apparatus.

REFERENCES

¹ Schumacher: *Beit. z. klin. Chir.*, 1910, lxxi, 482.

² Miller: *Ann. of Surg.*, November, 1916, p. 550.

Nairobi, Kenya. C. VINEY BRAIMBRIDGE, F.R.C.S.Ed.

TRAUMATIC EXTRAPERITONEAL RUPTURE OF THE DUODENUM

Traumatic extraperitoneal rupture of the duodenum is a rare and dangerous abdominal catastrophe.¹ Thus out of 132 cases of traumatic intestinal rupture it was found that in twenty-three the duodenum was affected; in four only of these was the lesion extraperitoneal, and in seven the injury was entirely overlooked at operation. The prognosis is particularly grave²; only two out of eighty-five recorded cases recovered. Although the condition is well known and its mechanics thoroughly understood, yet its precise diagnosis is a matter of great difficulty. The following case, therefore, needs no further introduction.

L. T., a checker, while working behind his own motor lorry, was struck in the back by another motor lorry and pinned between the two for about five minutes. He was brought into the casualty department in a condition of profound shock, and complained of severe boring pain in the upper part of the right side of his abdomen passing through to the back. His pulse was 72, respiration 22, and temperature 97.6° F. His breathing was entirely thoracic, and he was rigid all over the right side of the abdomen and exquisitely tender and hyperaesthetic in his right hypochondrium and right loin. There was no diminution of liver dullness, and his left flank was resonant, but his right flank was dull—non-shifting. An examination of his urine did not reveal any abnormal constituents. The patient was treated for shock, placed under continuous observation, and a half-hourly pulse record taken. A steady rise in his pulse rate to 96, within two hours, indicated that surgical intervention was here imperative.

The abdomen was opened by a right paramedian incision. No escape of gas occurred, and no excess of fluid was seen in the peritoneal cavity. No lesion was detected in any of his abdominal or pelvic viscera, but a haematoma about two inches in diameter was seen behind the mesentery. The retroperitoneal region was therefore explored. The peritoneum was incised just to the right of the transverse colon, and this was then turned back. The retroperitoneal tissues were revealed bathed in blood and bile, and the second part of the duodenum was seen to be severed transversely for about seven-eighths of its diameter; the tear was completely extraperitoneal. The blood and bile were swabbed away, and the duodenum sutured end to end. The abdomen was then closed, Morrison's pouch being drained by a tube passed through the right loin. Recovery was complicated by collapse of the base of the right lung and right haemothorax—both the result of the accident. These conditions resolved under careful nursing. The odour of the slight discharge after a few days pointed strongly to a pancreatic leak; it was therefore examined for pancreatic ferment and bile.

Report.—Small amount of bile present.

Diastase: 50 units.

Trypsin: very small amount present.

Cultures: enterococci and *B. coli*.

The discharge gradually ceased, and henceforth progress was rapid.

The distribution of the pain was possibly due to the involvement of the pancreas (having regard to pancreatic lesions such as acute pancreatitis and adherent peptic ulcer). However, the intimate anatomical relationship of the two organs renders it highly improbable that the pancreas could escape involvement by trauma sufficiently violent to tear the duodenum. Hence the radiation of the pain as described above is of important diagnostic significance. The case also illustrates the value of a rising pulse rate as the criterion of surgical intervention in the treatment of the "acute abdomen," and the paramount importance of regarding all the findings in an exploratory laparotomy with due gravity and

¹ Berry and Giuseppe.

² Sherren and Walton in *Choyce's System of Surgery*.

proportion ; in this case the important finding was that of a retroperitoneal haematoma in the duodenal region.

My thanks are due to my chief, Mr. C. Jennings Marshall, M.D., M.S., F.R.C.S., for his kindness in allowing me to write this note, and for his valued help and criticism in its preparation.

M. BLASKER, M.R.C.S., L.R.C.P.
House-Surgeon, Charing Cross Hospital.

AN UNUSUAL NEPHRECTOMY

The following case seems to be of much interest, and may be considered worthy of record.

The patient, an unmarried woman aged 45, first consulted me in the early part of November, 1933. She complained of pains in the lumbar region, which had been troubling her for two or three weeks and were increasing in intensity, but said that otherwise she felt perfectly well. On examination there was a large, well-defined cystic goitre, from which she stated she had suffered for eighteen years (ever since a pregnancy), and which had recently started to give rise to slight obstructive symptoms. There was also a marked spinal curvature, with a convexity on the left side, most prominent in the lower dorsal region. On abdominal palpation a large, freely movable, and somewhat tender swelling could be felt in the left iliac fossa. This had been increasing in size at a considerable speed, according to the patient, who had not mentioned its existence prior to the examination. A diagnosis of ovarian cyst was made. After some consideration as to whether it would be wiser to deal first with the abdominal condition or with the neck, it was decided to open the abdomen.

On November 20th, under avertin and ether anaesthesia, the abdomen was opened by a mid-line incision, and a large cystic swelling was revealed, which lay partly in the pelvis and partly in the lower left abdomen. On examination this proved to be not an ovarian cyst but a cystically degenerated kidney, which had been forced forward and downward by the spinal curvature. Owing to the curvature and deformity it was quite impossible to consider removing the kidney by the usual extraperitoneal method, for the lower part of the spinal column lay, owing to its rotation, directly behind the hilum and vessels: it was therefore decided to remove the kidney transabdominally. The same cause that prevented the reaching of the vessels from the retrolateral position made them more accessible from the abdomen, and they were accordingly ligated and the kidney removed through the abdominal incision. Two large calculi were completely obstructing the left ureter about three inches below the pelvis of the kidney, and these were removed. A long drainage tube was then inserted and brought out through the upper part of the wound, and the wound closed in the usual manner.

Except for a somewhat troublesome cough (due largely to the condition of the neck), which on one occasion caused a slight protrusion of omentum through the drain wound, the patient has made an uneventful recovery, and is now quite convalescent and summoning up sufficient courage to have her neck operated on for the cystic goitre.

On examination of the specimen the kidney showed a very small portion of undegenerated tissue at the lower pole, with enormous distension of the pelvis and practical disappearance of the calyces, the whole of the remaining part showing a complete cystic degeneration secondary to the obstructive stones in the ureter. Interesting features arising in the case were: (1) how this woman, who stands about 5 feet, managed to have a full-term child eighteen years ago when suffering from the spinal deformity and pelvic inclination, which she states were as bad at that time as they are now; and (2) how the kidney had reached this condition without causing more severe symptoms.

I am much indebted to Dr. F. B. Oliphant, C.M., and to Dr. G. W. Oliphant for their assistance.

JOHN C. T. SANCTUARY, M.B., B.Ch.,
Honorary Surgeon, Bridport Hospital.

Reviews

PLUMBISM AND NEPHRITIS

*Chronic Nephritis and Lead Poisoning.*¹ by Dr. L. J. JARVIS NYE, is a carefully prepared, well-thought-out, and suggestive book,¹ one which will repay the reader. Although the subjects dealt with mainly concern Australia, the treatise is yet interesting and helpful to all. The association of plumbism and nephritis on that continent has long been known, and has been attributed to the painting of the verandas of the wooden houses with white lead paint. In Queensland 1,250 persons died from nephritis between 1917 and 1926; 706 of these were females, and 544 were males, the highest incidence occurring in the years between 20 and 30. In New South Wales for the same period the mortality rates were 539 males and 556 females, whereas in South Australia the numbers were 30 and 120 respectively. As the number of deaths under 40 years of age was more than three times greater in one State than the others, the question has been raised as to the harmful influence of its more tropical climate, or of the operation of a toxin upon susceptible persons. It is not uncommon to find a whole family affected by nephritis and its members dying one by one, a circumstance which has suggested the presence of some factor operating in childhood, and exercising a sclerosing influence which increases with the passing of the years. The interstitial type of nephritis is the more common, and it seldom shows itself till adolescence. Although many of the children are not robust, are stunted, and have not the playfulness of those who are healthy, they seldom require medical attendance until adolescence is reached, when there are complaints of failing eyesight, nose bleeding, and severe headache. Albumin may then be found in the urine, the blood is deficient in haemoglobin, and the blood pressure is raised. Vomiting is a common symptom, and is attributed to a vicarious elimination of urea by the gastric mucous membrane, since it is followed by a marked reduction in the amount of urea in the blood. Vomiting, recurrent and uncontrolled, is usually a precursor of death. At necropsy the kidneys are found to be contracted, the capsule firmly adherent, and on microscopical examination there is a widely diffused interstitial fibrosis with degenerated glomeruli.

Discussing the aetiology of nephritis, attention is drawn to the influence of micro-organisms or their toxins, also to chemical poisons. When the kidney disease develops during convalescence from an acute infection, the probability is that it is due to a bacterio-toxin of streptococcal origin, frequently, in the case of children, the *Streptococcus scarlatinae*. It has for long been a matter of debate as to how far nephritis occurring after 30 years of age is a repercussion of kidney trouble which had been present in childhood and due to scarlet fever. Nye's experience does not lend weight to the supposition. There is no definite information that post-scarlatinal nephritis is a forerunner of adult nephritis.

In studying the literature of lead poisoning there is little reference to children suffering from plumbism in our own country, but, three decades ago, J. A. Turner drew attention to the prevalence of the malady in the children of North Queensland: 428 cases had been treated during 1917-26 in the Hospital for Sick Children in Brisbane. As regards plumbism Nye's opinion is that there is a personal as well as a familial susceptibility to the toxæmia, also that seasonal influences operate, as

¹ *Chronic Nephritis and Lead Poisoning.* By L. J. J. Nye, M.B., C.M. Sydney, Australia: Angus and Robertson, Ltd. 1933. (Pp. 145; illustrated. 12s. 6d.)

shown by the largest number of cases occurring in the warmest months of the year. The physical signs of plumbism in children differ from those in the adult, especially as regards paralysis. In adults it assumes the form of "drop-wrist," but in children it attacks mainly the lower extremities, both limbs being affected, and when the upper limbs are involved the paralysis is always more pronounced in the feet. The extensor muscles of the toes and the peroneal muscles are the more involved, giving rise to "toe-drop," but the tibialis anticus and gastrocnemius do not always escape. When in children the upper extremities are affected the muscles involved are, as in the adult, the extensors of the fingers and of the wrists, and nearly always bilaterally. Cerebral symptoms are rare, although the retina and ocular muscles may become affected. J. L. Gibson has advanced the opinion that the papilloedema of the retina and paralysis of the ocular muscles are caused by increased intracranial pressure, and this view is strengthened by the good results which have followed lumbar puncture. Whether the paralysis of the extremities in lead poisoning is due to anatomical changes in the spinal cord, to peripheral neuritis, or to changes in the muscles is still an unsolved problem.

As regards the frequency of plumbism in children in Australia, there is little doubt of it being the result of the type of paint used for covering and protecting the verandas of wooden houses. White lead is the pigment mostly used, and in warm weather the surface becomes chalky and dusty. Children frequently suck the raindrops on the railing, or the dust penetrates underneath the finger-nails. Many of the children are nail-biters or thumb-suckers, and as two or three children in one family may die from lead poisoning it is difficult not to incriminate the paint. Attempts are being made to find a substitute. A titanium compound is said to possess equal covering power to lead carbonate, and to be capable of similarly resisting the influences of the weather. Time and trial alone will show whether all the advantages claimed for it can be substantiated, and particularly its freedom from harmful influences.

THOMAS OLIVER.

SURGERY OF THE THORAX

The thoracic cavity is the last of the great body spaces to be invaded by the surgeon, and the increasing extent of the practice of thoracic surgery is evidence of its relative success. Textbooks on this subject in the English language are few, while the literature in the form of papers is rapidly assuming formidable proportions. It was necessary, therefore, that an attempt should be made to sift this material and to assess what will stand the test of time and what is ephemeral. This Mr. HOLMES SELLORS has set himself to undertake, as he states in the introduction to *Surgery of the Thorax*.² A wide experience is one of the essentials for this task, and it might be debatable whether the relatively small practical experience of the author (which he frankly acknowledges) is sufficient for a review of this type. On the whole, however, good judgement is shown in the general description of well-tried measures and the application of essential principles.

In certain respects the author deviates from the straight and narrow path of orthodox teaching, such as when he states that lipiodol will enter the communicating bronchus of an abscess the opening of which is of

sufficient size to allow pus to pass out on coughing. This is definitely against general observation; and in the acute and subacute abscesses the granulation tissue in the bronchus is the chief barrier to the entrance of the oil, but does not prevent pus slowly leaking out as the tension in the abscess increases. In the really chronic abscess and the long-standing bronchiectatic cavities the epithelium of the bronchial tubes spreads into the cavities and allows free communication, and into these lipiodol will pass relatively freely. We should have liked to see more emphasis laid upon the value of intercostal drainage in selected cases of streptococcal empyema, and especially in children, either as a temporary measure or in many cases as the sole surgical procedure. While the value of bronchoscopy in the cure of acute pulmonary abscess may be debatable, as a proportion of such abscesses will resolve spontaneously after rupture into a bronchus, we cannot agree with the author when he declares that "bronchoscopy is of comparatively little value in lung abscess when compared to bronchiectasis." In fact, it is doubtful if bronchoscopy ever cures a patient with established bronchiectasis—apart from the variety which is secondary to the presence of a foreign body. Although temporary alleviation is common, relapse is frequent soon after the end of the course of treatment.

In addition to diseases of the lung there are short chapters on the heart and pericardium, the diaphragm, and the oesophagus. The illustrations are clear and well reproduced, and the presentation and printing make for easy reading.

PHYSICAL METHODS OF TREATMENT

Dr. HEINRICH WOLF must have worked with rare perseverance and energy to have written his *Textbook of Physical Therapy*³ during the busy years of medical practice. Apart from chapters on special subjects contributed by colleagues, the book is based entirely on the author's personal experience in the various branches of physical medicine during the last thirty years. Its purpose is to consider the clinical aspects of diseases from the physical therapists' point of view, and to show how to select appropriate treatment for individual cases at different stages of disease. The physical therapist is enjoined to regard himself primarily as a physician, and to adapt his treatment to the physiological needs of his patient, avoiding the dangers of over-specialization. A book written from first-hand experience is almost always fresher and more spontaneous in style than one compiled from other sources, but Dr. Wolf's book is an exception to this; and the reader may find it sometimes laboured. But the field covered is wide, and the task of surveying it must have been arduous.

Part I is concerned with theory and principles, and describes the different kinds of physical treatment, their effects, and the technique of their application. In the chapter on electrotherapy the author's references to the uses of sinusoidal currents and Schnee baths suggest that in his hands these measures have not proved as useful as other workers have found them. Diathermy is treated briefly in this section, but its special uses are considered later in relation to genito-urinary diseases, and in the chapters on minor electrosurgery and diseases of the lower respiratory tract. In the chapter on massage four conditions are mentioned which the author finds amenable to treatment by osteopathic methods. Unfortunately for the reader the successful manipulations are not described,

² *Surgery of the Thorax*. By T. H. Sellors, M.Ch., F.R.C.S. Preface by R. A. Young, M.D., F.R.C.P. London: Constable and Co., Ltd. 1933. (Pp. xxiii + 519; 140 figures, including 11 plates in colour. 22s. 6d. net.)

³ *Textbook of Physical Therapy*. By H. F. Wolf, M.D. With a foreword by L. F. Barker, M.D., LL.D., and chapters by W. Bierman, M.D., A. A. Lillen, M.D., F. Jourard, M.D., and M. C. L. McGuinness, A.B., M.D. London: D. Appleton-Century Company. 1933. (Pp. xxviii + 409; illustrated. 21s. net.)

on the ground that it is impossible to give satisfactory descriptions of them.

The second part of the book, on the practice of physical therapeutics, commences by dealing at some length with fractures and describing them individually, whether or not there is need for special modifications in their physical treatment. Much of this could, with advantage, be omitted, so reducing the weight of the book, which is uncomfortably heavy to hold. While mentioning the format of the book, the good printing deserves comment, but nothing is gained by including in the text diagrams such as that of the microcephalic in Fig. 45. Part II continues with accounts of the application of physical measures to diseases of the different systems of the body, conditions not included among these being considered together in a later chapter. The account of the therapeutic use of hyperthermia is interesting, particularly in relation to the physiological changes taking place under the influence of heat. The final chapter, contributed by a gynaecologist, strikes a depressing note, and one feels that this writer has become a misogynist, or has never met a normal woman. On page 358 appears the statement: "A woman is as well as her ovaries permit her to be"; and on the next page: "A woman has been defined as a constipated being with a pain in her side." But the value of physical methods in preventive medicine is realized, though not expressed very clearly. For instance, on page 359, we read: "To properly insure the girl and woman against the wear and tear of life to which she is apparently destined, physical medicine should be applied to both parents before and after marriage."

As a textbook the value of the present volume would have been increased if Dr. Wolf had departed from his rule of not often quoting other authors, and had appended a list of references or bibliography. While not contributing much that is original to the study of physical therapeutics, it is an honest attempt to present a comprehensive account of the subject, in the hope that this will lead to a wider understanding of physical medicine and a more rational employment of physical methods of treatment.

EFFECTS OF UNEMPLOYMENT

Generalizations as to the physical, psychological, and social effects of widespread unemployment, and statistics and averages as to its extent and incidence, require to be corrected, or at least supplemented, by a study of individual cases and of small communities in which it is more than usually prevalent in order to obtain a true picture or conception of the situation. Unemployment is not merely an economic problem, but a human experience. As we pointed out in a leading article on "Children and Unemployment" in the *Journal* of November 25th last (p. 981) the fully authenticated statement that "the harmful effects of unemployment have not been widespread or severe" in relation to school children, is compatible with the very real existence of malnutrition and other conditions detrimental to health in disquieting numbers of actual cases dealt with by the Save the Children Fund. So, though a steady diminution of the numbers of unemployed persons is encouraging, and a certain comfort may be derived from a knowledge that their unemployment is continuous over any long period in only a minority of instances, and though there is no reason to question Sir George Newman's statement that "there is at present no available medical evidence of any general increase in physical impairment, in sickness, or in mortality as a result of economic depression or unemployment," we require, in order fully to appreciate what is actually happening, a knowledge of the history

and circumstances of individual cases, and of the personal results on body, mind, and character.

This constitutes the value of such a book as *Memoirs of the Unemployed*.⁴ It is compiled and edited by LANCE BEALES and R. S. LAMBERT, and purports to give "first-hand accounts, by the workless themselves, of the physical and mental effects of prolonged unemployment." There are two appendices, useful but of no very outstanding value, by Ruth Bowley, on "How the Workless Spend their Money," and by Dr. Morris Robb on "The Psychology of Unemployment from the Medical Point of View." The former gives details of the budgets of five families, and discloses, in the light of the recent British Medical Association *Report on Nutrition*, a not very judicious expenditure. The latter appendix adds a short account of seven individual cases to the twenty-five fuller autobiographical narratives which constitute the body of the book. These are of a varied character, both as to nature of employment, position in society, age, circumstances, and effects. They bear every mark of authenticity, and have been judiciously collected and arranged. They are simple and brief "memoirs," and, as might be expected, disclose in some instances shortcomings of character as well as the heroic endurance of sheer misfortune and suffering, and even in a few cases a surprising continuance of optimism and confidence. They may, with advantage, be read by all those whose daily life does not bring them into contact at first hand with examples of a similar nature.

RECIPES FOR CHILDREN

The medical officers of the Chelsea Babies' Club have written a useful little book, entitled *Recipes for Food and Conduct*,⁵ dedicated to Dr. Eric Pritchard, and containing a great deal of sound common sense on diet, clothing, sunshine, fresh air, and other matters of importance to doctors and mothers. It is refreshing to find in this work a healthy condemnation of patent foods, together with a warning about the use of synthetic vitamin preparations: this is certainly needed to counteract the influence of commercial publicity campaigns. The ingenious method of allowing the flat-dweller's child to get fresh air by means of a wire cage fitted outside the window should prove popular when more widely known, while the section on artificial feeding—better called unnatural feeding—contains the wise recommendation that all milk, of whatever grade, should be brought to the boil. The same section records the sensible dictum, "It is impossible to feed babies artificially by a fixed formula," a point which can scarcely be emphasized enough. Written in clear language, this little book can be warmly recommended to all interested in babies.

Miss MARGARET BUCHANAN's little book on *Nursery Nourishment*,⁶ with a foreword by Dr. Robert Hutchison, can also be recommended as a useful means of finding an answer to the ever-recurring nursery problem of "what to give them." The author seems particularly strong on puddings, and shows a real understanding of children in her recipes for boiled rice pudding, which, when cold, is to be beaten up with cream and served in custard glasses with chopped cherries on top.

⁴ *Memoirs of the Unemployed*. Introduced and edited by L. Beales and R. S. Lambert. London: Victor Gollancz Ltd. 1934. (Pp. 287. 5s.)

⁵ *Recipes for Food and Conduct*. By H. Waller, N. Langdon Lloyd, J. Gibbens, and C. Grosvenor Millis. London: The Babies' Club, Stanley Cottage, 35, Danvers Street, Chelsea. (Pp. 63. 2s. 6d.)

⁶ *Nursery Nourishment*. By M. N. Buchanan. London: Edward Arnold and Co. 1933. (Pp. 104. 3s. net.)

Notes on Books

To help the mother of a blind baby in her difficult task of bringing up the child satisfactorily the National Institute for the Blind has issued a special bulletin for her guidance.⁷ The pamphlet is intended for those cases where the baby, instead of being sent to a Sunshine Home, is reared at home. Though, apart from the sense of sight, blind babies and seeing babies are physically and mentally the same, unexpected differences occur in behaviour. It has been observed, for example, that many blind children do not crawl before they begin to walk. Things beyond their reach have at that stage no attraction for them. Picture books mean nothing to the blind child, but it is normal in its love for the jingle of nursery rhymes. The mother is recommended to pay particular attention to those with action, such as "Pat-a-cake" and "Ride a cock-horse." A blind child is inclined to develop mannerisms unknown among sighted children: holding the head down, pushing out a foot to feel the way when walking, and so on. Such mannerisms, which must be carefully checked, are generally due to lack of confidence.

Sir Leonard Rogers contributes an introduction to *Unclean, Unclean!* by PAOLO ZAPPA⁸ (translated from the Italian by Edward Storer), and thus corrects a sombre story of the horror of leprosy in Brazil by showing how this disease is losing its terrors thanks to modern methods of treatment. The long-drawn-out misery of segregation, as pictured in the book, is now fast fading as cure is shown to be increasingly possible. In the future this pathetic tale may have a useful part to play, recalling a time of hopelessness that is at last gradually coming to an end. The terrible mental and physical sufferings of the advanced leper are delineated, and may lead some to understand better the great work that has been undertaken by the British Empire Leprosy Relief Association. The exaggerated fear of infection still exists, and hinders progress. It is well, therefore, that such a book as this, with its portrayal of incidents and facts and the illuminating commentary thereon by a great leprosy expert, should be available for propaganda work, as well as for those who can appreciate a record of suffering and of noble self-sacrifice.

The book entitled *Genealogy of Love*,⁹ which has been translated from the German *Stammesgeschichte der Liebe*, contains a readable account of the development of sexual life from amoeba to man, with special reference to savage tribes. The work is illustrated by numerous excellent photographs of mating in the lower animals.

*The Official Year-Book of the Scientific and Learned Societies*¹⁰ has attained its fiftieth year of publication, and the event is marked by a foreword to the latest issue by Sir Richard Gregory, the editor of *Nature*. In this foreword Sir Richard calls to mind the many scientific subjects—among them biochemistry, mycology, x rays, tropical medicine, and hygiene—that have given rise to new societies during the last fifty years, all of which are included in the year-book. He expresses the hope, which we heartily endorse, that the publishers will continue to render to science the service they have done so efficiently by publishing this valuable work of reference.

The thirty-fifth annual issue, for 1934, of *Mathiesons' Handbook for Investors*¹¹ gives a concise record of Stock Exchange prices and dividends of selected securities for the past ten years.

⁷ *The Care of the Blind Baby*. N.I.B. Bulletins No. 6. With an introduction by Eric Pritchard, M.D. London: National Institute for the Blind, 224-8, Great Portland Street, W.1. 1934. (Pp. 20. 3d.)

⁸ *Unclean, Unclean!* By Paolo Zappa. London: Lovat Dickson, Ltd. 1933. (Pp. 191. 7s. 6d. net.)

⁹ *Genealogy of Love*. By C. Thesing, M.D. Translated by Eden and Cedar Paul. London: George Routledge and Sons. 1933. (Pp. x + 283. 15s. net.)

¹⁰ *The Official Year-Book of the Scientific and Learned Societies of Great Britain and Ireland*. 1932-3. Fiftieth annual issue. London: Ch. Griffin and Co., Ltd. (Pp. 171. 10s. net.)

¹¹ *Mathiesons' Handbook for Investors for 1934*. London: F. C. Mathieson and Sons. (Pp. 347. 5s. net.)

We have received the first part of a work on Chinese drugs,¹² by Dr. TSUTOMU ISHIDOYA of the Pharmacological Institute of the Imperial University of Keijo. The need for such a publication is shown by the fact stated in the preface by Professor Noriyuki Sugihara, that in spite of an extensive literature dealing with the numerous Chinese drugs in existence, no modern work on the subject has hitherto been available for European research workers. The present volume gives a concise account, in alphabetical order, of drugs from China, Manchuria, and Korea, arranged in five sections according as they are derived from herbs, leaves, flowers, seeds, or fruits. A photograph of each plant from which the drug is derived is inserted in the text.

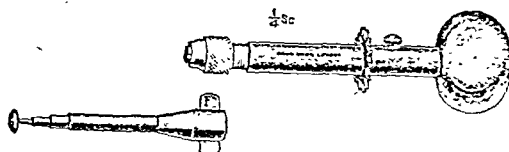
¹² *Chinesische Drogen*. By Tsutomu Ishidoya. I Teil. 1933. Keijo: Pharmakologischen Institut der kaiserlichen Universität. (Pp. 138; 171 figures.)

Preparations and Appliances

A FIDDLE BRACE

Major MEURICE SINCLAIR, C.M.G., R.A.M.C. (ret.) (London, W.1), writes: On first inspection the fiddle brace illustrated herewith may appear to have been published before, and this modification is also made for me by Messrs. Down Bros., Ltd., 21, St. Thomas's Street, S.E.1. While similar to the one published, which has an ordinary chuck that will only fit a slight variance of sizes of drill points, the same principles of drilling are maintained. It has a good uniform rate of rotation, is powerful, drills a clear-cut cylindrical hole, and, moreover, is easy to control and does not obstruct the line of vision. It is supplied with six interchangeable chucks of graduated, various sizes, and a "bullet," which are not here illustrated.

This instrument is fitted with a chuck (as in Figure 80 published in my book *Fractures*), which will hold almost every form of drill point for hand drilling, and can now be made to



hold the "Kirschner's thread" as well, by screwing off the cap, and placing a chuck which suits the "thread." This thread has a pyramidal drilling point at one end, and is squared at the other in order to allow it to be made fast when in the chuck by gliding the point of the thread through the "telescopic housing" and securing the squared end, which is accomplished by screwing its butterfly nut down until it jams the thread. Now extend the telescope to such a length as to allow about half an inch of the thread to be seen beyond the housing. Having decided the direction, the trajectory of the thread should be visualized, and where its exit is going to be. Gently press the point through the skin on to the bone; take your bearings again, holding the ball of the brace in one hand, and by fiddling on the cogwheel with the other it is remarkable how easily the thread will pass through the bone, provided the thread revolves quickly under very light pressure and that there is no alteration in the direction of its path. While the thread progresses through the bone the telescope becomes shorter and shorter. Steel threads (2 mm. or 1 mm.) are preferable to the so-called stainless variety. There are, so far as I know, only two metals which remain stainless when they are moistened, and stainless steel is certainly not one of them. After the thread has been fitted into the instrument the whole can be sterilized.

ACRIFLAVINE CREAM

Burnol acriflavine cream (Messrs. Boots) contains about 1 per 1,000 of acriflavine dissolved in a base of which the chief ingredient is liquid paraffin. It is intended as an antiseptic but soothing application suitable as a domestic and first-aid remedy in a wide variety of minor conditions. The valuable antiseptic properties of acriflavine are well known, and hence the cream appears to be very suitable for the uses for which it is recommended. The cream is put up in tubes, which is a form particularly convenient for first-aid applications.

THE ROYAL COLLEGE OF SURGEONS

HUNTERIAN FESTIVAL

The Hunterian Festival at the Royal College of Surgeons of England was held on Tuesday, February 13th, in commemoration of the two hundred and sixth anniversary of the birth of John Hunter. In the afternoon Sir Cuthbert Wallace delivered the Hunterian Oration, which is published in full in the opening pages of this issue. In the evening a banquet was given in the College Library, the company being received by the President, Sir Holburt Waring, and the Vice-presidents, Professor G. E. Gask and Mr. Wilfred Trotter.

THE PRESIDENT'S REVIEW

After the loyal toasts had been honoured the President, in proposing the time-honoured toast, "To the Memory of John Hunter," briefly reviewed some of the important matters which had occurred in connexion with the College since the last Hunterian Festival two years ago. The outstanding event had been the building and completion of the Buckston Browne Surgical Research Farm at Downe (adjoining the former home of Charles Darwin) in Kent. This research institution had been founded and endowed by Sir Buckston Browne, who made a gift of £100,000 for the purpose. By the munificence of the Leverhulme Trustees, Sir Louis Baron, and the late Lord Melchett four research scholars have been appointed to work at Downe or at the research laboratories of the College in Lincoln's Inn Fields, in addition to the College research scholar. Much valuable original work had been done on surgical shock by Mr. O'Shaughnessy and Dr. Slome, who had reinvestigated the whole problem. Other important researches were being carried on in connexion with certain aspects of thoracic and abdominal surgery by Messrs. Knight and O'Shaughnessy, and on bone formation by Messrs. Willis and Thompson. In addition to these researches Sir Charles Ballance was continuing his very important work on the regeneration of nerves. Thus it would be seen that the Royal College of Surgeons was taking its proper place in surgical and biological research. Recently the Proffit Trustees had allocated to the College £10,000, to be spent at its discretion on cancer research, and two cancer studentships of £500 per annum for five years, with an additional £200 per annum to each student to enable visits to be made to other seats of cancer research. The College had subsidized the radium beam therapy research at the Radium Institute, and a research on the treatment of cancer by massive x-ray radiation at the Mount Vernon Hospital. Speaking of recent changes in the senior personnel of the administrative and scientific staff of the museum, the President said that Sir Arthur Keith had resigned the post of Conservator after twenty-five years' service, and had become Master of the Research Farm at Downe. Mr. R. H. Burne, their invaluable physiological curator, had also resigned, and Mr. Cecil Beadles, the pathological curator, had died. To all three the College owed a great debt. Dr. John Beattie—associate professor of anatomy at McGill University, Montreal—had been appointed Conservator of the museum and director of scientific research; the other posts had not yet been filled.

In proposing the health of the guests Professor GASK welcomed first the eleven Hunterian Trustees who were present that evening, and then in a few complimentary words the various groups of other distinguished visitors—academic, legal, civic, medical, and administrative. He specially greeted Bishop Paget, whose father gave the Hunterian Oration fifty-seven years ago.

IDEALS FOR THE POST-GRADUATE SCHOOL

SIR AUSTEN CHAMBERLAIN, in responding to the toast, suggested that the reason for asking him to do so was the fact that he was chairman of the Governing Body of the British Post-Graduate Medical School "which we are now bringing to birth." In this, as in other matters, he

said, the University of the capital city of the Empire had a special part to play under the conditions of to-day. Experience had shown that co-education of the medical graduate and undergraduate in the same institution was not practicable, and he and his colleagues had come to the conclusion some time ago that they must create a new school which would build up its own traditions in line with those of the great and ancient medical schools of the metropolis, and in harmonious co-operation with the Royal Colleges. One of the obvious tasks ahead of the British Post-Graduate Hospital and Medical School at Hammersmith would be to give refresher courses to practitioners who had lost touch with the great centres where experience of new things was easily come by. That was an urgent need, but not the most important function of the school as he saw it. His ideal was that it should become the home and temple of British contributions to medical science in all its branches; the staff must include the very best men in each line of work, who would regard this appointment as the blue ribbon of the teaching profession in medicine. The school ought also to be a place of research. In these ways London would enhance its position as a great medical centre, keeping in the forefront of progress in medicine and surgery and drawing to it graduates from all parts of the world.

The health of the Hunterian Orator was proposed by Sir ARTHUR STANLEY, treasurer of St. Thomas's Hospital, who spoke in glowing terms of Sir Cuthbert Wallace's services in peace and in war, and of his great and beneficent influence upon the hospital and medical school to which he had devoted most of his life. The toast was received with enthusiasm, and Sir CUTHBERT WALLACE acknowledged it in a few sentences obviously spoken from the heart.

In the Hunterian Museum and other parts of the College a number of exhibits, specimens, and books, etc., had been laid out for the occasion. These included books relating to John Hunter and to recent discoveries in medicine and surgery, and specimens connected with pathology, anthropology and comparative anatomy; experimental surgery, and the history of medicine.

The company included, in addition to those whose names have been mentioned: Viscount Leverhulme, Lord Dawson of Penn, P.R.C.P., Lord Lamington, Lord Rutherford, Lord Moyrihan, Lord Riddell, Lord Stanmore, Lord Horder, Sir John Bland-Sutton, Sir Farquhar Buzzard, Sir George Newman, Sir William Bragg, Sir D'Arcy Power, Professor Langdon Brown, the President of the Royal Society of Medicine (Mr. V. Warren Low), the President of the Radium Institute (Sir George Blacker), the President of the British College of Obstetricians and Gynaecologists (Dr. J. S. Fairbairn), the Principal of the University of London (Dr. Edwin Deller), the Treasurer of the Inner Temple (Mr. Howard Wright), the Treasurer of Gray's Inn (Mr. G. D. Keogh), the Masters of the Leathersellers' and Barbers' Companies, the Chairman of the Board of Control (Mr. L. G. Brock), the Chairman of the Representative Body of the British Medical Association (Dr. E. Kaye Le Fleming), and the Editor of the *British Medical Journal*.

The following members of the Council of the College also were present: Mr. E. W. Hey Groves, Mr. F. J. Steward, Mr. C. H. Fagge, Mr. W. Sampson Handley, Professor A. H. Burgess, Mr. Victor Bonney, Mr. Hugh Lett, Mr. Leonard Gamgee, Mr. R. G. Hogarth, Professor R. E. Kelly, Mr. A. James Walton, Mr. A. E. Webb-Johnson, Mr. G. Gordon-Taylor, Mr. R. C. Elmslie, and Mr. L. R. Braithwaite, with Mr. S. Forrest Cowell (secretary), Mr. W. R. LeFanu (librarian), and Dr. John Beattie (conservator of the museum).

A summary of current literature on water pollution research has been issued by the Department of Scientific and Industrial Research. The brochure contains abstracts Nos. 1 to 125, classified under the headings "Water Supplies," "Analysis and Examination of Water," "Sewage," "Trade Waste Waters," and "Pollution of Natural Waters." Included in the section on "Miscellaneous Subjects" at the end of the brochure is an abstract of a bibliography on the hygienic aspects of aluminium and aluminium utensils. The abstracts are published monthly, and may be obtained from branches of H.M. Stationery Office, price 2s. net.

British Medical Journal

SATURDAY, FEBRUARY 17th, 1934

THE HUNTERIAN ORATION

Once again, on Tuesday of this week, the Royal College of Surgeons of England has paid its pious tribute to the memory of John Hunter, who was born on February 14th, 1728. The endowment for this purpose was accepted by the College in 1813, and since 1853 the festival has been held every two years. In the Hunterian Oration for 1934, which appears in the opening pages of our present issue, Sir Cuthbert Wallace speaks of some of the chief characteristics of John Hunter's individuality, and with admirable effect he draws a picture of Hunter's career against the background of his times. He seeks to answer the questions, What are the outstanding differences between the learning and practice of medicine to-day and the conditions which obtained a hundred and fifty years ago? and, What would Hunter have thought of our present education? Hunter's own education was haphazard and fragmentary: its only regular part was the assistance he gave to his brother William in his anatomy school; the rest was picked up at intervals in various hospitals, and the whole extended over some twelve years. When we recognize that if there is one thing more characteristic than another in his career it is its originality, we are tempted to relate his self-education to this as cause and effect. Sir Cuthbert Wallace gives a vivid account of the state of medical training in those times; it usually took the form of apprenticeship in practice and in hospital, but so lightly did the staff of a metropolitan hospital regard their teaching duties that Hunter accused his colleagues of taking money from their pupils and apprentices and doing nothing to earn it. The truth is, of course, that Hunter's originality is not to be traced to any empty freedom, but to the fact that he learnt to teach himself. No doubt he would have done so under any conditions. To-day a man, whatever his originality, finds himself inevitably part of an elaborate professional organization; this is the chief difference between the field of medical practice now and then. The community has gained much by the change; opinion will vary as to whether something of opportunity has not been lost to the individual.

Sir Cuthbert Wallace refers at considerable length to Hunter's war service, and quotes with approval his view that military surgery should not be looked upon as in any way special except in its circumstances; he speaks with authority when he says that the Great War also introduced little improvement in the practice of the art, a remark with which, we think, the generality of surgeons will agree. Its outstanding effect has been the separation of the treatment of bone affections as a specialty, the justification for which remains to be

proved. An indirect effect, referred to in the Oration, has been the stimulation of the idea of organizing civil treatment after the manner in which the medical care of the Army was organized, and the progress in this direction in the last twenty years is obvious. The main theme of the Oration is, however, a comparison of medical education then and now, and Sir Cuthbert asks the question whether, in remedying the want of order in Hunter's day, we have not gone too far in standardization and in centralization of control? This is a question which needs debate, and it can hardly be gainsaid that the passion for curriculum-making has gone a long way towards regimenting every hour of the student's time. A curriculum which even approaches this is a danger to originality; whether it would have stifled Hunter is not a point which can be profitably discussed, but drill cannot be substituted for learning without tending to have this effect. Yet Hunter was one of the pioneers in the organization of teaching. How far would he have carried it? Certainly not as far as adopting a full time-table of drill teaching, by class and lecture and demonstration, as the main preparation for the one profession for which it is least suited. He lent his influence towards changing the defects in guidance which existed in his time, and we should receive no support from him if we wished for a return of the kind of freedom he experienced; but it may be claimed that he would have been on the side of those who would design medical education so that the student may learn for himself and be his own chief instructor. If this is the design which would give originality a chance and at the same time give it guidance it would appear to be the best for medicine; for in medicine the solving of practical problems is the life-work of the individual, and some spark of originality is needed for the successful solution of them all.

The Orator took the opportunity to discuss some other of our present habits in the light of John Hunter's career, and we commend to notice his remarks upon specialization and research. In regard to the first and its relation to educational practice, he certainly marks the right relation when he says that specialization must not lead to the crowding of undergraduate instruction, but should come only after graduation. The representatives of several specialisms are claiming to-day that, whatever happens to others, for the one they practise at any rate room must be found in the undergraduate course. Such claims have little regard to the actuality that in the five years between the ages of 18 and 23 what can be given to the student is a basis of knowledge and a right method; much of the application of these must be learnt afterwards, and to emphasize a specialty can only take away time which is needed for the foundations upon which it should be built. There are many wise words in this Oration upon problems that are occupying professional attention to-day, well worth reading and thinking over by all who desire perspective and balance in our medical training.

PROPHYLAXIS OF MEASLES, SCARLET FEVER, AND DIPHTHERIA

In a recent article J. G. Fitzgerald provides an interesting survey of the specific prevention of measles, scarlet fever, and diphtheria in Canada.¹ The Connaught Laboratories have been fortunate enough to maintain a supply of "convalescent" measles serum in doses of 5 c.cm. for practitioners in Toronto. In the control of scarlet fever, antitoxin and active immunization are employed. Dr. Frieda Fraser obtained toxin from 95 per cent. of thirty-four haemolytic strains isolated from scarlet fever and from 80 per cent. of 102 non-scarlet-fever strains; puerperal and miscellaneous strains produced as potent toxin as those from true scarlet fever. To produce antitoxin, Strain NY5, of "broad valency," is employed (this strain, we understand, is also mainly used in England). The prophylactic use of scarlet fever antitoxin has been highly promising. Between 1921 and 1924 there occurred among 26,000 children admitted to the Toronto Children's Hospital 120 cases of scarlet fever (0.5 per cent.); since then all Dick-positive children on admission have received a prophylactic dose (apparently 2. to 5 c.cm.), and twenty-three children developed scarlet fever (0.05 per cent.). Since eighteen of these, for various reasons, received no antitoxin, the morbidity among those receiving serum was 0.01 per cent. In the earlier period twenty-five cases of scarlet fever broke out among 406 "burns" admitted; in the later period, among 500 admissions no attacks occurred, except in nine patients who did not receive serum. The disease is also being combated by active immunization. Prior to active immunization 5 to 6 per cent. of the staff of the Children's Hospital in Toronto were attacked each year; since active immunization was adopted the percentage has been 0.4 to 0.7 per cent. This pleasing result recalls the equally successful work of Benson in Edinburgh and Harries in Birmingham. The dosage employed is not mentioned. Groups of Dick-positive children had been immunized with toxin partly detoxicated with formalin; the percentage becoming Dick-negative ranged from 63 to 83. For the prevention of diphtheria, sufficient toxoid for the immunization of a million and a quarter people has been issued. Canadian experience indicates that reactions following the use of formol-toxoid are very rarely met with in children under 6 years of age, and are infrequent until the eighth birthday is past. The "Moloney" (intra-dermal-toxoid) test, for detecting people likely to suffer from reactions during immunization, is employed and is satisfactory. "Moloney-positive" reactors are immunized with perhaps four doses of toxoid, ranging from 0.02 c.cm. to 0.1 c.cm. or more. Dr. N. E. McKinnon and Miss M. A. Ross² have analysed the "Moloney" reactions of about 30,000 children. Up to the age of 5 there were 1.5 per cent. of positive reactions; almost all these "reactors" were in their

fifth year. Fortunately, therefore, in the pre-school period, where immunization is most called for, we need not anticipate much reaction. Between the sixth and eighth year 5 per cent. of children were strongly "Moloney-positive." Dr. W. H. Park³ of New York is issuing toxoid, and finds that, two to three months after commencement of a series of three, or even two, injections of material containing about 10 flocculation units per cubic centimetre, above 90 per cent. of the children are Schick-negative. He advocates starting to immunize country children at 6 months of age and city children at 9 months; he is also hopeful that alum toxoid may be useful.

Dr. W. H. Shepard⁴ presents an interesting analysis of the efficiency of the ordinary methods of advocating immunization against diphtheria. When the "mass propaganda" by newspapers, posters, and radio was studied, it was found that of the 600,000 people in San Francisco only 120,000 were mothers or fathers. Therefore, approximately four-fifths of the advertising energy was wasted. A house-to-house canvass revealed that, of the immunizations, 60 per cent. were credited to the school clinic and 26 per cent. to the private physician. Among the reasons for failure to immunize, lethargy, ignorance, opposition, and economic reasons were given, in that order of frequency. The general argument indicates that personal following up of children from the notification of birth, and the activity of tactful health visitors, are most fruitful. It is said that the photographs of the children of leading citizens being immunized are good propaganda. The ingenious author points out that, when it was decided to control beri-beri in the Philippine Islands by inducing the people to eat unpolished rice, the most powerful appeal was a photograph of the Governor-General eating this nourishing cereal, with, it is supposed, apparent enjoyment. Thus opportunity opens doors to conscientious members of Parliament and lord mayors! It is a striking fact that the material for this investigation was supplied by the Metropolitan Life Assurance Company, which for some years past has had the rare vision to see that much expenditure on advertising the efficiency of immunization against diphtheria, and other health measures, is sound business.

Are we in England keeping abreast of our neighbours? Toxoid was employed by Nash in England in 1924, a few months later than Ramon's first work. Highly concentrated toxoid was made by M. L. Smith⁵ in 1932, and alum toxoid has been used by Saunders and others; O'Brien and Parish⁶ and Laurent⁷ have recently shown that toxoid with an unusually high antigenic unitage will smoothly and rapidly produce immunity in school children, in tuberculous patients, and in nurses. The ideal aimed at is that immunization may be so simple and free from risk of reaction that virtually all parents will wish their children immunized

¹ *Amer. Journ. Pub. Health*, 1933, xxiii, 600.

² *Ibid.*, 1933, xxiii, 547.

³ *Journ. Path. and Bact.*, 1932, xxxv, 663.

⁴ *Lancet*, 1932, ii, 176.

⁵ L.C.C. Annual Report, iv (Part III), 28.

¹ *Canadian Pub. Health Journ.*, 1933, xxiv, 455.

² *Ibid.*, 1933, xxiv, 496.

before attending school, and that the efficiency of immunization will be so definite that neither "pre-Schick" nor "post-Schick" tests will be called for. The attaining of this ideal is within sight; probably it would be more rapidly reached if keen immunologists and school medical officers of health had readier opportunities. But the English method is to proceed slowly.

COLOUR SATURATION

The Medical Research Council has issued the report of a piece of research work done by Messrs. Martin, Warburton, and Morgan on "The Determination of the Sensitiveness of the Eye to Differences in the Saturation of Colours." The well-known methods of additive colour mixture allow the production of mixtures of spectral colours with white. Observations of a series of such mixtures of white with a single spectral colour show that as the proportion of the spectral component increases there is an increase in that quality of sensation called "saturation." This saturation, like the colour itself, is a psychological entity which cannot be measured directly, but it can be correlated with the photometric proportions of spectral colour and white in the mixture. If the mixture be altered without a change in the hue wave-length or brightness, a finite change has to be made before any difference in saturation is observed between one field showing the modified stimulus and another in which the stimulus is unchanged. The amount of this change is known as the "purity limen," and the investigators have sought to find how this quantity varies. The determination is important in practical colorimetry, and may throw light on the nature of colour vision. It is known that spectral colours are not of apparently equal saturation, and it is possible that none is completely saturated. Several modes of experimentation were tried. Most satisfactory results were obtained by viewing the two contiguous halves of an illuminated field. The observer controls the purity of one half and the relative brightness of the two parts. Starting with matched fields the purity is varied until a colour difference is produced which cannot be made to disappear by an adjustment of relative brightness. The changes are perceived in steps. In all cases it is clear that the amplitudes of the steps increase as the change is made from white towards colour; there is a maximum at some intermediate point and a tendency for the steps to become smaller again as the spectral colour is approached. Further, it is considered that a "result of greatest significance emerges from the work in an indication of the existence of a *white* definable in terms of visual capacity rather than of aesthetic judgement. The *white* is the sensation corresponding to the stimulus from which the least discriminable steps in purity tend at first to increase in mixtures with all spectral colours starting from white towards the colour." Helmholtz attributed the great variation of relative luminosity between complementary amounts of the spectral complementaries to their differences of saturation, an idea developed by Sinden. The idea seems to be well founded.

¹ Medical Research Council, Special Report Series No. 188. Medical Research Council Committee upon the Physiology of Vision. London: H.M. Stationery Office. (Is. net.)

"AIR-CONDITIONING" FOR THE PREMATURE CHILD

The number and variety of incubators which have been invented and discarded is a sufficient indication of the still unsuccessful search for a perfect environment for the premature baby. A recent monograph from Boston¹ suggests that Dr. Kenneth D. Blackfan and his associates have found a satisfactory method of controlling the temperature and humidity of the air in which a premature baby lives for the early weeks of life, and have thereby demonstrated a considerable lowering of mortality. The main point of the system was the establishment of what were called "air-conditioned nurseries." These consisted of three rooms, ventilated by means of a mechanical equipment situated in the basement of the hospital, which had sufficient capacity to produce about twenty-five changes of air per hour in each of the rooms. The inlet and outlet for the air in each nursery were planned to prevent any draughts, and a wide range of temperature and humidity of the air in the rooms was possible by elaborate systems of control. When a definite temperature or degree of humidity was desired these could be obtained irrespective of the weather conditions outside. Observations were made on three groups of patients: normal premature babies weighing from 1½ to 5 lb. and admitted to hospital from a few hours to several weeks after birth; congenitally diseased premature infants or those suffering from congenital anomalies and from other pathological conditions incident to premature birth; and premature infants with acute and chronic infections and infants dying within forty-eight hours after admission. As far as possible general hygiene, clothing, feeding, etc., were kept uniform, and these premature infants treated in the air-conditioned nurseries were compared with the figures for previous years in "unconditioned" nurseries, where, however, other factors were not altogether uniform. Despite this fundamental difficulty of assessing the exact value of the results obtained, these seemed to be striking enough to warrant certain conclusions. The humidity best suited for stabilizing the body temperature (and preventing various disorders) was about 65 per cent. at temperatures ranging from 75° to 100° F. according to the state of the infant and the body weight. Under these controlled conditions low body temperature and fluctuations in body temperature were still noted in the infants of the lowest weights, but heat regulation seemed to be more easily stabilized at a satisfactory level. The post-natal loss of weight was less and ceased in a shorter time in the air-conditioned nurseries, and the maximum gain in weight occurred in patients in those nurseries under the higher levels of humidity. Air conditions have appeared to be of great importance in the control of the digestive disorders likely to occur in premature infants. The incidence of disturbances referable to the digestive tract was about three times greater under low than under high humidity, while the duration of such disturbances was four times greater. The death rates varied according to weight, age, sex, and general constitutional state of the infants, but it was found that the gross mortality for infants of the lowest weight groups was about 29 per cent. lower in the air-conditioned

¹ Amer. Journ. Dis. Child., November, 1933, xlv, Part II, 1175.

nurseries than in previous years in the unconditioned nurseries. Even more startling figures were obtained if the mortality rates were calculated by leaving out all deaths occurring within forty-eight hours of admission, deaths due to congenital malformations incompatible with life, and deaths due to acute and chronic infections present at the time of admission. The "net" rate under the old conditions was 28.9 per cent. During the last two years, with the air-conditioned nurseries with optimum ventilation and humidity always high, the "net" death rate was 0.7 per cent., only one infant dying apart from the exceptions mentioned. The improved methods in general medical and nursing care of premature infants which were adopted as a direct consequence of the installation of the rooms and the investigations carried out must come into consideration, but cannot wholly account for this striking reduction in mortality. Although the apparatus could only be available for institutions its use has demonstrated the great importance of control of environmental conditions and especially of humidity of the air for the premature infant.

CARBON DIOXIDE IN MEDICINE

The use of carbon dioxide as a rapid respiratory stimulant is now so general and its value so undisputed that a review¹ by Professor Dautrebande of its physiological and therapeutical properties is of especial interest. As the author points out, carbon dioxide can be regarded as a specific antidote for all forms of established and imminent respiratory syncope, whether accompanied by acapnia or not. Thus in carbon monoxide poisoning increased pulmonary ventilation resulting from an insufficient supply of oxygen to the respiratory centre leads to an abnormal loss of carbon dioxide. The administration of the latter gas, preferably in conjunction with oxygen, causes augmentation of pulmonary ventilation, and so encourages the elimination of carbon monoxide and the absorption of oxygen. In poisoning by substances such as methyl alcohol, morphine, and the barbiturates, which cause a primary depression of the respiratory centre, there is diminished pulmonary ventilation, leading to an increase in the alveolar carbon dioxide and a fall in the alveolar oxygen content. In these circumstances the administration of carbon dioxide and oxygen supports the rhythmic activity of the centre, maintains the arterial pressure at a reasonable level, promotes oxygenation of the tissues, and, in the case of a volatile poison, facilitates its excretion. In the treatment of poisoning of this nature it is essential that carbon dioxide should be given with the minimum of delay, and in the absence of an easily accessible supply of the gas in the form of a cylinder or otherwise the author advocates the use of exhaled air. This can be administered in conjunction with artificial respiration either by direct mouth-to-mouth breathing, or through wide-bored rubber tubing, or after collection in a rubber bag, and it constitutes a safe and efficient first-aid measure. Professor Dautrebande emphasizes the value of carbon dioxide to the anaesthetist, and he draws particular attention to the fact that the speed at which ether is absorbed by the pulmonary capillaries depends solely on the quantity carried to the lungs in a unit

of time. Accordingly, the effect of doubling the respiratory volume by the aid of carbon dioxide is the same as that produced by doubling the percentage of ether in the inspired air, and it follows that the judicious use of this gas permits a rapid induction with the minimum concentration of irritating ether vapour. He refers to the work of Davies and Gilchrist, who showed that the administration of carbon dioxide during ether anaesthesia was a potent factor in preventing both the incidence and the severity of post-operative vomiting; in addition, he recommends the use of this gas, not only during anaesthesia, but also for short periods during the four or five days following operations, as a prophylactic against the development of post-operative respiratory complications. The use of carbon dioxide as a prophylactic for angina pectoris is discussed, and the author recommends inhalation for fifteen to twenty minutes thrice daily of a CO₂-air mixture in which the proportion of the former gas is insufficient to increase visibly the respiratory rate.

DRAINAGE OF INTESTINE IN PARALYTIC ILEUS

The treatment of paralytic ileus remains one of the major problems of surgery. While the value of rest, hypertonic saline, and enemata in the early stages is universally recognized, there is no general agreement on what should be done when, after a fair trial, these measures have failed, and the patient presents the picture of increasing toxæmia, progressive distension and vomiting, and a rising pulse rate. Any further exposure and handling of the intestine cannot but lead to an increase of paralysis. For this reason, and also because operation is often deferred until the patient is hopelessly toxæmic, the operative results are bad. But the fact remains that many of these patients are saved by operation, and it is therefore necessary to inquire what is the procedure which will give a satisfactory outflow to the intestinal contents with a minimum of trauma to the gut. R. Bernard¹ gives a critical survey of the methods which have been used, with details of a small series of his own. Two—gastrostomy and spinal anaesthesia—are mentioned only to be condemned: the first because all its advantages without its disadvantages can be gained by gastric intubation; the second because, paradoxically, it is more dangerous in its success than in its failure, as it may lead to a greatly increased absorption of toxins from the lower bowel. Duodenal intubation is dismissed rather summarily. The merits and demerits of bowel puncture, enterotomy, short-circuiting, and enterostomy are fully discussed. Evacuation of the intestinal contents by puncture is difficult, tedious, and incomplete, requiring a prolonged operation and extensive handling. Aseptic in theory, it is rarely so in practice. Enterotomy, by which is meant an incision 2 or 3 cm. long in the most dependent loop of the eviscerated intestine, is a most rapid and effective method of emptying it, but is ruled out as unsuitable in paralytic ileus because its effective and aseptic performance necessitates evisceration. The operation of short-circuiting, made famous in English surgery, is long and severe. It leaves the toxic material in the intestine, and the colon can so little be depended on to deal with it that a caecostomy, in addition, is generally considered advisable. Moreover,

¹ *Bruxelles-Médical*, October 22nd, 1933, p. 1500.

¹ *Rev. de Chir.*, October, 1933, p. 606.

the exclusion of any considerable length of intestine leaves a state of affairs which will require still another operation after the patient has recovered. It is asked whether all this is justifiable when a high enterostomy is far quicker, safer, and at least as effective. A high enterostomy through a left para-umbilical incision is regarded as the method of choice. It is quick and easy to do, only requires local anaesthesia, and can be performed aseptically. The technique followed is similar to that of Witzel's gastrostomy. The tube can easily be withdrawn when its work is done, and spontaneous closure of the fistula is stated to be the rule. A high enterostomy is chosen because this is the last part of the intestine to lose its peristaltic power—the *ultima moriens*—and the first to regain it. The defect of the method is that it depends on the persistence or the return of peristalsis, and that as a means of passively emptying the intestine it is almost useless. This is the fundamental flaw in every operative method of approach to the problem. The condition, after all, is paralysis, and every laparotomy and manipulation of the gut can only aggravate it. Their good effects, if any, are incidental.

HEALTH OF THE FRENCH AIRMAN

Professor René Cruchet, whose name has for long been associated with the medical aspects of aviation, has recently traced the development of this branch of medicine in France since the end of the war. During it, airmen were medically examined on the lines adopted for the other Services, and it was not till 1919 that a special examination was introduced. In October, 1933, Annex E to the international convention governing aviation provided for the medical control of the pilots of public aircraft both before and during their service. In 1920 Professor Cruchet and Dr. Moulinier published their work on airmen's ailments—a book which was promptly translated into English. The years between 1920 and 1926 saw certain modifications in the tests and regulations affecting airmen's health, but since the latter date no great changes have been necessary. At the present time five different forms, representing five different medical examinations, have to be filled in: Medical, radiological, neurological, oto-rhino-laryngological, and ophthalmological. At Bordeaux, out of a total of 1,494 candidates for entry to the air service between May 18th, 1921, and the present time, as many as 592 have been disqualified either temporarily or permanently. This implies a high standard, and the authorities have been criticized for rejecting as great a proportion of candidates as 39.65 per cent. But this high standard has had a salutary effect in raising the general level of the applicants, who have learnt that only the very fit can be accepted. A classification of the disqualified applicants shows that as high a proportion as 41 per cent. failed on account of their eyes, and 23 per cent. on account of their respiratory systems. A faulty general constitution was responsible for 13 per cent. of the disqualifications, and a faulty nervous system for only 1 per cent. The medical examinations for civilian pilots yielded a much lower disqualification rate (7.46 per cent.), for the simple reason that most of the candidates had already served in the air force.

Professor Cruchet has learnt to recognize a characteristic airman's heart, one which is demonstrable even in men of apparently good physique. As for the air future of this picked body of men, it is short enough in all conscience. A man may continue in full activity till he is 40, but that is the limit, beyond which he will find his circulatory system failing him. He may take short flights and "*promenades de tourisme aérien*," but for long flights he is too old after this age.

JUBILEE OF THE "ANNALS OF SURGERY"

We congratulate the *Annals of Surgery* on attaining its fiftieth year.¹ Messrs. Lippincott, the publishers, celebrate the event with a special cover resplendent with gold, as is fitting in a country possessing most of the world's stock of the metal. They have, however, with undue modesty, hidden a short account of the *Annals* on the back of this cover, where it is likely to be overlooked and will be lost except to those owners who direct their binders to "put the covers at the end" of the volume. As befits the occasion, the number is exceptionally good both as regards the paper, the printing, and the letterpress. It is enriched by a life-like portrait of Dr. L. S. Pilcher, with his eulogy written by Dr. J. P. Warbassé. It appears from this eulogy that Dr. Pilcher entered the University of Michigan when he was aged 13, took his bachelor's degree at 17, served as a hospital steward—we should call him a dresser—during the American Civil War in 1863, was appointed an assistant surgeon in the United States Navy in 1867, and became the first editor of the *Annals of Surgery* when it began its career in 1884. His name still appears as editor on the title-page of this jubilee number. We wish him continued health and strength to perform his editorial duties. The *Annals of Surgery* has always maintained an intimate connexion with British surgery. Mr. C. B. Keetley, Sir Frederick Treves, Sir Watson Cheyne, and Sir William Macewen performed in succession the duties on its staff which are now so worthily carried out by Mr. Sampson Handley.

The Milroy Lectures, on international co-operation in public health, its achievements and prospects, will be delivered by Sir George Buchanan before the Royal College of Physicians of London on February 27th and March 1st; the Goulstonian Lectures, on hormones and their chemical relations, by Professor E. C. Dodds on March 6th, 8th, and 13th; the Lumleian Lectures, on glandular fever and infective mononucleosis, by Dr. H. L. Tidy on March 15th and 20th; the Oliver-Sharpey Lectures, on viruses in relation to the aetiology of tumours, by Dr. C. H. Andrewes, on May 1st and 3rd; and the Croonian Lectures, on arterial hypertension, by Professor O. L. V. S. de Wesselow, on June 5th, 7th, and 12th. The lectures begin at 5 p.m.

Lieut.-General Sir Harold B. Fawcus, K.C.B., whose forthcoming retirement from the post of Director-General of the Army Medical Services we announce on another page, has been appointed Director-General of the British Red Cross Society, and will take up his duties at 14, Grosvenor Crescent, S.W., on March 1st.

¹ Journ. de Méd. de Bordeaux, November 20th, 1933

² *Annals of Surgery*, xlix, No. 1, January, 1934.

RESEARCH SCHOLARSHIPS IN MEDICINE

LADY TATA MEMORIAL TRUST

This trust was founded and endowed in April, 1932, by the late Sir Dorabji Tata of Bombay as a memorial to his wife, the late Lady Tata, in order to promote the advancement of medicine by research into the diseases of the blood, with special reference to leukaemias. Provision is made under this trust for research scholarships, fellowships, prizes, and grants in aid of research work. With the exception of one-fifth of the net income, earmarked for the encouragement of research by Indians in India or abroad, the rest will be devoted as stated above, and the awards will be open to candidates of any nationality, including India. The trustees are advised by an advisory committee having its headquarters in London, including Continental representatives, and by an Indian committee in India.

In June, 1933, the first four Lady Tata Research Scholarships were awarded.¹ Announcement is now made that four further scholarships, of the value of £400 a year each, will be open for award in June, 1934, to men or women of any nationality for research work in the subject of blood diseases, with special reference to leukaemias. Each will be tenable for a year from October 1st, 1934, and renewable up to a normal maximum tenure of three years. The scholarships will ordinarily be awarded on a whole-time basis, but a candidate holding a part-time teaching post may be allowed to retain this if, in the opinion of the trustees as advised by the committee, his duties will not prevent him from giving his chief interests and energies to his proposed research work.

Candidates for these scholarships must send their applications in time to be received in London on April 15th next, addressed to the secretary, Dr. H. S. Patel, Lady Tata Memorial Trust, Capel House, New Broad Street, London, E.C.2, or Professor A. Vacha, Calvinstrasse, 27, Berlin, N.W.40, or the Lady Tata Memorial Trustees, Bombay House, 24, Bruce Street, Fort, Bombay, from whom forms of application may be obtained. Applications which are delayed by special circumstances will be accepted up to April 30th, but in no case later.

A candidate at a distance who may be unable to obtain a form of application in time will be considered if his (or her) name, age, sex, nationality, and qualifications are given, together with the proposed line of research and the methods to be used, the institute or laboratory in which this is to be done, and the director who will supervise it. Testimony in confidential letters addressed to the secretary should be sent at the same time by not more than three persons able to speak from personal knowledge of the candidate's character, ability, and experience.

PRECAUTIONS AGAINST ELECTRIC SHOCK

The attention of the British X-Ray and Radium Protection Committee has been drawn to a series of accidents involving electrical shock. It is recognized that with the more powerful plants in use to-day the possibilities are that such shocks might prove fatal. These dangers have already been dealt with in the committee's recommendations, and are referred to in the revised recommendations, which read as follows:

Electrical Precautions in X-Ray Rooms

1. The floor-covering of the x-ray room should be of insulated material such as wood, rubber, or linoleum.
2. Where permanent overhead conductors are employed they should be not less than 9 feet (3 metres) from the floor. They should consist of stout metal tubing or other coronaless type of conductor. The associated connecting leads should be of coronaless wire kept taut by suitable rheophores.
3. Wherever possible earthed guards or earthed sheaths should be provided to shield the more adjacent parts of the high-tension system. Unshielded leads to the x-ray tube should be in positions as remote as possible from the operator and the

patient. The use of "shock-proof" x-ray equipment in which the high-tension circuit is completely enclosed in earthed conductors is specially recommended. Unless there are reasons to the contrary, metal parts of the apparatus and room should be efficiently earthed.

4. Main and supply switches should be very accessible and distinctly indicated. They should not be in the proximity of the high-tension system, nor should it be possible for them to close accidentally. The use of quick-acting double-pole circuit breakers is recommended. Overpowered fuses should not be used. If more than one apparatus is operated from a common generator, suitable high-tension multi-way switches should be provided. In the case of some of the constant-potential generators, a residual charge is held by the condensers after shutting down. A suitable discharging device should therefore be fitted.

5. Some suitable form of kilovoltmeter should be provided to afford a measure of the voltage operating the x-ray tube. Wherever possible a safety spark-gap should be provided.

6. Special electrical precautions should be taken in rooms where low-flash-point anaesthetics are used in conjunction with x rays.

The committee now desires to emphasize the great importance of these precautionary measures to all persons responsible for or working in x-ray departments. Every step possible should be taken to prevent accidental contact with any part of the high-tension system, including the tube, the leads, and the associated measuring instruments.

While the use of shock-proof x-ray equipment in which the high-tension circuit is completely enclosed in earthed conductors is specially recommended, much can be done with existing apparatus in the way of providing relatively simple devices such as earth guards to shield the more adjacent parts of the high-tension system. Mobile units in particular should be carefully examined before their use in the case of every patient. Further, schemes of suitably illuminated warning notices which function when the equipment is "alive" are found to serve a very useful purpose. Printed first-aid instructions¹ for dealing with electrical shock should be available and the staff trained in their use.

England and Wales

British Industries House, London

British Industries House, the building put up by Gamages in Oxford Street, has been acquired by a combination of some of the leading assurance companies, who are equipping it as a place where the manufacturer of British goods can bring his wares to the notice of buyers. They have secured the interest of the Department of Overseas Trade, the Scottish National Development Council, and many important Chambers of Commerce, and other similar bodies all over the world. Lord Derby has given it his warm support, as a project for the promotion of British trade. Those responsible for the scheme resolved to have a medical department in which British manufacturers could show their most representative products, so that buyers could see them side by side instead of having to tour the country to make their purchases. The directors, believing that such a section should be run on lines which would be approved by the medical profession, asked Dr. Alfred Cox to advise them, and he suggested the appointment of a small medical advisory council, which could guide the business people as to the lines of general policy. Dr. Cox accepted the chairmanship of this committee, and Sir Crisp English, Dr. E. P. Poulton, and Mr. A. R. Melhuish, past-president of the Pharmaceutical Society of Great Britain, have accepted membership.

¹ British Medical Journal, June 24th, 1933, p. 1137.

¹ Printed cards of this kind are issued by the Electrical Review office, 4, Ludgate Hill, E.C.

Hunterian Society

The annual dinner of the Hunterian Society of London was held at the May Fair Hotel on February 8th, with the president, Mr. W. E. Tanner, in the chair. After the loyal toasts had been honoured, Judge Cecil Whiteley proposed the health of the Hunterian Society. He excused himself from making any biographical reference to John Hunter as he felt sure members of the society must already have heard a good deal about him. Instead he discoursed humorously on a subject which had recently come before the society—the value of alcohol to the citizen. Alcohol, he said, had been of great financial value to his own and to the medical profession. The president, in a brief reply, reminded his audience that Hunter had died in 1793, in St. George's Hospital, only a short distance from where they were dining. "The Corporation of the City of London" was proposed by Professor John Eyre. The Hunterian Society, he said, had on many occasions accepted the hospitality of the City of London, and they were very glad to have with them on this occasion Sir Charles Batho, who had always had the interests of the community and the medical profession at heart. Replying briefly, Sir Charles remarked that the Hunterian Society had done, was doing, and always would do, great work in the interests of the profession. He himself had always tried to do his best for the hospitals of this country. The toast "The Guests and Kindred Societies" was proposed by Dr. C. F. Hadfield. Having welcomed the chief guests individually he thanked Sir Charles Batho and other members of the Corporation of the City of London and the Cutlers' Company for all that they had done for St. Bartholomew's Hospital. Lord Horder thanked the members of the Hunterian Society for their hospitality and entertainment, and Mr. P. J. Hannon, M.P., also replied on behalf of the guests.

Medical Treatment after School Age

The Education and Central Public Health Committees of the London County Council brought up a joint report to the Council on February 6th on the question of providing preventive and curative treatment for children between the ages of 14 and 16 years. There is no power for a local authority to spend money out of the education rate on the medical inspection or treatment of young persons not attending educational institutions. The State does not provide for persons between 14 and 16 who have left school. By the provisions of the Education Act, 1921, however, a local authority has certain duties in this respect regarding young persons attending secondary, continuation, and other provided schools. Persons above the age of 14 attending secondary and trade schools have the benefit of the L.C.C.'s school medical service, but there are eleven voluntary day continuation schools maintained by the Council in which no medical service has been provided, and there is no medical service at the evening institutes, where it is estimated that some 30,000 persons between these ages attend. As an experiment for one year a scheme is now to be applied to the day continuation schools and to three junior evening institutes (in Bethnal Green, Battersea, and Shoreditch). Medical inspection will take place between three and six months after admission. It will be explained to the students that inspection is voluntary, and parents will be informed and invited to attend. At the day continuation schools about twenty-five students will be submitted for inspection at each visit (of about two and a half hours' duration) of a medical officer, and twenty students at the evening institutes, in a session of about two hours. Any student noted as requiring medical treatment will be advised accordingly, and where such treatment cannot be arranged on the student's own initiative, application will be made by the principal of the school or institute

for voucher cards for treatment under the Council's general school treatment scheme, where possible, or, if necessary, in the evening. Reinspections of students with defects are to be made in alternate terms. At the evening institutes where a class is held in health subjects the lecturing medical officer will be, if possible, the inspection medical officer. If necessary, convenient treatment sessions will be provided at the treatment centres in the evenings for students who cannot attend the day centres. It is estimated that 3,000 students at the continuation schools and 900 at the three selected institutes will undergo the voluntary medical examination. The total expenditure is estimated at less than £500.

Presentation to Dr. M. W. Renton

A farewell presentation was made on February 1st to Dr. M. W. Renton, who recently retired from the post of medical superintendent of the Dartford Institution. There was a large gathering of medical colleagues, officials, staff, and friends in the dining hall of the hospital. Mr. E. J. Hobbs, clerk of the Dartford Guardians Committee, and the senior official present, said that Dr. Renton had been medical superintendent for nearly a quarter of a century. When the guardians determined to re-establish the hospital on more up-to-date lines after the war Dr. Renton, by his great skill and organizing ability, was largely responsible for the clinics, the nurses' training department, the admission of private patients, the appointment of a staff of eminent specialists, and for bringing the work of the hospital to its present high state of efficiency. While losing him as medical superintendent they welcomed his appointment as honorary consulting surgeon. Dr. T. S. Cochrane, on behalf of the medical and nursing staff, paid a tribute to Dr. Renton's inspiring energy and ability, and spoke of the affection and respect they all had for him. After other speeches Mr. Hobbs presented Dr. Renton with an inscribed silver salver, a gold wrist-watch, and a handsomely bound illuminated address, containing a list of nearly 150 subscribers.

Society of Radiographers

The thirteenth annual dinner of the Society of Radiographers was held at the Restaurant Frascati, London, on February 10th, under the chairmanship of its president, Dr. L. A. Rowden of Leeds. Dr. Duncan White, who deputized for Dr. Stanley Melville, president of the British Institute of Radiology, proposed the health of the society. In complimenting the honorary secretary, Mr. Frederick Melville, and the executive council upon their wise guidance, he mentioned that the council had recently circulated an open letter pointing out that the profession of radiography at the present time had an ample number of recruits, if not too many. Dr. Rowden, in responding, took up the same point. While he did not think that the openings for radiographers were by any means exhausted, the appointments at the larger hospitals were now fairly well filled, and there remained the work in the smaller hospitals and in private practice, where, quite probably, it would be found that a second qualification, in massage, physical treatment, or nursing (two-thirds of the members of the society were women), would be very desirable from the point of view of the applicant. The register of technicians in subjects ancillary to medicine was getting into shape; it was due to the initiative of the British Medical Association, and its results would be to attach the Society of Radiographers more closely to the medical profession. The membership of the society had increased greatly during the last five or six years, and now numbered 760, scattered all over England and Wales, with some in Scotland and Ireland; and branches in Australia, New Zealand, and South Africa. Dr. Douglas Malpas welcomed the guests and visitors, and three responses were made to the toast of their health. Mr. R. C. Elmslie, chairman

of council of the Chartered Society of Massage and Medical Gymnastics, associated himself with what had been said about the dual qualification. In small country hospitals a dual qualification would be of real value; he suggested that the second qualification should be massage rather than nursing, because it was easier to obtain, and the radiographer who was also qualified to give massage could render very effective service in small hospitals. Mr. Elmslie added that as an orthopaedic surgeon he spoke for a branch of medicine which required greater assistance from the radiographer than any other. He welcomed the idea of the register of medical auxiliaries. To employ an unqualified radiographer was extremely unfair to the individual himself, because while he was in such employment he was not encouraged to obtain the necessary qualification, and without it he found himself at a grave disadvantage when his employment terminated. A proper qualification was essential for the radiographer, either in hospital or private practice. Further responses were made by Dr. G. W. C. Kaye of the National Physical Laboratory, and by Dr. E. Thorpe, president of the Birmingham Radiographic Society, while other speakers were Mr. C. W. Furby, the past-president, and Miss K. C. Clark, the first lady to occupy the position of vice-president. The Archibald Reid medal for a thesis on radiography was presented, for the second time, to Mr. M. Leman of Belfast.

Scotland

Carnegie Universities Trust

At the annual meeting of the Carnegie Trust for the Universities of Scotland it was mentioned that during the last four completed academic years the total number of students attending the Scottish Universities had been approximately 12,000 each year, with only a variation of about 1 per cent., and it was doubtful if any further increase would be wholesome. Principal Sir Thomas Holland, however, stated that in Edinburgh there were some 500 or 600 students from over-seas, who went back to their own countries when they had finished their studies, thus diminishing the risk of unemployment. In medicine there were 200 fresh students every year, but most of these went away, and it was believed that they all obtained employment. The Trust still pursued the principle of paying the fees of necessitous Scottish students, and during the past year the amount repaid by former beneficiaries had been £1,702. With regard to research the chairman, Lord Sands, said that chemistry, particularly organic chemistry, presented the most openings to-day. The Trust received more applications from men exceptionally well qualified in chemistry than from any others. During the past five years, out of fifty-seven chemistry scholars there had been seventeen physical chemists. In organic chemistry the fifteen Fellows to whom awards had been made published over thirty papers, which were said to constitute a very substantial contribution to current advances in this subject. Attention was drawn to the important researches at St. Andrews on the chemistry of sugars and terpenes. At the laboratory of the Royal College of Physicians, Edinburgh, which was supported by the Trust, eighteen workers had been engaged in research during 1932-3, and a fresh and promising line of research on industrial diseases had been started in co-operation with the Factory Department of the Home Office. During the thirty years of the Trust's operations the total number of awards for scientific research had been 2,982, and the total publications received had numbered 227 volumes and 2,002 other original contributions. The expenditure on research for the first quinquennium, 1908-13, had been £27,754, rising to £69,268 in 1928-33, with a gross total of £250,772 for the period of thirty years.

Crichton Royal Institution

The annual report of Dr. C. C. Easterbrook, physician-superintendent of the Crichton Royal Institution, Dumfries, shows that the number of patients under treatment during 1933 was 1,283. The number on the register at the close of the year was 989, including 458 males and 531 females. There were 642 private patients—of whom 278 were voluntary and 347 rate-aided patients. The certified patients had numbered 713 at the beginning and 711 at the close of the year, and there had been 126 admissions, sixty-four discharges, and sixty-four deaths. The voluntary patients had numbered 274 at the beginning of the year; there had been 170 admissions, while 131 had left and thirty-five had died; of the 444 under treatment during the year, only one had had to be certified. The mean age of the 228 patients admitted had been 46.2 years, the youngest being a boy of 10 and the oldest a man of 94. Three-fifths were in the middle period of life, one-fifth below 30, and one-fifth above 60. Fifty-four patients were engaged in professional occupations, twenty in commercial, twenty-three in industrial, and twenty-nine in agricultural; ninety-three females were engaged in domestic work, and nine other patients had no occupation. With regard to causes, pathologic stresses, including disease in such forms as general debility, exhaustion, malnutrition, heart and vascular disease, and glandular disease, were found in nearly all cases, including especially influenza in 8 per cent. and organic brain disease in 5 per cent. Biologic stresses were found in some 60 per cent., including the climacteric in 25 per cent., adolescence in 20 per cent., and senility in 12 per cent. Psychic stresses comprising emotional conditions such as worry, grief, and anxiety were found in 44 per cent., and hygienic and toxic stresses each in some 10 per cent. The types of mental illness among the admissions comprised chiefly the constitutional psychoses such as melancholia, schizophrenia, mania, and delusions in about 87 per cent., psychoneuroses such as epilepsy and neurasthenia in 3 per cent., and organic and congenital psychoses each in about 4 per cent. At the time of admission the patients had been mentally ill for less than six months in 54 per cent., up to two years in 22 per cent., and for upwards of two years in 24 per cent. Of the 195 discharges in 1933, 131 were voluntary patients and sixty-four certified. Of the voluntary patients, seventy-two left recovered, fifty-one improved, and eight unimproved, the recovery rate being 42.3 per cent. of the admissions. Of the certified patients forty-seven were recovered, sixteen improved, and one unimproved, the recovery rate being 37.3 per cent. The mean age on recovery was 42.2 years. Sixty-four of the ninety-nine deaths occurred in certified patients and thirty-five in voluntary ones. The death rate was 9.2 per cent. of the average daily number under treatment in the case of certified patients and 12.2 per cent. of voluntary patients. The chief causes of death were heart disease and arteriosclerosis 24 per cent., senile decay 13 per cent., cerebral arteriosclerosis and apoplexy 12 per cent., exhaustion 9 per cent., influenza with pneumonia 8 per cent., tuberculosis 6 per cent., bronchopneumonia 5 per cent., and epilepsy and general paresis 4 per cent. each. The mean age at death was 62.5 years, the youngest being 16 and the oldest 95, and the types of mental illness among those who died were chiefly dementia, melancholia, and delusional and confusional psychoses.

Edinburgh Dental Dinner

Proposing the toast of "The Edinburgh Dental Students' Society," at the annual dinner on February 9th, when Mr. Angus Millar presided, Dr. William Guy said that the modern education of the dental student was one of the most liberal that a man could have, and was directed towards making him a scientist, a craftsman, an artist, a

philanthropist, and a soldier in the great army which waged unceasing warfare against disease, ill-health, and deformity. Professor Sydney Smith, dean of the Faculty of Medicine at Edinburgh University, in proposing the "Edinburgh Dental Hospital and School," said that up to 1900 the dental profession had been mostly concerned with mechanical and manipulative measures. To-day dentists were mainly concerned with conservation—with keeping a healthy mouth and healthy teeth—and he expected that in the future a great deal of their activities would be directed to research in regard to nutrition, metabolism, and similar matters. Mr. Hutchison, dean of the Dental School, in replying, said that those who practised dentistry must now have both a liberal education and efficiency. These might be secured by having special classes in all dental subjects for dental students; by ensuring the efficiency of technical instruction through the appointment of heads of departments who would be at the hospital every day; and by the establishment in the universities and medical schools of chairs in dental surgery, from which dental education would be supervised and research work and post-graduate instruction encouraged.

Care of Crippled Children

The first published report of the Princess Margaret Rose Hospital for Crippled Children at Edinburgh, formerly known as the Edinburgh Hospital for Crippled Children, deals with the early activities of this institution. As a result of conferences held in 1926 and 1927 under the chairmanship of the Lord Provost of Edinburgh, it was decided to build a central orthopaedic hospital on the outskirts of Edinburgh with associated major clinics in the more populous centres of the south-eastern counties of Scotland, and minor clinics in the more remote and less populous parts of these counties. The scheme met with a ready response, and sums amounting to approximately £99,000 had been received up to March 31st, 1933. The hospital was opened to patients on June 1st, 1932, and in the first ten months forty-three patients were admitted. Steps were also taken to establish clinics in Edinburgh and at convenient places in the surrounding counties. A charge of £2 15s. per week is made for private patients, which is the estimated figure required to meet ordinary expenditure when the seventy-five beds in the hospital are full. In the case of patients sent by local authorities the charge is limited, in view of the present financial stringency, to £2 5s. per week. Until the hospital is full the committee of management have found it necessary to make an appeal for subscriptions, but it is expected that this will not be necessary when all the seventy-five beds are occupied. The administrative buildings and general layout have been so arranged to permit ready extension to 150 beds when necessary. The Duchess of York has taken the greatest interest in this hospital, and, following a visit which she paid last November, the Duke and Duchess have graciously consented to allow the institution to be named the Princess Margaret Rose Hospital for Crippled Children.

Assistance for Incurables in Glasgow

Speaking at the annual meeting of the Association for Relief of Incurables in Glasgow and the West of Scotland, Sir James Macfarlane mentioned that the association had now entered on its sixtieth year. In 1933 the number of patients under care in Broomhill Home was 150, in Lanfine Home sixty-eight, and on the roll of the outdoor relief department 128, making a total of 346. The ordinary income for the past year had been £16,093, as compared with £17,672 in 1932. There had been a deficit of £2,300, but the capital income for 1933 had been £5,134, which was an increase of £2,085 over that for 1932. The annual subscriptions for the year had been £1,964, which was £116 less than in 1932.

Reports of Societies

CONDITIONS COMMON TO OPHTHALMIC AND DERMATOLOGICAL PRACTICE

A joint meeting of the Sections of Ophthalmology and Dermatology of the Royal Society of Medicine was held on February 9th, under the chairmanship of Mr. E. W. BREWERTON, to discuss conditions common to both branches of practice. The discussion was limited to styes, rosacea, blepharitis, and one or two other conditions.

Mr. J. H. DOGGART said that the common ground between these two branches of medicine was extensive. There were many diseases in general medicine which commonly implicated the skin and eyes. Measles caused conjunctivitis, and possibly corneal ulcer, as well as a rash. Thyroid deficiency had been known to produce multiple opacities in the corneal substance. The eyeballs needed the protection of the lids, which were covered with facial skin, and certain neoplastic and inflammatory conditions of the skin—for example, rodent ulcer and lupus—showed a predilection for the face. In a few diseases, such as rosacea and pemphigus, the investing membranes of the eyeball itself might undergo damage. Styes often appeared to result from conjunctivitis or some other local eye condition, but in many other cases they were associated with pustules elsewhere, and were an expression of lowered general resistance to staphylococci. On the other hand, styes were often seen during a spell of good health and in the absence of any conspicuous local infection. Crops of them might last for months. A good many different substances had been tried in the way of treatment, by the mouth and hypodermically. In this country perhaps the autogenous vaccine had the best reputation amongst ophthalmic surgeons, but it was not at all certain to help.

Blepharitis was often divided, arbitrarily, into the mild or squamous and the severe or ulcerative types, but he doubted whether that division was of any value. In the great majority of cases blepharitis at its onset was probably due to some variety of conjunctivitis, or facial dermatitis. Frequently, however, long-continued blepharitis was seen in the absence of any conjunctivitis, and unassociated with any obvious disorder of the skin of the face. These cases, which were relatively far more common in hospital than in private practice, were often attributable to neglect or improper treatment in the early stages. Many patients got into the habit of rubbing the affected skin as a result of hot, irritable sensations, and so caused spread and prolongation of infection. The longer the condition went on the more the blepharitis would approach the ulcerative form, which was characterized by scantiness and irregular growth of the eyelashes. Many of these cases were aggravated by over-treatment. Normal saline was probably as good as most agents. The accumulated crusts should be sponged away by clean wool applied in the direction of the lashes. Application of ointment to the lid margins before sleep was useful, but sometimes the skin became so sodden and fissured by repeated wetting with lotion that it did more harm than good, and it was better to withhold it for a while to enable the skin to recover. He thought the aetiological importance of refractive errors was greatly exaggerated as the cause of blepharitis.

As for rosacea, in the mind of the lay public this remained inseparable from alcoholism, but most medical men now knew that abstinence was no guarantee against rhinophyma. Indeed, one variety was said, in an old work, to arise from excessive water-drinking, and to be curable by wine. Many writers conveyed the impression that ill-health was always associated with the condition, and it could not be denied that a large proportion of patients suffered from indigestion and other troubles. As to the relative frequency of ocular complications, the ophthalmic out-patient department gave a false idea of frequency, rosacea keratitis being an obstinate disease, tending to relapse, and many patients went from clinic to clinic. Nearly every case of rosacea in time developed a

mild blepharitis. Rosacea conjunctivitis was accompanied by a great deal of watering of the eyes and intolerance to light. Some cases displayed small nodules on the ocular conjunctiva near the corneal margin. Except in the mildest cases rosacea conjunctivitis signified impending keratitis, the earliest manifestations of which consisted of vascular loops invading the edge of the cornea. Rosacea keratitis was a very serious handicap; a bad case might relapse many times a year, so as to incapacitate the patient from doing regular work. Although severe keratitis might result in scanty signs on the face, yet in any particular case it was usual to find a close correspondence between corneal and facial outbreaks, in the sense that fresh infiltrates in the eye seldom occurred in the absence of renewed skin activity. Therefore it was unreasonable to expect a permanent cure for rosacea keratitis unless the skin lesions could be prevented from recurring. The frequency and severity of the attacks would often decline with the approach of old age, but meanwhile the cornea might have become entirely opaque.

Dr. H. C. SEMON, speaking on rosacea, said it was unknown in children, rare before 30, and more common in women than in men. It affected women especially at the menopause. Lesions were confined to the face; especially the malar prominences, the forehead, chin, and nose; the last-mentioned was sometimes, in the case of men, apt to be severely implicated, and to lead in time to a condition of extreme sebaceous hypertrophy. The almost invariable association of flushing, either post-prandial or emotional, strongly suggested vasomotor instability, which in part explained the tendency of the disease to appear at the menopause. Chronic congestion led ultimately to a varying degree of paralytic distension in the vessels of the corium and infection of the sebaceous glands, with clinical evidence of this in the appearance of papules and pustules in the "flush area." This also included the scalp, and most cases presented evidence of its implication in increased tendency to greasiness and scurf. The area of involvement almost exactly corresponded with that of the fifth nerve distribution. In spite of its comparative frequency in dermatological practice, rosacea rarely presented eye lesions in the out-patient department. He had never yet had to refer a case to the ophthalmological department, though many had been referred to him from that source for treatment. Although dyspepsia was not always apparent, hypochlorhydria was a presumed cause or association in a considerable number of cases, and hydrochloric acid was a useful adjunct in the treatment, which must also include attention to the teeth, tonsils, and other sources of focal sepsis, and strict adherence to a simple and non-stimulating type of diet. Tea was a more common factor in the production of rosacea than alcohol. Local applications of weak sulphur or ichthyol lotions relieved the subjective symptoms, and checked the tendency to septic complications. X-ray treatment was seldom required, and by no means always successful. Other irradiations were useless, and sometimes harmful.

Turning to dermatitis of the eyelids, Dr. Semon said that this might be either primary or secondary; usually it was the latter. It might occur at any age, but was not common in childhood apart from conjunctivitis. Most cases were due to an external (exogenous) cause. The causes, of which any number were possible, included substances to which the patient had an acquired or hereditary idiosyncrasy, such as dyes, hair, or fur; plants such as primula, chrysanthemums, and narcissus; and scents, such as *orris root*, employed in face powders. Dermatitis of the face might be preceded by swelling and irritation of the eyelids. The diagnosis of dermatitis of the eyelids was always easy, but the cause, on which prognosis and treatment depended, was seldom apparent, and might result in many recurrences before discovery led to prevention and cure. As a secondary complication of seborrhoeic infection, dermatitis of the eyelids was exceedingly common, and from the dermatological aspect mainly occurred in two forms—namely, simple swelling, with or without a yellowish superficial infiltration, and marginal blepharitis. The persistence of blepharitis and the coincident loss of lashes appeared to offer a guide in the matter of prognosis. The treatment of this form of

dermatitis was that of the underlying seborrhoeic state or diathesis, the exact cause of which had still to be discovered. As for styes, the index references of the leading dermatological textbooks ignored the term, and the condition was only treated by dermatologists when it was part of a general furunculosis or a complication of the seborrhoeic state. Most dermatologists would hesitate to define the differences between styes (hordeola), chalazion, and meibomian cysts, and the majority would, if they were wise, refer their cases to the proper quarter.

Mr. R. A. GREVES said that some years ago he had the temerity to publish a paper about the treatment by x rays of acne rosacea, and since then he had been overwhelmed with cases. He had quite a large clinic at Middlesex Hospital of acne rosacea cases with ocular manifestations. Corneal lesions were by far the commonest, but usually occurred as single or local infiltrates in the superficial layers of the cornea. The overlying epithelium broke down, and an ulcer formed. The cases were extremely resistant to treatment, and when healing took place an appreciable amount of scarring was left. These lesions almost invariably kept on recurring, and a wide area of cornea became involved. A less common variety began with inflammation at the corneo-scleral junction. The most characteristic feature of the disease was its obstinacy and the repeated appearance of fresh lesions, whether the old ones were healed or not. As regards treatment, acne rosacea was a manifestation of some constitutional disturbance, and the logical method would be to correct this if possible. As for local treatment, he found that the eye lesions responded best to stimulation, and for this reason he prescribed hydrochloric lotion as a stimulant, and yellow oxide of mercury ointment, with, of course, atropine, which relieved pain and photophobia. It was a mistake to cover the eye with a pad, but dark glasses gave relief. The greatest good was done by x-ray applications, between one-sixth and one-third of a Sabouraud pastille dose being given. Applications should not be made more often than once a fortnight. X rays might cause a recent infiltrate to disappear. This treatment also had the result of relieving pain, which was so distressing a feature of the condition. Fresh attacks were almost bound to occur if the constitutional cause persisted, but the interval between recurrences was lengthened by this treatment. He had never seen any harmful results follow from x rays, and there was no visible reaction with so small a dose.

Dr. SYBIL EASTWOOD said that for some years at University College Hospital she had had the opportunity of tackling the problem of rosacea from the point of view of the general physician. It had been said that the digestive factor in rosacea was overrated, but after seeing a series of several hundred cases she had found some digestive disturbance in 95 per cent. of them. It was often comparatively mild, but the underlying factor of the rosacea with ocular complications and pustules was vascular congestion of the face, which was probably a reflex from some other part of the body, and in very many cases the stomach. It was often assumed that hydrochloric acid was the only thing which counted in producing this reflex dilatation of the vessels, but this was by no means the case. Roughly, 48 per cent. of cases of rosacea had either achlorhydria or very low curves, about 40 per cent. were completely normal, and about 10 per cent. had a high curve. The most promising cases were those with low hydrochloric acid secretion. These, if given hydrochloric acid, became, comparatively speaking, well, the period of remission lasting, perhaps, for as long as five or six years. But some cases with pyloric spasm and very high acidity curves had been equally amenable to proper treatment. She thought that some of the failures had been due to attempts to treat these people by giving them acids or alkalis without trying to find out in each case individually whether acid or alkali was needed. Quite a number of patients did well if given acid with meals, followed by alkali one and a half to two hours later, so as to produce the normal cycle of digestion. She agreed that alcohol was not a very big factor in production; over-drinking of tea and excessive starch consumption were more frequent causes. Dr. Semon had said that the condition was more common in women

than in men. In her view it was about the same in both sexes, but the aesthetic consideration weighed more strongly with women in causing them to come for advice and treatment. If the problem were treated, neither as a dermatological nor as an ophthalmological one, but as a general medical problem, in which the objective was to restore the patient's general health to normal, recurrences would be fewer and the condition would fade out altogether.

Dr. S. H. BROWNING said that quite a number of people were sent to him for bacteriological examination of the eyelid, and he found them suffering very badly from seborrhoea of the scalp; their blepharitis would get well if treatment started with the scalp, coming downwards if necessary. Most of the blepharitis he saw was due to the staphylococcus, either the *albus* or the *aureus*, and here vaccines were useful adjuncts to the other eye treatment. Very shortly an anti-staphylococcus serum would be available for the treatment of styes and acute staphylococcal conditions more efficiently than hitherto. With recurrent styes anti-staphylococcal vaccines were valuable, but some cases did not get well with these vaccines: these patients, he thought, had a streptococcal infection. In treating staphylococcal conditions, boils or styes, he had found quite large doses of hydrochloric acid, three or six times a day, with plenty of water, very effective.

The PRESIDENT (Mr. BREWERTON) asked whether there was any danger in operating on a sty at an early stage. It was very tempting, if the patient was having a bad time, and the sty was actually pointing, to incise it. What was the risk of spreading infection along the line of the needle? One heard, occasionally, of catastrophes. Mr. EUGENE WOLFF said that Dr. Semon had told them that probably the eye and the skin were affected together, because they had the same sympathetic supply, and Mr. Doggart had shown pictures in which the lower part of the cornea was affected. So far as the speaker was aware, there was no difference between the sympathetic supply of the corneal vascular plexus above and below. One wondered, therefore, how far exposure played a part in the production of acne rosacea lesions in the eye. Mr. JOHN FOSTER said that apparently on the Continent it was not uncommon to treat blepharitis by exposing it to x rays, but there was a prejudice against it in this country and in America on the ground of possible damage to the eye. Had any dermatologist present treated it in that way? Dr. A. C. ROXBURGH replied that he had treated a number of cases of chronic blepharitis with small doses of x rays, and they had all improved—some might be said to be cured—but he would not like to say that it was an entirely reliable method, though he had never seen any trace of damage to the lens.

PROBLEM OF THE DIPHTHERIA BACILLUS

At a meeting of the Fever Group of the Medical Officers of Health Society on January 26th, with the president, Dr. H. S. BANKS, in the chair, Dr. WILLIAM MAIR read a paper on varieties of *C. diphtheriae*.

Dr. Mair classified diphtheria bacilli on the separation of (1) the barred group, which does not ferment starch and which is highly characteristic in its morphology, mode of growth, and reaction in the guinea-pig, and (2) the starch fermenters, the morphology of which is not so characteristic, from (3) the remaining strains, which he regards as a miscellaneous group. With lantern slides illustrating these points, and statistics based on several thousand cultures, he showed that there has been an increase in the barred and starch-fermenting strains in London in recent years, and that these strains are now associated with the more severe cases of diphtheria. The subsequent discussion made it clear that Dr. Mair's barred form corresponds exactly to the "intermediate" form, the starch fermenters correspond to the "gravis" group, and the miscellaneous group includes the "mitis" and "atypical" groups of the Leeds workers.

Dr. ALEXANDER JOE gave the results of 192 cases which he had classified clinically, and in which Dr. Mair had typed the organism. Cases in which starch-fermenting

organisms were found numbered fifty-three, and showed a paralysis rate of 20.7 per cent. and a case fatality of 11.3 per cent.; eighty-four cases in which barred forms were found showed a paralysis rate of 23.8 per cent. and a case fatality of 8.3 per cent.; while in the non-fermenting group of fifty-five there was a paralysis rate of 9.1 per cent. and a case fatality of 5.6 per cent. Dr. Joe pointed out that his cases were not consecutive and that the series contained a higher proportion than normal of severe and moderately severe cases, but otherwise he thought the cases were representative. While being cautious about the statistical interpretation of his results, he believed they gave some support to the observations of the Leeds workers, and referred to the interesting behaviour of diphtheria in London, which at present, in the view of most of his colleagues, was tending to become more severe. If this tendency should become more marked it would be of the utmost importance to note whether starch-fermenting organisms became predominant.

Dr. J. S. ANDERSON referred to the combined statistics of Leeds, Hull, Manchester, and the North-Western Hospital, London, in all of which centres bacteriological and clinical results had been correlated. Exception had been taken to the nomenclature of the types, but in view of these statistics the Leeds workers continued to uphold their attitude. It was pointed out that, in the original papers, the possibility of intermediate strains approaching gravis strains in virulence had been foreseen. The criticism that the association of severe diphtheria with gravis strains was a local phenomenon was now obviously untrue, as a similar state of affairs existed elsewhere. Delayed treatment and inadequate treatment as factors could likewise be set aside. Dr. Anderson restated the view that endemic diphtheria might be caused by mitis strains and epidemic diphtheria by gravis and intermediate strains, and also referred to the work of Povitsky, Eisner, and Jackson in New York, in which it was suggested that gravis strains possessed a greater invading power and produced toxin in the human body more rapidly than other strains. He drew the attention of clinicians to the marked decrease in the incidence of laryngeal disease in Leeds, and to the marked increase in the case mortality between the ages of 5 and 10 years, both being features of a severe epidemic in which gravis strains were predominant. He asked for more observations to be made in both these directions.

Professor McLEOD remarked that, if the cases brought forward by Dr. Mair and Dr. Joe were taken into account the bacteriological type and the clinical condition had been correlated by now in 2,000 cases from fever hospitals situated in Dundee, Glasgow, Hull, Leeds, London, and Manchester respectively. Of these 45 per cent. were of the gravis type with a 13.6 per cent. case mortality; 35 per cent. of the intermediate, with a 10.5 per cent. case mortality; 17 per cent. of the mitis, with a 3.2 per cent. case mortality; and 2 per cent. of the atypical, without recorded death. These facts, together with the observation that infectivity of the pellicle-forming and starch-fermenting strains seems to be greater, appeared to justify the adoption of the name gravis for these strains. Although, Professor McLeod continued, the evidence in support of this view from animal experiment was less frank, it was clear that there also the gravis strains were more formidable. On the average they killed the animals more rapidly, they persisted more frequently in the tissues, and, further, non-pathogenic strains were so rare that tests for pathogenicity with characteristic strains of this type appeared to be superfluous. On the other hand, although highly pathogenic strains of both intermediate and mitis types were common, from 5 to 15 per cent. of the total number examined had been found to be non-pathogenic or relatively apathogenic for animals. An unusual type of starch-fermenting strain had been met with in Glasgow in small numbers. These strains were unlike the usual gravis strains, both in respect of the appearance of the colonies and of the characters of their growth in broth. With the exception of a few strains less definitely smooth in broth cultures they had been found to be non-pathogenic to animals. It was an interesting speculation

whether these strains might prove to be the reservoir from which an epidemic of severe diphtheria might presently be developed in Glasgow.

Of the eight mitis deaths in this series observed outside London all but one—from an infant who first received treatment on the seventh day of disease—had been complicated by tracheal obstruction, bronchopneumonia, or severe enteritis. Primary toxic deaths, such as occurred frequently in the intermediate and gravis cases, seemed to be extremely rare in mitis infection.

Dr. R. A. O'BRIEN said that diphtheria, which was virtually a preventable disease, still caused many deaths. They therefore owed much to the Leeds workers for stimulating valuable research on typing. He looked forward to studying in detail, when they were published, the figures presented at the meeting. So far as he knew diphtheria antitoxin used prophylactically had never failed to stop an outbreak anywhere in the world. Obviously, therefore, all types of the diphtheria bacillus must be, immunologically, closely related, if not identical.

Surgeon Captain SHELDON DUDLEY said that in the Royal Naval Medical School trypsin serum agar gave a cleaner-cut differentiation of the three types of Klebs-Löffler bacillus colony than the Leeds workers' chocolate medium. The colony morphology could, however, be distinguished on many media, including plain ox-heart agar. Miss Orr Ewing had shown that the starch-fermenting gravis strains of K.L.B., which were received from different places, fell into several serological groups—a fact which to some extent harmonized the discordant reports on the cultural and pathogenic characters of gravis K.L.B. In a school where diphtheria had been endemic for years artificial immunization was successful in keeping the school free of the disease for four years, though carriers of virulent K.L.B. remained plentiful. In October, 1932, a gravis type of K.L.B., of the same serological group as that predominant in Leeds appeared for the first time in this school. Synchronously with this event an epidemic of mild modified diphtheria broke out in this fully inoculated population, and the carrier rate for K.L.B. was higher than had ever been noted before. This observation was consistent with the view that this serological type of gravis *C. diphtheriae* was more infective and invasive than the average. In his opinion the school had only been saved from a much more severe and wider spread epidemic by the fact that it had been inoculated against diphtheria. The cases which occurred in these partly immune subjects were trivial and mostly unrecognizable as diphtheria without laboratory confirmation. It was, however, very uncertain how far other serological groups of gravis *C. diphtheriae* deserved the name on clinical and epidemiological grounds. The bacterial flora changed so frequently with time and place that it was doubtful if any classification, or correlation of bacterial type with clinical picture, which might hold to-day would have any permanence.

Dr. H. J. PARISH agreed that most strains now being isolated in London fell into the Leeds groups, although a year or two ago atypical strains were common. The organism was apparently in a constant state of flux, and, although severe diphtheria was to-day associated mainly with gravis in several areas, there was always a possibility that some new variant—or even the classical mitis strain—might cause a high mortality in future. Ewing showed that the Leeds gravis agglutinated differently from the Hull gravis. One could therefore doubt if direct spread had occurred.

Dr. STURDEE said that apparently severe outbreaks of diphtheria had been caused by both gravis and intermediate types. If at some future date a severe outbreak were found to be due to mitis they would be where they were. At any rate, there seemed no reason at present to advise a medical officer of health to alter in any way his procedure for dealing with diphtheria. It would be interesting if bacteriological investigation were made of some obviously mild outbreaks in order to see by what type of diphtheria organism they were caused. There might be danger in calling an outbreak severe if the day of disease on which antitoxin was given was not known.

LOWER SEGMENT CAESAREAN SECTION

At a meeting of the North of England Obstetrical and Gynaecological Society, held at Manchester on January 26th, with the president, Professor DANIEL DOUGAL, in the chair, Dr. K. V. BAILEY (Manchester) read a paper on the lower segment operation as the routine Caesarean section.

He said that the operation should be performed in all cases in which abdominal delivery was thought to be necessary, whether the patient was in labour or not, and whether she was potentially infected or not: he claimed that it was a safer procedure, with a smoother convalescence and a sounder ultimate result, than the classical operation. Though the lower segment was only fully developed after labour had begun, the part of the uterine wall through which the incision was made was thinner than it was at a higher level, even before labour. It was therefore permissible to speak of the lower segment operation, even when it was carried out before the onset of labour. In his own series of cases, he continued, fifty-one were in labour and fifty-eight were not. Without giving a full description of the operation, Dr. Bailey stressed the following points in technique.

He preferred, he said, the horizontal position to any form of Trendelenburg position. Even a modified Trendelenburg position might embarrass the breathing owing to the fundus uteri falling against the diaphragm and so rendering the administration of anaesthesia difficult. The weight of the uterine body pulling on the lower segment increased the liability of the incision to split during extraction of the child. In the Trendelenburg position the extraction was made more difficult by being carried out uphill; more force was required than in the horizontal position; also, potentially infected liquor and blood tended to flow downhill into the upper abdomen, however well the swabs were disposed. A sub-umbilical incision was made; then the sides of the abdominal cavity were packed in the usual way, and a retractor (Doyen or self-retaining separator) was introduced at the lower end of the wound. The lower segment was incised. Dr. Bailey favoured a semicircular incision, the mid-point being a quarter of an inch above the bladder reflection, and the ends pointing directly upwards, parallel to the sides of the lower segment. He considered that it gave the best access with the maximum of safety. A vertical incision had been followed by fatal rupture into the bladder, and a transverse incision might split during extraction of the child, with serious haemorrhage from the uterine vessels. He incised and reflected the peritoneum before dealing with the muscle. The hand of the operator which was nearer to the patient's feet was then introduced through the incision and passed to the back of the child's head. The other hand retracted the upper flap of the uterine incision, and the assistant pressed firmly and uniformly on the fundus. Thus the head was shelled out and the body subsequently delivered. During this manoeuvre, Dr. Bailey said, the excellent access given by the type of incision described could be appreciated. He had never found the forceps necessary. He did not like the idea of using a somewhat unwieldy metal instrument inside a thin-walled space, and preferred to use his lower hand as elevator and guider. Next, the uterus was lifted out through the abdominal incision and compressed between warm swabs. The placenta was expressed by this means, combined with traction on the membranous surface. He deprecated the insertion of the hand into the uterus as being a possible source of sepsis. The uterus was sutured with two layers of continuous chromic catgut No. 2, the first including the endometrium and half of the muscle, the second the other half of the muscle and the peritoneum. In potentially infected cases the second suture did not include the peritoneum, which was stitched separately with a third suture. The retractor and swabs were removed, the abdomen and pelvis were freed of blood, and the abdominal incision was closed.

In the series of 109 cases there had been no maternal death. Fifty-eight patients had been operated on before labour, in good condition. Of the fifty-one in labour, fifteen had been in labour more than eighteen hours, and in eight the membranes had been ruptured more than ten hours. In nine the time in labour had been between thirty-two and seventy-two hours, and the pulse had been high before operation. In nine cases the placenta had partly occupied the lower segment, and in one there had been ante-partum haemorrhage because of this. There had been two cases of concealed accidental

haemorrhage and one of eclampsia. Twenty-one cases had been morbid; the standard of morbidity was fever reaching 100° F. on at least two consecutive days after the third post-operative day. Of these cases eight had chest, four urinary, and two breast infections. A reactionary temperature of 100° or more occurred in twenty-one cases during the first forty-eight hours after operation. Six of the babies had been stillborn (two concealed accidental haemorrhage, one maternal valvular disease, one hydrocephalus and spina bifida, and one asphyxia), and one had died on the second day (placenta praevia). The infant mortality of the series was 6.4 per cent.

Summarizing his views on the operation, Dr. Bailey said that he believed, from a consideration of the literature and from his own experience in the three cases in which he had done a second-lower segment operation on the same patient, that the risk of rupture of the scar must be much less than in the classical operation. In his three cases the uterine scar at the second operation had only shown as a slight puckering of the peritoneum. The operation was rather more difficult than the classical procedure, and should only be undertaken by the experienced gynaecologist.

RECOVERY IN NON-MENINGOCOCCAL MENINGITIS

At the seventh annual meeting of the Association of Clinical Pathologists, held in the Inoculation Department, St. Mary's Hospital, on January 27th, with Professor A. FLEMING in the chair, Dr. S. C. DYKE (Wolverhampton) opened a discussion on the prognosis and treatment of meningitis other than that due to tuberculous or meningococcal infection.

Dr. Dyke said that he had been struck by the difference in opinion which appeared to exist as to the gravity of the outlook in meningitis of pneumococcal, staphylococcal, or streptococcal origin. His own experience had been that, once any of these organisms had been isolated from the cerebro-spinal fluid, death invariably followed. The records of the Royal Hospital, Wolverhampton, for the past four years showed that death had occurred in all cases (twenty-seven) of meningitis in which Gram-positive cocci—in eighteen cases pneumococci, in six streptococci, and in three staphylococci—had been isolated from the cerebro-spinal fluid. He had frequently been told by others of cases of bacteriologically proven infection by these organisms in which recovery had ensued. With the view of obtaining some light on the subject a questionnaire had been issued to all members, and the following cases represented the response. Dr. Dyke stated that he himself had had experience of only one case of recovery in meningitis not meningococcal. In this the infecting organism was a haemophilic bacillus of the Pfeiffer type. The patient was a male, aged 22, in whom lumbar puncture had been performed twelve times in sixteen days.

Dr. J. HARWOOD LITTLE (Chichester) reported a similar case in a boy aged 8. The source of infection was apparently the ear, and lumbar puncture was performed only once, a bacillus of the Pfeiffer type being isolated. Dr. CUTHBERT DUKES gave brief notes of a case in which haemolytic streptococci had been found in the cerebro-spinal fluid. One week after the onset anti-scarlatinal antitoxin had been injected intrathecally and intravenously on successive days, with subsequent recovery. Dr. G. W. GOODHART, in absence, forwarded the report of one case in which recovery had ensued after isolation of streptococci from the cerebro-spinal fluid. Lumbar puncture had been performed four times. Dr. ELIZABETH O'FLYNN recorded recovery in a case of mixed meningococcal and streptococcal (haemolytic) meningitis. The following cases of meningitis in which recovery took place were also reported: Dr. A. G. SHERA (Eastbourne), a case of fracture of the skull involving the ethmoids in which *Streptococcus viridans* had been found in the cerebro-spinal fluid; Dr. F. B. SMITH (Preston), a case due to

haemolytic streptococci; Dr. D. S. MURRAY (Richmond), a case due to *Staphylococcus aureus*; Dr. I. B. MORRIS, a case in which *Staphylococcus albus* had been isolated from both the blood and the cerebro-spinal fluid.

Dr. J. G. GREENFIELD referred to instances in which pus found on lumbar puncture came not from the theca, but from the epidural space. In such cases repetition of the puncture carried with it the danger of infecting the meninges. Dr. EMBLETON put in a plea for frequently repeated puncture in all cases of meningitis. He did not consider every six hours too frequent. Dr. GREENFIELD made mention of drainage of the theca by an indwelling lumbar puncture needle cut off and bent over a perforated metal plate. Dr. DYKE pointed out that the evidence went to show that isolation of Gram-positive cocci from the cerebro-spinal fluid in cases of meningitis although it rendered the prognosis grave in the extreme, evidently did not justify the abandonment of all hope.

Dr. R. MAEGRAITH (Oxford) described a precipitin reaction for the diagnosis of cerebro-spinal fever. The reaction consisted in bringing together in Dreyer's tubes small amounts of cerebro-spinal fluid as antigen and a suitable anti-meningococcal serum as antibody. A positive reaction was shown by the appearance of a white precipitation ring at the juncture of the two fluids. The reaction became positive within the first few hours after the onset of symptoms, and constituted a valuable aid to early diagnosis.

Miscellaneous Communications

Professor G. S. WILSON, in a communication on the diagnosis of *Brucella abortus* infections, said that abortus infection in this country was practically always due to the bovine type, which in primary culture requires an atmosphere of 10 per cent. carbon dioxide. The bovine type had high infectivity but low pathogenicity; many persons whose work brought them in contact with cattle developed serum agglutinins against the organism without ever having had symptoms of the disease. The mere demonstration of agglutinins in the serum was therefore not proof of the existence of the disease. For diagnosis, either a high agglutinin titre or characteristic symptoms were requisite. In persons not exposed to infection a diagnosis might be permissible on a low agglutinin titre, but this was not permissible in those exposed to infection unless the clinical picture was typical. Blood culture formed a valuable method of diagnosis. The best culture medium was 1 per cent. glucose broth, and incubation should be prolonged in an atmosphere of 10 per cent. carbon dioxide.

Dr. H. J. PARISH spoke on staphylococcal toxin and toxoid, with special reference to the use of the latter as an immunizing agent. The anti-staphylococcal haemolysin titre of the serum rose, he said, *pari passu* with the antitoxin value. Both in men and in animals the anti-haemolysin titre could be greatly increased by injections of toxoid, and he described a simple technique for the estimation of the anti-haemolysin titre of the serum, drawing particular attention to the value of this procedure as a means of estimating the response to immune therapy, either passive by means of serum or active by means of toxoid.

Dr. E. L. STURDEE detailed the results of a statistical inquiry into the therapeutic effect of anti-meningococcal serum. Allowing for the fact that reliable controls were extremely difficult to secure, he said that by the use of serum the mortality rate had been reduced by from 20 to 30 per cent. Dr. W. M. SCOTT pointed out that the type of meningococcus predominant in the present epidemic area was I-III, as opposed to the state of affairs in the epidemic period 1915-19, when the II-IV type was mainly met with. Dr. R. A. O'BRIEN spoke of the debt which those concerned with the manufacture of therapeutic serum owed to the work of the medical officers of the Ministry of Health. He deplored the absence of any reliable test as to the therapeutic efficiency of anti-meningococcal serum; the agglutinin titre he regarded as a very doubtful criterion of therapeutic value.

VACCINATION: THE PRESENT POSITION

At a meeting of the Medical Society of London on February 12th, with Sir JOHN THOMSON-WALKER, the president, in the chair, a discussion was held on "The Present Position of the Vaccination Question."

Dr. C. KILLICK MILLARD said that thirty years ago he read a paper before the Society of Medical Officers of Health which got him into some disgrace with his particular branch of the profession. A senior member of the society said that such a paper ought never to have been read, and moved that it be not printed. A compromise was made by allowing the paper to be printed, but with no reference to the fact that it had been read before the society. The paper was entitled "The Leicester Method of Dealing with Small-pox." His suggestion that it might be possible effectually to control small-pox without recourse to compulsory vaccination caused great offence at that time. He did not think that now such a paper would cause very much disturbance. Nothing that had happened in the course of those thirty years had weakened his profound faith in the power of vaccination to confer protection, specific in nature, on the individual against small-pox. He knew of no other fact in the whole field of medicine more definitely established. But it must be understood that the protection was only temporary, even though it usually lasted for a period of years. An important distinction was to be drawn between the effect of vaccination on the individual and on the community, and its protection for the community was not nearly so well established as its protection for the individual. In the past there had been too much readiness to regard the reduction in small-pox mortality which followed the introduction and increased use of vaccination last century as necessarily all due to vaccination. As an example, he referred to a table given by the Registrar-General in his annual report for 1880, in which three periods were taken and contrasted as regards vaccination and small-pox mortality:

Periods	Vaccination	Small-pox Mortality
1847-53	Optional	305 per million
1854-71	Obligatory, but not efficiently enforced	223 "
1872-80	Obligatory, and more efficiently enforced	155 "

Many authorities had quoted this table with approval as vindicating vaccination. How little they foresaw what the future years would reveal! If the table were carried forward on similar lines it would show a great decrease in vaccination, the introduction of a conscience clause, the making of exemption easier by allowing parents to make statutory declarations, and, finally, a state of affairs in which more than half the children born remained unvaccinated, and yet, parallel with this, small-pox mortality had gradually fallen and was now at vanishing-point. There was no true relationship between the amount of infant vaccination and the mortality from small-pox; other and more important factors must have been at work. Here Dr. Millard compared the experience of England, where sanitation had made so much progress, with that of India, where sanitation was backward. For generations small-pox had been a scourge in India, in spite of an active vaccination and revaccination service. In India the amount of vaccination per million of population was much greater than in this country, but, on the other hand, the small-pox mortality, instead of declining, remained at an appallingly high figure. During the last twenty years the deaths in British India from small-pox showed no decrease at all. During the quinquennial period 1911-15 there were 405,000 deaths, and during the last quinquennial period, 1926-30, there were 477,000. Such an appalling death rate indicated the tragic failure of preventive methods, including the system of vaccination. He would admit that if every one of the hundreds of millions of the Indian population was recently vaccinated and kept recently vaccinated, small-pox deaths would cease, but such an ideal course was even less attainable there

than in this country. There had been similar failures of vaccination in England in towns where infant vaccination was unsupported by other methods of sanitation. He instanced the case of Middlesbrough in 1897-8, a town in which the proportion of vaccinated children was very high, but which, in the words of its medical officer at that time, was "the home of epidemics"; there a serious small-pox epidemic took place, and 86 per cent. of those affected were vaccinated persons, and 108 of those vaccinated persons died. The last visitation of Asiatic small-pox, variola major, in this country, occurred in the early years of the twentieth century. Since then there had been isolated outbreaks, but all had been successfully stamped out, in spite of increasing default in the matter of vaccination.

VARIOLA MAJOR AND MINOR

During the post-war period the whole situation had been radically changed. Variola major had virtually disappeared, and its place had been taken by a trivial form of small-pox—variola minor—non-fatal, not permanently disfiguring, and not much more serious clinically than chicken-pox. During the years 1922-33 there were in England and Wales 81,080 of these cases of variola minor; 254 deaths (0.3 per cent.) were ascribed to it, but probably in a majority of these deaths small-pox was only a secondary cause. Variola minor was a distinct entity, which for all practical purposes might be regarded as breeding true, and there was no satisfactory evidence that it changed into variola major. The two varieties of small-pox presented two different administrative problems. There was still a good deal of difference of opinion as to measures to be taken in dealing with an outbreak of variola minor. In practice, at the beginning of an outbreak, many medical officers of health were prepared to go considerable lengths, but later on they were less averse from a policy of *laissez-faire*. It was not unreasonable to ask what would happen if such a policy were really followed. Would the epidemics really behave like epidemics of chicken-pox? There would be this difference, that with respect to chicken-pox the population was largely protected by previous attack, but in time the same thing would obtain with regard to variola minor. If it did spread and were allowed to take its course that would be in some ways an advantage, and would go far to comfort those who were seriously alarmed at the great danger created by the neglect of vaccination. If variola minor protected permanently against variola major it would have an advantage over vaccination, which gave only a temporary protection. It might be worth while trying the effect of substituting for vaccination in India inoculation with variola minor. He believed that variola minor was not a new disease; it has existed in many parts of the world from time immemorial. In Leicester in 1904 there were 321 cases and only four deaths, and he believed those four deaths could be accounted for by an accidental introduction of variola major amongst the variola minor, which at that time was not recognized as such.

Another great factor which had profoundly modified the vaccination question was the occurrence and recognition of post-vaccinal encephalitis. Dr. Millard admitted that it was easy to exaggerate its importance, and the total number of cases which had occurred in proportion to the number of vaccinations performed was very small. On the other hand, it was possible to belittle this new and added danger attaching to vaccination—a danger which was greater when compulsory vaccination took place of unvaccinated contacts, especially between 5 and 15 years of age. He concluded by saying that in spite of steadily diminishing vaccination variola major had been practically banished from these islands for thirty years, and, notwithstanding importations favourable to its spread, had never succeeded in getting a foothold. They were always told that it might come back, but it showed less and less tendency to come back, and was now becoming an exotic. Variola minor was admittedly so trivial that it was difficult to justify compulsory vaccination, especially in view of the fact that vaccination could not be said to be an operation free from danger. It might be said that compulsion to-day was only nominal,

but if vaccination was not compulsory why hesitate about the abolition of the cumbersome machinery of compulsion? It was true that at the Representative Meeting of the British Medical Association in Dublin last summer a motion calling for the abolition of the compulsory element in vaccination was not carried, but he would suggest that general practitioners were less in touch with what might be called modern thought on this question than were the medical officers of health, on whom the task fell of having to combat small-pox should it arise.

NEED FOR FRESH LEGISLATION

SIR GEORGE BUCHANAN agreed that there was no doubt that the type of small-pox now in evidence had been breeding true, and that it could properly be called variola major. At the same time they might always get variola minor. Only a year ago he was passing through Alexandria and found there a typical outbreak of variola major, exactly of the same type as that with which he made acquaintance in this country for the first time in 1892. The same state of affairs obtained in many countries, and with facilities for importation, such as the increased use of aircraft, and so on, he would not like to say that this country was out of danger, though he thought that, barring accidents, if there were importation it could be very quickly brought within bounds. There was no doubt about the protective value of vaccination; it was true that it was temporary, though it lasted for a long time. He could not attach quite the same value as Dr. Millard had done to sanitation in general as a means of diminishing small-pox, unless in sanitation he included the detection and isolation of small-pox cases. He thought that the State or the local authority ought to provide facilities for vaccination, making it available to anyone of any age and at any time, though that did not necessarily mean that the present public vaccinator system must be kept up. Legislation in regard to vaccination was certainly overdue. The powers under the Public Health Acts were not sufficiently definite. Only one thing was an obligatory requirement—namely, infancy vaccination—and this was particularly ineffective as a means of controlling small-pox. The whole thing wanted re-drafting, but parliamentary time and organized opposition had to be considered. The extreme anti-vaccinator had been a great obstacle to progress, because he was not content with a number of good points which he could make, but went on to say that vaccination did not protect against small-pox, which made it difficult to take him seriously.

Dr. J. P. MARSDEN said that all would agree that a successful vaccination protected against small-pox for a limited time; most would agree that as a method of abolishing small-pox from the community compulsory vaccination as applied in this country was a failure. It always would be a failure in a community other than one subject to rigid discipline. For that reason, added to the fact that for many years in this country the only type of small-pox, with one or two exceptions, had been a small-pox devoid of mortality, there had arisen a demand for the abolition of the compulsory element in vaccination. Should this be left entirely to the individual? So long as vaccination remained compulsory, even if compulsion were not applied very efficiently, a certain amount of vaccination was carried out. He also drew attention to the new procedure in vaccination, following on the recommendations of the Rolleston Committee, whereby one insertion instead of the previously recommended four was made. That was a popular move, very quickly appreciated by the man in the street, but it was still a question how long such protection lasted. What evidence was available went to show that the larger the area and the greater the number of scars, the longer the protection. With regard to encephalomyelitis, that particular condition was not confined to its association with vaccination. A condition which, if not the same, was at any rate indistinguishable from it, might be found associated with small-pox. He had had under his care seven cases of encephalomyelitis which had followed attacks of small-pox. In the patients who died and were examined pathologically the histological picture was indistinguishable

from encephalomyelitis following vaccination. Therefore the argument that by abolishing vaccination one would abolish encephalomyelitis would not hold.

NOMENCLATURE OF VARIOLA MINOR

A good deal was heard of variola minor. This was small-pox which ran a modified course, the cases being due to infection with an avirulent strain of the virus. There was nothing new in that at all. The modification of an attack of small-pox, breeding true in a series, had been known to exist since Jennerian times. Outbreaks of small-pox had occurred in which there had been practically no mortality. Infection with an attenuated, avirulent, and benign strain of small-pox virus would produce an attack of small-pox which ran a modified course. But that was not the only factor which would produce such an attack. If a man who was relatively immune, either by virtue of a previous vaccination or some degree of natural immunity, came into contact with a virulent and malign strain of small-pox, his attack would be modified, and clinically it was not possible to distinguish between the two cases. Regarding the man as a unit, one could not say whether he was suffering from variola major, minor, or minimus. His objection to the term "variola minor" was that it was not a clinical term. One could tell by studying a series, and finding out whether the disease bred true, that it was variola minor which was concerned, but one could not tell it by looking at an individual patient. That was one of his main arguments against making a distinction in one's preventive treatment between so-called variola major and variola minor.

Dr. E. W. GOODALL disagreed with the last speaker as to the nomenclature of variola minor. If the medical profession had not invented a name for this disease the people of this country would have done so. Many such conditions had been recognized by the common people before they were described by the medical profession; that was true of rubella, chicken-pox, and scarlet fever. He thought variola minor was a very good name, and there could be no question that there had been for many years a form of variola which was quite different from the old classical form. Mild cases of the classical small-pox were not the same as variola minor. He was not disposed entirely to agree with Dr. Millard that variola major had been banished, and on that account he was not inclined to assent to the abolition of compulsory vaccination. He thought, however, that it need not be pushed too much; it was good to have it as a standby. He added that, so far as he knew, in small-pox there were no such things as carriers, so that from that point of view small-pox was not administratively difficult.

Dr. H. B. DODWELL said that from the point of view of a local authority they were very conscious of the hostility towards compulsion, and on this ground he was in favour of abolition of compulsion. In his own private practice he tried the effect of persuasion with parents, and never had a refusal. He thought it might be necessary for some compulsory powers to be retained by the local authority in the event of an outbreak of serious small-pox, but, short of that, the method should be by persuasion.

The President drew attention to the oil-painting in the society's room, which showed a group of early members of the society, including Jenner, Lettsom, and Woodville, the men who did most—except Pearson, who was not represented—to introduce vaccination for small-pox into this country 136 years ago. It would be interesting to hear what they would say about the discussion that evening. Had the work of those men been the cause of the very satisfactory position in regard to small-pox, or would the result have been the same supposing their work had not been done?

Dr. KILLICK MILLARD, in answer to another question by the president as to whether there would be a sufficiency of lymph to meet a sudden serious outbreak, supposing compulsory measures were abolished, said that he believed that the Government kept a large store of lymph. (Sir GEORGE BUCHANAN said that the Government had about two or three years' supply in cold

storage.) Taking up the point about the two varieties of small-pox, Dr. Millard declared that it was nonsense to talk about a modified small-pox. Variola minor was a definite entity. They did not know that it was modified; for all they knew, variola minor was just as ancient a disease as variola major. There was no sense in saying that it was modified in the sense that small-pox was modified by vaccination. He spoke warmly on this subject because he believed that there was an ulterior motive behind the resistance to allowing variola minor to be recognized as a separate entity. While he agreed with Dr. Goodall that there were no carriers in small-pox, there was something like a carrier in the unrecognized case of a person who had at some time in his life been vaccinated and who was suffering from a mild attack.

CORRESPONDENCE

The Nutrition Report

SIR,—In view of the political use which has been made of the Association's Nutrition Committee's excellent report (*Supplement*, November 25th, 1933), and for other more practical reasons, it is unfortunate that the terms of reference were not more specific. It is common knowledge that the amount and nutritive value of food required by people following different occupations vary considerably, and even those of the same individual under varying conditions as regards muscular exertion likewise vary. It was therefore a problem to decide whose "working capacity" had to be maintained. The committee widely envisaged that mythical person—the average man doing moderate manual labour. In the case of his family the problem was not so difficult, the requirements of a housewife doing her own work and of school children being more constant.

If the terms of the reference had been more restricted the conclusions of the committee would have been less open to criticism and misinterpretation. As an instance of the latter, Mr. Arthur Greenwood (see *British Medical Journal*, December 9th, 1933, p. 1098) quoted in the House of Commons the diet No. 16 to prove that families on the dole were not receiving adequate allowances. Mr. Greenwood considered the cash outlay on food laid down by the committee as essential for maintaining the health and working capacity of the members of the family; but he disregarded the fact that the majority of families do not come within the definition of diet No. 16, and that the father, being unemployed and on the dole, did not require the full diet of 3,000+400 calories, though the rest of the family would probably require their various quotas in full.

One gathers from Hutchison and Mottram's *Food and the Principles of Dietetics*, seventh edition, Chapter III, that an idle man requires only about two-thirds of the calories he would need when employed at moderate manual work. Thus a saving in the cost of his diet would be achieved. There would seem to be no necessity for an idle man (unemployed for perhaps months on end) to keep up his capacity for work by his diet. Given health, he can easily increase his intake when work is found. On this point the committee would appear to differ from Hutchison and Mottram's textbook. The former, in a note to diet No. 2, states that in the case of the unemployed cutting down this diet would "seriously depreciate its physiological value." That is quite true; but the idle man (according to Hutchison and Mottram) does not require the value prescribed therein. The above considerations should be impressed upon all those who take an interest in the dietetic requirements of the unemployed individual leading an indolent life.

Another point to be noted is that the committee considers that the 39 grams of first-class protein (out of a

total of 100), hitherto thought sufficient, is too low a quantity, and bases its calculations on 50 grams per day, which make the diet correspondingly costly. Diet No. 2 is most varied, and is founded on what the committee discovered as being in use in well-to-do English working-class houses. One most sincerely congratulates the English working classes on the variety and quality and quantity of their diet, and it is to be hoped that they duly appreciate their good fortune as compared with the vast majority of mankind. Even north of the Tweed the English have long been regarded as doing themselves uncommonly well. It may be, therefore, that the committee is quite right in holding that the monotony of diet No. 1 would soon cause distaste and gastric revolt. Sympathy is due to Mr. Greenwood in his anxiety, even though he is somewhat mistaken, about the exact smallness of the sum left over from the dole, when out of such a meagre balance the householder has to provide for such items as rent, coal, clothing, beer, tobacco, artificial silk stockings, dances, cinemas, and football matches—all regarded as so essential to a decent standard of living.

You, Mr. Editor, in an annotation mourn the flippancy of the lay Press in its reception of this most important report; but please take some consolation from the fact that these people regard everything from its news-value aspect, and that even such scurvy treatment is much better than being entirely ignored. It might now be of some advantage to the public if the committee were to take sample individuals at random from various occupations and from the idle, and make an investigation into their general health and capacity for work (if employed) and state of nutrition; ascertain and analyse their usual daily diet, and decide whether such diet is correct in every way for the conditions of existence of each individual. Then draw up a statement (avoiding figures as far as possible) of these investigations, showing where each individual diet exceeds, or falls short of, the person's requirements, or meets the case. Such a document issued to the lay Press for general information might prove valuable, as it would approach the subject more from the point of view of everyday life and practice.—I am, etc.,

Southern Rhodesia, Jan. 12th.

D. CAMPBELL WATT.

Dosage of Barbiturates

SIR,—A few days ago I read a report of an inquest on a victim of dial. During the inquest several medical witnesses gave evidence and were questioned by the coroner on the toxicity of various barbiturates, including dial. One—according to the daily paper's report—replied that the fatal dose of barbitone (veronal) is about 50 grains, and that the same holds good for dial.

I hope this is the inaccuracy of a reporter, and not the actual statement of the medical man concerned, for it is obvious that it is a misstatement in the above form. Dial—the allyl derivative of barbituric acid—is at the very least twice as toxic as veronal, and in my opinion more than that. The fact that it is sold in tablets of 0.1 gram or $1\frac{1}{2}$ grains, against the 5 grains of veronal and sulphonal, shows that the average dose is one-third of that of the two simpler compounds. I have personal experience on this subject, having seen a case of dial poisoning where 20 grains were taken, and the patient's life was saved only by the narrowest margin imaginable, and, indeed, was given up by two consultants. In another case—an adult woman—16 grains were fatal after forty-eight hours.

May I appeal on this occasion to those colleagues who have to prescribe—or dispense—these dangerous drugs, never, never, to prescribe them in tablets and in bulk; but to make an invariable rule, as I do, to prescribe them in

divided powders and in combination with pulv. ipecac. and sacch. lactis, like:

R Diali ...	... gr. jss	or	R Phenobarb. sod. ...	gr. jss
Pulv. ipecac. ...	gr. iij		Pulv. ipecac. ...	gr. ij
Sacch. lact. ...	gr. v		Pulv. glycyrrhiz. ...	gr. iv
f. pv., nocte s., si op. sit.			f. pv., nocte s.	

This combination will have very salutary effects on anyone taking, say, five of these powders, before the soporific has been absorbed in large quantities. Perhaps one of these powders could be included in the B.P. as pulv. phenobarb. co., in which case it could be easily prescribed in suitable cases. Has the time not yet arrived when these compounds should be included in Part I of the Poisons Act, or some of them even in the Dangerous Drugs Act?—I am, etc.

ERIC A. FREYWIRTH, M.D.
L.M.S.S.A.

London, W., Feb. 5th.

Sudden Circulatory Failure and Diabetic Coma

SIR,—Although insulin therapy has made possible the recovery of cases of diabetic coma, a number of such patients still continue to die. Death can often be attributed to the effects of a concomitant infection, but there still remains a group in which at necropsy no lesions are found, and one has perforce to admit that such cases must be regarded as deaths from uncomplicated diabetic coma. Patients in this latter group usually appear to die suddenly. The clinical picture suggests sudden circulatory failure, and the striking fact about it is that the majority of the deaths occur after apparent recovery from the coma. We have recently met with three cases of sudden circulatory failure after recovery from diabetic coma: one patient died in the condition, one recovered and died from pneumonia forty-eight hours later, and one recovered completely. All had these points in common: the collapse occurred shortly after the patient was raised from the recumbent to the sitting posture; all had previously received a solution of glucose in normal saline intravenously. In view of the recovery under treatment in two cases and the suggestive similarity of the events preceding development of the condition, it appeared worth while to draw the attention of your readers to these points, in the hope that sufficient cases may eventually be recorded to permit the formulation of efficient preventive or curative measures.

First Case.—Woman, aged 38. Suggestive history of untreated diabetes for several years. Admitted at 6 p.m., unconscious; sugar, "acetone," diacetic acid, present in large quantities in the urine; cellulitis in the left axilla. Treated with subcutaneous and intravenous glucose-saline and insulin. Ten and a half hours later was sufficiently conscious to drink glucose solution by mouth, but the pulse was reported as weak. At this time the urine contained much less diacetic acid. At 9 a.m. diacetic acid had disappeared from the urine, and by the Rothera reaction only a trace of acetone was detected. At this time there was a slight improvement in the general condition, but the pulse was weak. A few minutes past 9 a.m. she was lifted on to a bed pan, and died ten minutes later. After coming off the bed pan she had been propped up on three pillows and actually died whilst sipping fluid. Unfortunately, consent to a post-mortem examination could not be obtained.

Second Case.—Man, aged 50, a known diabetic taking 5 units of insulin twice a day. Admitted at 6 p.m. on the verge of coma. Urine showed a strongly positive ferric chloride and acetone reaction. On examination had signs at both bases suggesting pneumonia. Pulse good. Treated with intravenous glucose solution and insulin. Became fully conscious in four hours and acetone-free in six hours. Three hours after admission it was possible to give glucose by mouth and all further doses were given in this way. At 10 a.m. next day he suddenly struggled into the sitting position and fell back collapsed. When seen he was pale, with cyanosed lips, the respirations were almost imperceptible, the extremities were cold, he was pulseless at the wrist, but faint heart

sounds could be heard. Death appeared imminent. The patient was laid flat in bed, the foot of the bed was raised on blocks, blankets and hot-water bottles put round him, oxygen administered, and 1/16 grain strychnine given. The man's condition rapidly improved, and one hour later was no worse than might have been expected from the pneumonia. He died from the disease two days later.

Third Case.—Woman, aged 36 years (eight months pregnant). Admitted in coma. The urine gave a strongly positive Benedict, ferric chloride, and Rothera reaction. She was given intravenous glucose solution and insulin, and recovered consciousness in four hours. Five hours after admission only a trace of acetone was found in the urine. An hour later she wished to sit up, and was raised by two nurses into a sitting position. Whilst the pillows were being arranged behind her she suddenly collapsed. Her condition at this time was exactly like that recorded in the previous case, and an experienced physician who saw the patient expected her to die any minute. She was laid flat in bed, oxygen and warmth were given, and she recovered in about three hours.

The first question is, To what extent did the intravenous administration of fluid contribute to the production of collapse? We have seen many cases treated in this way which had no such dramatic sequel, and we would point out that in each of the above cases collapse did not occur during the injection of fluid, but some hours later. It would therefore appear improbable that the collapse can be directly attributed to the previous intravenous injection.

The second question is, Can the collapse be due to the sudden raising of the patient from the recumbent position? The time relation of the movement to the collapse suggests that we are here dealing with a causal factor. One of us was present in the ward when the third case collapsed, and he could not avoid thinking of the similarity between the condition and the sudden circulatory failure which may occur in the course of diphtheria. It is well known that in the latter condition such collapse tends to occur if the patient sits up.

We therefore suggest that in our three cases the change to the sitting posture produced the collapse, and this suggestion is strongly supported by the beneficial effect in the last two cases of a return to the recumbent position. If we are correct in our conclusion, the treatment of the condition is obvious. Prevent its occurrence by keeping all cases of diabetic coma flat in bed until forty-eight hours after recovery of consciousness. If by an accident collapse is produced, treat the patient by putting him flat in bed, raising the bed on blocks, applying warmth, and administering oxygen and strychnine.—We are, etc.,

C. J. FULLER,
Physician, Royal Devon and Exeter
Hospital, Exeter.

H. P. HINSWORTH,
Medical Unit, University College
Hospital, London.

February 8th.

Factors which Regulate the Uterus

SIR,—I was pleased to read Dr. J. M. Robson's letter in the *Journal* of February 10th (p. 262). I should, nevertheless, like to comment on one or two points.

I repudiate the suggestion that in my letter (January 20th) I "ignored" certain facts, although it is quite true that I deliberately avoided discussion, or even mention, of those facts. They were omitted for two reasons: (1) Doubt had been expressed as to whether oestrin has any effect, direct or indirect, on uterine contractions during pregnancy and parturition. The method by which it acts was not in question, and any reference thereto, besides being irrelevant, would have made the communication unnecessarily lengthy. (2) My views as to the manner in which oestrin affects uterine musculature have

been expressed elsewhere. Now, however, that Dr. Robson has introduced the question, may I take this opportunity of saying that for some time past I have held opinions similar in most respects to those expressed in his letter. Moreover, I am glad to learn that his experimental findings lead him to believe that one of the most important actions of the oestrus-producing hormone is to sensitize the uterus as gestation approaches term: this confirms the view expressed by Professor Blair-Bell, Dr. Datnow, and myself in the paper which gave rise to this correspondence. Although this is perhaps the most important mechanism by which this principle exerts its ultimate effect, it must also enhance uterine contractions by reason of its power to cause an increase in size of the muscle fibres. Again, the very reasonable theory that oestrin stimulates the secretory function of the posterior lobe of the pituitary has not yet been disproved. It is true that the original experiments of Dixon and Marshall on this matter have not been confirmed by all investigators, yet others, using different experimental methods, have arrived at similar conclusions. Therefore, until more evidence is forthcoming, there seems no justification in excluding the probability that infundibulin—the most powerful oxytocic substance formed in the body—is concerned in the mechanism of labour.

Finally, may I state that I am extremely interested in Dr. Robson's suggestion that the uterine contents play a decisive part in determining the behaviour of the uterus during pregnancy and parturition. I am entirely in agreement with this view, and personal experiments, together with reports of others, lead me to believe that the placenta secretes not only the oestrus-producing principle, but also the gonadotropic hormones found in the blood and urine of pregnant women, and that, by way of these substances, it is the most important organ controlling spontaneous contractions, and the response to stimulation, of uterine muscle during the progress and termination of gestation. If this conception is true, the gonadotropic hormones are inhibitory, whereas "oestrin" is motor in action. The latter substance probably exerts its effect in at least the three different ways described above.—I am, etc.,

Liverpool, Feb. 10th.

T. N. A. JEFFCOATE.

"Cheap Anaesthesia"

SIR,—Dr. Stanley Sykes, in your issue of February 3rd (p. 215), voices, I feel sure, the opinion of most anaesthetists in the country, and especially of those general practitioners who, apart from their ordinary work, specialize in the administration of anaesthetics.

The anaesthetist, until quite recently, has been regarded by the surgeon as a necessary evil in the operating theatre. Surgeons, as a whole, do not appreciate the skill and concentration that is necessary to make a good anaesthetist. The anaesthetist must be a good physician; he must be able to appreciate the risks attendant upon the proposed operation; and he must choose what is, in his opinion, the best anaesthetic for such an operation before the patient is wheeled into the anaesthetic room. Few surgeons are willing to discuss with the anaesthetist, the day before operation, the suitability of such-and-such an anaesthetic for the patient, or to share with the anaesthetist the difficulties which may be presented to him.

For instance, the use of gas and oxygen may be ideal for a certain abdominal case, and the surgeon may agree; but he must not afterwards be annoyed if he finds that he does not get the abdominal relaxation that is present under ether or chloroform-ether mixtures. Gas-oxygen anaesthesia is by no means easy to administer properly, and the difficulties experienced by the anaesthetist are in no way minimized if the surgeon is continually fussing

and complaining. After a stormy operation the anaesthetist's attitude may well be "anything for peace," and the next time the old-fashioned method is used the surgeon is pleased and the patient has grave post-operative complications and dies. This may well be an exaggeration, but it serves as an example of what may happen if there is lacking a spirit of co-operation between surgeon and anaesthetist.

Dr. Sykes, quite correctly, mentions the cheapness of anaesthesia. A general practitioner, specializing in anaesthetics, may look upon £3 3s., in ordinary circumstances, as the maximum fee obtainable. The public will pay that amount, either to good or to bad anaesthetists, for it does not seem, as yet, to appreciate the services of a skilled anaesthetist, meticulous though it be as regards a surgeon. The cost of gas and oxygen to an anaesthetist for an operation lasting one hour is about 17s. 6d., a third, nearly, of the fee, which remains the same whatever anaesthetic may be used. It seems only reasonable, therefore, that the public should be denied the benefits of modern anaesthesia until it appreciates the cost of apparatus and running expenses, and until it pays the anaesthetist the fee to which he is entitled. Far be it from me to suggest that surgeons are overpaid, but I do definitely think that anaesthetists in general practice are underpaid.

In conclusion, has not the time come for a diploma in anaesthetics to be given to those who, desirous of being specialists in the subject, can satisfy a board of examiners that they possess a knowledge above the average?—I am, etc.,

GRAEME BENTLEY, M.D. Cantab.,

Jersey, Feb. 4th.

Anaesthetist, Jersey Dispensary.

Gas and Oxygen Anaesthesia

SIR,—The article on the history and development of nitrous oxide by Mr. H. Edmund G. Boyle is most interesting and timely as a reminder to the medical profession of the opposition that there has always been from the profession itself to anaesthesia and advances in the same. We are all, especially the women of England, indebted to Mr. Boyle for his persistent advocacy of nitrous oxide and oxygen for confinement cases and all gynaecological things, even though he does very often give a little ether with it.

I am pleased to see that he mentions E. I. McKesson of Toledo very favourably, but he says that McKesson's method of giving gas is rather alarming. I saw him do it and did not find it so, and, moreover, the condition of McKesson's patients was always better than those to whom ether had been given in however small an amount. The secondary saturation of McKesson is the reply to those doctors who say that relaxation cannot be got with nitrous oxide and oxygen. McKesson gets it. I have seen him do it for gall-bladder cases, stomach operations, and every abdominal operation that can be mentioned also. The question of relaxation is only a matter of how far you are prepared to go. For most cases it is not necessary to go to the length that McKesson does, and, although it is safe, so far as I have seen, with McKesson, I am in agreement with Mr. Boyle that it is not a method to teach students; but I would add this proviso—that it is a method that should be taught to any man who is taking up anaesthesia as a specialty.

The real reason why gas and oxygen is not more used is (as I have heard it expressed many times) that it is not a business proposition for the practitioner. The apparatus is expensive, and it requires a fair amount of skill and attention to use it. Therefore patients have to put up with open ether and even chloroform for such small things as teeth extraction.—I am, etc.,

Doncaster, Jan. 31st.

E. J. CHAMBERS.

A Falling Birth Rate

SIR,—The interesting letter on the above subject in your issue of February 3rd (p. 219) by Dr. Harry Campbell is one which calls for more than passing comment. He paints the picture black enough, and I may add true enough; but one may ask, What vantageth it to increase the population without a due regard to a selective birth rate? We have got a selective death rate, which is useless so far as the quality of the population is concerned unless we look after its forerunner—a selective birth rate. In 1918 Mr. Lloyd George declared that "the result of the physical examination of the manhood of Great Britain demonstrates that the physical condition of the British people is lower than that of any other civilized country." Since then matters have been allowed to drift, though there is no reason to think that the general physical condition has in any respect improved.

The medical profession as a rule leave the birth rate alone, and, like other classes, have long since ceased to add many to the population; they are quite content to point out the fall in the death rate, and complacently tell you that the average length of life is increasing, forgetting that this increase is almost entirely due to the fall in the birth rate. A man owes his health and longevity largely to his progenitors, near and remote, so the medical profession often get more credit than is their due. If we only stopped the reproduction of the unfit, the fit would then be able to look after themselves, and the selective evolution of the race would go on rapidly. It is not now a question of the survival of the fittest; your industrious, independent, hard-working man who is taxed to support the loafer, the wastrel, the pauper, the criminal and the progeny of the degenerate, does not live to eke out an existence with an old age pension. It is your miserable degenerate, who is assisted by charity from the cradle to the grave, that often survives the longest. Some time ago I was called upon at a prisoners' aid society in Liverpool to propose a vote of thanks to the two judges of Assize. *Inter alia* I said that Mr. Justice Bailhache deplored having to pass a long term of imprisonment on a man aged 70 who had already spent fifty years of his life in prison. I suggested that a life of crime is not necessarily a short one, and if this individual had been a hard-working honest man he probably would have been dead long ago. Too much sympathy may be easily wasted on individuals of this type, and perhaps permanent detention is the simplest way of dealing with them. Nature, when free to act, weeds out the unfit, but on account of our benevolence and charitable sentimentality the mental and physical weakling has often in the present day a better chance of survival than the strong and fit. The degenerates not only survive, but they are more prolific than the intellectual; they are not hampered by any economic laws, and they rapidly produce another generation more degenerate than themselves. Nature's method of adapting the individual to the environment, which is the surest method of progress, has been reversed, and we now adapt the environment to the individual—temper the wind to the shorn lamb.

In the eighteenth century, "the age of enlightenment," we had a high birth rate and a high death rate with a small but very intellectual population, who did their fair share in acquiring and populating fresh lands. We want a race of choice, not of chance. The derelicts are of no use either in peace or war, but what to do with the enormous number which we have on hand is the puzzle. No country on God's earth, not even our own colonies, will relieve us of this burthen. This would be a good job for Mr. Lloyd George and Dr. Harry Campbell in their spare time.—I am, etc.,

JAMES BARR.

Hindhead, Feb. 7th.

Eugenics and Sterilization

SIR,—Lord Horder, in the *Journal* of December 9th, 1933 (p. 1057), sets out to discuss: (1) what is meant by eugenics, (2) the attitude of the public towards eugenics, and (3) the position of the doctor in relation to eugenics. He accepts Galton's definition of the term, which, he says, "includes two main influences . . . the influence of environment . . . and the influence of heredity." Then, to our surprise, he dismisses in a few words the influence of environment and devotes the remainder of his address to the influence of heredity.

It soon becomes plain that to Lord Horder and the Eugenics Society eugenics means the study of the influence of heredity only, and the main application of eugenics consists in the sterilization of the unfit. Anyone opposed to the operation of sterilization of the unfit is an opponent of eugenics. Those who do not support the sterilization of the unfit are soon grouped by him into two classes: (1) those who "from a fundamental inability to think clearly" remain indifferent; (2) those who have "got the question of racial improvement mixed up with religion." The entanglement causes them to oppose "active measures of a eugenic kind," the chief of which, of course, is sterilization of the unfit.

The source of this opposition is dismissed in a few words. Apparently it arises from two superstitions: (1) "the primitive association of procreation with magic, and, later, with divine influence"; (2) the fact that the mentally deficient were by many races deemed to be possessed of some special sign of grace. Having thus disposed of all opposition, Lord Horder goes on to make an eloquent plea for the more intensive study of eugenics, a plea which will gain the support of every one of his professional colleagues.

But I suspect that Lord Horder's contemptuous dismissal of all objections to his proposals arose more from impatience than from reason. Sir Henry Brackenbury, at the Centenary Meeting of the B.M.A., adduced some telling arguments against sterilization which could not have been derived from either of the two superstitions mentioned by Lord Horder. The writings of theologians, too, must have met with but scant perusal at the hands of Lord Horder, for otherwise he would certainly be aware that their objections arose from sources much more fundamental, and that their reasoning follows a logical train of thought.

No branch of Christianity is opposed to eugenics as originally defined by Galton. On the other hand, it is its most enthusiastic supporter. Religion has always been in favour of sufficient nourishment, fresh air and exercise for growing children, decent housing conditions, temperance in the use of alcohol, more skilful obstetrics, segregation of the insane and mentally defective, the eradication of syphilis and other communicable diseases. It also advises against the marriage of people who are likely to transmit any defects to their offspring. But the Eugenics Society does not appear to include those pressing social needs in its programme. Can anyone doubt that the overcrowding and the undernourishment of England's large cities are a fertile cause of the increase in inefficiency; that there is more than chance in the association of the rise of industrialism with the alarming increase in the proportion of mental defectives in England? As to sterilization itself, nobody can pretend that it would cause any appreciable reduction in this proportion. Less than 5 per cent. of defectives are the offspring of deficient parents; wholesale sterilization, therefore, would decrease mental deficiency in the next generation by less than 5 per cent. Against this small decrease we have to balance the evils of the setting free of many defectives at present segregated.—I am, etc.,

MICHAEL KELLY, M.B., B.S.

Barbury, Western Australia, Jan. 11th.

Voluntary Sterilization

SIR,—In 1925 the suggestion was made at the Medico-Legal Society by a leading member that, notwithstanding a client's request, a surgeon who did a sterilization on other than serious therapeutic grounds might be liable to a criminal prosecution under the ancient law of maiming. Because of this suggestion the operation has ever since been almost universally regarded in England as being legally like artificial abortion! An *ad hoc* departmental committee has now advised that voluntary sterilization be legalized for certain defectives and for probable carriers of grave transmissible defect. I deplore that its report recommends that the operation be not made available to normal persons. It should, on eugenic and other grounds, be made available to any person with two children who desires it.—I am, etc.,

London, S.W.7, Jan. 27th.

B. DUNLOP.

Hereditary Blindness

SIR,—It would be impossible, in the interests of our blind population, to overlook Mr. Cecil Tivy's statements in the *British Medical Journal* of February 3rd with regard to my paper, "The Menace of Hereditary Blindness." I will answer all the points he raises.

In no place in my paper do I state that there is an annual increase in blindness, although this is by no means improbable, owing to dysgenic selection and the increasing expectation of life, the years of life; this latter factor also makes the birth of a blind child so much the more serious owing to the possibility of, say, a hundred years of blind life. I stated clearly that it was only the registered blind that showed increases.

Having collected figures over six years, I have found that at my clinics, for every blind person registered I have seen four that were not, and many of these were never likely to be registered as matters stand to-day. That is where the 250,000 figure comes from. With a register of 70,000 the figure would be 350,000. I prefer to make the understatement. I have certainly not overlooked categories 3, 4, and 5—that is:

3. Those who become blind after leaving school at 14 or later, and are not registered until reaching blind pension age at 50. Many of these refuse to be certified, regarding it as rather a disgrace.

4. Those who become blind after 68 and are not registered. They obtain the old-age pension, which is the same in amount as the blind pension—namely, 10s. weekly. This is a very large group, and is likely to grow as the average length of life increases.

5. Those blind persons who are eligible for the blind pension—that is, they are between the ages of 50 and 65—but who do not apply for it because they have never heard about it.

I have seen very large numbers of unregistered blind in these groups.

Mr. Tivy asks how 1 in 15 senile cataracts can be prevented. I did not state that 1 in 15 could be prevented. I did, however, include 6 to 7 per cent. of senile cataracts as possibly hereditary; reference to Nettleship Memorial volumes of the *Treasury of Human Inheritance* and other authorities will show large numbers of pedigrees where it would appear to be so. This 6 per cent. of senile cataracts was included in the list of largely avoidable groups of blindness, and if Mr. Tivy will read a simple book of genetics, say, Lindsey's *Textbook of Genetics*, he will learn how inherited defects can be avoided.

He would like to know "how all cases of blindness due to myopia can be prevented"! As I made no such claim whatever, and explained the present knowledge with regard to the hereditary nature of myopia at length, such a question coming from an ophthalmologist proves that

my paper has had a superficial examination. Mr. Tivy probably forgets that environment also plays a definite part in the avoidance of blind myopics.

Here Mr. Tivy "skips on" a long way to the last column, to my "possible remedies": (1) constructive birth control to avoid overcrowding and poverty; and (7) the Wassermann reaction during or before pregnancy, which he says "are the only sensible suggestions, and those not even mainly for their influence on hereditary blindness." Mr. Tivy here proves that he is not aware of the fact that "constructive birth control" requires a knowledge of the chief hereditary factors and simple biological principles, and is therefore of paramount importance to the reduction of hereditary blindness. The Wassermann reaction used in the way I suggested is of extreme value in avoiding congenital syphilis and the interstitial keratitis cases, known as a pseudo-heredity, and it is of sufficient importance to be mentioned in a paper such as mine.

If Mr. Tivy will refer to my article in the *British Medical Journal* of April 30th, 1932, "The Welfare of the Blind and National Economy," he will understand how I have the cause of the prevention of blindness at heart. Does he realize that large numbers of blind persons have been placed on the blind register since the war without examination by eye specialists, and that many doctors have signed these certificates without knowing the standards of blindness thoroughly, and also without payment at all in many cases, and without adequate payment in large numbers of cases; that some have been registered by persons other than doctors; and all this in spite of the recommendation of the B.M.A. that £1 1s. per case should be paid for this important work? An examination in the busy out-patient department of a voluntary or other hospital without payment will never lead to the satisfactory registration of causation, heredity, treatment or operation, training possibilities, etc.; and only experienced eye specialists can do the work properly, and then only with the necessary time.

The certification of the blind is nobody's business. The blind person cannot be responsible, for obvious reasons, and he often objects to certification; the surgeons at the clinics are often loath to mention the subject, in the rare event of their thinking about it or knowing the necessary standards and procedure. There are a large number of borderline cases for examination, and these are often the most difficult to decide upon.

Ophthalmologists must not forget that, in addition to the sight-testing opticians, unqualified eye practice is still permitted in this country; and I doubt if it would be tolerated were a full blind register in existence. Are people aware that more and more careers are being closed to individuals who are born with, or develop, comparatively small defects of sight (myopia, astigmatism, colour-blindness, etc.)?

Only last Thursday I saw four blind persons who were not on the register, nor ever likely to be; one woman stated quite simply that her husband would not like her to accept charity, and she herself would much prefer not to be on a blind register. In two of the cases it was highly undesirable to mention the subject, as both the patients hoped for improvement (which was unlikely in their cases). I am especially anxious that a full and accurate blind register may be obtained (unilateral blindness is important), and then we shall know still more about the balance between heredity and environment, and prevention will be facilitated. The time has come to respect the rights of the unborn child; my recommendations are preventive in character, and readers can easily judge as to their degree of efficacy or desirability.—I am, etc.,

J. MYLES BICKERTON,
Senior Ophthalmic Surgeon, King's
College Hospital.
London, W.1, Feb. 5th.

Painful Injections

SIR,—Dr. Bousfield's letters have been both timely and practical, but I should much like to know whether his objection to the possibility of aspirating spores into a syringe from the air has any basis in fact. While not denying the possibility, I am sure that it would interest many of us to know whether any harm has ever resulted from it occurring. How much does the customary dab of spirit do to prevent sepsis (personally I always use iodine), and how many cases of trouble arose from the innumerable hypodermic injections given during the war through completely unsterilized skin? While not advocating any departure from aseptic principles, I believe that many of us, as scientific men, would like an answer to these questions. Furthermore, while always using sterilized water if available, I have never had any trouble from washing out my syringe with cold water running straight from the tap. Is the local water supply peculiarly sterile, or is the body well able to deal with an occasional bacillus introduced under the skin with the minimum of trauma?

There is one practical point about injections which has not so far been mentioned. Some people, usually, I think, of the fat type whose skin puckers on being pinched, have a peculiar kind of subcutaneous tissue in that, if pricked, the track of the needle remains patent for a short while. As a result, solution injected a good inch under the surface will often exude after the needle is withdrawn. Haemorrhage in these people may come from a deeper layer than could be detected from examination of the avascular areas. They seem more liable than most to get "bad arms." Such cases may, I believe, be due to bacteria being rubbed by the patient into the still patent orifice made by the needle. Since I have made a practice, in this type of patient, of keeping up digital pressure for a minute or so after the needle is withdrawn I have had much greater freedom from bleeding or regurgitation of fluid and no inflammatory reactions.

I would also like to draw attention to the valuable suggestion of keeping a little air in the syringe when injecting any painful solution intramuscularly. If this bubble of air is injected after the solution it cleans out the needle and helps to prevent a painful track forming in the subcutaneous tissue.—I am, etc.,

Winsford, Cheshire, Feb. 5th.

W. N. LEAK, M.D.

Pruritus Ani

SIR,—I find that my letter in the *Journal* of January 20th (p. 123) has elicited two replies—one corroborative, the other critical. Mr. A. S. Morley (February 3rd, p. 216) accuses me of "the common error of writing on pruritus ani as if it were a disease *sui generis*, and of referring to it as being 'curable' by x rays." Well, in its idiopathic form, which is very common, it is as much a disease entity as many other symptom-complexes whose title is not disputed; and if to be freed for several years by a single course is not a "cure," at least most patients are content to call it so.

It is true that the radiotherapist sees a much higher proportion of idiopathic cases than obtains in general practice. In view of the care and skill exercised by the modern general practitioner, this is inevitable. The causes enumerated by Mr. Morley are well known to the family doctor—more particularly the role of parasites. The average case which is sent to the consulting radiologist has been carefully investigated, and there are thus *a priori* grounds for believing it to be of idiopathic type. As x-ray treatment is convenient, clean, and quick in its results, there is no reason for not trying it. Failure or

quick relapse is in itself of diagnostic value, as it indicates that there is some cause which will probably be discovered by more intensive search—or that the condition is, in the particular patient, of neurotic origin.

There are two other points in Mr. Morley's letter which I should like to touch upon briefly. He mentions "anaesthetic remedies or x rays" in conjunction, as though there were some similarity between them. Now I understand that Mr. Morley is an authority on anaesthesia, but obviously he is not a safe guide as to x-ray action. Those of us who have studied it most know little about it, but it is at least certain that x rays in suitable doses stimulate the skin and underlying tissues to resist microbial invasion. This is evident in the treatment of acne, and no one who has seen the dramatic drop of temperature in acute erysipelas after one or at most two x-ray applications could possibly doubt it. Then there is the matter of operation for haemorrhoids. I assure Mr. Morley that I had no thought of taking part in a controversy between surgeons who "operate" and those who "inject." I used the word "operation" to cover any mechanical procedure for the destruction of piles.—I am, etc.,

London, W.1, Feb. 6th.

F. HERNAMAN-JOHNSON.

X-Ray Cinematography

SIR,—You were kind enough to insert a notice in your issue of December 25th, 1926, with reference to a paper I was reading before the Röntgen Society on January 11th, 1927, on my work in connexion with x-ray cinematography. This work was initiated by me in 1921, and a thesis submitted to the University of Cambridge in 1925. Subsequently to the paper read before the Röntgen Society, I read a paper before the American Roentgen Ray Society, and showed some films of a thorax, etc., in September, 1927. The account of this was published in the *American Journal of Roentgenology* in May, 1928. During the latter end of the past year I have succeeded in bringing the subject to a really practical issue, and have been able to obtain x-ray cinematograph films of all the moving parts of the human body; more especially I would mention the movements of the stomach and intestines after the administration of a barium meal.

It is thus possible to study abnormalities in the alimentary tract. Movements of the heart and thorax were obtained some years ago; I was able to show these in 1925.—I am, etc.,

RUSSELL J. REYNOLDS, C.B.E.,

London, W.1, Feb. 9th.

M.R.C.P.

Treatment of Early Breast Cancer by X Rays

SIR,—The discussion upon radiotherapy at the recent Radiological Congress, together with the views expressed in your columns from time to time, make clear the lack of co-ordination and co-operation between English radiotherapists. This, I think, is to be deplored, since it precludes any possibility of progress in this important branch of modern medicine. If a correct evaluation of deep therapy is to be achieved, it can only be done by careful comparison of results between practitioners employing exactly similar methods. I am therefore tempted to suggest a definite line of treatment in early breast cases, in the hope that some colleague will adopt the method and make it possible to compare results at some future date.

I specify early cases (and naturally infer those showing no obvious extension to glands or elsewhere), since they alone will prove or disprove the efficacy of the method. Nevertheless, there seems to me no valid reason why it should not be employed even in advanced cases. Our main problem in these, as indeed in all malignant cases,

is the question of metastases, and to my mind their prevention (if possible) should be our primary objective rather than the original tumour. Unfortunately other sites are not so accessible as the breast, but I maintain it should be attempted whatever the location. Here let me state that I claim no originality for the method; it was introduced to me (in modified form) by Professor J. Woodburn Morison.

He adopted it in cases with surrounding skin metastases, and with excellent results. Furthermore, post-mortem observation of patients under treatment and who died of metastases or intercurrent infection revealed definite areas of necrosis within the tumour where heavy dosage had been given, together with varying degrees of hyperplasia or thickening of the surrounding connective tissue. These changes were not apparent where fractional dosage was the method of choice or when soft radiation had been employed. It is therefore logical to assume that we can constrict or impair the circulation in surrounding blood vessels and lymphatics, and thereby hinder the passage of active cancer cells. One case in particular impressed this fact upon me, and led me to believe that herein lay a rational line of attack. I will refer to it later. The method of procedure is as follows:

The optimum voltage, in my experience, is in the neighbourhood of 180 kV with 0.5 mm. Cu-filtration. The preliminary treatment consists of an attempt to seal off the primary growth, and to this end an erythema dose is given to the outlying quadrants, carefully avoiding the lesion itself. The apertures used are sufficiently large to form a closed square, and the f.s.d. is 40 cm. The axilla and supraclavicular areas are next treated, but a dosage of 450 r is, I think, sufficient for these, provided the former have been adequately dealt with. Then an interval of three or four weeks is given; this I think essential to allow for deep tissue reaction. Meanwhile, the untreated primary will often be found to have diminished in size. Finally, the breast itself is irradiated by combination of direct and glancing methods, in order to ensure complete irradiation of the entire neoplasm.

The case referred to above was treated on these lines, except that the inner quadrant was overlooked. An otherwise excellent result was marred a few months later by a recurrence in the opposite axilla, though the breast on that side was perfectly healthy.

I firmly believe that this method will prove of value in all cases. It is well tolerated, and I have yet to see any suggestion of damage to the thoracic contents.

On these principles there should be a wide field as yet unexplored for deep therapy, and, as I see it, a chance of fuller justification. Radium and x rays are double-edged tools, capable of retarding the spread of malignant disease when used rationally, but also capable of accelerating the spread when used indiscriminately. Radium I regard essentially as a weapon of offence; x rays, when used conjointly, a weapon of defence. But I maintain that defence must precede offence. Those of us who have treated pelvic extensions in cervix cases subsequent to radium application realize the futility of this following-up irradiation. In upwards of 100 cases I saw not a single response. Once extension has occurred no treatment can avail. Surely, then, the rational course would be x-ray treatment: first a short interval, then the application of radium.

Most primary tumours are in varying degree radio-sensitive, but the same cannot be said of secondary growths. If, therefore, we have a means of preventing the latter, then let us use it; but at the right time—that is, before the active malignant cells have time to escape, in company with the necrosed products of intensive radiation. Here, as I see it, lies a future for deep therapy, and herein lies a fruitful field for research.

Since this note was submitted for publication, Dr. Gilbert Scott has advocated somewhat similar principles in this *Journal*, together with x-ray baths. The latter

method is certainly deserving of more attention, and general radiation at low milliamperage should be tried, but always prior to surgical or other treatment. It seems to me that with treatment metastases change in type, tending to reproduce the original tumour in the form of massive deposits in the lungs, vertebrae, etc. Whereas, formerly, in long-neglected breast cases one frequently saw generalized dissemination of the miliary type, such types to-day are rare, at least in my experience. In any case, it does seem more rational to employ x rays when they might be of service rather than to fall back upon deep therapy only when nothing short of the miraculous could be effective.

In conclusion, I would urge the British Institute of Radiology to draw up definite standards of routine treatment with a view to their general adoption. Only by co-operation can progress be achieved, and radiotherapists would do well to follow the example of their radium confreres by forming a branch society.—I am, etc.,

Colwyn Bay, Feb. 4th. W. GRIFFITHS, M.B., D.M.R.E.

The Tuberculosis Problem

SIR,—I rejoice to see the letter by "A. R. F." in the *Journal* of February 3rd, as its subject is one I have so often, with no avail, written about for years. If we returned to the well-thought-out policy of the Astor Commission, and adhered to it, we would as a profession again get the confidence of the public, who are now better versed than in 1912 in what tuberculosis means, while the thousands of consumptives who have been to the various sanatoria have educated many more thousands of their relations about the open air and the more modern treatment received there. The use of x rays is universal in sanatoria, and the public know quite well nowadays that no diagnosis is complete without a film. Yet very many tuberculosis dispensaries have no x-ray apparatus, and when up-to-date general practitioners bring films along many so-called specialists cannot even read them. The result is that the tuberculosis patient has no faith in his outside specialist, but returns and asks the medical superintendent to examine him. This obviously cannot be done. The general practitioner simply uses this "omnibus expert" as a clearing clerk to get the patient into a sanatorium where the medical superintendent treats his patient properly.

That there are far too few beds in most counties and cities is a crying shame, but finance lies at the bottom of an economic policy which is unsound from the standpoint both of treatment and of prophylaxis. The pioneer work of King Edward VII and Mr. Lloyd George is being stultified. To neither of these two has sufficient credit been given in the past. I feel sure that when trade returns the "intermediate T.B. interlopers" will give place to the properly trained men of 1912. The fully trained chief tuberculosis consultants are never used properly, human nature being what it is. I feel certain that all my fellow specialists will agree with everything I have written.—I am, etc.,

February 4th.

JAMES D. MACFIE.

SIR,—The extremely pessimistic letter of "A. R. F." in the *Journal* of February 3rd must have come as a shock to tuberculosis workers. No, Sir, there is not much wrong with our anti-tuberculosis campaign *provided that it is efficiently carried out*. I do not think there can be many areas in this country such as the one described by "A. R. F.," but I do know that the Ministry of Health inspectors are constantly employed in gingering up local authorities who are so niggardly in their expenditure that the anti-tuberculosis measures in their districts are extremely inefficient. Tuberculosis

dispensaries should not only be provided with highly qualified and well-paid officers, but also equipped with efficient x-ray departments and all other aids to modern methods of diagnosis. In the areas with which I am familiar in the North of England no expense is spared by the local authorities to bring this about, and they are of real assistance and enjoy the complete confidence of the local practitioners; as well as the staffs of the local hospitals.

"A. R. F." asks whose fault it is that cases are not recognized or sent for treatment until in an advanced condition. A long experience as senior medical officer in a tuberculosis dispensary has shown me that this, in a majority of cases, is due to the patients themselves not seeking the advice of their medical man at a sufficiently early stage, although I must admit that some cases are due to the perfunctory examination of the patients whilst attending their medical practitioner. In my annual report of three years ago concerning the work done in this department the following note appears:

"It is a remarkable fact that many cases of pulmonary tuberculosis reach a comparatively advanced stage before the patient seeks the advice of a medical practitioner. It is worthy of note that in many reports from the patient's doctor accompanying such advanced cases to the dispensary occur the words, 'I have only seen this patient for the first time a few days ago.' It is astonishing that pulmonary tuberculosis can reach such widespread distribution in the lungs without producing symptoms sufficiently striking to cause the person affected to seek advice, and it is often difficult to make patients and their friends realize that serious disease is present in the chest."

I find that the younger practitioners are more alert in the search for pulmonary tuberculosis than the older men, because they have had better tuition during their university career. In my own area, which is in a northern city, I endeavour by means of post-graduate lectures to bring to the notice of local medical men suggestions for the better diagnosis of pulmonary tuberculosis. I have suggested that it is necessary to impress on G.P.'s the following points:

1. That all persons who have suffered with a cough which has not responded to treatment spread over four or five weeks should have the sputum examined, and also be referred to the dispensary for examination.
2. That all cases of primary pleurisy, especially those with effusion, are almost certainly tuberculous, and should be referred for examination with a view to sanatorium treatment.
3. That persons of old age who suffer with a chronic cough are in many cases tuberculous, and are the source of infection to younger persons living in the same house.

As Dr. Ernest Ward admirably says in a recent paper:

"The general practitioner occupies the front line in our fight against tuberculosis, and he could aid tuberculosis officers in discovering sources of infection if he made a habit of considering the families of his tuberculous patients, speculating whence came the infection, and persuading likely sources to be examined and radiographed."

I am most gratified to state that in my own area the liaison between the dispensary medical staff and local medical men is admirable, and we do our utmost to give them all the help we can. We have a completely up-to-date x-ray equipment, and every new case sent to the dispensary has a radiogram taken of the chest, and in cases where lesions are found a photographic copy of the radiogram is forwarded to the practitioner concerned, along with a complete report of the condition discovered. That this is helpful is shown by the number of letters of appreciation which I receive. I feel sure that similar methods are used in all efficient dispensary areas. It is gratifying to note that in this city deaths from pulmonary tuberculosis have been reduced by 50 per cent. during the last twenty to twenty-five years, and during the past twelve months we have been unable to keep our sanatorium beds filled owing to the lack of new cases of tuberculosis.

I trust that the information given above will reassure "A. R. F." that anti-tuberculosis measures are being efficiently carried out in at any rate many parts of this country.—I am, etc.,

E. N. R.,
February 8th.
Senior Tuberculosis Officer.

Rest in the Treatment of Neuroses

SIR,—My letter in the *Journal* of December 30th, 1933 (p. 1231), was not written for the instruction of such an authority on the neuroses as Dr. Macdonald Ladell, (January 27th, p. 174), who needs no such hints as I ventured to give, but rather for the harassed general practitioner who has not had Dr. Ladell's opportunities of appreciating the exhausting mental and physical effects of mental conflict. I called attention to the causes of the exhaustion, which I considered should be mitigated by rest rather than increased by what I regarded as unprofitable waste of energy. I did not for a moment intend to convey the impression that rest in bed under mild sedation in these cases should in any way replace or render unnecessary every possible endeavour of the physician to help the patient to unburden himself of the causes of his conflict, with its consequent anxieties and exhaustion. I perhaps did not stress this so much as I might have done, because my object at the time was rather to point out the need for recognizing that patients such as I had in mind are already exhausted and, till relieved of their mental stresses by some adequate form of treatment, are quite unfit to make the further efforts that I find they are too often urged to make. That these efforts only add to their anxieties and feeling of hopelessness can, I think, hardly be denied, since they feel themselves unable to—and, indeed, many of them cannot—make the effort required.

I entirely agree with Dr. Ladell that the necessity and even the wisdom of insistence on such rest as I advocated is a matter for decision in each individual case, and that in any event the reason for such rest and its limitations must be thoroughly understood by both physician and patient. If this is the case I do not think there should be any danger of assisting the patient, merely because he is in bed, to "withdraw himself from his efforts at adaptation"; on the contrary, my object in such practice is to conserve the energy of which he is already short, and which he has been expending fruitlessly, so that he may have as much as possible available for use, when rightly directed, for such a adaptation. Does not whether "the patient finds himself back in the infantile position of irresponsibility which his Unconscious has desired" depend on his physician's treatment of him when in bed rather than on the mere fact of his being in bed, as Dr. Ladell seems to suggest it does?—I am, etc.,

J. W. ASTLEY COOPER.

Middleton St. George, Co. Durham, Feb. 8th.

* This correspondence is now closed.—ED., B.M.J.

Rest and Chorea

SIR,—With regard to the incidence of infantile chorea I shall be most interested to know if others have noted—as I have done—that this disease is almost entirely confined to the artisan classes. Though I have had quite a considerable number of cases under my care in hospital, I cannot recall a single instance among my private patients. I have been trying to fathom a reason for this. It cannot be lack of nutrition, as many of these patients are quite well nourished and come from homes where there is no lack of the necessities of life. I have found, however, that these children often go very far short of the amount

of sleep they should have for their age. I once had an inquiry made as to bedtime hours in all chorea cases admitted to hospital under me. The result quite bore out my expectations—that is, that these children were up hours after they should have been in bed. For example, children of 10 years of age and under were running about till after 9 p.m.

In the treatment of chorea I am quite sure rest is the most vital factor. One has seen quite a variety of drugs used at different times for this complaint, and usually good results are obtained from them all, provided the case is also kept strictly at rest. May it not be also conceivable that the heart condition, so often found associated with chorea, is due, anyhow in part, to the same cause? The heart in this child has been overworked, and has succumbed to an infection that otherwise it might have resisted. Some observers have noted that the heart in children develops irregularly, and that when the period of rapid growth is taking place the softer fibres are more prone to injury and disease.—I am, etc.,

Wolverhampton, Feb. 6th.

E. HAYLING COLEMAN.

Ultra-violet Rays and Seminal Stains

SIR,—In his letter in the *Journal* of January 6th (p. 37) Dr. F. W. Martin very rightly draws attention to the value of filtered ultra-violet light in determining the site of seminal stains; he does not, however, point out that in the present state of our knowledge evidence of fluorescence alone, uncorroborated by chemical or microscopical tests, is insufficient proof that the stains are due to semen and to nothing else. Work on fluorescence is being carried out in this laboratory, but must still be considered to be in the experimental stage, and a considerable amount of work remains to be done. At the present time I advise the use of filtered ultra-violet light for locating a stain which is not obvious to the naked eye, followed by chemical or microscopical tests for determining its nature.—I am, etc.,

NORMAN BURGESS, M.A., M.D., M.R.C.P.

Criminal Investigation Research Laboratory, Central Police Station, Bristol, Feb. 6th.

Universities and Colleges

UNIVERSITY OF OXFORD

Dr. William Stobie, Hon. M.A., has been appointed representative of the University at the conference of the National Association for the Prevention of Tuberculosis.

UNIVERSITY OF CAMBRIDGE

Dr. Eric Holmes has been appointed a member of the Faculty Board of Medicine until December 31st, 1934, in the room of Dr. R. A. Webb. Mr. W. H. Bowen, M.S.Lond., F.R.C.S., has been appointed a member of the M.D. Committee until September 30th, 1934, to fill the vacancy caused by the resignation of Sir F. Gowland Hopkins.

The third report of the Council of the Senate on proposed amendments to the regulations for academical dress is published in the *Cambridge University Reporter* of February 6th. The recommendations end with a proviso that a member of the University may continue to wear any academical dress which when he first wore it conformed to the practice of the time.

At a congregation held on February 10th recommendations for the establishment of a Sheild Readership in Pharmacology in the Faculty of Biology "B" and of a Subdepartment of Pharmacology in the Department of Physiology, were approved. Recommendations in regard to the Molteni Institute of Parasitology were also approved. Professor E. H. Kettle, M.D.Lond., was appointed an elector to the Professorship of Animal Pathology in succession to the late Sir William Hardy. Professor G. H. F. Nuttall was appointed to represent the University at the centenary of the University of Bern, in June next.

The following medical degrees were conferred on February 10th:

M.D.—S. Vatcher.

M.B., B.Chir.—G. F. Barran.

M.B.—C. R. T. Lane, W. D. Brown.

B.Chir.—E. C. Herten-Graven, A. R. Thomas, E. G. Pyne, A. C. L. Houlton, J. Smart.

The title of the degree of B.Chir. has been conferred by diploma on E. D. Thompson of Girtton College.

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—(Part I): J. D. P. B. Boyd, A. A. Danlevy, J. H. Gillespie, T. R. Harlan, M. S. Kavarna, A. U. Millar, G. R. Nolan, H. I. Osler, J. P. Raban, C. W. Robertson, T. F. Tierney.

UNIVERSITY OF LONDON

Dr. G. P. Wright has been assigned to the Faculty of Medicine as from March 1st.

Mr. H. L. Eason, C.B., C.M.G., has been reappointed representative of the University on the General Medical Council.

Applications for grants from (1) the Dixon Fund, for assisting scientific investigations, and (2) the Thomas Smythe Hughes and Beaverbrook Medical Research Funds, for assisting original medical research, must be sent in between April 1st and May 15th. Particulars can be obtained from the Academic Registrar.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council of the Royal College of Surgeons was held on February 8th, with the President, Sir Holburt Waring, in the chair.

The President reported the appointment of Mr. Victor Bonney as Bradshaw Lecturer for the ensuing collegiate year. Mr. Bonney was also re-elected the representative of the College on the Central Midwives Board.

Diplomas

Diplomas of Membership were granted to the following candidates who have passed the final examination in medicine, surgery, midwifery, and pathology of the Conjoint Board: W. Bullock, H. D. Fairman, J. R. Kingdon; and to 150 other candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of February 3rd at page 220; as were the names of the fifteen candidates who have been granted Diplomas in Public Health.

Council Election

The President reported that an election of four Fellows into the Council would take place on Thursday, July 5th next, at 11 a.m., in the vacancies occasioned by the retirement in rotation of Mr. Ernest W. Hey Groves, Mr. G. Grey Turner, and Mr. Hugh Lett, and by the death of Mr. R. P. Rowlands; that notice of the election would be given to the Fellows by advertisement and by circular on March 9th; that March 19th would be the last day for the nomination of candidates; and that a voting paper would be sent on April 3rd to every Fellow of the College whose address was registered at the College.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

A meeting of the Royal College of Surgeons of Edinburgh was held on February 5th, when Dr. A. H. H. Sinclair, president, was in the chair. The following candidates, having passed the requisite examinations, were admitted Fellows: T. W. Carroll, M.B., B.S.Melb., J. L. Newton, M.B., Ch.B.Liverp., J. B. Reid, M.B., Ch.B.St. And., B. Williams, M.B., B.S.Melb.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

A quarterly meeting of the Royal College of Physicians of Edinburgh was held on February 6th, with the president, Dr. Edwin Bramwell, in the chair. Dr. Ian George Wilson Hill (Aberdeen) and Dr. Sydney Alfred Smith (Edinburgh) were introduced, and took their seats as Fellows of the College. Dr. Francis Wm. Murray Cunningham (Hove), Dr. Prem Nath Suri (Lahore), and Dr. Alex. MacAndrew Gillespie (Gold Coast) were elected Fellows.

ROYAL COLLEGE OF SURGEONS IN IRELAND

At a meeting of the President, Vice-President, and Council held on February 9th, William Norman Rae, M.A., F.I.C., was elected professor of chemistry and physics in the Schools of Surgery of the College.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Lords has given a second reading to the Contraceptives Bill, introduced by Lord Dawson. The debate is reported below. The text of the Bill appeared in the *Supplement* of February 3rd (p. 54).

The House of Commons was in committee this week on the Unemployment Bill. An amendment to extend the benefits of the Bill to "black-coated workers" was defeated. Resolutions were put down for February 15th approving increased import duties on oats, oat products, and French dress goods. A Standing Committee began to examine the Bill for standardizing the hours of sale in public houses.

The Parliamentary Medical Committee met at the House of Commons on February 7th, Sir Francis Fremantle presiding. Professor Edward Mellanby spoke on the work of the Medical Research Council, of which he is secretary. Debate followed on how these researches could be linked with parliamentary action. Mr. C. Hill, Mr. Pearson, and Mr. Gamble, representing three firms of manufacturing chemists, made statements to the committee about the supply and price of insulin. They declared that the price in the United Kingdom was lower than in any other country except Denmark, which had used British methods to develop the production and export of the drug.

The Rural Water Supplies Bill was presented by the Minister of Health in the House of Commons on February 12th and read a first time. This Bill also applies to Scotland.

The report for 1933 by the inspector under the Inebriates Act was laid on the table of the Commons on February 9th.

A petition "against the increasing practice of vivisection," signed by 170,000 persons, was presented to the House of Commons by Mr. Groves on February 8th.

Sale of Contraceptives

LORD DAWSON'S BILL

In the House of Lords on February 13th Lord Dawson of PENN moved the second reading of the Contraceptives Bill, which restricts the sale, display, and advertisement of contraceptives. He said opinions on birth control and contraceptives could not be intelligibly considered one without the other. As one who had thought and written about the subject for many years, he wished at once to identify himself with the view that the way to keep the sale and use of contraceptives on sound lines was to remove the veil of doubt as to the honesty of contraception. The fact that there was a doubt as to its cleanliness and honesty prevented honest traders from taking contraceptives into their trades, and thereby the profits remained too large and the sale got into the hands of less scrupulous traders. If this slur were removed that trade would get into more normal channels. No impartial observer of events to-day could doubt that birth control was here to stay, and was part and parcel of our social fabric. At the same time there was good cause for protecting children and young persons from having contraceptives forced on their notice by automatic machines in streets or by lurid displays in shops. An investigation of the facts—and he had investigated facts—would show that in the main the wholesale trade was as respectably run as any other trade. The factories were well constructed; the workers belonged to a high class; and were well treated and well behaved. There was no justification for referring to the trade as vicious. It was condemnation which sent the sale into underground channels. The same was true of propaganda. If clinics were supported which gave information which was sane, these lurid publications would cease to be profitable.

Evidence of Birth Control

There had been a fall in the birth rate in most countries, whether Protestant or Catholic, in the Western world. If

they took the years from 1880 to 1930 they would find a decline of 54 per cent. in the birth rate in England and Wales, 43 per cent. in Scotland, 42 per cent. and 58 per cent. in Catholic Belgium and Austria, and 42 per cent. in Denmark. Turning to this country and this century, and taking the table of the birth rate per 1,000 married men under 55, there had been a steady fall in fecundity. That fall began among the professional classes. It was found first, for example, among ministers of religion, doctors, lawyers, and teachers. It then extended to people of other occupations, and it might now be said to have reached the artisan classes. There had been a legitimate fear that if there was a decline in fecundity in all these classes, except the classes of semi-skilled and unskilled labour, the result would be serious to the quality of the population. That would have been true if that fact had held. During one or two investigations there had recently been made a scientific inquiry into a group of wives of artisan and semi-skilled and unskilled citizens. That inquiry had had under its purview ten years—from 1923 to 1933. During that time there had been a total decline of the birth rate in the unskilled and semi-skilled classes of 14.4 per cent., and the decline was increasing, especially among the younger married men of 40 and under. What was more significant was that, if they took the gap or space between children in that class for that period of years, they found that the average gap had gone up by eight months. There was no surer evidence of birth control than a fall in the birth rate and an increase in the interval between children.

The sale of contraceptives had gone up almost by leaps and bounds. One firm at the present time turned out 8,500,000 articles a year, another firm dealing in contraceptives turned out 72,000 per week; and home production was reinforced by large importations from abroad. Contraceptives were now part of our social fabric, and to oppose them was to beat the air. No civil or military authority had ever succeeded in suppressing contraception. It had now been decided, for good or evil, that for economic and family reasons pregnancies should be limited, and that choice, not chance, should decide the size of the family. When told that these ends should be attained by self-control, young persons of to-day replied that they were being asked something which was new, and something which preceding generations in this country did not practise. In effect, they were being asked to practise celibacy within the state of wedlock. In the prosperous forties of the last century the Gladstones and the Lytteltons often stayed together under the same roof. In 1847, on one of those occasions, there were eleven children of the two families under 7 years of age. On another occasion there were seventeen children under 12 years. There was not much evidence of abstinence in marriage there. Human nature had not changed since the forties of last century, nor had biological laws. The foundation of the home required physical love periodically repeated, yet no one would be rash enough to say in these days that families should be of equal size to those of the last century. Take a young couple who married, the man between 24 and 25 and the girl 21. They had a modest income, and properly, after the first child, or possibly the second, made up their minds that for a period of seven or eight years they would not be able to afford any more children. That could be done by abstinence, which, as a medical man, he thought would be impossible, or would lead to irregularities and eccentricities, which were serious matters. In 1847 the infant death rate was 172, sufficiently high to act as a safety-valve; to-day the figure was down to 65. Contraception had not sprung from any evil purpose or selfish impulse; it was outrageous to say that of the young generation. Contraception was right so long as it was properly carried out, with delicacy of feeling and proper restraint.

Provisions of the Bill

The aim of his Bill was to protect the immature by preventing the obtrusive display and sale of contraceptives. For more than a year he had been watching carefully, and there was no doubt that there was an increase of the automatic machines. These were placed in thoroughfares, outside chemists' and rubber shops, and were left there when the shops were closed. In one of the largest Midland towns, outside a chemist's shop, which faced the exit of the largest factory in the town, stood an automatic machine; on one

side of the machine were divisions out of which, for 6d., could be drawn "aspros," and on the other side, for 1s., were contraceptives. Lord Dawson said that automatic machines were dealt with in Subsection A of the first clause. There was an undoubted tendency for shops which were lurid in their get-up to increase in numbers. As long as they were confined to a notorious quarter of London he would have said nothing. But there was an extension in their number, and they had an increased glamour in their presentation. Inside their windows, side by side with contraceptives, would be found illustrations and descriptions which were flamboyant and aggressive. No good purpose could be served by anything of that kind. Subsection C of the clause laid it down that it should be illegal to display contraceptives in or outside any shop so as to be visible to persons outside the shop. There was no limitation to be put on what the owner of the shop wished to put inside the shop, nor was any restriction placed on the sale of contraceptives to any person at any age. Once a person who wanted them got into the shop he was perfectly free to buy any contraceptives he desired.

It might be asked why they did not forbid the sale of contraceptives inside the shop altogether. There was nothing so foolish as trying to dragoon youth. In his judgement the intervention of the resistance which the entry into the shop provided would be enough. Unless these things were thrown at the healthy youth he would not trouble much about them. Of course there were exceptions, as no one knew better than a medical man. He could spend hours telling the House the most dreadful examples of degeneracy through the use of contraceptives and over-drinking. It was a notorious thing that both in and out of marriage sex had a great tendency to run to perversion. That was one of the problems of the age. Therefore the sanest thing to do was to content themselves with doing away with obtrusive display and sale, whether in an automatic machine or in a lurid shop. Subsection D prevented the sending of circulars about contraceptives to unmarried people under 18.

If the House gave the Bill a second reading obvious amendments would be required, which he would be happy to accept provided that the principle of the Bill was not undermined. He would mention two. It was quite clear that they must exempt from the operation of Subsection B nurses, midwives, and doctors. In Subsection D magazines, newspapers, and suchlike publications would be exempted, for it would never do for a newspaper which happened to contain an advertisement of contraceptives to run any risk of being charged with an offence. He had submitted that point to his legal advisers, and if the Bill went to committee he would immediately move to add a proviso to deal with all these points.

General Debate

Lord BANBURY moved the rejection of the Bill. He said that, having listened to Lord Dawson's speech, he had come to the conclusion that he was strongly in favour of the use of contraceptives. He had spoken a few moments before to Lord HORDER, also a medical man, who had authorized him to say that in his opinion the use of contraceptives was in no way injurious to health. Lord Dawson had said that birth control was here to stay, and was part of our social system; if that was so, why bring in a Bill to restrict the sale of contraceptives? If a person liked to do something which, according to Lord Dawson and other medical authorities, was not injurious to health, why on earth should he not do so? Under this Bill it would be impossible for a nurse or midwife who was visiting a poor woman whose health had been undermined by child-bearing to sell, or offer for sale, any contraceptives. He presumed the Bill would not prevent the nurse giving contraceptives. The Bill would also apparently prevent the doctor bringing contraceptives unless he gave them away. The BISHOP OF LONDON said that, while he did not agree with Lord Dawson, he enthusiastically supported his Bill. Holding up a large envelope, the Bishop said: "I would ask Lord Banbury, Does he really think that there is nothing harmful in these things, which are sent to every engaged couple by these firms?" The medical profession did not at all hold the view that this indiscriminate advertisement of means of prevention was in the public interest. Viscount FITZALAN said that it was impossible for him to accept the view that the use of contraceptives was not wrong. He had a perfect horror of their use, and of the harm

and evil which he believed they were doing. But he was bound to acknowledge that the object of the Bill was to abolish certain evil things which were going on at present, and so he supported it.

The BISHOP OF ST. ALBANS said that if Lord Dawson really believed that contraceptives were a gift of God through science then he should say so plainly, and should get the General Medical Council to make a pronouncement on the subject. Lord Dawson would lead them to suppose that the medical profession was unanimous in believing that the use of contraceptives was healthy, promoted happier homes, healthier motherhood, a finer race of children, and, above all, finer character. He would give them to believe that practically all the members of his profession would agree with all that. He had heard it stated by responsible people that practically the only medical men who were not in favour of birth control were members of the Roman-Catholic Communion. That he denied. There were a number of medical men whose special work had been in this line who were not members of that communion, but who held just as strongly that on grounds of health, let alone anything else, there was grave doubt of the beneficial effects of these mechanical and chemical devices for frustrating the biological end of sexual intercourse between men and women. Lord PONSONBY opposed the Bill on social grounds. He said he did not suppose it would go far, and it had no chance in the House of Commons, as there would be no time for it. The result would be that contraceptives would be sold in increased quantities. The ARCHBISHOP OF CANTERBURY said that the Bill should be decided on its merits. Lord Dawson would not have taken the responsibility of bringing in this Bill unless he had two convictions: one that there were evils associated with the use of these contraceptives that called for restraint, and the other that this was a Bill which was in vital ways likely to set forward that object. Those who regarded the use of contraceptives at all times and in any circumstances as morally wrong must acknowledge that it was impossible to prohibit the sale of contraceptives, and public prohibition in this matter would only increase the evil. In the Bill the House was dealing—it might be inadequately—with a growing evil. The widespread purchase of contraceptives was resulting all over the country in promiscuous acts of sexual intercourse among unmarried persons.

The EARL OF FEVERSHAM, Lord-in-Waiting, replying for the Government, said that any Bill dealing with this question must have a strong measure of public support before it had any prospect of passing into law. The Government was strictly neutral on the Bill; it would neither support it nor oppose it. It would carefully examine the views expressed.

Lord Dawson said that after the debate he was still without the constructive alternative to his proposals for which he had so often asked.

The motion for the rejection was defeated by 45 votes to 6—majority, 39—and the Bill was read a second time.

The Sterilization Report

Sir HILTON YOUNG told Commander James, on February 8th, that he was in consultation, through the Board of Control, with the Medical Research Council and the Registrar-General as to the best course of action concerning the recommendations in the report of the Departmental Committee upon Sterilization.

Road Accidents: Suggested Remedies

In the House of Commons, on February 7th, Mr. GLOSSOP moved a resolution about the increase in road accidents, and called for active steps to conduce to greater safety of all users of the road. He remarked upon the multiplicity of lighting authorities, and the lack of uniformity in the systems employed for lighting the same road. Captain WATT, in seconding, said England had more vehicles per mile of road than had any other country—13 motors per mile, against 3.9 in France, 6.3 in Germany, and 8.8 in the United States. In replying to the debate, Mr. STANLEY, Minister of Transport, said that in the quarter ended September 30th, 1933, 2,297,000 motor vehicles were licensed and 2,947,000 driving licences issued. He had asked the London and Home Counties Traffic Advisory Committee for a scheme of pedestrian crossing-places. He would try an experiment of "traffic lanes"

on one of the new wide by-pass roads, and also the dual track road with a continuous barrier down the middle. A special cycling track might be introduced on one of the roads near London. He had drafted a circular to road authorities which would announce that future grants for resurfacing roads would be contingent on alteration of camber and on super-elevation at bends, wherever practicable. The circular would also draw attention to the desirability of a light-coloured surface and rougher surfacing for the roads, and would ask that the surface of footpaths should not be inferior to that of the highway. He had made a grant towards a special "safety first" campaign in the coming summer. The House then adopted Mr. Glossop's resolution.

Road Accident Figures for Eight Years.—Replying to Mr. Isaac Foot, on February 7th, Sir JOHN GILMOUR gave the following table showing the number of persons killed and injured during the eight years 1926 to 1933 on the roads of Great Britain.

Year	Killed	Injured	Total
1925	4,886	113,888	138,774
1927	5,329	148,575	153,904
1928	6,138	164,839	170,976
1929	6,695	170,917	177,613
1930	7,305	177,895	185,200
1931	6,691	202,119	208,810
1932	6,667	206,450	213,117
1933	7,125	216,401	223,526
Total	50,837	1,421,083	1,471,920

Convictions under Vaccination Act.—On February 12th Mr. HACKING informed Mr. Groves that governors of prisons had standing instructions to ensure that persons committed to prison for matters connected with the Vaccination Acts were treated as first-class misdemeanants as required by Section 5 of the Vaccination Act, 1898. Such committals were rare.

Research-Workers on Chemical Defence.—Mr. DUFF COOPER told Mr. Gordon Macdonald, on February 8th, that the total staff on the approved establishment of the Chemical Defence Research Department on April 1st, 1925, 1930, and 1933 were 480, 553, and 502 respectively.

Water Supply Surveys.—In reply to Mr. Logan, on February 8th, Sir HILTON YOUNG stated that forty-four county councils had taken action in the carrying out, initiation, or co-ordination of surveys in their areas as to conditions of existing water supplies and the availability of new supplies. In addition six county councils had rural schemes under consideration. Six advisory regional committees had been formed, and measures had been taken for the appointment at an early date of two additional committees covering large areas.

Housing Progress.—Between May 1st and December 31st, 1933, local authorities and private enterprise in England and Wales erected 35,561 houses with the aid of subsidies. During the half-year ended September 30th, 1933, the same agencies erected 76,185 small houses without subsidy. Under the Housing (Financial Provisions) Act, 1933, local authorities have submitted to Sir Hilton Young plans in respect of 17,300 houses. Since May last fifty-three local authorities have secured approval of proposals for building without subsidy.

Inquiry Committees.—On February 5th Mr. HORE-BELISHA, replying to Mr. Wilmot, circulated a list of committees of inquiry appointed during the last six years which have not yet finally reported. The list includes the committee on Workmen's Compensation (Industrial Diseases), which was appointed in November, 1930. The Local Government and Public Health Law Consolidation Committee, which was appointed in December, 1930, had as its object to consider the grouping of enactments in regard to consolidated legislation. The Committee on Food Standards, to inquire into the law relating to the composition and description of articles of food, was appointed in May, 1931, and reappointed in July, 1933.

Inflammable Film with Toy Cinema Projectors.—Sir JOHN GILMOUR told Dr. Howitt, on February 8th, that he understood that the film supplied with some toy cinema projectors was of standard size and highly inflammable. Three accidents with this type of machine and film had been brought to his notice. In November last the traders concerned agreed to issue with each machine and box of film sold a notice warning purchasers to take suitable precautions against fire. Similar action was taken by firms known to be advertising film for sale. He had no power of control over the sale of inflammable film, but was making inquiry on what further action could be taken.

Poisons Act and the Sale of Barbiturates.—Replying, on February 8th, to Mr. David Grenfell, Sir JOHN GILMOUR said that the Pharmacy and Poisons Act contained no provision for the appointment of Government inspectors. Mr. Grenfell further asked what existing power there was to prevent the increasing sale of drugs of the barbituric group. Sir John Gilmour said he had no reason to suppose that the powers of control of the sale of poisons conferred by the Pharmacy and Poisons Act, 1933, would not prove adequate for this purpose. He had received information about the alleged increase in fatalities due to the use of these drugs, and hoped that the new regulations under the Act would be effective.

Obituary

D. E. CORE, M.D., F.R.C.P.

Lecturer in Neurology, Manchester University

Donald Elms Core, the son of the late Thomas Hamilton Core, professor of mechanics in the University of Manchester, was born at Manchester on October 14th, 1882. He was educated at the Manchester Grammar School, where he showed evidence of his unusual ability by prize-taking and a liking for languages, dead and living. His medical training was received at Manchester, and he took several class prizes as well as the surgical clinical prize at the Royal Infirmary, and the Dumville surgical prize. He was awarded first-class honours in his M.B., Ch.B. examination in 1906, took his M.D., with honourable mention, in 1910, and in 1927 was elected Fellow of the Royal College of Physicians. After filling the post of house-physician at the Manchester Royal Infirmary he pursued post-graduate studies in Paris, attending the clinics of the leading physicians, including that of Babinski. On his return to Manchester he was appointed successively to the posts of pathological registrar at the Christie Cancer Hospital, house-physician at Derby Royal Infirmary, resident medical officer at the Barnes Convalescent Hospital of the Manchester Royal Infirmary, and, finally, resident medical officer in the last-mentioned hospital.

During the tenure of his last resident post he contracted a severe septicaemia from a wound on his hand whilst on holiday, and the small finger remained permanently useless in complete flexion. In 1912 he returned to Paris for a few months and carried out some work under Metchnikoff at the Pasteur Institute, on the morphology and physiology of the blood and bone marrow. Next year he was appointed an honorary physician to Ancoats Hospital and assistant medical officer to the Manchester Hospital for Consumption and Diseases of the Chest. When Mr. A. H. Burgess organized the 33rd British General Hospital for service in Mesopotamia, and staffed it almost completely with Manchester men, Dr. Core went with it as one of the physicians, against the advice of friends, who thought that he would not be able to stand the climate. Unfortunately he broke down at once with dysentery, and was invalided to India. He also had pleurisy and malaria, but recovered in six months to rejoin the unit and work with it until its year of service terminated. This breakdown under-

mined his constitution and left him with impaired health. Nevertheless he carried on with his full share of work, and was put in charge of the special neurological unit of the 2nd Western General Hospital in Manchester; he also acted as consulting specialist for nervous affections in all other affiliated units of the parent hospital. In 1917 Dr. Core was appointed honorary assistant physician to the Royal Infirmary, Manchester, and four years later joined the University staff as lecturer in neurology. His teaching was much appreciated by the students, especially when he was dealing with organic diseases. He was also an honorary physician to the Manchester Royal Eye Hospital.

In 1922 he published an elaborate monograph on functional nervous disorders, their classification and treatment. The object of the book, the preface stated, was to try to clear up the confusion and lack of agreement in the problems presented by such a subject, the importance of which had been emphasized as a result of the recent war. It was a close clinical and psychological study, and presented very novel ideas on the subject. It was too difficult for the average person, let alone the student, to master, and even experienced neurologists found that it needed very careful reading to grasp its line of argument. A few years later (1928) he published a smaller book, *The Examination of the Central Nervous System*. This was intended for the use of medical students who had not completed their training in neurology. Its scope was more elementary, and it was written in a clear and simple manner. A paper published in 1918 on some mechanisms at work in the evolution of hysteria, and another in 1925 on some clinical aspects of certain emotions, indicated his predominant interest in the study of functional nervous disease.

As consulting physician in the neurological hospitals he came into contact with many practitioners, who were much impressed by his enthusiasm for the work and his careful attention to details. This latter characteristic remained with him in his very large practice, his letters about patients sent to him being much fuller than those of any other physician. Dr. Core had an attractive personality, and was a well-read and widely informed man. He will long be remembered with regard and esteem in the medical life of Manchester.

GERARD FORD PORTER, M.D., F.R.C.S.Ed.

Medical Officer of Health and Port Sanitary Officer, Harwich. We regret to announce the death, on January 21st, of Dr. Gerard Ford Porter of Dovercourt, Essex, who was greatly esteemed as a general practitioner, and combined with that work the duties of medical officer of health, school medical officer, and port sanitary medical officer for Harwich. He was born on December 9th, 1883, in Manchester, of which city his father, the late Sir Alexander Porter, had been Lord Mayor. From Manchester Grammar School he went to the Victoria University, where he graduated M.B., Ch.B. in 1906, and M.D. three years later, obtaining the diploma of F.R.C.S.Ed. in 1912. During his undergraduate days he was captain of the Manchester University Cricket Club. Dr. Porter's early appointments included those of house-physician and accident house-surgeon at the Royal Infirmary, house-surgeon at St. Mary's Hospital, and house-physician at Ancoats Hospital, Manchester; and house-surgeon at the Ear, Nose and Throat Hospital, Birmingham. He served through the greater part of the war with a temporary commission in the R.A.M.C., his skill as an operator being recognized by appointment as surgical specialist. Since the war he had practised in partnership with his brother, Dr. Alexander Porter, at Dovercourt, and he was a J.P. for the borough of Harwich.

Mr. B. WHITCHURCH HOWELL, F.R.C.S., writes: The sudden and unexpected death, in the prime of life, of Gerard Ford Porter, F.R.C.S.Ed., came as a very great shock to the borough of Harwich and the countryside for miles around. It had been my very great privilege to have worked with him, and known him intimately, for some ten years. It did not take one long to realize his sterling qualities, both as an operating surgeon and as family doctor, philosopher, and friend. He was indeed the beloved physician. He had time for everybody, young and old, and for their problems. He found time, too, for everything: reading in all the branches of his profession and general literature, politics, travelling, music, games. The Harwich and Fryatt Memorial Hospital owed its fine modern site, building, and equipment to the foresight and enthusiasm of Gerard Ford Porter. It was the apple of his eye, and, in consequence, the centre of surgical and medical practice for miles around. "Friar Tuck" he was to some of us, and his jolly smile, his jaunty step, his ever-present optimism, will ever be remembered.

CHARLES ATKIN, F.R.C.S.

Consulting Surgeon, Sheffield Royal Infirmary

Mr. Charles Atkin, formerly well known as a prominent Sheffield surgeon, died on February 2nd, after an accident. His father was Surgeon Major G. Atkin, and one of his grandfathers was Alderman John Carr, also a surgeon and Mayor of Sheffield. He was educated at Hildesheim Gymnasium, at Sheffield, and at Guy's Hospital, and after qualifying M.R.C.S., L.R.C.P. in 1880 he studied at clinics in Vienna. His early appointments included those of house-surgeon at the Sheffield Royal Infirmary, senior demonstrator in anatomy at University College, Sheffield, and house-surgeon to the Liverpool Eye and Ear Infirmary. In 1884 he became a Fellow of the Royal College of Surgeons of England. Later, on being elected to the surgical staff of the Sheffield Royal Infirmary, he became lecturer on pathological anatomy and demonstrator of practical surgery in the University College. When he retired from the active work of the hospital he was elected consulting surgeon.

For more than thirty years Mr. Atkin was a member of the British Medical Association, and at the Annual Meeting at Sheffield in 1908 he held office as vice-president of the Section of Surgery. He married Alice, daughter of Professor Brady, and had two sons and one daughter.

Dr. BERNARD HOLLANDER, who was very well known to the public through his writings and lectures on mental and nervous derangements, died in London on February 6th at the age of 70. A native of Vienna, he came to England at the age of 19, and studied medicine at King's College Hospital, qualifying M.R.C.S. and L.R.C.P. in 1898. He was for some time an assistant at Krafft-Ebing's psychiatric clinic in Vienna, and studied also at the University of Freiburg, where he obtained his M.D. degree. In 1899 he became naturalized as a British subject, and joined the British Medical Association. With an active and inquiring mind and great fluency of tongue and pen, Dr. Hollander won high regard in lay circles as a popular interpreter of psychopathology. He described himself as one of the foremost exponents of psychotherapy and as the founder of a modified system of phrenology on strictly scientific lines. He was also founder and president of the Ethological Society, which took its name from J. S. Mill's definition of ethology as "the science of character." His work in more prosaic fields had included that of a medical officer under the Mental Deficiency Act for the county of London, and physician to the British Hospital for Functional Mental and Nervous Disorders (Forbes Winslow Memorial) in Camden Road.

The death took place at his residence in Brighton, on February 10th, of GEORGE CHARLES LOUIS VINTRAS, B.Sc. Paris, M.D. Durh. He was born in London sixty-nine years ago, son of Dr. Achille Vintras, founder of the French Hospital and Dispensary in Shaftesbury Avenue, and of the French Convalescent Home at Brighton. Louis Vintras was educated in France and England, and spoke and wrote French, and English with equal facility. He received his medical education at St. Mary's Hospital, qualifying M.R.C.S., L.R.C.P. in 1890. He was a Knight of the Légion d'Honneur, and a Knight and Officer of the Order of the Lion and Sun of Persia, and also held the medal of King Albert of Belgium. He was consulting physician to the French Hospital and director of the French Convalescent Home in Brighton for twenty-one years, from 1907 to 1928. In his earlier years he travelled extensively as medical officer in the Royal Mail Steam Packet Company. Service in the West Indies and South America, and he also was medical officer to H.M. Transport *Tagus* in the Boer War. During the Great War Dr. Vintras was commandant and medical officer to the French Convalescent Home and Auxiliary Hospital in Brighton. He had also been assistant secretary to the French delegates at the Congress of Hygiene and Demography in London, 1891, and was physician to the Société des Gens de Lettres. He was for some years a member of the British Medical Association, and had contributed many articles to English and foreign medical journals. Dr. Vintras was possessed of a very charming personality, and when just over a year ago he recognized the fatal character of his illness, his courageous acceptance of the inevitable and his cheerful demeanour throughout were a source of admiration and inspiration to all who came across him.

The Services

DIRECTOR-GENERAL A.M.S.

The War Office announces that Major-General J. A. Hartigan, C.B., C.M.G., D.S.O., M.B., Honorary Physician to the King, at present Deputy Director of Medical Services, Aldershot Command, has been appointed Director-General, Army Medical Services, with effect from March 1st, 1934, in succession to Lieut.-General Sir Harold B. Fawcus, K.C.B., C.M.G., D.S.O., D.C.L., M.B., Honorary Physician to the King, who is retiring at his own request.

Medical News

The Rickman Godlee Lecture will be delivered in the Great Hall of University College, London, to-day (Friday, February 16th). The lecturer is Sir Arthur Eddington, F.R.S., Plumian Professor of Astronomy, University of Cambridge, and his subject "The Constitution of the Stars." The chair will be taken at 5.30 p.m. by Lord Dawson of Penn.

Dr. R. G. Canti will give an address and cinematograph demonstration on "The Cultivation of Living Tissue" to the Metropolitan Counties Branch of the British Medical Association at B.M.A. House, Tavistock Square, on Tuesday, March 6th. Members will be received by the president of the Branch, Dr. C. F. T. Scott, at 5 p.m.

The next quarterly meeting of the Royal Medico-Psychological Association will be held at 11, Chandos Street, W., on Thursday, February 22nd, at 2.30 p.m., when Dr. T. Lindsay will read a paper on "Mental Deficiency at Caterham."

The annual meeting of the Industrial Health Education Society will be held at Lord Luke's house, 29, Portman Square, W., on Wednesday, February 28th, at 4 p.m. The speakers will include Lord Horder, Sir Thomas Oliver, and Mr. George Hicks, M.P., secretary of the Building Trade Workers' Union. All communications in regard to the work of the society should be addressed to the secretary, Tavistock House North, Tavistock Square, W.C.1.

The next meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, February 21st, at 5.30 p.m., when papers will be read by Professor R. Tanner Hewlett, and Mr. J. E. Barnard and Mr. F. V. Welch.

At a meeting of the Medico-Legal Society at 11, Chandos Street, W., on February 22nd, at 8.30 p.m., a paper will be read by Sir Lancelot Sanderson on law and order and medicine in India in the future, to be followed by a discussion.

The next course of post-graduate lectures and demonstrations on medical, surgical, and special subjects, given by the honorary staff of the Manchester Royal Infirmary, will open on Tuesday, February 20th, and will continue each week (with the exception of April 3rd) till May 15th. The demonstration of clinical cases and methods in the wards and special departments, which commence on Friday, February 23rd, will be continued till Friday, May 11th (with the exceptions of March 30th and April 6th). There is no fee, and arrangements are made for the parking of cars.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the sixth lecture-demonstration, by Dr. Clark-Kennedy, on diarrhoea, will take place at 11, Chandos Street, on February 20th, at 2.30 p.m. The subject of the seventh lecture, on February 27th, will be jaundice. A demonstration on the treatment of recent and old fractures will be given on February 27th, at 2.30 p.m., by Mr. Alan Gairdner, at St. George-in-the-East Hospital. Forthcoming courses include medicine, surgery, and gynaecology at the Royal Waterloo Hospital, March 5th to 24th; proctology at the Gordon Hospital, March 5th to 10th; week-end course in clinical surgery at the Royal Albert Dock Hospital, March 10th and 11th; orthopaedics at the Royal National Orthopaedic Hospital, March 12th to 24th; week-end course in diseases of the chest, March 24th and 25th, at the Brompton Hospital. Courses of instruction, clinics, etc., arranged by the Fellowship are open only to members and associates.

At the annual meeting and luncheon of the Institute of Child Psychology, held on February 8th at the Florence Restaurant, the directors, Dr. Margaret Lowenfeld and Dr. Ethel Dukes, gave an account of the work done at the Institute in the investigation and treatment of the psychological disturbances of childhood. Begun in a small way in 1928 as a centre for research and study, the increasing demands upon the Institute led to the acquisition of new and larger premises at 26, Warwick Avenue, W.9. Among those present at the luncheon, over which Professor Winifred Cullis presided, were Lady Glenconner (vice-president), Dr. G. E. Oates, medical officer of health, Paddington, and Miss M. C. L. Greaves, Board of Education.

A demonstration of contraceptive methods, for medical practitioners only, will be given at 108, Whitfield Street, Tottenham Court Road, W., on February 21st, at 2.30 p.m. Application for tickets should be made in writing to the honorary secretary, C.B.C., at that address.

At the annual meeting of the American Association of Oral and Plastic Surgery held at New York last November, Dr. J. P. Webster delivered an address on Gaspare Tagliacozzo, the father of plastic surgery.

The issue of *Paris Médical* for January 27th contains the English text of the four bulletins written in pencil by Major Archibald Arnott, surgeon to the 20th British Regiment, at Napoleon's deathbed, and now in possession of M. Gentili de Giuseppe.

January 29th was the centenary of the birth of the celebrated physiologist Rudolf Heidenhain, who died on October 13th, 1897.

The following bequests are included in the will of the late Mr. Samuel Taylor, of Acocks Green, Birmingham: £5,000 each to the General Hospital, Birmingham; Queen's Hospital, Birmingham; the Children's Hospital, Ladywood Road, Birmingham; Birmingham Midland Eye Hospital, Church Street, Birmingham; Birmingham and Midland Ear and Throat Hospital; and Birmingham Midland Skin and Urinary Hospital.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is **EUSTON 2111** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshigh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Calot's Solution

"G. B." writes: In the *Epitome of Current Medical Literature* for February 3rd, Calot's solution is mentioned for the treatment of otorrhoea. I should be glad to know the exact prescription.

* In Martindale's *Extra Pharmacopoeia*, 20th edition, 1932, the following note appears at p. 655: "*Creosoted Oil* (Calot's formula). Liquid paraffin 70 gm., sterilized by boiling for $\frac{1}{2}$ hour. Allow to cool, and add in order (1) creosote 5 gm., (2) guaiacol 1 gm., (3) iodoform (sterile) 10 gm., (4) ether 30 gm. Used as a wound dressing."

Mental Allergy

Dr. P. LIONEL GOITEN (London, W.) writes: Possibly the causal process for certain irrational fears mentioned by "A. G." (January 13th, p. 88) aroused, in the predisposed, alike by animate and inanimate objects, is not so much an hereditary allergic state (idiopathy or eccentricity) as a conditioned reaction to a certain situation. It is not the object that is deleterious, but the idea of the object. The analogy to bodily "shock" in response to something foreign to its nature is strengthened when we remember the asthmatic's "attack" to artificial flowers and the acrophobe's "cold sweat" at the mere mention of the objects of his dread. "A. G.'s" paræsthetic sensation to saw-sounds is, of course, analogous to the "cold shivers" down the spine in many grown-ups at the screech of glass, the scratch of the nail on shiny paper, the whine of grating china, etc. This is often found to be a survival of that period of growth when the mind endows all objects indiscriminately with feeling, and the infant "empathizes" with the glass, etc., as a result, believing its shriek to be the cry of pain in response to actual or threatened injury. The stage of animism in mental evolution (when the feelings are considered to be shared by the object) has its counterpart in the projection of fears on to external objects—for example, the fear of the little thing—as terror at the (innocuous) frog, mouse, worm, etc., a well-known universal phenomenon before objects of symbolic import to the unconscious of the race. Such an hereditary feature, then, would explain, for the species as well as for the race and individual, "A. G.'s" quoted anomaly—namely, the hysterics of the chimpanzee, the taboos of the savage, and the idiosyncrasies of certain of his patients.

Income Tax

Remittances from Abroad in Payment of Expenses

"OVERSEAS MEMBER" inquires whether his brother, who is executor for his deceased sister, is liable to tax in respect of remittances sent to him by "Overseas Member" in payment of expenses incurred by the brother as executor.

* The remittances would not seem to represent income either to the deceased sister's estate or to the brother, and we can see no ground on which they would be held

liable to income tax. They seem to be merely repayment of sums spent in connexion with capital, and, as such, outside the scope of the Income Tax Acts.

LETTERS, NOTES, ETC.

Study of Chicken-pox and Herpes Zoster: Request for Material

The director of the Lister Institute of Preventive Medicine will be grateful if doctors or medical superintendents of hospitals or institutions in the London area, and not too remote from Chelsea, who have such cases under their charge and are willing to give facilities for access to such cases (to secure material from earliest varicella vesicles and small samples of blood), will communicate by letter, postcard, or telephone with Dr. C. R. Amies, the Lister Institute, Chelsea Bridge Road, S.W.1 (Sloane 2181).

Procreation after Prostatectomy

Dr. CHARLES P. MATIN (San Francisco) and Dr. EMILIO DE LA PEÑA (San Francisco and Madrid) write: We have read with great interest Mr. Alex. E. Roche's comments (*Journal*, November 11th, 1933, p. 904) on our recent article (abstracted in the *Epitome*, November 4th, 1933, para. 315) in reference to the improbability of procreation after transurethral resection of the prostate, and his statement that "there is no advantage from the procreative point of view in transurethral, as opposed to suprapubic, prostatectomy." In an article by us in the *Urologic and Cutaneous Review* (1933, xxxvii, 156) we stated that "increase in sexual power was observed in many cases and integrity of the procreative power was preserved." This statement was apparently distorted in the translation of this article into Spanish for publication in the *Arch. Med., Cir. y Esp.*, from which the abstract referred to by Mr. Roche was made. If your readers will refer to our original articles they will learn that on account of the very low mortality connected with transurethral resection of the prostate (less than 1 per cent. in our hands) it is now being applied to an increasing number of men who are approaching the prostatic age, and in whom prostatic hypertrophy is detected in its earliest stages, before infection, stasis, and decrepitude have shown themselves. As recession of the gland has been observed to occur following transurethral resection, this operation can be considered as a preventive measure against urinary retention of old age. Few men will refuse this relatively benign closed operation—many men, at least those in America, have suffered from prostatism, dreading prostatectomy for years, and finally accepting the operation only when the obstructive symptoms have become intolerable. This group of early cases contains a few men in the forties; a larger number in the fifties and early sixties. A large percentage of these men are in the age of sexual activity, and in this group a properly performed resection in which the integrity of the internal sphincter has been respected does not necessarily destroy procreative capacity. We naturally assumed that it would be understood by all our readers that in referring to procreation we were not considering the decrepit septuagenarians and octogenarians, weakened by years of suffering and threatening uræmia, who, if married, usually have wives beyond the child-bearing age. In the majority of these cases it is our procedure to perform a preliminary vasectomy in order to prevent the unpleasant complications of epididymitis. Procreation is of importance to the early cases of prostatic hypertrophy, which are treated by transurethral resection. For the above reason we shall feel that our statement in reference to procreation was well worth making and worthy of consideration.

Disclaimer

Mr. S. W. Daw, F.R.C.S., writes: My name has been mentioned in certain newspapers in connexion with a case treated at Leeds Infirmary. I wish it to be made known that this use of my name was entirely unauthorized and without my knowledge.

Book-keeping for the G.P.

A typographical error appeared in our note under this heading (February 3rd, p. 224). Referring to Dr. Rowthorn's "slips" we stated that these took the place of "day-book, prescription book, and waiting list"—this last should, of course, read "visiting list."

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 50, 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 72.

PROPRIETARY REMEDIES, WITH SPECIAL REFERENCE TO HYPNOTICS*

BY

N. MUTCH, M.D., F.R.C.P.

PHYSICIAN, GUY'S HOSPITAL; LECTURER AND EXAMINER IN PHARMACOLOGY, LONDON UNIVERSITY

Proprietary remedies far outnumber official ones. Their definition, which presents some difficulty, is given by the American Medical Association as:

"Any chemical, drug, or similar preparation used in the treatment of diseases, if such article is protected against free competition as to name, product, composition, or process of manufacture by secrecy, patent, or copyright, or by any other means."

Many are substances of genuine merit, but the dubious devices employed by certain proprietors to promote the sale of their particular drugs engender feelings of resentment and suspicion among the medical profession in respect of all. The following blatant methods are in common use: the application of a registered name to a pharmacopoeial drug and its sale to the public in an attractive packing; the exploitation of the mystery of vitamins and radium as a means of selling mixtures containing, in addition, analgesic, stimulant, or aperient drugs; and the obfuscation of the medical man himself by plausible, pseudo-scientific trade literature adorned by fantastic chemical nomenclature.

The present object, however, is to extol the virtues of ethical remedies, not to discuss the black sheep of pharmaceutical exploitation. One of the greatest tributes paid to those who devise new drugs and patent them is the official adoption of drugs of proprietary origin in later editions of the *British Pharmacopoeia*. Methyl sulphonal was patented in 1888 as a sulphonal derivative of greater solubility and speedier hypnotic action than the parent substance. It was sold as trional, but soon found its way not only into the *British Pharmacopoeia*, but into those of Belgium, Holland, America, and Japan. Barbitone itself had a similar origin, and was introduced under the registered name veronal in 1903. Nowadays it is official in the leading pharmacopoeias throughout the world. Soluble barbitone, patented in 1904 as medinal (Schering), is enjoying a similar career, and has just been introduced into the new 1932 edition of the *B.P.* So it has been with heroin, dionine, atophan, stovaine, and a host of other products.

RESEARCH BY COMMERCIAL FIRMS

Facilities for pharmacological research in our universities and medical schools are very limited indeed. During the last half-century attention has been focused on anatomy, physiology, and pathology, but pharmacology and experimental therapeutics have been neglected, although they have a direct vocational bearing and supply the true link between the academic knowledge of the non-practising medical scientist and the everyday needs of the busy practitioner. This neglect is largely responsible for the mental dissociation which takes place between knowledge acquired laboriously in undergraduate days and that used directly for the benefit of the patient. The legitimate demand of the practitioner for new tools and drugs has in the past largely been met by firms interested financially in the sale of their products. Large sums have been diverted from their dividends into the channels of research. It would be more in keeping with the dignity and traditions of the profession if independent pharmacological research could be endowed in our medical schools and universities sufficiently well to enable us to

make our own discoveries. We ought not to be under so great an obligation to the manufacturers of proprietary remedies in this matter. The discriminating work on the active principles of ergot carried out by Sir Henry Dale and his co-workers in the Wellcome Research Laboratories^{2, 4, 5} is an outstanding example of important advances made under the direct aegis of commercial concerns. Such firms exert a powerful influence on post-graduate teaching. It is a good policy to interview travellers from important drug houses and scan the literature with which they burden the breakfast table. In this way there can be acquired much useful knowledge which is not imparted in the lecture rooms and wards. The simplicity and reiteration of their statements register in memory and practice more effectively than does logical exposition before learned societies or in scientific journals.

Vegetable mucilages, such as those of linseed, psyllium, and ispaghula, have long been employed in gastro-enterology, but as a class they never enjoyed any great vogue in this country until some difficulties of administration were overcome and house-to-house instruction in their properties undertaken by Messrs. Napp and Co. in their efforts to sell a particular brand of dried mucilage as normacol. The practical importance of this type of therapy is now common knowledge throughout the profession.

The physical process of adsorption had been known and widely used in general commerce and in chemical research long before the century began. It is highly improbable, however, that in 1914 even one practitioner in a thousand realized that it could be applied advantageously in the treatment of alimentary conditions. Now, thanks largely to the educational value of trade literature, adsorption by china clay and kindred products is made use of daily by a large proportion of the profession to purify infected and putrescing material in the stomach and intestines. It has become a fundamental therapeutic principle in dealing with intestinal toxæmia and poisoning from contaminated food.

Palatability, elegance, convenience, and painlessness all call for a type of research for which the medical man has little time to spare, but they are essential to success and the special concern of those who manufacture under patents and registered names. It is useless to prescribe unless the patient will consume. The tablet has made the midday dose so easy that the business man and the patient who is out all day have now no excuse for omitting it. The earlier forms of injectable iron made up to prescription provoked a local reaction so painful as to prohibit their use. Proprietary solutions, such as Messrs. Roberts and Co.'s ferrigen or Fraisse's ferruginous serum, were painless and essential. Now at last a painless injectable iron preparation has been introduced in the new *B.P.*

VALUE OF A "BRAND" NAME

Sale under a brand name has much to be said in its favour. The quality even of *B.P.* products sold by large firms under their brand name is often maintained by systematic tests of a far more discriminating nature than those laid down in the *Pharmacopoeia*. Until a year ago medicinal paraffin could be sold as conforming to *B.P.* standards even if its specific gravity was as low as 0.869. Samples of light oils of this nature were on sale in all parts of the country, but they were useless for lubrication

* Based on addresses read before the Kent Branch and the Kensington Division of the British Medical Association.

at body temperature. It would have been far more rational to use Arctic grade motor oil in the Tropics than to employ these light-grade medicinal oils in the intestine. Several firms, applying the principles of engine lubrication, marketed high specific gravity paraffin only. Their wisdom receives recognition in the 1932 *B.P.*, where the low limit for these oils is now raised to 0.880. Until last autumn, however, it was most important to specify a proprietary brand of known high viscosity or stipulate on the prescription a definite specific gravity.

In dealing with a substance like medicinal charcoal, which does not now find a place in the *B.P.* at all, the question of brand is of greater importance still. The curative virtues of charcoal are determined by its power of adsorbing deleterious substances from solution in septic exudates or in the contents of the bowel. Using methylene-blue as the substance to be adsorbed and comparing the adsorptive powers of thirty samples of medicinal charcoal from various sources, I recently found astonishing variations in the potency of different brands. At one end of the scale were really effective brands of a potency undreamt of a few years ago, such as Merck's with a coefficient of 85 on my private scale, and Bayer's 75 and Gideon Richter 56; whilst at the other end were relatively feeble products, such as chardox, coefficient 9; Fraudin, 2.5; and Bragg's charcoal biscuits, 0.5. In this particular respect, therefore, Merck's product was 170 times as active as Bragg's, weight for weight. The wholesale prices varied widely from 15s. to as much as £67 4s. per cwt. Here clearly are great opportunities for the exploitation of weak inexpensive charcoals on the reputation of the more active ones. The only practicable safeguard for the busy doctor in this and similar instances is to shield himself behind the brand name of some firm of high repute.

New drugs evolved in subsidized laboratories are often costly, but this is not always the case. On occasion such researches save the patient's pocket materially. Originally adrenaline obtained from the gland itself was far more active than synthetic adrenaline produced in the laboratory. The two products had identical formulas, but the natural substance was laevorotatory and the synthetic an optically inactive isomer. In 1923 the laevorotatory form was synthesized in the laboratory of the Society of Chemical Industries at Basel for sale as adrenaline "ciba." After exhaustive tests the synthetic product appears to be identical quantitatively and qualitatively with the natural substance, and finds a place in the new *B.P.* The discovery prepared the way for a great reduction in the price of a costly substance in common use. It is a pleasure to record this example of an expensive proprietary research which resulted in so substantial a reduction in the retail price of an important drug.

Hypnotics

The ingenuity of manufacturing and distributing firms in inventing new drugs, modification of drugs, copies of old ones, mixtures of old and new, and in registering fresh titles for all threatens the busy man's clarity of mind. Almost every post introduces a new name. A directory is needed urgently which will summarize the chemical and therapeutic associations of these substances in a readily accessible manner. The case of our modern hypnotics can be taken as typical of the chaos with which the profession is threatened.

In recent years proprietary research has been very active among the derivatives of urea. Indeed, few pharmaceutical firms of standing have failed to appropriate at least one of these substances for exclusive sale. The search has been stimulated by the hope of finding safe hypnotics free from the heart-depressant action of the

chloral group; the offensive odour and bulky fluidity of paraldehyde; and the sluggishness, hang-over, and cumulation of sulphonal and its derivatives. Three types are needed—namely, substances suitable for inducing a night's sleep, those possessing additional power of pain relief, and others adapted for basal anaesthesia.

MODIFICATIONS OF BARBITONE

Barbitone has been an object of special interest in these researches, not because it is free from drawbacks, but because of its chemically plastic molecule. A large series of modifications has been evolved, including many substances of great utility (see Table I).

TABLE I.—Barbituric Hypnotics

Allurate (in allonal)	Allyl isopropyl barbituric acid	C_6H_5 C_3H_7 > B
Amytal	Isoamyl ethyl B	C_6H_5 C_4H_9 > B
Amytal soluble	Sodium amytal	C_6H_5 C_4H_9 > B_{Na}
Barbitone	Diethyl B	C_6H_5 C_2H_5 > B
Barbitone soluble	Sodium barbitone	C_6H_5 C_2H_5 > B_{Na}
Butobarbital	Butyl ethyl B (see soneryl, neonal, and soporigene)	C_6H_5 C_4H_9 > B
Dial	Diallyl B	C_6H_5 C_2H_5 > B
Evipan	N-methyl C C. cyclohexenyl, methyl B	C_6H_5 CH_3 > C_6H_9
Gardenal	Phenyl ethyl B (see luminal and phenobarbital)	C_6H_5 C_6H_5 > B
Hebaral sodium	Sodium hexyl ethyl B	C_6H_5 C_6H_5 > B_{Na}
Ipral	Calcium ethyl, isopropyl B	C_6H_5 C_3H_7 > B_{Ca}
Luminal	(See gardenal and phenobarbital)	
Medinal	(See barbitone soluble)	
Nembutal	Sodium ethyl isomethylbutyl B	C_6H_5 (CH_3) C_4H_9 > B_{Na}
Neonal	(See butobarbital)	
Noctal	Brompropenyl isopropyl B	C_6H_5 C_3H_7 > B
Pentobarbital	(See nembutal)	
Pernocton	Sodium butyl bromallyl B	C_6H_5 C_4H_9 > B_{Na}
Phanodorm	Cyclohexenyl ethyl B	C_6H_5 C_6H_9 > B
Phenobarbital	(See gardenal and luminal)	
Prominal	N-methyl ethyl phenyl B	C_6H_5 C_6H_5 > C_6H_9
Proponal	Dipropyl B	C_6H_5 C_3H_7 > B
Sandoptal	Isopropyl allyl B	C_6H_5 C_3H_7 > B
Soneryl	(See butobarbital)	
Soneryl sodium	Sodium butyl ethyl B	C_6H_5 C_4H_9 > B_{Na}
Soporigene	(See butobarbital)	
Veronal	(See barbitone)	

These are all modified barbituric acids conforming to the general formula C_6H_5
 C_2H_5 > **B**, where **B** stands for the barbituric nucleus and is constant, but the ethyl groups are replaceable by this, that, and the other. With every change in these ethyl groups a new barbiturate is born.

If a phenyl group C_6H_5 is used to replace one of the ethyl groups the drug seems to acquire special depressant power over the motor cortex. Such drugs can be used in epilepsy: luminal and prominal.

If sodium is added to the "B" nucleus without disturbing the essential ring formation the product becomes soluble. This confers greater speed in action—for example, barbitone sodium or medinal is far more soluble and quicker in action than simple barbitone or veronal. Solubility also makes it possible for one to inject the drug. Most of the basal anaesthetics are sodium compounds—for example, soneryl is a sleep-producer. Soneryl sodium, being more soluble, can be injected as a basal anaesthetic. Amytal sodium, evipan sodium, pernocton, and nembital itself are all compounds of this class.

In the stage of intoxication which precedes narcosis susceptible patients show excitement. Almost everyone must on occasion have given soluble barbitol and produced a state of excitement which has hindered rather than promoted sleep. The preventive for such trouble is a preliminary dose of bromule. In certain cases, therefore, bromine has been introduced into the barbiturate nucleus—for example, noctal, pernocton.

AMIDOPYRINE AND BARBITURATES

Attempts to confer pain-relieving qualities on the barbiturates have not been very successful. The closest approaches to a solution which have been made up to the present are the association of a barbiturate nucleus with amidopyrine in Pfeiffer's compound, used in veramon, and the linkage with a member of the morphine group in didial and codeonal. Amidopyrine, a derivative of antipyrine, is well known under the registered name of pyramidon, and appears to possess greater analgesic properties than antipyrine itself or other members of the simple coal-tar group. Its pain-relieving powers are enhanced by admixture with a simple hypnotic, possibly because the latter diminishes the patient's anticipation of pain. This fact has been made use of in a popular modern series of pain-relieving mixtures which fall outside the Dangerous Drugs Acts (see Table II).

TABLE II.—Analgesics Based on Amidopyrine

Allonal	= Amidopyrine + a barbiturate
Asciatine	= " + butyl chloral
Cibylgin	= " + a barbiturate
Compral	= " + a urethane
Optalidon	= " + a barbiturate
Somnosol	= " + bromural
Veramon	= " + barbitone
Veropyron	= " + barbitone

In each case pain relief is due to amidopyrine combined either mechanically or molecularly with a simple hypnotic. A barbitone derivative with pain-relieving qualities in its own right is still to be found.

DERIVATIVES OF MORPHINE

Research has also been active among the derivatives of morphine with the object of securing pain relief without causing either constipation or addiction. The bowel difficulty has largely been overcome, but it has proved impossible to dissociate addiction from the analgesic qualities of these drugs. All substances of this group with any powerful control over pain are therefore still controlled by the Dangerous Drugs Acts. They may be placed in two therapeutic groups: those akin to morphine in their control of pain, and those resembling codeine in that their analgesic properties are feeble and their utility confined to the relief of cough (Table III).

TABLE III.—Morphine and Codeine Group

For Pain	For Cough
Acechone	Codeine or methyl morphine
Dicodid	Dionine or ethyl morphine
Dilaudid	Eucodene
Eukodol	Pamecodin
Heroin and morphine	(Free from the D.D.A., but
(All under the D.D.A. regulation)	of no real utility as anal-
	gesics)

HYPNOTIC CREDENTIALS

The credentials of every new hypnotic should be carefully examined before a single dose is prescribed.

Is It a Barbiturate?

No one who is familiar with Sir William Willcox's¹⁶ work on this group of drugs can fail to realize the great harm which can follow the repeated use of many members of this class. Unfortunately, the manufacturer often cloaks the description of his drug with complex chemical terms which mean nothing to most of us. For example, dial is diallyl barbituric acid, and if so described is recognizable at once as a barbitone derivative. It can also be correctly described as diallyl-malonyl-urea. It must be remembered, therefore, that all malonyl-ureas are barbitone derivatives. If, however, the firm which markets this drug describes it as 2, 4, 6, trioxy-5-diallyl-pyrimidine, what can we do? The description is correct, but none except a research chemist specializing in the organic branch would recognize it as a barbiturate.

There are many urea derivatives other than the malonyl-ureas, and some are first-class hypnotics. They are not barbiturates and are particularly useful for patients with idiosyncrasies and for those who have become habituated to barbiturates (see Table IV).

TABLE IV.—Urea Derivatives (Not Barbiturates)

1. Carbromal, now B.P. and sold as adalin, nyctal, planadalin, uradal.
2. Bromural or dormigene
3. Sedormid

The Margin of Safety

The actual potency does not concern us much. It is just as easy to give five grains of one drug as one grain of a more potent one. The point of practical importance is the margin of safety between the hypnotic dose and the lethal one. This is represented by the ratio M.L.D./M.Th.D. The higher this figure the safer the drug. Quoting from the literature:¹⁷ luminal is 1.3; barbitone 1.6; soneryl, nembital, and phanodorm, 2.4; dial, 2.5; evipan, 5. From this it would appear that it is not very safe to employ luminal in full hypnotic doses, although in sedative or anti-epileptic dosage it is free from immediate risk.

Duration of Sleep to be Expected

The effect of a sleeping draught should last many hours, but die away before morning. For a basal anaesthetic a much shorter duration is desirable. Quoting once more from available literature:—Human therapeutic dosage: evipan sodium intravenous lasts twenty minutes, and evipan by mouth two hours. Rats¹ with coma dosage: nembital, four and a half hours; pernocton, five hours; amyral, six to thirty hours; luminal, dial, and allurate, eighteen to twenty-four hours; barbitone, eighteen to thirty-six hours. The duration of narcosis produced by the dial group lies between the evanescent basal anaesthetics and that of drowsy barbitone itself. As judged by these two considerations of safety and duration alone the basal anaesthetics of choice are evipan and nembital. Practical experience appears to justify this conclusion.

How Quickly will the Patient go to Sleep?

It is impossible to foretell whether preliminary excitement will occur during the intoxication phase or not. The question can only be answered after therapeutic trial. The speed with which hypnosis will be induced

can, however, be surmised from the solubility of the substance. If a quick effect is desired a barbiturate containing sodium should be used.

Hang-over and Cumulation

The questions of hang-over and cumulation depend upon the completeness with which the drug is dealt with by excretion or detoxication over periods of eight and twenty-four hours respectively. They are best determined by therapeutic trial, but the laboratory data are of interest. Barbiturates meet with various fates after ingestion. Some are re-excreted, others are broken down, and others disappear mysteriously. Frethwurst, Halberkann, and Reiche⁶ could recover 75 per cent. of a given dose of barbitone from the urine, 65 per cent. of pernocton, only 30 per cent. of dial, between 10 and 40 per cent. of luminal, and no amytal or neonal at all. Evipan is said to be metabolized completely in a few hours. Clearly urine analysis alone does not yield any reliable index of the probability of hang-over. Cumulation is more easily determined, especially if the drug is recoverable in part from the urine. Barbitone is known to be a serious offender, and the following analyses⁷ furnish the chemical explanation of the defect: only 8 per cent. appears in the urine in the first twelve hours; 20 per cent. in the first twenty-four; 36 per cent. in the first forty-eight; and traces can be found for as long as nine days after a single dose.

A number of other important points are only decided after the drug has come into wide use and experience has accumulated. Toxic effects may arise, due not so much to the cumulation of the drug in the tissues as to the summation of its effect on the tissues. Mental impairment and the motor paralysis following luminal are examples of this kind of trouble. The range of possible idiosyncrasies and the degree to which the patient is exposed to the risks of addiction are only discernible after the drug has been in use for years.

TABLE V.—Some Hypnotic Mixtures

Alepsal	= Phenobarbital, belladonna, and caffeine
Beotal	= Barbitone, valerian, and hyoscyanus
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Theogardenal	= Butobarbital and theobromine
Veromidia	= Soluble barbitone and passion flower

PRACTICAL SUGGESTIONS

1. The rejection for general use of any proprietary preparation which is merely a mixture of old familiar friends. It may be appropriate when circumstances are exceptional.

2. The rejection of any proprietary preparation exploiting the pain-relieving properties of amidopyrine and other coal-tar analgesics. These parent substances can be prescribed from the B.P., with the addition, if desirable, of the hypnotic of individual choice. Similar rules could be formulated on a rational basis in all branches of this subject of the proprietaries. If universally adopted they would spare the memory a great and daily increasing burden.

REFERENCES

- ¹ Barlow, O. W., Duncan, J. T., and Gledhill, J. D.: *Journ. Pharmacol. Exper. Therap.*, 1931, xli, 357.
- ² Dale, H. H., and Barger, C.: *Biochem. Journ.*, 1907, ii, 240.
- ³ Dale, H. H., and Dixon, W. E.: *Journ. Physiol.*, 1909, xxxix, 25.
- ⁴ Dale, H. H., and Laidlaw, P. P.: *Ibid.*, 1910, xli, 318.
- ⁵ Dale, H. H.: *Ibid.*, 1913, xlvii, 291.
- ⁶ Frethwurst, F., Halberkann, K., and Reiche, F.: *Munch. med. Woch.*, 1930, lxxvii, 1401.
- ⁷ Nielson, C., Higgins, J. A., and Spruth, H. C.: *Journ. Pharmacol. Exper. Therap.*, 1925, xxvi, 371.
- ⁸ Reiche, F.: *Klin. Woch.*, 1926, v, 2112.
- ⁹ Reinert, M.: *Arch. Exper. Pathol. Pharmacol.*, 1928, xlix, 130.
- ¹⁰ Willcox, W. H.: *British Medical Journal*, 1927, i, 877.

BASAL ANAESTHETICS AND ALLIED SUBSTANCES

THEIR USE AND MISUSE*

BY

H. W. FEATHERSTONE, M.A., M.D.,

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The group of anaesthetic agents to which a great deal of attention has been drawn in the last few years are solids which are administered to the patient in solution in water. They provide a contrast to the well-known anaesthetic gases which are absorbed through the lungs. In this paper the attempt is made to discuss this group of non-inhalational narcotics, many of which, in view of the incomplete nature of the anaesthesia they produce when given in safe doses, have been termed "basal anaesthetics."

Although a great deal has been written on the subject by manufacturers, anaesthetists in this country have not yet offered discriminating criticism to any large extent. The medical profession and the public owe much of the progress of therapeutics in modern times to the research departments of the great drug and chemical manufacturers; but it is very necessary that judgement on the relative values of the products which these important firms offer should be dispassionate in order that, in a particular condition, the most suitable drug may be selected. To read a short excerpt quoted in the reports of a drug firm without the whole context often leads to misunderstanding of the meaning of the original author.

CHEMISTRY OF THE BARBITURATES

The substances known as sodium amytal, nembutal, pernocton, hebaral, sodium soneryl, and sodium evipan all belong to the large new group of barbiturates which modern research has elaborated. The pioneer work in basal anaesthesia by Zerkas of Indianapolis with sodium amytal and by Lundy of the Mayo Clinic with sodium amytal and nembutal (which Lundy originally called embutal) should be recalled. In 1930 the present writer, together with Dr. Magill, Dr. Apperly, and Dr. Parsons, witnessed some of the work in American and Canadian clinics, and subsequently the possibilities of the various methods which are available in this interesting branch of anaesthetics have been explored by many anaesthetists in this country.

The chemistry of the barbiturates is important but somewhat obscure. For help in the compilation of the brief but by no means complete account which follows I have to thank Dr. Nierenstein of Bristol and Mr. Garfield Thomas of the Birmingham General Hospital.

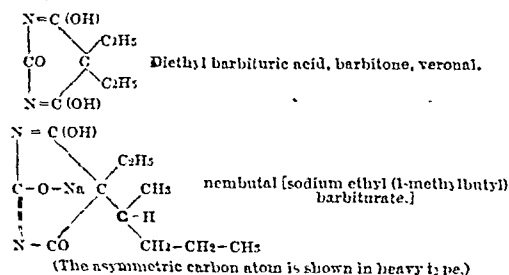
About thirty years ago it was pointed out by Nebenthan that if one prepared an isomer of urea, a drug could be prepared which produced hypnotic qualities. Now urea NH_2CO has the linkage —NH—CO— , which can be tautomerized to —N=C(OH)— . The position, however, becomes more complicated in the case of barbituric acid. Here the system $\text{—NH—CO—CH}_2\text{—}$ may tautomerize to $\text{—N=C(OH)—CH}_2\text{—}$, and thus produce a substance possessing hypnotic properties, or —NH—C(OH)=CH— may be formed, which would thus exclude the production of an hypnotic. This actually takes place in barbituric acid, which has no hypnotic properties. This tautomeric form —N=C(OH)— is termed "the Nebenthan factor." In order to render the new linkage a stable compound, various groups such as ethyl groups replace the mobile hydrogen atoms. This opened up a new era for the

* Delivered to the Midland Medical Society, January 10th, 1934.

drug manufacturers, and a variety of hypnotic drugs were prepared with names which differed according to the nature of the immobile radicles—veronal, allonal, neonal, luminal, etc.

Now in more recent years we have become aware that, for some reason, substances which contain an asymmetric carbon atom (and which are optically active), possess very powerful physiological effects in the body (for example, the carbohydrates, the proteins, the alkaloids, and adrenaline). The effort was then made to prepare a derivative of the barbiturates which contained both the Nebenthou factor and, in the affixed radicles, an asymmetric carbon atom. These substances, of which nembutal (sodium ethyl (1-methylbutyl) barbiturate) is a well-known example, are employed in the form of the sodium salts which are soluble in water, with the result that they can be readily absorbed from the intestine. The presence of an asymmetric carbon atom suggests the possibility that the strength of specimens may vary according to the proportions of dextrorotatory and laevorotatory moieties which are present. Mr. Garfield Thomas, however, upon examining a few specimens of nembutal, has not found the optical activity to vary greatly. This point may be worthy of further attention.

In addition to the influence of (1) the Nebenthou factor and (2) the asymmetric carbon atom, the hypnotic power of the barbiturates also varies considerably with (3) the complexity and composition of the side-chains, and other affixed radicles.



THE NEWER COMPOUNDS AND THEIR EFFECTS

The duration of their effects differs, and the differences depend partly on the rate of excretion of the unaltered drug and partly on the rate of destruction of the drug in the body. Barbituric acid itself is inert, and therefore the drugs are rendered inert by the oxidation of their side-chains, so that the drugs with the least stable side-chains produce the shortest actions. Luminal is oxidized but slowly, it is slow-acting, and it is of great value in epilepsy. Sodium amyltal and nembutal are short-acting. Sodium evipan is oxidized the most rapidly of all.

The drugs are removed from the body by oxidation and detoxication (principally in the liver) and elimination through the kidneys. In the case of sodium evipan, apparently, these processes occur with such rapidity that the effects of an overdose soon pass off provided that respiration and circulation can be prevented from failing completely.

A number of these compounds have been prepared, and it may perhaps be remarked that the researches into their action in animals and in human beings have proved to be more fruitful in those countries which possess ample opportunities for animal experimentation, such as Germany and America.

The best known of the newer barbiturates are: sodium iso-amyl-ethyl barbiturate (sodium amyltal), sodium ethyl (1-methylbutyl) barbiturate (nembutal), butyl-bromallyl barbituric acid (pernocton), and sodium α -methyl- γ -cyclophenyl-methyl barbiturate (sodium evipan). Pernocton possesses a bromine atom, and it is therefore

more than a simple barbiturate. Sodium soneryl, hebaral, and somnifene are members of the same group which are employed by many workers. They do not all possess an asymmetric carbon atom.

Lundy has pointed out that for practical purposes he divides the effects into three stages: Stage I (*hypnosis*): The patient can be roused to speak and even to voice his disapproval if pinched, but subsequently he has little or no memory of the incident. Stage II (*inebriation*): He moves when the skin is stimulated, and may be restless, but he shows no signs of consciousness. Local anaesthesia is not in all cases aided by this stage, because the restlessness may cause an operative procedure to be well-nigh impossible. Stage III (*anaesthesia*): There is no response to painful stimuli, but often in this stage respiratory depression, a fall in blood pressure, and a tendency for the tongue to fall back are observed. Shock, and pulmonary oedema leading to bronchopneumonia, may result from a particularly large dose of the barbiturate.

One may sum up the situation by saying that the first stage—hypnosis—is generally achieved with administration by the mouth; inebriation—that is to say, complete unconsciousness—with administration by intravenous injection; the third stage—narcosis—is not generally regarded as desirable in the case of sodium amyltal, nembutal, and pernocton, but the new drug known as sodium evipan is said to be relatively safe as a true narcotic. Thus, in dogs, the minimal dose of sodium evipan is said to be more than five times the minimal narcotic dose.

ADMINISTRATION

In administration of the barbiturates the oral and intravenous routes are generally found to be the more useful. Intramuscular injection and instillation of a barbiturate solution into the large bowel have also been employed. I have not had much experience of the intramuscular route. In my hands the onset of hypnosis is delayed, a relatively large dose is required to obtain sleep, and one is chary of employing the method because one does not dare to give an adequate dose from the fear that when at last the whole of the solution has entered the circulation and the full effects have developed, the patient may suffer from an overdose. I have not employed the rectal method in many cases. It is not particularly convenient, and the correct dosage is not easily determined.

Avertin (tribromethyl alcohol, $\text{CBr}_3\text{CH}_2\text{OH}$) is well known. I would remind you that the solid avertin is supplied in solution in amylene hydrate (1 gram in 1 c.cm. of solution), that it is sparingly soluble in water, so that the watery solution which is instilled into the patient is of large bulk, and that the rectal route is almost universally employed. When given intravenously avertin is detoxicated by the liver so rapidly that consciousness returns only a few minutes after the administration has been completed. The rectal method offers slow, steady absorption, and when 0.1 gram of avertin has been given for each kilogram of body weight, the patient remains unconscious usually for a period of two to three hours. Shipway, in a personal communication based upon more than 12,000 cases, expresses his entire satisfaction with rectal avertin. Wesley Bourne of Montreal has administered avertin to one patient on twenty-two occasions within a period of ten weeks without injury to the liver or any other untoward effect.

A CONTRAST WITH GASEOUS ANAESTHETICS

Perhaps the most noteworthy point to be emphasized is the striking contrast between the gaseous anaesthetics and these solid narcotics in absorption, in action, and

can, however, be surmised from the solubility of the substance. If a quick effect is desired a barbiturate containing sodium should be used.

Hang-over and Cumulation

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REFERENCES

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- ⁵ Dale, H. H.: *Ibid.*, 1913, xlvii, 291.
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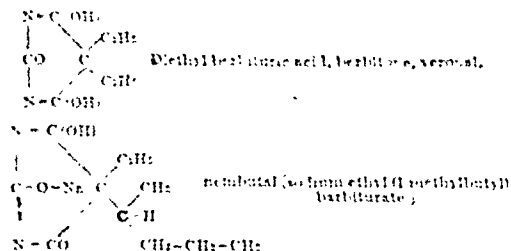
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In addition to the influence of (1) the Nebenthan factor and (2) the asymmetric carbon atom, the hypnotic power of the barbiturates also varies considerably with (3) the complexity and composition of the side-chains, and other affixed radicals.



(The asymmetric carbon atom is shown in heavy type)

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The duration of their effects differs, and the differences depend partly on the rate of excretion of the unaltered drug and partly on the rate of destruction of the drug in the body. Barbituric acid itself is inert, and therefore the drugs are rendered inert by the oxidation of their side-chains, so that the drugs with the least stable side chains produce the shortest actions. Luminal is oxidized but slowly, it is slow-acting, and it is of great value in epilepsy. Sodium amytal and nembutal are short-acting. Sodium evipan is oxidized the most rapidly of all.

The drugs are removed from the body by oxidation and detoxication (principally in the liver) and elimination through the kidneys. In the case of sodium evipan, apparently, these processes occur with such rapidity that the effects of an overdose soon pass off provided that respiration and circulation can be prevented from failing completely.

A number of these compounds have been prepared, and it may perhaps be remarked that the researches into their action in animals and in human beings have proved to be more fruitful in those countries which possess ample opportunities for animal experimentation, such as Germany and America.

The best known of the newer barbiturates are: sodium iso-amyl-ethyl barbiturate (sodium amytal), sodium ethyl (1-methylbutyl) barbiturate (nembutal), butyl-b-bromallyl barbituric acid (pernocton), and sodium *n*-methyl-C-C-cyclophenyl-methyl barbiturate (sodium evipan). Pernocton possesses a bromine atom, and it is therefore

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One may sum up the situation by saying that the first stage—hypnosis—is generally achieved with administration by the mouth; mebriation—that is to say, complete unconsciousness—with administration by intravenous injection; the third stage—narcosis—is not generally regarded as desirable in the case of sodium amytal, nembutal, and punction, but the new drug known as sodium evipan is said to be relatively safe as a true narcotic. Thus, in dogs, the minimal dose of sodium evipan is said to be more than five times the minimal narcotic dose.

ADMINISTRATION

In administration of the barbiturates the oral and intravenous routes are generally found to be the more useful. Intramuscular injection and instillation of a barbiturate solution into the large bowel have also been employed. I have not had much experience of the intramuscular route. In my hands the onset of hypnosis is delayed, a relatively large dose is required to obtain sleep, and one is chary of employing the method because one does not dare to give an adequate dose from the fear that when at last the whole of the solution has entered the circulation and the full effects have developed, the patient may suffer from an overdose. I have not employed the rectal method in many cases. It is not particularly convenient, and the correct dosage is not easily determined.

Avertin (tribromomethyl alcohol, $\text{CBr}_3\text{CH}_2\text{OH}$) is well known. I would remind you that the solid avertin is supplied in solution in amylene hydrate (1 gram in 1 c.cm. of solution), that it is sparingly soluble in water, so that the watery solution which is instilled into the patient is of large bulk, and that the rectal route is almost universally employed. When given intravenously avertin is detoxicated by the liver so rapidly that consciousness returns only a few minutes after the administration has been completed. The rectal method offers slow, steady absorption, and when 0.1 gram of avertin has been given for each kilogram of body weight, the patient remains unconscious usually for a period of two to three hours. Shipway, in a personal communication based upon more than 12,000 cases, expresses his entire satisfaction with rectal avertin. Wesley Bourne of Montreal has administered avertin to one patient on twenty-two occasions within a period of ten weeks without injury to the liver or any other untoward effect.

A CONTRAST WITH GASEOUS ANAESTHETICS

Perhaps the most noteworthy point to be emphasized is the striking contrast between the gaseous anaesthetics and these solid narcotics in absorption, in action, and

can, however, be surmised from the solubility of the substance. If a quick effect is desired a barbiturate containing sodium should be used.

Hang-over and Cumulation

The questions of hang-over and cumulation depend upon the completeness with which the drug is dealt with by excretion or detoxication over periods of eight and twenty-four hours respectively. They are best determined by therapeutic trial, but the laboratory data are of interest. Barbiturates meet with various fates after ingestion. Some are re-excreted, others are broken down, and others disappear mysteriously. Frethwurst, Halberkann, and Reiche⁶ could recover 75 per cent. of a given dose of barbitone from the urine, 65 per cent. of pernocton, only 30 per cent. of dial, between 10 and 40 per cent. of luminal, and no amyltal or neonal at all. Evipan is said to be metabolized completely in a few hours. Clearly urine analysis alone does not yield any reliable index of the probability of hang-over. Cumulation is more easily determined, especially if the drug is recoverable in part from the urine. Barbitone is known to be a serious offender, and the following analyses⁸ furnish the chemical explanation of the defect: only 8 per cent. appears in the urine in the first twelve hours; 20 per cent. in the first twenty-four; 36 per cent. in the first forty-eight; and traces can be found for as long as nine days after a single dose.

A number of other important points are only decided after the drug has come into wide use and experience has accumulated. Toxic effects may arise, due not so much to the cumulation of the drug in the tissues as to the summation of its effect on the tissues. Mental impairment and the motor paralysis following luminal are examples of this kind of trouble. The range of possible idiosyncrasies and the degree to which the patient is exposed to the risks of addiction are only discernible after the drug has been in use for years.

TABLE V.—Some Hypnotic Mixtures

Alepsal	= Phenobarbital, belladonna, and caffeine
Beotal	= Barbitone, valerian, and hyoscyamus
Belladonal	= Phenobarbital and the alkaloids of belladonna
Bromidia	= Chloral bromide and hyoscyamus
Bromovalerianate	= Chloral bromides and valerian
Brosedan	= Bromide and yeast
Indonal	= Barbitone and cannabis indica
Neurinase	= Soluble barbitone and valerian
Theogardenal	= Butobarbital and theobromine
Veronidia	= Soluble barbitone and passion flower

PRACTICAL SUGGESTIONS

1. The rejection for general use of any proprietary preparation which is merely a mixture of old familiar friends. It may be appropriate when circumstances are exceptional.

2. The rejection of any proprietary preparation exploiting the pain-relieving properties of amidopyrine and other coal-tar analgesics. These parent substances can be prescribed from the B.P., with the addition, if desirable, of the hypnotic of individual choice. Similar rules could be formulated on a rational basis in all branches of this subject of the proprietaries. If universally adopted they would spare the memory a great and daily increasing burden.

REFERENCES

- ¹ Barlow, O. W., Duncan, J. T., and Gledhill, J. D.: *Journ. Pharmacol. Exper. Therap.*, 1931, xli, 357.
- ² Dale, H. H., and Barger, G.: *Biochem. Journ.*, 1907, ii, 240.
- ³ Dale, H. H., and Dixon, W. E.: *Journ. Physiol.*, 1909, xxix, 25.
- ⁴ Dale, H. H., and Laidlaw, P. P.: *Ibid.*, 1910, xli, 318.
- ⁵ Dale, H. H.: *Ibid.*, 1913, xlv, 291.
- ⁶ Frethwurst, F., Halberkann, K., and Reiche, F.: *Munch. med. Woch.*, 1920, lxxvii, 1401.
- ⁷ Nielson, C., Higgins, J. A., and Spruth, H. C.: *Journ. Pharmacol. Exper. Therap.*, 1925, xxvi, 371.
- ⁸ Reiche, F.: *Klin. Woch.*, 1926, v, 2112.
- ⁹ Reinert, M.: *Arch. Exper. Pathol. Pharmacol.*, 1928, xlix, 130.
- ¹⁰ Willcox, W. H.: *British Medical Journal*, 1927, i, 877.

BASAL ANAESTHETICS AND ALLIED SUBSTANCES

THEIR USE AND MISUSE*

BY

H. W. FEATHERSTONE, M.A., M.D.,

HONORARY ANAESTHETIST, GENERAL, CHILDREN'S, AND MATERNITY HOSPITALS, BIRMINGHAM; LECTURER ON ANAESTHETICS IN THE UNIVERSITY OF BIRMINGHAM

The group of anaesthetic agents to which a great deal of attention has been drawn in the last few years are solids which are administered to the patient in solution in water. They provide a contrast to the well-known anaesthetic gases which are absorbed through the lungs. In this paper the attempt is made to discuss this group of non-inhalational narcotics, many of which, in view of the incomplete nature of the anaesthesia they produce when given in safe doses, have been termed "basal anaesthetics."

Although a great deal has been written on the subject by manufacturers, anaesthetists in this country have not yet offered discriminating criticism to any large extent. The medical profession and the public owe much of the progress of therapeutics in modern times to the research departments of the great drug and chemical manufacturers; but it is very necessary that judgement on the relative values of the products which these important firms offer should be dispassionate in order that, in a particular condition, the most suitable drug may be selected. To read a short excerpt quoted in the reports of a drug firm without the whole context often leads to misunderstanding of the meaning of the original author.

CHEMISTRY OF THE BARBITURATES

The substances known as sodium amyltal, nembutal, pernocton, hebaral, sodium soneryl, and sodium evipan all belong to the large new group of barbiturates which modern research has elaborated. The pioneer work in basal anaesthesia by Zerfas of Indianapolis with sodium amyltal and by Lundy of the Mayo Clinic with sodium amyltal and nembutal (which Lundy originally called embutal) should be recalled. In 1930 the present writer, together with Dr. Magill, Dr. Apperly, and Dr. Parsons, witnessed some of the work in American and Canadian clinics, and subsequently the possibilities of the various methods which are available in this interesting branch of anaesthetics have been explored by many anaesthetists in this country.

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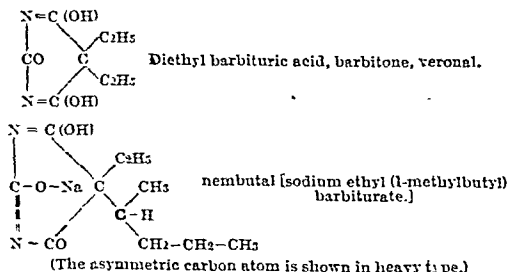
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A CONTRAST WITH GASEOUS ANAESTHETICS

Perhaps the most noteworthy point to be emphasized is the striking contrast between the gaseous anaesthetics and these solid narcotics in absorption, in action, and

in excretion. On the one hand, gaseous anaesthetics are absorbed by the lungs, the amount in the body at any particular time can be controlled with remarkable precision (particularly in the case of nitrous oxide, ethylene, acetylene, etc.), and they are excreted by the lungs without detectable alteration in their chemical composition. (It may be that chloroform and ethyl chloride are to some extent destroyed by the liver.) The principal disadvantages of the gaseous group are, first, the dislike some patients have of going through the ordeal of induction, and, secondly, the strain which is thrown upon the pulmonary tissues.

On the other hand, the problems of absorption, action, and elimination of the solid narcotics are much more complicated. Absorption depends upon the method of administration, and although these drugs are greatly appreciated by most patients, the effective dose is difficult to control. The action of the drug so long as its composition is unchanged is probably constant, but the processes of detoxication and elimination begin immediately the drug appears in the circulation.

Therefore the duration and depth of narcosis depends upon the nature of the drug, the dose, the type and temperament of the patient, the state of the heart and circulation, and the efficiency of the liver and of the kidneys. With general anaesthetics most of these problems can be dealt with as anaesthesia proceeds, for the dose is controlled from minute to minute, but all the points should be taken into consideration most carefully beforehand when administering an effective dose of a solid narcotic. After a solid narcotic has been injected, reduction of the effect of the drug is beyond the power of the administrator. Certain measures, however, are very helpful. The circulation and respiration may be improved by inhalations of carbon dioxide and oxygen combined with injections of coramine, and adrenaline or ephedrine. For the pulmonary oedema, which may occur when injecting a large dose of a barbiturate, intravenous injections of hypertonic saline with glucose, together with atropine, are recommended. It is claimed that the effects of avertin may be greatly reduced by the injection of coramine. Some think that avertin is antagonistic to iodothyrene, and that avertin is therefore specially safe in exophthalmic goitre.

THE PATIENT AND PRE-OPERATIVE SEDATIVES

I now propose to review a number of the points which have to be borne in mind if these useful drugs are to be employed to their best advantage, and they will be considered from the point of view of the patient, of the surgeon, and of the anaesthetist. The great demand by patients for the use of basal narcotics is sufficient evidence that, from the patient's point of view, the quiet and comfortable induction of sleep which these drugs offer supplies a long-felt want. Although in particular cases there may be clear reasons for withholding pre-operative sedatives, nevertheless we must accept the fact that these drugs (improved upon, no doubt, as research progresses) must be included in the armamentarium of modern anaesthetists.

We all know that it is comparatively easy with a small dose of anaesthetic to induce and maintain anaesthesia in patients who possess a calm and philosophical outlook, and also in those who are quietened by severe illness and a long period in bed. But the excitable, apprehensive, vigorous individual often requires a large dose of anaesthetic and careful handling. The alcoholic is especially difficult. In these cases the barbiturates are often most helpful and comparatively safe. For alcoholics avertin gives excellent results, and the lungs (which are frequently in a poor condition) are spared the assault of a concentrated vapour.

Oral nembutal does not always answer very well if the patient is excitable, and particularly if he is aware of the nature of the drug which he is swallowing. In such a case the pylorus may be firmly closed, the barbiturate may be retained in the stomach, and the hydrochloric acid of the gastric juice may then react with the sodium of the barbiturate, with the result that the insoluble barbiturate is deposited. It is then absorbed very slowly or not at all. A small dose of omnopon beforehand and darkening of the bedroom will, in such cases, prepare the patient for rapid absorption of the barbiturate.

For the later cases in a long operation list, an early dose of oral nembutal is a kindly help with which to dull apprehension. Attention should be drawn to the value of a dose of nembutal on the night before operation. The rectal injection of avertin is a reliable aid for most patients, but as a routine measure it adds to the responsibilities and to the amount of work entailed for the operating and nursing staff. For patients who require repeated minor operations, and particularly for children, oral nembutal is a great boon. To obtain good results in children the following suggestions may be helpful. (1) The dose of nembutal by the mouth should be small (1 grain or less for a child 4 years old). (2) It is advisable, when possible, to give the sedative at night, when the child is tired. He will then fall asleep in his bed, and general anaesthesia can be induced without waking him. (3) Capsules often are refused, but the powder may be dissolved in a teaspoonful of syrup or in a strong solution of cane sugar in warm water. The extremely bitter taste of the barbiturate is thus masked. (4) If the barbiturate is not effective or if it is vomited, a very small dose of avertin—for example, 0.05 gram per kilogram—may be given by the rectum. These methods enable us to anaesthetize small children repeatedly without their being aware that they have been operated upon at all. Experience has proved their value for such procedures as the setting of fractures, repeated lavage of nasal sinuses, and multiple operations for cellulitis or pyaemia.

In cases following anaesthetics in which a full dose of oral nembutal has been used there is sometimes a long period of partial or complete loss of memory. A powerfully built doctor dropped off to sleep before a double hernia operation as the result of swallowing 6 grains of nembutal. He did not regain complete wide-awake consciousness until two days had elapsed. This was quite satisfactory for him, because he was spared much unpleasantness, but it increased the strain on his attendants.

From the patient's point of view there is the additional advantage that in healthy subjects the frequency of post-anaesthetic vomiting is reduced by employing any basal narcotic. Vomiting, due to liver weakness, intestinal obstruction, or other causes may be increased.

THE SURGEON AND BASAL ANAESTHETICS

From the surgical point of view uniformly good results can be obtained only by employing a suitable drug with appropriate technique. For operations on the stomach barbiturates should be given intravenously, but a fall in blood pressure is often caused, and rectal avertin produces less disturbance. In American clinics intravenous nembutal followed by ethylene-oxygen-ether or gas-oxygen-ether has yielded excellent results. For operations on the appendix and large bowel there are reasons why the rectal administration of drugs should be avoided.

For prolonged surgical operations, where depth of anaesthesia and muscular relaxation is not required, intravenous injection of a barbiturate combined with gas-oxygen is an excellent method. Plastic surgery has proved to be an admirable field for this technique (Magill). Avertin is also good, but the blood loss is rather more than with barbiturates. For cerebral surgery, oral nem-

butal with omnopon, followed by a very little anaesthetic and some oxygen, has yielded very good results. In gynaecological plastic surgery a similar method is recommended, for haemorrhage is thereby reduced (Fairlie). In thyroid surgery the barbiturates have received an extended trial, but I am not enamoured of the method. Certainly for a second operation on a patient who has already lost half her thyroid by the method of stealing it, the variety of routes enables one to put the patient to sleep without her knowledge. But the oral route is not sufficiently powerful for these highly sensitive nervous systems, or at least a good deal of inhalational anaesthesia must be added. Furthermore, the intravenous injection of a barbiturate into a patient whose heart is exhausted from Graves's disease is a highly dangerous procedure. These patients may be almost moribund, and the slight fall in blood pressure occasioned by the injection, together with the small degree of cyanosis which often accompanies it, may prove fatal. Excellent results usually are obtained with avertin preceded by omnopon and hyoscine, and followed by local anaesthesia, with gas-oxygen if necessary.

Ear and throat surgeons are, I think, divided in their opinions. For simple operations in nervous patients, such as tonsillectomy, the pre-operative sedation with oral nembital may be helpful. But in operations on the upper air passages, the prolonged period of dulled cough reflex, together with restlessness, is apt to lead to trouble during the hours following operation. During septum operations and other procedures under local anaesthesia, absolute quietude is not always obtained, and the operation may be impeded by the restlessness and talkativeness of the patient. I think laryngologists will agree that avertin gives a quiet sleep, more rapid recovery, and less restlessness.

In dental surgery the barbiturates should be used with discretion. If the operation is an extraction in the dental chair, an exceedingly nervous patient may be helped to take gas peacefully when a dose of nembital has been swallowed beforehand, but the dentist must be prepared to keep the patient on a couch for several hours afterwards. For larger procedures such as the extraction of many teeth in a nursing home, the quiet anaesthesia resulting from a combination of general anaesthesia with a barbiturate is very pleasant. But should the tooth sockets bleed after the patient has returned to bed it is often difficult in such cases to make the patient bite on to swabs in order to stanch the haemorrhage. Intravenous sodium evipan, which is detoxicated more rapidly than the other barbiturates, enables the patient to recover consciousness and a completely active cough reflex more rapidly, and it is probable that it will serve a useful purpose both in laryngology and in dentistry.

This drug is receiving a good deal of attention just now. Induction of anaesthesia is quicker, narcosis may be taken to a greater depth with safety, and recovery is rapid. By itself the uses of the drug are, I think, somewhat limited. It is not usual for full anaesthesia to last for more than a quarter of an hour. Therefore, if the drug be given while the patient is in bed, there is not much time in which to take him to the theatre, to prepare him for the operation, and to perform it. In most cases it is necessary to continue with an inhalational anaesthetic. For tooth extractions, for the setting of fractures, for painful dressings, and for brief gynaecological procedures, the drug seems to be valuable, but I do not find that the indications for its use are by any means numerous. If one dose only is to be given, without any other anaesthetic, it is usually necessary that the patient should be fully prepared on the operating table before the injection is begun. Surely less pleasant than a general anaesthetic! In my experience there is a period of an hour or more following the stage of

narcosis when the patient is drowsy and sometimes incoherent. I find that post-operative restlessness is not so marked with sodium evipan as with nembital.

In obstetrics the barbiturates have received a considerable test. My own experiences may be summarized as follows. Usually a full dose of sodium amytal or of nembital injected intravenously just before full dilatation will produce painless labour. It does not affect the frequency of contractions; usually it appears relatively to increase the expulsive force, and the drug does not lead to any embarrassment of the child. The placenta is born speedily, and post-partum haemorrhage, in my experience, is reduced. This full dose should be given very slowly, otherwise the fall in blood pressure will very properly deter one from giving the full dose which was intended, with the result that full analgesia would not be obtained. It is noteworthy that when the regular contractions of labour have set in, they continue with the same rhythm both during and after the injection of the drug.

When the head is on the perineum progress is not delayed so much as in ordinary labour, and there is the danger that the child may be shot out precipitately, with a severe tear of the perineum as the result. At the time of delivery some patients wriggle about so much that it is not an easy matter to control them and to deliver the head quietly and steadily. The administration of gas-oxygen gives valuable aid at this time, but in a confinement under the influence of a barbiturate the presence of two trained attendants is essential. This uncontrolled restlessness is present in most cases delivered after the oral administration of nembital, while, furthermore, with oral nembital, analgesia is usually not complete. Avertin has given excellent results, but it is, I think, true to say that sometimes the rectal injection of avertin solution is returned, labour tends to be delayed, and the child's respiration may be depressed.

In Caesarean section performed under spinal anaesthesia, nembital by the oral route is a useful sedative. In these cases the fear of depression of the child's respiratory centre precludes us from the use of morphine; but nembital soothes the mother, and it enables the child to be delivered in a vigorous state. It is true that sometimes the child may be rather sleepy, but respiration is easily aroused. Intravenous nembital should be avoided, for the fall in blood pressure induced by the combination of intravenous barbiturate and spinal anaesthesia may be of an alarming degree—as some of us know from experience.

In general medicine nembital and its allied compounds have proved to be helpful. In a case of strychnine poisoning the convulsions were controlled, death was averted until the effects of the drug had worn off, and recovery ensued. It is claimed that strychnine may be employed in barbiturate poisoning, and successful cases are cited. As much as 1/6 grain has been injected hypodermically every six hours. Several cases of tetanus in my own experience have been controlled by intravenous nembital: at least two with a successful cure. Status epilepticus offers a field for the more vigorous barbiturates. For cardiac insomnia the sound sleep promoted by nembital has afforded substantial improvement to the heart. Delirium tremens, mania from various causes, and persistent hiccup are examples of conditions which have benefited greatly from the use of basal narcotics.

We may now consider certain conditions in which the administration of barbiturates is fraught with increased risk for the patient. Sir William Willcox on many occasions has emphasized the risk of pneumonia in those individuals who have received a large dose of a barbiturate. Therefore in the presence of inflammation of the lungs, in operations for empyema, and even in

catarrhal conditions of the bronchi and upper air passages barbiturates should be withheld. In my experience avertin does not involve so great a risk, and if other conditions warrant the use of avertin, the inhalation of a gaseous anaesthetic is reduced in amount and, indeed, may be avoided if local anaesthesia is effective.

When the efficiency of the liver or the kidneys is affected by toxic blood conditions, by local inflammation of those organs, or by other diseases, such as eclampsia or cirrhosis, the fear of further damage to them, together with coma as the result of retarded detoxication and excretion of barbiturates or avertin, will be a sound reason for withholding the drug. It has been remarked by gynaecologists that upon opening the abdomen of patients who have received nembutal the bladder appears to be rather more full than usual. It seems reasonable to think that a certain amount of diuresis is caused by these drugs. In prostatectomy, when the fear of renal insufficiency is particularly acute, a barbiturate would seem to be an unnecessary load.

I have on several occasions given nembutal or avertin with gas and oxygen to patients with diabetes of mild degree. The results have been uneventful, but avertin appears to be preferable in such conditions. Should coma follow the giving of a barbiturate to a diabetic, I should perform lumbar puncture as Purves-Stewart and Willcox have recommended. These authorities state that in coma caused by a barbiturate the drug can be detected in the cerebro-spinal fluid, and that removal of a quantity of the fluid by lumbar or cisternal puncture always produces at least temporary improvement.

The state of the heart is of importance. In the presence of heart disease, if signs of active toxæmia are absent, the use of avertin with gas and plenty of oxygen is a most valuable measure. In heart disease associated with severe toxic goitre I am quite sure that the intravenous injection of nembutal is dangerous. It may be that the fall in blood pressure which often accompanies this method is the factor which reacts indirectly on the heart, or the problem may be a complicated one concerned with the poor condition of the liver, kidneys, and so forth, but the practical point remains that a toxic heart should not receive an intravenous barbiturate. Even oral nembutal may cause pallor and a lowered blood pressure in apparently normal people. Reference has already been made to the risks of administering an intravenous barbiturate and then injecting a spinal anaesthetic; for the blood pressure may drop to an alarming extent.

There are local conditions of the stomach or bowel, such as inflammation or perforation, which should preclude the introduction of a narcotic solution into the diseased viscus. Some of the conditions such as gastritis, gastric ulcer, perforation, and colitis have already been referred to, and there does seem to be some risk in giving rectal avertin in cases of appendicitis or diverticulitis, particularly if perforation is feared.

It is perhaps well to emphasize the need for making certain that the patient is absolutely ready for operation before the administration of a basal anaesthetic is begun. The operator may desire to make a further examination or to speak to the patient after he has been brought to the anaesthetic room. During the recovery period from anaesthetics in which barbiturates and avertin have been employed, patients often become exceedingly restless. The restlessness is less marked following avertin or sodium evipan. Such restlessness definitely increases the possibility of post-operative recurrent hæmorrhage. Very small doses of morphine or omnopon (repeated if necessary) usually control the restlessness. The administration of oxygen is sometimes helpful.

Although basal anaesthetics are a boon to patients, I am not sure that nurses find them convenient. The

preparations beforehand are more complicated than in routine anaesthesia, but the principal disadvantage from the nursing point of view lies in the recovery period. The respiration may be depressed, the tongue may fall back, and the patient may be restless. These conditions usually require that a competent nurse shall sit by the patient for an hour or more after he has returned to the ward. Furthermore, as I have already mentioned, the after-effects of barbiturates may be prolonged, and a relatively small dose may confuse the patient's mind for many hours. This confusion often persists longer than the onlookers realize, so that nurses must be informed of every patient who has received a barbiturate. In the case of avertin a small degree of respiratory depression and trouble with the tongue is not uncommon, but prolonged unconsciousness, amnesia, or confusion is rare.

THE ANAESTHETIST AND BASAL ANAESTHETICS

I have left the anaesthetist's point of view to the last. It is always advisable that an anaesthetist should see a patient on the day before operation, but if a basal anaesthetic is to be given, by the mouth or by the rectum, the preliminary visit is essential. Even with intravenous methods time should be given for a very full consideration of all aspects of the case before the drug is administered.

I have already referred to many of the considerations which must be borne in mind in selecting the particular drug. Sodium amytal has a greater duration than nembutal; it is said that the post-anaesthetic restlessness also is greater, but I am not sure. I have found that pernocton (which is given by the intravenous route) is not so powerful as the two I have just mentioned. Sodium soneryl and hebaral I believe are relatively weak when given in safe doses. Sodium evipan is dramatically effective, but the full ordinary dose of 1 gram does not secure a prolonged effect in every case. The degree of muscular relaxation varies. Jarman, who has carried out extensive clinical investigations, precedes the intravenous injection of sodium evipan with a hypodermic injection of omnopon-scopolamine. In some cases, as the effects of the first injection are wearing off, he administers a second. He has used sodium evipan alone successfully in many cases of appendicectomy. On one occasion he gave four injections of sodium evipan for an operation which lasted nearly two hours, and no other anaesthetic was required.

Dosage.—This is a matter of very great difficulty, and I have already indicated the need to take into consideration the type of the operation and the personal equation of the patient, but the most useful aid is the patient's weight. In the case of avertin a dose of 0.1 gram of the drug for each kilogram of body weight yields fairly uniform results. It is claimed by some anaesthetists that 0.12 gram per kilogram will yield complete anaesthesia in 60 per cent. of cases, but I prefer to stick to the smaller dose of 0.1 gram. When employing intravenous methods greater precision may be attained. It appears to me that usually, at the end of the injection, the anaesthesia begins to lighten almost immediately, but the fall in blood pressure continues for some minutes before it rises once more.

To sum up: (1) it does not seem wise to give a basal narcotic unless the patient has been examined carefully beforehand; (2) the oral route for the barbiturates is convenient, but it may be ineffective or, on the other hand, the effects may be too prolonged; (3) the intravenous route is not always safe; (4) avertin seems to be less convenient but perhaps more reliable: the dose is assessed with greater accuracy and the liver appears to be able to detoxicate the simple molecule of avertin rapidly.

A WARNING REGARDING BASAL NARCOTICS

BY

R. J. McNEILL LOVE, M.S., F.R.C.S.

SURGEON, ROYAL NORTHERN HOSPITAL, ETC.

The widespread use of narcotics in pre-operative medication has certainly relieved the dread and anxiety associated with surgical procedures, especially in sensitive or imaginative patients, but it should be emphasized that these drugs are not entirely free from danger. I append notes of two cases which have occurred in my practice during the past six months, in both of which narcotics were indubitably a contributory cause of death. It must be admitted that other sedatives were administered, and it would appear to be extremely unwise to administer morphine or omnopon in conjunction with basal narcotics.

Patients exhibit an idiosyncrasy to most drugs, and perhaps especially to narcotics. Although pre-operative medication gives excellent results in the majority of cases, yet occasionally an alarming period of unconsciousness results, or even a fatality. It is possible that for various reasons little is heard about these unpleasant results, and therefore basal narcotics are apt to be administered indiscriminately. It is now my practice to administer avertin only in amounts corresponding to two-thirds of the official dose, and supplement its effect with gas and oxygen as necessary. I believe this dose to be comparatively safe, and I find that it is sufficient to render the patient amnesic.

CASE I

The patient, a woman aged 29, had suffered from the typical manifestations of exophthalmic goitre for about a year, and had previously had a course of medical treatment for five months, but after temporary improvement the condition relapsed. On admission to hospital her pulse rate was 132, but this quieted to 96 after treatment in bed and Lugol's iodine. The thyroid gland was moderately enlarged, exophthalmos was present, and there was a systolic murmur. On the morning of the operation $\frac{1}{4}$ grain morphine and $\frac{1}{100}$ grain hyoscine were given hypodermically, followed by 4.4 c.c.m. of avertin per rectum, which is the recognized dose for a patient weighing 7 st. Half an hour after the administration of the avertin the neck was infiltrated with 1 per cent. novocain and a partial thyroidectomy performed. The bulk of both lobes and the isthmus were removed; the operation presented no difficulty, and was completed in about forty-five minutes. Towards the end of the operation signs of respiratory failure became evident, as evinced by cyanosis and slow, shallow respirations. Oxygen inhalation caused a temporary improvement. The operation was rapidly completed, and a pint of glucose and saline, with 30 minims of Lugol's iodine, was administered per rectum. Two hours after operation the temperature was 103° , the pulse 146, and respirations 12 per minute. There was no external bleeding and no signs of extravasation in the neck. Oxygen inhalation was continued, cardiac stimulants were administered, but the pulse rate gradually increased until it became imperceptible. The patient died five hours after the operation was completed without regaining consciousness.

Death in this case appears to have been due to respiratory failure following the administration of avertin, as the pre-operative condition of the patient was highly satisfactory and the operation presented no difficulty.

CASE II

The patient, a woman aged 38, was operated on in June, 1931, for cyst of breast and a femoral hernia. The usual dose of avertin was given, with excellent results. In June, 1932, when in India, she developed an appendix abscess; this was drained on three occasions, and a vesico-vaginal fistula resulted. There was prolonged suppuration, and she returned to England; in June, 1933, the portion of the appendix which was still attached to the caecum was removed. She was given intravenous nembital with gas, oxygen, and ether, and recovered consciousness in a normal manner two hours after the operation. As the fistula still persisted, with recrudescence of pelvic infection, it was decided that a laparotomy

should be performed and the fistula closed from above. The operation was arranged for 8.15 a.m. on November 20th, and was performed by one of the leading gynaecologists in London. The patient requested that she should again be given nembital, and on the previous evening $1\frac{1}{2}$ grains (one capsule) of the drug were given orally. At 7.45 a.m. the following day the patient was wide awake. She was given 3 grains of nembital by the mouth, and $\frac{1}{6}$ grain morphine and $\frac{1}{100}$ grain of atropine hypodermically.

The operation, as was expected, proved to be difficult and tedious. The pelvic organs were buried in a mass of adhesions, but the fistula was competently closed, and an infective blood cyst of the right ovary, to which was attached the remains of the tip of the appendix, was removed. The operation lasted just over two hours, during which time open ether was administered. At the end of the operation the pulse rate was 130, but the general condition was satisfactory. At 12.45 p.m. the patient, though still comatose, became somewhat restless, and was given $\frac{1}{3}$ grain omnopon hypodermically. At 3 p.m. the pulse became thready, and a blood transfusion of 400 c.c.m. was given, followed by one pint of saline and glucose. The condition improved temporarily, but at 6.30 p.m. the pulse rate rose to 156, and more saline and glucose was administered. Throughout the night the respirations gradually became more rapid, and the pulse rate varied between 140 and 160. Further infusions of saline and glucose were given, but at 9 a.m. the following day deep unconsciousness still persisted, although corneal reflexes were brisk. As the continued unconsciousness gave rise to alarm the advice of Sir William Willcox was sought, and he saw the case in consultation at 9.45 a.m. The condition was then as follows: pulse 148, respirations 48, temperature 101° , no reflexes present except the corneal, pupils small but not "pin-point," reaction to light just perceptible, crepitations and impaired resonance present at the base of both lungs. On the advice of Sir William Willcox lumbar puncture was performed and saline and glucose infusions continued. At 4.30 p.m. a further consultation was held, and the patient then exhibited a slight right plantar reflex; the corneal reflexes were brisk, and the pupils were slightly larger and sluggishly reacted to light. This improvement was attributed to the lumbar puncture. A further 12 c.c.m. of cerebro-spinal fluid was withdrawn, which, on analysis by Dr. Roche Lynch, was found to contain $\frac{1}{3}$ grain nembital. Cardiac stimulants and further infusions were given, but at about 11 o'clock on the following morning the pupils became widely dilated and did not react to light, the pulse was imperceptible, and the patient died at noon.

As consciousness was not regained after administration of the anaesthetic the case was reported to the coroner and an inquest held. It was agreed that the cause of death was shock, some renal impairment due to ascending infection from the infected bladder, and the effects of nembital. An estimation of the blood urea had been made at 6 p.m. on November 21st; this showed a concentration of 0.57 mg. per 100 c.c.m., so that renal deficiency was not serious. It is interesting to note that on a previous occasion nembital had been given with no untoward symptoms. In this final operation the prolonged toxæmia from the pelvic suppuration, which began in June, 1932, had undoubtedly rendered the patient unduly susceptible to nembital, so that a dose which would otherwise have been quite safe had a greatly enhanced effect, and produced a typical barbituric acid toxæmia with characteristic pulmonary congestion and bronchopneumonia.

The notes concerning this case are written with the agreement of Sir William Willcox, who on three occasions visited the patient in consultation.

The treatment of a case of narcotic poisoning consists in the administration of cardiac stimulants, intravenous infusions of saline and glucose (5 per cent.), and oxygen inhalations. Repeated lumbar punctures are valuable, as by this means cerebro-spinal fluid is withdrawn which contains a considerable amount of the narcotic, and which is replaced by fresh fluid of lower narcotic content. Frequent injections of strychnine have given good results in some cases (*British Medical Journal*, December 16th, 1933). In a case of veronal poisoning not less than 6 grains of strychnine were administered in sixty hours, and recovery ensued.

HEREDITARY SCLIOSIS

BY

HUGH G. GARLAND, M.D., M.R.C.P.

HONORARY PHYSICIAN, LEEDS PUBLIC DISPENSARY AND HOSPITAL

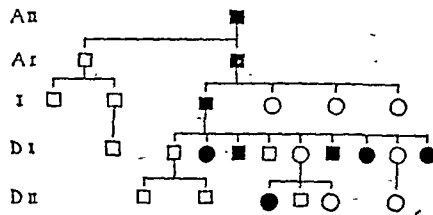
There are now many well-recognized skeletal deformities in man which are inherited according to Mendelian law, and a large proportion of these are inherited as Mendelian dominants—that is, each affected person has an affected parent and an affected grandparent, and on the average half the children of an affected parent are themselves affected; among the commoner skeletal defects inherited in this way is brachydactyly.

One of the commonest deformities seen in hospital practice is scoliosis, the causes of which are numerous and often clearly understood, but there seems to be considerable doubt as to the importance played by heredity in the production of this condition. In 1896 Tubby (*Deformities*, p. 104) considered the hereditary factor to be common and important, and he quoted two families from his own practice in each of which several members were affected by scoliosis. Most authoritative articles on the subject mention the hereditary factor, but it is usually dismissed in a cursory manner. The discovery, then, of a family in which scoliosis is seen in five generations is important, especially as the deformity appears to be primary—that is, there is no recognizable disease of the nervous system (for we know that scoliosis is a frequent accompaniment of such hereditary diseases as Friedreich's ataxia and hypertrophic neuritis) or of the vertebrae.

As will be explained in the detailed description of the family the deformity in these cases has not been associated with any disability, and, indeed, several affected adults were not aware of their abnormality until I pointed it out. The pattern of the deformity is remarkably constant in all the affected persons, and it takes the form of the usual distortion of the thorax resulting from scoliosis. Briefly, there is a prominence of the ribs and costal cartilages of one side, affecting the lower more than the upper, the opposite side being flattened; the sternum, being rotated about its vertical axis, appears to be narrow; on the side of the prominence, which is well marked in the chondro-sternal junctions, the clavicle is raised, the shoulder being higher and straighter; the opposite clavicle is lower and not so prominent as its fellow; the angle of Louis is prominent. The degree of this distortion of the chest wall, of course, depend on the position of the axis about which vertebral rotation occurs. In all these cases the scoliosis is either slight or not apparent on inspection, but it can always be seen by x-ray examination. The concavity is usually to the left in the lower dorsal and lumbar regions.

A,II,1 and A,I,1 and 2 are dead, but I,3, an intelligent man, who has appreciated his abnormality all his life and who has been carefully examined, assures me that his father and grandfather had exactly the same deformity, though it caused no disability; he says that his father, who died aged 65, was "affected on the left side." I,3 is a man of 64, and shows marked prominence of the left lower costal cartilages, starting at the third. His sisters and cousins have not been examined, but are said to be normal; I have written to I,1, who confirms that he has no deformity; I,5 and 6 say the same. I,2 died of cancer aged 55, and I,4 died aged 40. Nothing is definitely known of D,I,1, and D,I,2 is said to be normal. D,I,3 has been examined. She is a woman of 42 who has had a "pigeon breast" all her life; the left side of the chest bulges forward, although in this case the upper part of the chest is the most affected. D,I,4 was killed, aged 24, but the father is quite certain that the left side of the chest was affected. D,I,5, died aged 9 months and

nothing is known of him. D,I,6 died at the age of 36, and is said to have been normal. D,I,7 is 34, and has been seen; he knew nothing of his deformity, and again the prominence is on the left side. D,I,8, aged 32, has also been examined; she was said to be normal, and admitted that she had not noticed her deformity until it was pointed out to her. In this case the prominence is on the right side and is slight; there is no scoliosis obvious to the naked eye. She, like several of the others, has always had difficulty in getting her clothes to fit at the shoulders. D,I,9, aged 30, has been examined and is normal. D,I,10 has also been examined; in her case the right side is prominent, and she knows that the deformity has been present since birth. D,II,1 and 2 have not been seen, but are said to be normal. D,II,3, 4, and 5 were also said to be normal, but D,II,3, aged 12, was found to be affected on examination, the prominence



being right-sided and confined to the lower ribs; scoliosis was only demonstrable by x-ray examination. D,II,6, aged 15 months, has been examined, and is apparently normal.

It is interesting to note that I,3 shows two other congenital abnormalities. One is an accessory nipple on the left side, and the other is a "shagreen patch," of considerable size and similar to those so commonly seen in cases of epiloia, which lies symmetrically over the lower dorsal region. Similar abnormalities have not been seen in the other affected persons.

It will be seen that the deformity runs directly through five generations with the single exception of D,I,6; but this person is dead, and as D,I,8 had failed to notice her own deformity it is quite possible that D,I,6 was affected. This being the case, and considering the last three generations, there are sixteen children of affected parents; of these, eight are affected and three found to be normal on examination. In the case of the remaining five it is impossible to make a definite statement, but it is probable that the majority were unaffected. This gives as close an approximation to the 1:1 ratio as can be expected with such small numbers.

Here, then, is an example of scoliosis inherited as a simple Mendelian dominant, but the exact pathological anatomy is obscure. Radiograms have shown no structural defect in the vertebral bodies or intervertebral disks, nor have these patients shown any evidence of disease of the nervous system. So far as I know this is the first recorded example of scoliosis inherited as a Mendelian dominant, and it may give the clue to many cases of scoliosis of hitherto unknown origin.

It is proposed to hold an international congress of electro-radio-biology in Venice in September to study exclusively the biological phenomena caused by x rays and radium, independently of their application to medicine and therapy. The subjects to be discussed include the probable influences on organic and organized matter of the various rays, radiations, or radio-active salts in organic combinations, electric states of the atmosphere and their effect on biological conditions, and the question of the possible inheritance of such modifications. Further information may be obtained from Dr. Giocondo Protti, S. Gregorio 173, Canal Grande, Venice.

THE ORTHOPTIC TREATMENT OF SQUINT

BY

MONTAGUE L. HINE, M.D., F.R.C.S.

SURGEON, ROYAL WESTMINSTER OPHTHALMIC HOSPITAL

Considerable attention has been attracted during the past three or four years to the "orthoptic treatment" of squint. Under this title one includes not only the older and simpler methods of improving or maintaining the vision of the squinting eye (by correcting glasses, occlusion of the fixing eye, atropinization, etc.), but also, and more especially, the various methods of training the *desire* for binocular vision, where this is feebly developed or has lapsed from disuse, and of exercising the defective muscular movements of the eyes, which may be associated with squint. Much of the technique is well known and has been described previously, especially by Worth in his textbook on squint; but there are important improvements both in the instruments employed and in the methods used, which are of more recent development, and not so generally understood. This seems to be a suitable opportunity to indicate the general lines of such treatment as it is at present employed, and to give some idea of the cases in which it is likely to be of use. Much of the information has been obtained from the Orthoptic Department of the Royal Westminster Ophthalmic Hospital, which hospital, in 1929, was the first in this country to organize such a department.

GENERAL INDICATIONS

For satisfactory results to be obtained it is necessary to select suitable cases. There should be good fixation with the squinting eye, and, if the child is old enough to be tested, the corrected vision of this eye should not be less than 6/18. The child should be at least 3 years old, but under 7. Over this age results are much less favourable, though not by any means entirely, or uniformly, negative. All patients should have their refractive error almost fully corrected. The best results are obtained in convergent squint; cases with a vertical deviation in addition are less favourable, many of these not being true concomitant squints, but having a parietic element. Even in such cases, however, it is sometimes found that the vertical deviation disappears during treatment. Myopic divergent squints, which develop later in childhood, and which glasses alone have failed to cure, usually respond satisfactorily; the divergent squints which are not due to refractive errors, and which usually develop in infancy, are seldom benefited, probably because there is a very weak inherited desire for binocular vision. True alternating squints, also, are not very satisfactory for training for the same reason.

THE SYNOPTOPHORE

The instrument which is used in many of the orthoptic clinics in this country is the synoptophore, an elaborate development of the original amblyoscope, described and used by Worth. Like the amblyoscope, the synoptophore consists of two angled metal tubes, each with a mirror, set inside at the angle, to reflect the image of the picture, placed in the slot at the distal end of the tube, through a convex lens, set in the eyepiece, into the patient's eye. Each tube can be moved separately on the base of the instrument to suit any angle of squint. The angle of deviation can be read off on a scale attached to the base; vertical deviations can be read off on a vertical scale. An electric lamp, controlled by a rheostat to vary

the intensity of the light, is set inside each tube to illuminate the picture. In the most recent models, to provide additional interest for the child, there is a mechanism for showing specially prepared "moving pictures." One important difference between this instrument and the amblyoscope, or ordinary stereoscopes, is that an unimpeded view of the patient's eyes is obtained by the trainer, who is seated on the opposite side of the instrument. Special stress is laid on this, as it has been found that some 70 per cent. of squinters do not, at first, obtain binocular vision at the true angle of their squint, but get simultaneous vision, or even fusion, when the squinting eye is still squinting a variable degree, often 10 degrees. This deviation cannot be detected by instruments which are controlled by the patient himself, in which the position of the eyes cannot be watched, and if fusion training is started without true binocular macular fusion, the result is likely to be unsatisfactory, as the faulty habit of obtaining binocular vision with the eyes still squinting becomes harder to correct after it has been thus encouraged.

TECHNIQUE

The true angle of the squint must therefore be first determined. This is done by finding the position of the tube opposite the squinting eye, in which the corneal reflex from the light in the tube is exactly symmetrical with that in the fixing eye. The angle is then read off on the scale. Any vertical deviation is similarly measured by adjusting the tube vertically, and taking the reading on the vertical scale. If it is found that the child has simultaneous perception of pictures, such as a lion on one side and a cage on the other, while the squinting eye is still partially deviating, as can be determined by the position of the corneal reflex, and does not see both pictures at the same time when the one before the squinting eye is placed at the true angle of the squint (in which position it is thrown on the macula), then there is false binocular projection. This must be remedied, if possible, before further training with the synoptophore, or any exercises with an amblyoscope or various kinds of stereoscopes, can be undertaken. This is effected by making the patient fix a well-illuminated picture with the squinting eye. While all his powers of concentration are focused on this picture, the tube containing the picture before the other eye is slightly moved rapidly from side to side, varying the illumination if necessary, until he gradually becomes able to appreciate both pictures nearer and nearer the true angle of the squint, and finally is found, on the instrument, to have true binocular projection, with the pictures accurately focused on each macula.

When this stage has been reached exercises are carried out to develop this true binocular vision under more difficult conditions of illumination, by varying the intensities of the lights, until the patient ultimately sees both pictures simultaneously under all conditions of illumination. The contrast between the pictures can be similarly varied. The pictures used with the synoptophore, as with the amblyoscope and various stereoscopes, are of three classes: (1) Those which require simultaneous vision only, and no fusion—for example, a lion on one picture and a cage on the other. (2) Those which require some sense of fusion to make a complete picture—for example, a man in one picture with arm and leg missing, these parts being supplied, with some parts common to the first picture, by the second. (3) Those which require a sense of perspective—true stereoscopic vision, which is necessary for the most accurate judgements of depth and distance.

Having developed good simultaneous perception the trainer shows pictures of the second group, and, when

good fusion has been obtained under all conditions of illumination and contrast, the range of fusion is increased by slowly moving the tubes through smaller or greater angles, until the limit has been reached at which the picture still continues to be seen as a whole. When a good range, or amplitude, of fusion is present, it is usually possible for the patient to have a sense of perspective, and this is trained and developed by pictures of the third group.

RESULTS

The cure is complete when the child has become so desirous of this good vision, and the muscles, by the exercises, have been strengthened sufficiently to enable him to overcome the deviation owing to this unconscious or conscious desire, that he habitually ceases to let one eye squint. Many patients, of course, do not attain this ideal, and others require operation. If it is found that good binocular vision can be obtained while the patient has the strong stimulus for such vision, which is supplied by the interesting pictures shown him on the various instruments, but that, under normal conditions of life, the squint still persists, operation should be undertaken at the earliest possible age, to approximate the visual axes more nearly to normal: The desire for fusion, already shown to exist, will then overcome any slight imbalance that may still be present. Such operations are preferably done before the age of 7, and must then be performed under general anaesthesia, when one cannot so accurately control the result of the operation as under local anaesthesia. Hence it is only in cases in which useful binocular vision is expected to result that one should operate under general anaesthesia and hope to gain perfectly satisfactory results. However, when an "inferiority complex" is developing in a young child, or even in the mother, as the result of the squint, an operation may be undertaken, even without such expectation, in order to improve the appearance of the child. Except in such cases, purely cosmetic operations should be left until the child is old enough to have one carried out under local anaesthesia.

After operation undertaken for the purpose of obtaining binocular vision, a few further exercises should complete the cure of the squint. If the operation is delayed until 7 years of age or more, the prospects of such a complete cure are remote. No treatment session should be continued too long, or the child will lose interest; half an hour is the limit. The exercises may be varied by using other instruments, once the "binocular projection" is true. The cheiroscope, with which the fingers are used to draw pictures, to pick-up various objects, etc., while the child is being unconsciously educated to use both eyes at the same time, is a useful variant, as also are the ordinary stereoscopes and the "drawing" stereoscope; these can be used for home training. To improve the action of individual muscles or groups of muscles another apparatus, the myoculator or the myoscope, may be used. A double picture, requiring fusion, is projected on to a screen, and moved backwards and forwards in any required direction.

The time taken for such training varies considerably. Forty sessions are frequently required, sometimes more, sometimes only twelve. Considerable patience on the part of the trainer is obviously required, and the necessary skill can only be obtained under competent instruction. For practical reasons such treatment is frequently impossible, but there is no doubt that it is of great benefit in suitably selected cases, and that its recent development in hospitals and private clinics has proved of considerable service to ophthalmology.

EPIDEMIC JAUNDICE IN NORTH LEICESTERSHIRE

BY

T. MCCOWATT MONTFORD, M.B., CH.B.GLAS.
MEDICAL OFFICER OF HEALTH FOR THE CASTLE DONINGTON
RURAL DISTRICT

Outbreaks of infective jaundice are comparatively common in Britain, and have been reported on from time to time.

Cockayne¹ (1912) described two types of the disease. The more severe form he styled "infectious jaundice" (the so-called Weil's disease), and the other milder condition "epidemic catarrhal jaundice." In the severe type Inado and Ido² (1915) discovered *Leptospira icterohaemorrhagiae*. *Leptospira* were found by Elliott and Beattie³ (1932) in the Selkirkshire epidemic. Buchanan⁴ (1927) obtained leptospira in the urine of seventeen cases, and produced spirochaetal jaundice in two guinea-pigs by inoculating them with the urine of infected patients. Morgan and Brown⁵ (1925) were unable to demonstrate this organism in the cases they investigated in Northamptonshire. No causal agent was identified in the Surrey epidemic by Findlay, Dunlop, and Brown⁶ (1931).

The symptomatology in these and other British epidemics did not greatly vary, and it would seem that such epidemics are manifestations of the one disease, although a spirochaete or other organism could not be constantly demonstrated.

An epidemic occurred in Castle Donington, North Leicestershire—a country town of 2,674 inhabitants—in the eight months from February to September, 1933. Forty-five cases were identified as acute infective jaundice—twenty-four by me and twenty-one by my partner, Dr. W. H. Dowell. This article deals exclusively with the former twenty-four cases—twelve of each sex.

With the exception of two, all affected persons were children. There were no deaths.

The condition has been frequently described, and it is not proposed to give the records of individual cases. Two, however, are of interest, as they were characterized by manifestations of unusual nature.

The course of the disease, except in these two instances, varied but slightly from that described by other recorders: anorexia marked the onset, and generally this was associated with lassitude, and sometimes with prostration and a feeling of weakness in the lower limbs. Two children complained of giddiness. As a rule fever was slight or absent. Either constipation or diarrhoea was evidenced. Vomiting occurred in all except three cases, and lasted for several days. From three to seven days after the initial symptoms, and from two to three after the onset of vomiting, bright yellow jaundice appeared and quickly spread over the body surface, persisting for a period which varied with the severity of the individual attack. A boy of 4, it is interesting to note, complained of "seeing green." The tongue was furred, and the abdomen occasionally distended. Pain and tenderness were common in the epigastric region, the tenderness being greatest towards the duodenal side. The faeces were clay-coloured in every instance, dark motions intervening from time to time. Enlargement and tenderness of the liver were observed in several cases, and in two patients the spleen was increased in size. Bile was always present in the urine, and remained for long periods after the jaundice had disappeared. Albumin and urates were generally found. In only two cases was the urine examined bacteriologically. The microscopical examination of centrifugized deposits, made at the Leicestershire county laboratory, showed no *Leptospira icterohaemorrhagiae*, but there

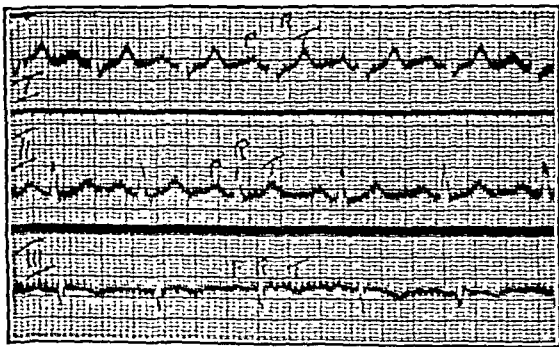
were large numbers of Gram-negative bacilli; on culture there was an acid and gas formation in lactose litmus broth which was suggestive of *B. coli*. As the urine was originally alkaline it was thought, the reports stated, that a large number of the Gram-negative bacilli were *B. proteus vulgaris*. Photophobia, cervical adenitis, and morbilliform rashes occurred, but were unusual. The infection was apparently distributed by personal contact. Salol was the drug most generally employed, but it was not certain that it influenced the course of the disease.

CASE I

The first case referred to was a girl aged 4. The attack was ushered in by malaise and vomiting on April 17th. The vomit contained bile, which at first was mixed with food. I was called in on the 19th, when there was slight jaundice, the tongue was furred, the temperature 103° F., the pulse raised, the liver enlarged and tender, the spleen easily palpable, and the motions constipated and almost white. Vomiting was severe, and was not relieved until the 27th. Even peptonized milk was not retained until after four days of treatment. The liver became normal in size on the 29th, but jaundice was still present. On May 5th a morbilliform rash appeared, and persisted for six days. This was associated with a cough, and moist rales and rhonchi could be heard on auscultation. Four days after the disappearance of the measles-like rash the temperature rose to 101°, and there was an urticarial eruption over the body and limbs which remained for five days. Conjunctival jaundice still lingered on until May 25th—twenty-seven days after its initial appearance. Two days later, however, there was a recurrence of vomiting, with epigastric pain and loose, pale stools. The temperature was subnormal but the pulse rapid. Urticaria again developed, and was quickly generalized. It was once more present for five days. Vomiting ceased at 8 a.m. on the 29th, but the motions were loose until June 5th. As bismuth was being administered it was impossible to ascertain when the colour of the motions would have become normal. Bile was still present in the urine.

CASE II

The second case, in which atypical symptoms arose, was a married lady who was approaching the menopause. She



Electrocardiographic tracing from the second case, indicating myocardial disease.

felt chilled on May 9th, and on the following day vomiting and diarrhoea commenced. The temperature was 100° F., and the pulse 120. Backache and epigastric pain were marked. On the 11th the diarrhoea and vomiting became more troublesome, and there was then hepatic enlargement and tenderness. The spleen was painful on palpation. The temperature was unchanged, but the pulse was now 100. The motions were pale, and the diagnosis of infective jaundice was made, and, on the day following, confirmed by the appearance of an icteric tinge in the conjunctivae. Jaundice, although not intense, was soon widespread, and lasted for eight days. Bile and albumin were present in the urine. The temperature and pulse were normal on the 16th, and the clay-coloured stools became darker and less loose, but the tests for the presence of bile and albumin in the urine were still positive. The course of the disease was apparently satisfactory until,

on the morning of the 23rd, there was sudden stabbing precordial pain, which passed backwards to the angle of the scapula and upwards into the shoulder. There was great dyspnoea, and the face was ashen. The pulse was poor in volume and rapid. In consultation with Dr. Hugh Barber of Derby the condition was diagnosed as myocardial infarction, and this was considered to be substantiated some months later when the consultant, on making an electrocardiographic examination, found evidence of myocardial disease. In the tracing (which is reproduced herewith) the ventricular R wave in lead II presented well-marked notching.

I wish to express my indebtedness to Dr. J. A. Fairer, the county medical officer of health, for his reports on the two samples of urine, and to Dr. Hugh Barber for his report on the electrocardiographic examination, which he carried out.

REFERENCES

- ¹ Cockayne, E. A.: *Quart. Journ. Med.*, 1912, vi, 1.
- ² Inado, R., and Ido, J.: *Tokyo Jishushki*, 1915, No. 1908.
- ³ Elliott, G. M., and Beattie, C. P.: *Edin. Med. Journ.*, 1932, xl, i.
- ⁴ Buchanan, G.: Medical Research Council, Special Report Series, No. 113, 1927.
- ⁵ Morgan, H. T., and Brown, H. C.: Ministry of Health, Reports on Public Health and Medical Subjects, No. 42, 1925.
- ⁶ Findlay, G. M., Dunlop, J. L., and Brown, H. C.: *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1931-2, xxv.

Clinical Memoranda

A SYMPTOM OF POISONING BY HYPNOTICS OF THE BARBITURIC ACID GROUP

Poisoning by members of this group is now so common that it has become the subject of frequent comment, not only in the medical journals, but in the lay press also. While the ordinary symptoms are well known, there is one symptom which has never been stressed in publications on the subject, but which may nevertheless explain some of the acute and even fatal cases of poisoning which otherwise appear unaccountable. This symptom is perhaps most easily described by reference to the following three cases:

1. A professional man, aged 42, was taking dial tablets (each 1½ grains) for insomnia. He took one tablet and, failing to fall asleep, took a second. From that time he lost all knowledge of what he was doing, and apparently went on taking further tablets at intervals until he had emptied a complete tube of ten. He slept for thirty-six hours, and on waking had no recollection of taking more than two of the tablets.

2. A nurse, aged 35, had a precisely similar experience, also with dial, in her case emptying a tube in which were eight tablets, again without any recollection of having taken more than two.

3. Another professional man, aged 76, who was in the habit of taking veronal (7½ grain tablets) swallowed in a similar way eight of these tablets, and after sleeping for twenty-four hours assured me he had had only two, at intervals of one hour between the doses.

For this symptom I have borrowed the term "automatism," as that seems to explain best the process involved. It would appear that the knowledge of the need for another tablet persists, while the memory is so affected by the drug that the patient does not realize that he has already satisfied the need, and automatically repeats the dose at intervals. Though all three patients recovered it has to be noted that in each instance the available supply was exhausted, and had a larger quantity of the drug been at hand there is no reason to believe it would not have been all taken, with possibly fatal result.

The occurrence of such a symptom adds materially to the risk of exceeding moderate doses in the use of drugs of this class.

ROBERT RICHARDS, M.D., F.R.C.S.Ed.,

Lecturer in Forensic Medicine,
University of Aberdeen.

SUBACUTE INVERSION OF THE UTERUS

The extreme rarity of the condition known as puerperal inversion of the uterus—authorities giving estimates of its incidence varying from anything between 1 in 27,000 and 1 in 190,000 labours—prompts me to report the following case.

On November 17th, 1933, I was summoned by a colleague to see a woman, aged 34, whom he had delivered of a healthy child (her second) on November 14th. The placenta had been adherent, and he had found it necessary to remove it manually, but apart from this he had not noticed anything abnormal at the time. The patient, however, continued to lose steadily, and the practitioner sent for me as he could feel a mass in the vagina, which he thought might be a large fibroid polypus, since the uterine fundus was high. On abdominal examination the "fundus" was half-way between the umbilicus and the ensiform, but the exhibition of a catheter resulted in three pints of urine, and the tumour disappeared. The dimpling where the body of the uterus should have been was then apparent, and vaginal examination confirmed the diagnosis of a nearly complete inversion, the thinned-out rim of the cervix being just felt in the vaginal vault. The patient's condition was very poor. She had obviously lost a lot of blood, and the pulse was thin and frequent. There was no pyrexia.

Under a general anaesthetic I attempted reduction, but all my efforts were unavailing, the retraction ring in the lower uterine segment obviously blocking the way. I therefore packed the vagina, and had the patient removed to the Royal Salop Infirmary. I did not feel justified in pursuing expectant treatment—for example, by Aveling's repositior, which is advised in the first instance where reduction cannot be effected immediately after onset—seeing that the woman was slowly and surely bleeding to death. I therefore had her prepared for laparotomy, but made another trial of reduction per vaginam, which proved as abortive as the first. I then opened the abdomen, and saw the typical picture of tubes, round ligaments, etc., disappearing into a crater formed by a hard, thick ring. By means of taxis with my right hand in the vagina, at the same time incising the posterior sector of the contraction ring with a scalpel in my left, I had the satisfaction of seeing the uterus gradually evaginate and assume its normal contour. In this connexion I consider it preferable that the operator, rather than an assistant, should undertake the intravaginal manipulation, as by this means the requisite amount of pressure (and it is considerable) can be more accurately gauged. Any undue force, it is hardly necessary to remark, may be attended with disastrous results.

The operation was completed by repairing the incision in the posterior uterine wall, the wound being about three inches long and extending deeply into the musculature, and closing the abdomen. This procedure, attributed to Haultain, is well figured and described in the latest edition of the *Combined Textbook* emanating from the Scots school. Finally, the patient was placed in the lithotomy position, thoroughly douched out, and given an intrauterine swabbing with glycerin and iodine.

The patient did remarkably well. There was a good deal of distension on the third day, and the temperature rose to 100.2° F. By the fifth day, however, the temperature had settled down to 97.2°, and all immediate anxiety was at an end. The lochia were slight, and never at any time offensive. On the thirteenth day the patient had a rigor, and the temperature rose to 102.4°; from that day onwards, however, it came down steadily, reaching normal on the eighteenth day and remaining so. I could find nothing to account for this pyrexia, and ascribed it to a mild pelvic thrombophlebitis, a not unexpected sequel to manual removal of the placenta. There was no sign of phlegmasia. Subsequent convalescence was uneventful, and the patient returned home after five weeks, with no more than a slight anaemia remaining. I understand that she suffered some oedema of the legs when she started to move about her house, but this has now completely vanished. She has had one normal period.

The only other comments I have to make are: (1) the retention of urine is not surprising having regard to the

altered anatomical relationships; and (2) I do not believe the more or less complete inversion occurred at the time of placental removal. The attending practitioner certainly did not see the inversion, and I am of opinion that a slight dimpling took place, which later progressed to the full condition, the uterus being in a flabby state. On these grounds, and also from the fact that treatment was not instituted until the fourth day, I have labelled the case "subacute."

R. L. E. DOWNER, M.D., M.C.O.G.,
Honorary Obstetric Surgeon, Royal
Salop Infirmary.

A CASE OF CANCER TREATED BY SURGERY,
RADIUM, AND DIATHERMY

It is often difficult to follow up cases for a sufficient period to make the estimation of treatment of practical value. The case I am reviewing has been under my care for nearly seven years, and has a very important bearing on the value of the three means of treatment mentioned above in certain types of carcinoma. I am sure the patient would not now be alive and in good health had it not been for this combined method of treating her.

Miss A. M. J., aged 58, consulted me on December 13th, 1926, for uterine haemorrhage. Her menopause was passed many years ago. She had had three days of bleeding just prior to seeing me; there had been nothing of the sort for years, and she had had no vaginal discharge. I found the uterus freely mobile, but somewhat enlarged; the vagina and cervix appeared healthy, and no blood was seen. On December 17th I curetted the uterus in a nursing home. The curettings were massive, and left little doubt as to the nature of the disease: the pathological report stated the case to be one of columnar-celled carcinoma of the uterine body.

On December 22nd, 1926, I performed a panhysterectomy. The uterus showed a carcinoma involving quite half of the uterine cavity, and eating its way almost through to the peritoneum. From this operation she made a good recovery, and I did not see her again until August, 1928, when she came complaining of a blood-stained vaginal discharge which had existed for a month or two. Examination revealed a friable mass of growth in the vaginal vault which bled freely on touch; it proved to be a recurrence of the carcinoma.

The future of the case now seemed hopeless. I considered any extensive surgical removal out of the question; the only hope appeared to lie in the direction of radium and diathermy, and these might only tide the case over for a time. However, I removed the mass with a curette, and then used the diathermy all over the vault at the same operation. Some days later I packed a tube of radium up against the vaginal vault for twenty-four hours. Following this the healing was perfect; nothing was left but a clean white scar. Five months later the condition was the same. All the parts looked healthy and healed; but I did not trust it, and again packed in a tube of radium.

I saw her at intervals, and all seemed well until January, 1931. A nurse who had kept in touch with her then reported to me that there was a renewal of the vaginal haemorrhage. I examined the patient, and to vision and touch there was nothing to account for the bleeding. The vaginal vault was firmly healed and dry. The question of possible vesical haemorrhage arose, but examination of the urine revealed no sign of blood or growth. However, ten days later it became evident that the blood was coming from the bladder, and examination with the cystoscope showed a single sessile papilloma of small size, from which the blood originated. This I destroyed by means of a diathermy electrode passed through the cystoscope. I examined my patient a few days ago, and found her well and free from any signs of carcinoma or bladder papilloma. The latter growth had, I am sure, nothing to do with the former, from which she had been free for five years.

E. DRYBROUGH-SMITH,
M.D., F.R.C.S.Ed.

St. Leonards-on-Sea.

Reviews

DR. ADDISON'S DIARY

The general make-up of the Right Hon. CHRISTOPHER ADDISON's personal diary from June, 1914, to January, 1919, entitled *Four and a Half Years*,¹ is not attractive. This first volume, which takes us to the end of 1916, is heavy to handle, and printed closely in smallish type on not very agreeable paper. It is embellished with a considerable number of illustrations consisting mainly of portraits either of men whose portraits are already very well known or of others whose importance is scarcely such as to require their inclusion, together with a few other pictures of incidents of no very pronounced interest. There has been some inattentive proof-reading, and the mistakes made in the names of persons mentioned are amazing. Thus, Sir James Leishman is called William, and to instance two members of the British Medical Association whose names should be well enough known, we have a reference in one place to Dr. Arthur Cox and in another to Dr. Brackenberry.

On the whole, though it contains a number of scattered interesting passages, the book is rather on the dull side. Compared with the two recent publications of Lord Riddell and Mr. Lloyd George, covering much the same period, it fails to grip the attention except here and there, and at times becomes tedious. This comparison is, however, scarcely fair, for those two books were published first, and have already told us much of what we wanted to know, and the present author's position throughout the greater part of the period, though creditable and influential, was subordinate. He does not seem to provide us with any revelations or striking new facts. His diary is, indeed, too long. Though it would, of course, have been improper to falsify notes made at the time or to adjust the immediate expression of opinion in the light of later events, there could surely be no objection to lightening the book by the omission of sheer trivialities, which abound, or of ill-natured remarks about persons quite unimportant in this connexion, to whom or to whose relatives they can now only give pain without any compensating public advantage. Dr. Addison thinks it worth printing of a certain clergyman that "the good man is rather a bore," and of a certain provincial mayor that he was "the limit of mayors encountered to date. It was suggested that he might have a course in an M.D. school," and worth recording that one day he got "up late and pottered about the garden." There is one passage in which the author expresses in rather exaggerated language a contemptuous opinion of the British Medical Association, and another which implies his belief in the success of a much smaller and less-important medical organization. His judgement was evidently sometimes at fault, and it might be amusing to have a printed record of the view which certain of those whom he vilifies took of Dr. Addison.

The earlier part of the diary will be of most interest to readers of this *Journal*, and has an appreciable value. It relates mainly to the proposals for educational and health advance made in 1914 and the early part of 1915, and to the establishment and early work of the Medical Research Council. We are reminded of the difficult circumstances which these movements encountered, and these chapters reveal the author as a stout, zealous, indefatigable, forceful and, on the whole, wise protagonist for public health, educational advance, and fruitful scientific research. He pays a fine tribute in this con-

nexion to three great men with whom he was associated—Lord Moulton, Sir Walter Fletcher, and Sir Robert Morant. Of the last-named he says: "The man, of all others, who helps is Morant—great and keen and willing to take no end of trouble. . . . Morant is a king among public servants. . . . A great administrator, but, for all that, bubbling over with enthusiasm to get a 'move on' with things." This is well said. Dr. Addison also fitly acknowledges the helpfulness and fine work of Sir George Newman. A sidelight on the difficulties of progress in the fields with which he was most concerned is thrown by the author's account of what he calls these "everlasting departmental wrangles," for which he displays a very creditable contempt and impatience. They were mainly, at that time, between the Local Government Board and the Board of Education. Dr. Addison's efforts towards conciliation and adjustment were praiseworthy, and occasionally successful. It is pleasant to know and to acknowledge the services he rendered in saving, under very discouraging conditions, what could be saved of proposals for health provision and scientific research, some of which have already proved to be of inestimable value. The publication of his second volume, which will presumably contain an account of his activities as Minister of Reconstruction and the establishment of the Ministry of Health, will be anticipated with pleasure.

OPERATIVE GYNAECOLOGY

Gynécologie Opératoire,² by Professor HENRI HARTMANN, has been out of print for some time, and the second edition has been largely rewritten, although the original form of the book has been preserved. It is divided into five parts: the first deals with the examination of the patient, physical treatment, and minor gynaecology, the second with operations on and through the vagina, the third with those performed by the abdominal route, the fourth with therapeutic indications in diseases of the genital tract, and the fifth with the surgery of the urinary tract. It is apparently the custom in France to make vaginal, and even rectal, examinations without protecting the fingers with gloves or finger-stalls, otherwise the practice described in the first part does not differ widely from that observed in England.

The chapters on operations on and through the vagina are perhaps the most interesting, but it is surprising that so much space should be devoted to the various interposition operations, and to hysterectomy by the perineal and parasacral routes. It comes, moreover, as somewhat of a shock to read that Professor Hartmann thinks it necessary to leave four clamps on the uterine pedicles after performing vaginal hysterectomy. The feature of the third part of the book which strikes the English reader is the frequency with which resort is had to drainage. The author himself attributes his good results for hysterectomy largely to the fact that he drains either through the vagina or the abdomen, depending on whether the total or the subtotal operation is performed. This fact probably accentuates the difference between the operating theatre technique in France and England rather than that between the surgeons. It is further revealed that there are still some surgeons who close the abdominal incision in one layer. In the author's opinion, not only carcinoma of the body of the uterus, but also early cases of carcinoma of the cervix, are best treated by hysterectomy, and he favours the vaginal route. In the section devoted to the surgery of the urinary tract the direct method of cystoscopy developed by Kelly in America is enthusiastically recommended.

¹ *Four and a Half Years*. A personal diary by the Right Hon. Christopher Addison, P.C., M.D., F.R.C.S. Vol. i. 1914-1916. London: Hutchinson and Co. 1934. (Pp. 297. 18s.)

² *Gynécologie Opératoire*. Par Professeur H. Hartmann. Second edition. Paris: Masson et Cie. 1933. (Pp. 583; 478 figures. 110 fr.)

It would appear that nearly every gynaecological operation was first performed in France, and even the Alexander-Adams operation is "sometimes" called the d'Alquié-Alexander-Adams operation! The illustrations are moderately good, but that on page 316 depicting the median abdominal incision is valueless, and misleading in nearly every detail. The book is too advanced for the medical student, but gives a splendid idea of the range of gynaecological operations practised in Europe. Whether it is due to the French language or to the logical Gallic mind the fact remains that much information is presented in a compact form, and yet everywhere the sentences flow smoothly and are a pleasure to read. The binding is unworthy of such a volume.

LEGAL ASPECTS OF MENTAL ILLNESS

Under the title of *Legal Aspects of Mental Illness* Mr. GATTIE has rewritten and enlarged the second edition of his *Lunacy Practice, Certification, and Detention*, a change of title obviously necessitated by the new provisions of the Mental Treatment Act of 1930. Also a chapter has been added dealing with testamentary capacity and the appointment of a receiver. The Mental Deficiency Acts are not included in the work.

The first and second editions are well known as useful summaries of procedure, especially to the general practitioner when confronted with the certification of a person of unsound mind. In this, the third, edition particular interest naturally attaches to the new provisions in respect of voluntary and temporary patients. Here there is admirably clear and concise guidance to the whole procedure under Sections I and V of the Mental Treatment Act. It may be recalled that Section I extends to public mental hospitals permission to admit voluntary patients without any form of certification, a means of care and treatment previously limited to certain institutions for private patients; whilst Section V allows persons suffering from mental illness who are likely to benefit by temporary treatment, but are for the time being incapable of expressing themselves as willing or unwilling to receive such treatment, to be admitted for treatment into mental institutions, approved hospitals, homes, etc., on application and medical recommendation, but without certification. Steadily increasing advantage has been taken of the provision in regard to voluntary patients in public institutions wherever accommodation has been sufficient and proper; but there can be no doubt that the response to Section V, for one reason or another, has been most disappointing. In this connexion the author refers to the wording of Section V, which, he says, cannot be regarded as a triumph of draftsmanship, and adds that it is a subject for obvious comment that the words "capable" and "incapable" should have been omitted to be defined in the interpretation section. It is probably true that there are still widespread doubts as to the kind of case which would be officially regarded as properly falling within the operation of this section and consequent failure to take advantage of its benefits. For this reason this little book will be found of much help. At the same time it should be pointed out that the official returns published by the Board of Control show that in certain, and presumably more enlightened, districts very considerable advantage is taken of this section—in fact, greatly in excess, of the 5 per cent. of all admissions quoted by Mr. Gattie in a footnote as the probable maximum of its utility.

The book is well indexed and carefully documented, and excellently incorporates the practice under the Lunacy and Mental Treatment Acts, 1890-1930.

³ *Legal Aspects of Mental Illness*. By W. H. Gattie. Third edition. London: Shaw and Sons, Ltd. 1933. (Pp. 86. 7s. 6d. net.)

BACTERIOLOGY FOR MEDICAL STUDENTS AND PRACTITIONERS

The object of this book⁴ by Dr. A. D. GARDNER is to present the subject of bacteriology "shortly, readably, and relevantly." This is no mean task. It is so difficult to know just how much may be safely left out, and, this having been decided, how to weave the selected facts into an attractive story in which each one gets its correct value. However, Dr. Gardner has succeeded admirably. He starts with four chapters of a general nature explaining the significance of bacteria, their form and structure, the methods of cultivating them, and their pathogenic action. Following this the different pathogenic bacteria are described, each genus being given a separate chapter. Then there is a chapter devoted to pathogenic protozoa and fungi, a good short account of filterable viruses, and, finally, chapters on immunity and on the prevention of infection.

There is little to criticize. An obvious slip occurs in Table XVI, where the pathogenicity of the human and bovine types of the tubercle bacillus is given incorrectly, and some might object to the inclusion of Banti's syndrome and acholuric jaundice as fungoid conditions, even though the author has only done this provisionally. And in such a rapidly growing subject as filterable viruses it would indeed be difficult to write a general account which would satisfy everyone. It is doubtful, however, whether the author's view that characteristic form is one of the chief attributes of life would meet with general approval, and it is difficult to understand why the diagnostic value of the complement-fixation reaction, with the sera of chicken-pox and herpes convalescents, should be considered as of doubtful value (Table XXIV). These are minor points, however. The book is a good one, and appropriate to the purpose for which it has been written.

EARLY OPHTHALMOLOGY

A fourth volume of the Short History Series has been written by Mr. ARNOLD SORSBY dealing with ophthalmology.⁵ In the limited space of one hundred pages the author has contrived to give a thoroughly readable, informative, and balanced account of the gradual rise of the knowledge of the structure, functions, and troubles of the eye. He gives the reader a brief summary of eye treatment in the Ancient East, in the Greek and the Arabian periods, and in the West in the Middle Ages and since. He deals severally with the growth of knowledge of the anatomy, physiology, and pathology of the eye, and subjects such as cataract, glaucoma, therapeutics and spectacles, and the ophthalmoscope receive separate chapters. Finally, there is a chapter on ophthalmology in the British Isles.

In these days when, to quote the author's words, "the ophthalmoscope has raised ophthalmology to the most exact of clinical studies" one is apt to forget the difficulties of our forefathers in medicine. They were not a little handicapped by the penalties which popular prejudice attached to an untoward result that might have attended any treatment other than the "expectant!" The provisions of the code of Hammurabi some 2000 years B.C. were not calculated to foster daring treatment. The code enacted that for a successful operation which saved the patient's eye the fee should be ten shekels of silver in the case of a "gentleman," but only five shekels and two shekels in the case of a poor

⁴ *Bacteriology for Medical Students and Practitioners*. By A. D. Gardner, D.M., F.R.C.S. Oxford Medical Publications. London: H. Milford, Oxford University Press. 1933. (Pp. 276. 6s. net.)

⁵ *A Short History of Ophthalmology*. By Arnold Sorsby, M.D., F.R.C.S. With a foreword by R. Rutson James, F.R.C.S. London: John Bale, Sons and Danielsson, Ltd. 1933. (Pp. 103. 3s. 6d. net.)

man and an "owned" slave respectively. For an unsuccessful operation on a freeman causing death or the loss of the eye, the surgeon should have his hands cut off; in the case of a slave the penalty was replacement of the slave with another. The chapter on ophthalmology in the British Isles will be of special interest. It is full of quaint humour. Noteworthy is the translation by Richard Banister of Jacques Guillemeau's *Maladies de l'Oeil* in 1662. To the translation he added a *Breviary*, "something of mine own, that through my experience they may find at last, what I was learning long." Therein Sorsby found a most significant passage, one in which the hardness of the eye was described as a diagnostic and prognostic feature in the treatment of gutta serena—an observation that fell on stony ground and had to be rediscovered in the nineteenth century.

In any subsequent edition the author might well add a paragraph on the romance of the discovery of "retinoscopy" for refraction. Bowman saw the variation of the light reflex, and told Donders of it; the latter noted this in his book, but neither followed up the observation. Cuiquet, an obscure French ophthalmologist, discovered it for himself, and worked out its implications. But his knowledge of optics was so poor that his papers seemed nonsense. Not until Parent of Paris investigated the claim was the amazing secret displayed; it then received immediate and world-wide adoption. Mr. Sorsby's little book has been well done; it provides a pleasant evening's reading for both ophthalmologist and general practitioner, and withal is a convenient source of reference.

RAMÓN-CAJAL'S "HISTOLOGY"

RAMÓN-CAJAL'S *Histology** is now in its tenth edition. It is the standard work on the subject in the Spanish language, being in use in practically all the Spanish universities, and its author is recognized as the most distinguished histologist of modern times and the discoverer of the neurone structure of the nervous system. Yet the book is unknown in this country, except probably to one or two who understand the Spanish language. Dr. Fernán-Núñez has now translated it into English, and readers will thus be able to form an estimate of the great debt which histology owes to Ramón-Cajal and his disciples. The book reflects the particular features of the method of teaching histology in the Spanish schools, which differs in some important respects from the methods in use in this country. During the first year the medical student is given a thorough grounding in cytology, its history and philosophy. The normal histology of the tissues and organs is then taken up with their histopathology during the second year. From a biological point of view this method has much to recommend it, and English students might with advantage receive more instruction in cytology than they do at present, if they could find the requisite time. But with regard to histology it does seem desirable, from a purely medical standpoint, that the student should already have some general knowledge of pathology when commencing the study of histopathology. The cytological part of Ramón-Cajal's book is an exhaustive treatise on cells and their intimate structure, and it is illustrated by numerous beautiful photomicrographs. The second part of the work, dealing with the histology of the tissues and organs, is specially noteworthy for the minute and elaborate description of the structure of the nervous system. A valuable appendix on histological methods concludes the volume. The excellent portrait of Ramón-Cajal, inserted as a frontispiece, forms an attractive feature of the book.

* *Histology*. By S. Ramón-Cajal, M.D., F.R.S., J.L.D. Revised by I. F. Fello-Muñoz, M.D. Authorized translation from the tenth Spanish edition by M. Fernán-Núñez, M.D. London: Baillière, Tindall and Cox. 1933. (Pp. xlv + 738; 535 figures. 40s.)

BRITISH HEALTH RESORTS

We have received a copy of the 1934 edition of *British Spas, Inland and Seaside Resorts*, being the official handbook of the British Health Resorts Association Limited. As before, it is edited by Dr. R. FORRESCUE FOX and published by Messrs. J. and A. Churchill, at 1s. net. There are several new features. The Minister of Health contributes a "Foreword" wishing the association every success in its work, and pointing out that it fulfils a real need in directing, under responsible medical guidance, the attention of doctors and the public to the advantages of the home resorts. On page 5 is a brief statement of the conferences and meetings which the association has held, followed by an expanded statement on the uses of spas in general and the British spas in particular. For the first time attention is called in detail to the health attractions of the Dominions of New Zealand, South Africa, and Canada. The information in this handbook is compiled from official sources, and on the medical side has been carefully revised by the Medical Advisory Committee, with the assistance of medical officers of health and local professional bodies. A new section has been added on "The Seaside 'Cure,'" and the seaside resorts are now dealt with under their respective "regions," preceded in each case by a new map giving much useful information as to aspect, altitude, configuration, etc.—items of great value in deciding the proper venue for different individuals seeking health and convalescence.

Notes on Books

Those who are interested in children's sleep and who feel that they would wish to have the results of broad observations and general impressions reinforced or corrected by minute and careful investigation, will find in *Children's Sleep*,¹ by Professor S. RENSCHAW, associated with Vernon L. Miller and Dr. Dorothy Marquis, who are research Fellows under the Payne Fund, the account and conclusions of such an investigation. Of course, there are a chairman, a committee, and a dedication as well. The research was concerned with a group of children of both sexes between the ages of 6 and 18 years. The main criterion was the degree of mobility during sleep. This was ingeniously measured and recorded so as to ascertain a normal, and to assess any variations from the normal produced by the ingestion of coffee and by the watching of motion pictures of several types. The conclusions do not appear to be strikingly helpful, and the steps taken to arrive at them are set out with a superabundance of detail, and with what must be to many a tedious meticulousness. By some they may be regarded as significant and interesting.

The discovery of the lymphatic system and the demonstration of the chyloiferous vessels were the work of a number of seventeenth century physiologists. Aselli of Cremona discovered the lacteals in 1622, and twenty-eight years later OLAUS RUDBECK of Upsala published a *Nova Exercitatio Anatomica*, in which he demonstrated the existence of vessels containing clear lymph. An Englishman, Jolyffe, had described similar vessels ten years earlier in a Cambridge thesis. In commemoration of the tercentenary of Rudbeck's discovery, Messrs. Almquist and Wiksells of Upsala have published a facsimile of the *Exercitatio*,² with its two fine plates, for the Medical Faculty of Upsala, of which Rudbeck was a member. Rudbeck was professor of botany at Upsala, as well as of anatomy, and his name is probably better known as the godfather of the genus *Rudbeckia* even than as a physiologist. The daisy-like composites known as *Rudbeckia* are now familiar to all gardeners.

¹ *Children's Sleep*. By S. Renschaw, V. L. Miller, and D. P. Marquis. London: Macmillan and Co., Ltd. 1933. (Pp. 242; illustrated. 8s. 6d. net.)

² *Nova Exercitatio Anatomica, Exhibens Ductus Lymphaticos, et Vas Glanularum Serosa*. By Olaus Rudbeck. Upsala: Almquist and Wiksells.

The Frenchman who asked an English colleague "Qui est ce Monsieur Pink?" will find an adequate answer in a little book by Dr. Ch. Rocaz of Bordeaux, which has been translated into English under the title of *Pink Disease* by Dr. I. J. Wood. Although the malady is known in France as "infantile acrodynia" the translator has wisely adopted the title more commonly used in the English-speaking countries, and he has also incorporated a certain number of recent observations to bring the book up to date. A bibliography of ten pages shows the extent to which the literature on this comparatively newly recognized disease has been studied, and the result is a thoroughly readable, well-balanced little volume. A historical review leads on to a section on aetiology, and there follow over seventy pages on symptomatology, this forming the bulk of the book, and well illustrating the diversity of types in which the disease occurs. The author sums up the views on pathogenesis, and favours the conception of an inflammation of the nervous system closely related to epidemic encephalitis. The English version runs smoothly, and is welcome as a concise exposition on this subject.

In a pamphlet of twenty-seven pages Dr. GIUSEPPE BERTINI¹⁰ of Faenza maintains that the opinion held by some writers of the rarity of osteomyelitic infection in the newborn and sucklings is erroneous, and he gives details of eleven cases in support of his view. Of these seven were staphylococci, three streptococci, and one diplococcus. Vaccines may help, but surgical intervention offers the best hope in this very fatal disease of early infancy. The author appends a useful bibliography.

lated by I. J. WOOD, M.D. LONDON: BARNES, 1933. (Pp. 153; 20 figures. 7s. 6d. net.)

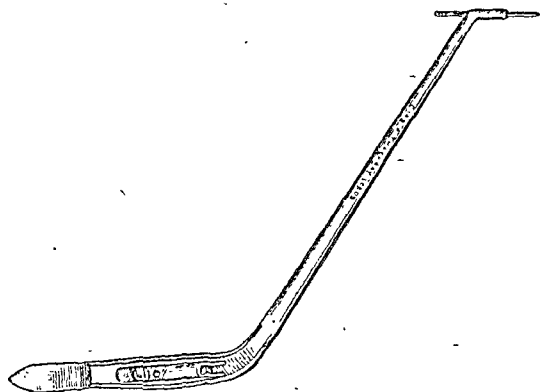
¹⁰ *L'Osteomielite acuta nei lattanti*. By Dr. G. Bertini. Opere di Assistenza all' Infanzia annesse al Brevettorio di Faenza. Faenza: Societa Tipografica Faentina. 1933.

Preparations and Appliances

RADIUM-HOLDING FORCEPS AND RADIUM STERILIZING TRAY

DR. WILLIAM TENNENT (radium officer, Glasgow Royal Infirmary) writes:

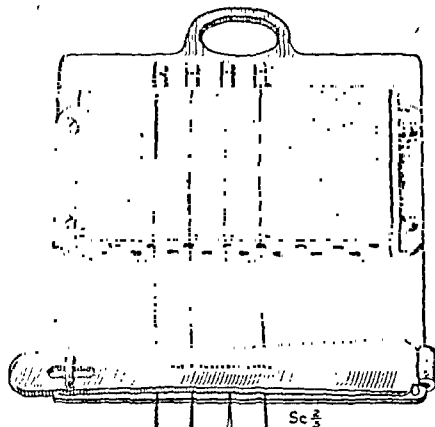
The radium-holding forceps illustrated herewith were designed to overcome some of the defects inherent in the types previously employed, and are intended for use in the handling of radium needles and tubes, and in threading needles either before or after sterilization. The usual dissecting type of forceps, even when fitted with a special jaw,



is unsatisfactory for handling radium, as the fingers must be brought within an inch or so of the jaw if sufficient pressure is to be applied to prevent the needle swivelling during threading. Where large quantities of radium are being repeatedly handled and threaded each day this constant proximity of the fingers to the radium is not without risk, but in the forceps illustrated the radium is constantly kept at a fixed distance of six inches from the hand. The jaw is diamond-shaped in cross-section, and holds firmly all

needles with a screenage of 0.5 mm. to 1 mm. platinum, while the elongation of the jaws prevents the large needles from sliding laterally while being threaded. The forceps are provided with a sliding lock for use during threading, and this serves to relieve the strain on the fingers when large numbers of needles are being dealt with.

The use of the radium sterilizing tray illustrated has been found to facilitate the handling of threaded radium needles



in the operating theatre. The instrument consists of a stainless steel back-plate, to which is fitted a lead block drilled vertically with several rows of openings passing the whole length of the block, and into which the radium needles may be inserted. The lead block is held in position by a stainless steel band, screwed into the back-plate. The needles, having been threaded in a radium bench, are inserted into the openings in the lead block and firmly held in position by having the threads clamped against the back-plate. The fully charged sterilizing trays, which measure only 9 by 10 cm., may now be placed in a lead-lined carrying box and taken to the operating theatre. These trays have the advantage over the usual type in that there are no movable parts in which the needles may become fixed and bent. In practice it has been found that even very small needles do not become dislodged from the lead block during sterilization, provided the threads have been securely clamped into place.

The forceps and tray have been made for me by Mr. Charles F. Thackray of Park Street, Leeds.

A CAUTERY AND LAMP UNIT

We have had the opportunity of seeing a demonstration of a portable unit for cautery and light, constructed, in one model, for use with either direct or alternating current, and in another, a smaller model, for alternating current only, at voltages of 100 to 130 and 200 to 250. It is also supplied, again for alternating current, in the form of cautery only and of light only. The unit has been put on the market by the Balding Electrical Company (33, Theobalds Road, W.C.1). The mechanism is earth-free, and it gives an excellent light for ear, nose, and throat work or other applications, while its value as a cautery appears equally evident. Everything has been done to make it as foolproof or mischance-proof as possible. The weight of the more ambitious instrument is 14 lb., and its size 9 by 7 by 6 inches, while the other, for alternating current supply only, is much smaller, and weighs only 3½ lb. A unit of this type, with the maximum of convenience and readiness of application, may be found very useful in general practice as well as in certain specialties. It is mounted in an ebonized mahogany case, and is chromium-plated.

ANTIVIRUS JELLY FOR CORYZA

Glaxo Laboratories (56, Osnaburgh Street, N.W.1) are now marketing a new antiviral preparation intended for the treatment of the common cold. Antiviral nasal jelly is stated to consist of sterile detoxicated filtrates from cultures of *B. pneumoniae* (of Friedländer), *M. catarrhalis*, and mixed streptococci, incorporated in a glycerin base, together with 1 per cent. of ephedrine. Its viscosity is such as to bring the jelly into intimate contact with the folds of the nasopharyngeal mucous membrane. It is sold in collapsible large-nozzle tubes at 1s. 6d.

THE LARGEST MUNICIPAL HOSPITAL ORGANIZATION IN THE WORLD

The section of the annual report of the London County Council for 1932 dealing with hospitals and general medical services¹ is belated, but much is to be forgiven when one contemplates the mass of tabulated information embodied in the document. Even though five years have passed since the Local Government Act whereby a large number of hospitals were transferred to the Council from other authorities, many otherwise well-informed Londoners have no idea how vast a hospital population the Council accommodates. In its general and special hospitals, including the sick-beds in the public health and public assistance institutions, there were 35,000 patients on the last day of the year which the report reviews, and during that same year 260,000 people—equal to the total population of Cambridgeshire—had been admitted. This number includes 10,500 infants born in hospital. The demand on the Council's maternity accommodation increases by about 1,000 cases a year. The attendances at the ante-natal clinics, numbering 48,618 in this year, are also multiplying with great strides.

GENERAL HOSPITALS

In the L.C.C. general hospitals 80 per cent. of the beds, on the average, are occupied, and the average duration of stay is thirty-eight days. In some of these institutions units have been established for branches of medicine and surgery which are of such a specialized nature that it is not convenient or economical to establish a unit for them at every hospital. These include plastic surgery, radium therapy, rheumatism, thoracic surgery, thyroid diseases, and lupus. Further special arrangements were made during the year for research work to be carried out in the treatment of lobar pneumonia by anti-pneumococcal serum. Some indication may be gathered as to the work of these hospitals from the fact that during the year under review 28,490 administrations of general anaesthetics were made; 22,757 patients were treated in the physiotherapeutic departments; and diagnostic x-ray work was done on behalf of 56,182. The number of new patients attending the out-patient departments was 62,157—a very minor figure, of course, compared with the corresponding one for the London voluntary hospitals.

INFECTIOUS FEVER HOSPITALS

The superintendents of the infectious diseases hospitals give accounts of research and other work, including the serum treatment of cerebro-spinal meningitis and the drug treatment of chronic encephalitis. It is mentioned that observation into juvenile behaviour disorders following encephalitis lethargica and those of the ordinary "difficult child," where no history of encephalitis lethargica can be found, has shown that there is a marked similarity in the two cases, and the opinion has been expressed that both are due to organic causes. The practical value of hypodermic injections of bulbo-capnine in the subduing of outbreaks of misbehaviour has been confirmed, and so far no other drug has been found to be so efficacious. The prophylactic inoculation of nurses against diphtheria has been continued. In the course of this work at the North-Western Hospital certain observations on the antigenic value of alum toxoid have been completed, and a commencement has been made with similar observations with regard to ferriol toxoid. The immunizing value of these prophylactics now seems to have reached a high

degree of efficiency, and no nurse has required to go off duty as a result of the inoculations. A complete pathological service, with group and single institution laboratories, is on its way to completion. In 1932 the total number of pathological examinations carried out for the Council's general hospitals was 131,941. In the fever hospitals the laboratory work consists mainly of investigations in connexion with the diagnosis and treatment of diphtheria, and 104,102 microscopical examinations of Löffler serum cultures were made during the year.

DISTRICT MEDICAL SERVICES

The district medical services are also covered in this report. Part-time practitioners in these services paid 47,776 domiciliary visits, and medical officers on the staffs of hospitals 22,490. It appears that in London, owing to the effective co-operation between the district medical and the district nursing services, there is some reversal of the usual tendency to seek hospital accommodation in sickness. The services of district nurses in reporting on the suitability of patients' homes for home nursing have been of much assistance, especially in regard to patients in receipt of relief but not attended by the Council's doctors. Under the new conditions, now that the district medical and nursing services are an integral part of the whole administrative scheme for the care of the sick, more demand is being made for nursing in the home. District medical officers have been quick to take advantage of the nursing facilities at their disposal, and it seems that a real need is being met. The considerable saving in hospital expenditure is to be set off against the expense of the district service.

LONDON AMBULANCE SERVICE

The labours of the statistician afford us a glimpse of the activities of the London ambulance service, which is now in two parts: one for accidents and the other for general cases. The number of times the ambulances were called out in the accident service in 1932 was 42,672, a figure below that of the previous three years. The figure for 1933, with the steep rise in the curve of traffic accidents, must be expected to show an increase. The hours of the day in which the largest number of ambulance calls are made are from 3 p.m. to 7 p.m. From 8 a.m. to midnight the hour of fewest calls is the first hour. Saturday is the day of the week which makes the greatest demand on the ambulance service, and Friday comes next. The busiest months of the year are July and August, and the quietest are February and January. The average time taken by an ambulance to reach the case is six and a half minutes, and to reach hospital fourteen and a half minutes. We will permit ourselves one final figure: the total staff of the Council's hospital, laboratory, district medical, and ambulance service, including whole-time and part-time officers, numbers 18,842 persons.

S. Ganot (*Thèse de Paris*, 1933, No. 582) states that, during the period 1930-2, the number of cases of recent syphilitic infection observed at the Hôpital Saint Louis and the various dispensaries of the French League against Venereal Disease in Paris amounted to 789 cases in 1930, 722 in 1931, and 572 in 1932, so that diminution in the incidence of syphilis in Paris amounted to 30 per cent. The Paris district, however, was the only one in France where this diminution was observed, as at a congress in Strasbourg in 1933 attention was called to the endemic increase of syphilis in France. The decline of syphilis in Paris is attributed by Ganot to several factors—namely, the results of propaganda against venereal disease, the education of doctors and patients, and the economic crisis, which is said to favour sexual abstinence.

¹ London County Council, Annual Report, 1932. Vol. iv (Part I), Public Health—General and Special Hospitals. P. S. King and Son (2s. 6d.)

MEDICAL RESEARCH IN THE MALAY STATES

The annual report for 1932 of Dr. A. Neave Kingsbury, director of the Institute for Medical Research, Kuala Lumpur, contains the notification that in order to assist State medical authorities in times of epidemics of enteric fever, cholera, or plague a mobile unit including a traveling laboratory will now be available. Primarily intended for purposes of diagnosis, this unit will also render assistance in control measures, so far as may be possible. As in previous years the work of the Institute has covered a wide field despite financial restrictions. Some of the more important lines pursued are as follows.

PROPHYLAXIS AGAINST MALARIA

In the previous report it was noted that an investigation of the prophylactic value of quino-plasmoquine had shown its value, though problems of toxicity were encountered, and the cost of the procedure was considerable—a serious handicap to undertaking such protection on a large scale. Atebrin for treatment was also mentioned as being well tolerated in curative doses, and superior to quino-plasmoquine in preventing relapses. Dr. R. Green has continued research in this connexion, and the present report records the results achieved. One series of 125 cases of malaria of all types was treated with atebrin, and another series with quino-plasmoquine. It was found that the action of atebrin was swifter, but this drug is not available in a form suitable for injections, and is therefore not applicable to cases of cerebral malaria and persistent vomiting. Its use is at present limited in cases of subtertian malaria to patients who can retain and absorb it when given by mouth. Like quinine, atebrin does not affect the viability of the gametocytes of *P. vivax* or *P. falciparum*, but, when administered for seven days or even less, the gametocytes of *P. vivax* are destroyed with sufficient rapidity to prevent the infection of anophelines. As regards gametocyte carriers of *P. falciparum*, neither atebrin nor quinine is effective in preventing the infection of mosquitos having access to such patients when under treatment. But, since atebrin is definitely the more effective in preventing relapses in all three types of infection, the production of further generations of gametocytes (on relapse) is less likely to occur among cases so treated, and thus atebrin possesses greater prophylactic value than does quinine, especially as it appears to be less toxic.

A series of experiments was commenced on rubber estates to discover whether the employment of atebrin would diminish malarial incidence and transmission if restricted to fertile individuals and not distributed for mass treatment—a much more costly method. The investigation was complicated by the fact that estates vary, some relying mainly on oiling while others are on a "care and maintenance" basis, oiling having been suspended or limited. In still other instances the managements are unable to afford the adequate supervision, labour, and material necessary for the continued maintenance of an effective oiling campaign. Although everything possible in regard to antilarval measures is being done on the majority of estates, there is a growing tendency to place reliance on the quinine treatment of individuals. This restricts the general severity of the disease, but the frequency of transmission by anophelines, and the actual incidence of malarial infections are little affected. It has been proved on many occasions that quinine, given in amounts less than the curative dose, fails to prevent the onset of malaria after a person has been bitten by infected mosquitos. This involves the administration to labourers of large doses of quinine, with consequent cinchonism, or dependence on inadequate dosage. In such circumstances the possibility of atebrin seemed hopeful, and three estates were accordingly tested, 450 persons being treated with it, and 353 serving as controls. The experiment was in progress at the time of preparing the annual report, but the preliminary figures indicated a very marked relative fall in both spleen and parasite rates in the case of those treated with atebrin. Examination is also being conducted of the new cinchona product "totaquina," recommended by the Malaria Commission of the League of Nations. The preparation was well tolerated in doses above clinical requirements, but as yet there is no definite intimation that it is superior to quinine.

OTHER MALARIA INVESTIGATIONS

Cultural methods as a diagnostic aid have been explored by Dr. J. W. Field, who has employed the modification of Bass's technique suggested by J. G. and D. Thomson. No evidence has yet been obtained which suggests any diagnostic advantage of the cultural method over the usual thick blood film in benign tertian and quartan infections. No strain was encountered with such early sporulation as to suggest a twenty-four-hour cycle. There was great variety in the vigour of growth, which could not be correlated with the severity or chronicity of the infection, though an interesting finding was that a relatively high proportion of successful cultures were obtained from patients with marked splenic enlargement. The results of the larva surveys so far lend little support to the theory of inverse larval and adult density. On the contrary, there was a surprisingly close correlation for several species between the larval findings and the adult catches. In one area, oil which had been used for larvicidal purposes was collected, and used again under control. It was found that its lethal power had diminished from 70 per cent. to 25 per cent., and the conclusion was established that the repeated use of antimalarial oil must be condemned. Other experiments showed that the oiling of water had little or no effect on the health of poultry.

TROPICAL TYPHUS

During the period under review there was an apparent fall in the number of cases of "K" type tropical typhus, and also a continued decrease in the "W" type cases. Evidence was obtained that there is a marked rise in incidence in the month of December, which continues during January and recurs in July. It has been suggested by Dutch workers that "K" type tropical typhus and Japanese river fever are essentially the same disease. Work in connexion with the Institute indicates that the two diseases are immunologically identical. An analysis of 529 cases of typhus showed that it is in the main a disease of adults. As regards sex incidence, the distribution of the "K" type cases was 100 males to twenty-seven females, and of the "W" type 100 to fifteen.

A statistical inquiry indicated that Indians suffered unduly from enteric fever, while Malays were relatively free. A partly successful attempt was made to treat lepers by desensitization, extracts of proteose from the urine being applied to scarified skin areas. Rats fed on a vitamin-deficient diet proved to be no less resistant to leprosy than were others on normal diets. The control of quinine therapy by testing the urine for this alkaloid was found to be better secured by using Tanret's acid reagent as well as Mayer's, since the former will invariably precipitate quinine, while the latter does not always do so. Tanret's reagent invariably precipitates albumin, and thus it is necessary to ensure that the urine is albumin-free. Mayer's reagent only precipitates quinine in high dilution when the urine is acid enough.

ROYAL MEDICAL BENEVOLENT FUND

At a recent meeting the committee of the Royal Medical Benevolent Fund voted eighty-eight grants, amounting to £1,971. Subscriptions and donations are very urgently needed in order that the activities of the Fund may be maintained. Legacies are needed to support the annuity department. Cheques should be made payable to the honorary treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W.1.

The following are particulars of a few cases helped.

M.D., aged 82, widower, has been in practice as long as his age and infirmity permitted. He is now confined to his bedroom, living in very straitened circumstances, indeed practically destitute. He has no relatives who can give financial help. Income, which includes old age pension, approximately £48. Fund voted £40.

Widow, aged 77, of M.R.C.S. Her husband had retired and was on pension, which ceased at his death; she was left with private means of £20. Another charity has made a grant of £30. Fund voted £13 for six months pending application for old age pension.

Widow, aged 64, of M.B., C.M. On her husband's death in 1924 she served as housekeeper in a nurses' home for some years until failing health compelled her to relinquish the post. She is suffering from cardiac enlargement. National health insurance provides £1 4s a month, letting room £1 a month, and friends have given £15. Fund voted £26.

British Medical Journal

SATURDAY, FEBRUARY 24th, 1934

A MILK RATION FOR CHILDREN

At a meeting of the Children's Minimum Committee, held at the House of Commons on February 15th, the proposal was advanced that "a daily ration of fresh milk should be made available for all children attending State-aided schools and for younger children through the Public Health Department." Though no actual resolution was put to the meeting, all present were invited to support the committee in urging the Government to give effect to this recommendation. The term "fresh milk" is a little ambiguous. It might mean the opposite to canned milk. On the other hand, it might mean raw as opposed to heat-treated milk. Sir Ernest Graham-Little, M.P., moved that the word "fresh" should be deleted and replaced by the words "pasteurized at a low temperature." This amendment was not accepted, and it would therefore appear that the term "fresh milk" is to be regarded largely as synonymous with raw milk.

The issue is more important than may appear at first sight. Numerous investigations, of which we may quote that recorded by Corry Mann, and the large-scale experiment carried out in Lanarkshire under the auspices of the Scottish Board of Health, have shown the undoubted value of a daily ration of milk in the growth and development of young children. In both of these investigations the children in the groups receiving extra milk showed at the end of a few months a marked superiority in height and weight over the children in the control groups. There is therefore every reason to believe that a daily ration of milk given to children, particularly to those who are living on the borderline of undernourishment, is likely to exert a beneficial action on their mental and physical development. Before giving, however, its approval to the recommendation of the Children's Minimum Committee, the medical profession will do well to pause and enter a caveat. Raw milk, as laboratory examinations in various parts of the country have firmly established, is frequently infected, either from the cow or from human carriers, with micro-organisms that are pathogenic to man. The most authoritative figures reveal an infection of 6.7 per cent. of samples of raw market milk with living virulent tubercle bacilli and of 20 to 30 per cent. with *Brucella abortus*. Besides these two organisms, it is known that milk becomes infected from time to time with haemolytic streptococci, diphtheria bacilli, and members of the typhoid, paratyphoid, food-poisoning, and dysentery groups. The attitude of those who would minimize the importance of these organisms in milk is not easy to comprehend. According to the report of the special committee appointed by the People's League of Health to make

a survey of tuberculosis of bovine origin in Great Britain, it is estimated: (a) that about 6 per cent. of all deaths from tuberculosis are caused by the bovine type of bacillus; (b) that about 2,000 deaths, mostly in children, occur annually from this cause; (c) that at least 4,000 fresh cases of bovine infection develop each year; and (d) that an immense amount of suffering, invalidity, and often permanent deformity is caused by this bacillus. These estimates, it may be noted, were worked out with great care from the Registrar-General's returns, and err, if anything, on the low side. Tuberculosis, however, is not the only milk-borne disease. Undulant fever, caused by *Br. abortus*, is being reported now from many parts of the country, and is not by any means confined to adults. The devastating effect of pathogenic strains of haemolytic streptococci, as revealed in the recent outbreak in a South Coast pleasure resort, where the consumption of an infected milk supply led to over 1,200 primary cases of septic sore throat with sixty-five deaths, will be fresh in the minds of many public health workers. The outbreak of paratyphoid fever at Epping in 1931, involving 312 cases with eight deaths, will likewise be remembered. But what further need is there to labour the point? That a large amount of disease is carried by raw milk is no longer an opinion; it is a fact—a fact as well attested as any in the domain of medical science. The recommendation, therefore, that milk should be consumed in the raw state is equivalent to the support of a measure which must result in the occurrence of sickness and death among a proportion of those affected by it.

The alternative to raw milk is not no milk, but milk rendered safe by some form of heat treatment. Of the various forms available low-temperature pasteurization appears to be the most satisfactory. As carried out in modern plant of proper design and with automatic temperature control, it can be trusted to destroy the various pathogenic organisms that have been mentioned. The objection sometimes raised by the protagonists of raw milk that pasteurization diminishes the nutritive value of the milk is based on very insecure evidence. Stirling and Blackwood of the Hannah Dairy Research Institute, in their monograph on "The Nutritive Properties of Milk in Relation to Pasteurization," after a very thorough review of the literature, come to the following conclusions: "... there do not appear to be any good grounds for the belief that pasteurized milk is a less valuable component of the diet than raw milk for children who satisfy the bulk of their nutritive requirements from sources other than milk." And again: "There are, therefore, strong grounds for the belief that infants can satisfy all their requirements on diets of adequate amounts of pasteurized milk provided that extra vitamin D, and, of course, vitamin C, are added to the diet." (Original in italics.)

Practical difficulties in the way of supplying children with properly pasteurized milk will be encountered in many towns and country districts. The alternative here is to see that the milk is boiled immediately before use. If these precautions are taken, all milk being rendered

safe either by pasteurization or by boiling, the Children's Minimum Committee is likely to receive very strong support from the medical profession. If, on the other hand, they are neglected, it must be the duty of every medical officer concerned in implementing the scheme to point out the grave results that are likely to follow the consumption of milk in the raw state.

BARBITURATES

Papers and reports and letters in the columns of the *British Medical Journal* and in those of our chief contemporary, together with much vapouring by the lay Press, have brought the barbituric acid group of hypnotics into the foreground once more. It is something of a paradox that sedative drugs should act as irritants to the medical profession, but for twenty years or so veronal and its congeners, under many names, plain or fancy, have been apt to provoke controversy. Thus in 1927 we had a long and lively correspondence on "drugs for sleeplessness," centring round the barbitone compounds; and now, in the *Lancet*, following a debate at the Royal Society of Medicine,¹ Sir William Willcox on the one side, and Sir Maurice Craig and those who think with him on the other, have joined issue again in "the battle of the barbiturates."

In our opening pages this week will be found an address by Dr. Mutch on proprietary remedies, with special reference to hypnotics. We print also Dr. Featherstone's paper on the use and misuse of basal anaesthetics, and a warning by Mr. McNeill Love, founded on two fatalities after the use of basal narcotics. Again, at page 331, Dr. Robert Richards puts on record a symptom (he calls it "automatism" for short) observed by him in accidental poisoning by barbitone derivatives. In the *Lancet* of February 17th Dr. R. D. Gillespie has expanded, with very full references to the literature, his contribution to the December debate, heading this, "On the Alleged Dangers of the Barbiturates." The full text of Sir William Willcox's opening paper, to which Dr. Gillespie's article is, largely of the nature of a rejoinder, will be in our readers' hands a fortnight hence. A mass of information and of opinion is thus accumulating, from which in due course a considered judgement may emerge, and even a working policy. The difficulty at the moment is that during a discussion in which views are sharply opposed it is hard to distinguish between evidence and advocacy. We have heard it said that as a topic the barbiturates, like milk, are always on the point of boiling over. But while it would be premature to attempt a summing up at this stage, we venture to offer a few interim reflections in the hope of clearing the issue and perhaps of cooling the atmosphere. We shall not touch here upon the barbiturates and kindred drugs in basal anaesthesia.

There are, fortunately, several points on which all are agreed. The first is that these drugs need thought

and care in their administration. They should be supplied only on the order of a qualified practitioner. It is altogether wrong (as Dr. Nesbitt-Wood wrote the other day) that in defiance of the law "a number of lesser chemists are prepared to sell them over the counter like so many sweets." Casual self-medication must be discountenanced; but, on the other hand, medical men should not be hampered in the prescription of sedatives for appropriate cases by irksome regulations made merely in response to a popular demand. So far as we can judge, the general opinion of the profession to-day, with one notable dissentient, is that the barbiturates, or some of them, have a place, and a valuable one, in the practice of medicine. It is also widely held that some further restriction upon their purchase by the public would be desirable from every point of view. If, as seems likely, amending legislation for control of the sale of hypnotics is under consideration by the Poisons Board set up under the Pharmacy and Poisons Act of 1933, we may feel sure that in recommending any new procedure to lessen the risks of poisoning, whether accidental or suicidal, from the misuse of barbiturates, the Board will pay due regard to the weight of medical opinion and to the need for interfering as little as possible with the freedom of medical practice.

For the prescriber, as Dr. Mutch says, the point of practical importance with the barbitone group is the margin of safety between the hypnotic dose and the lethal one. This margin varies a great deal, and is dangerously narrow in some members of the series. It is therefore a good working plan to prescribe only a hypnotic whose action is well known, and to keep the total quantity ordered at any one time well below the recognized fatal dose. Again, the prescription by rule of thumb of barbiturates in combination with coal-tar analgesics such as amidopyrine seems open to objection. Sir Maurice Craig has long held that whereas some doctors prescribe hypnotics before they are really necessary, at least as much harm is done by not giving hypnotics early enough. At the Brighton Meeting of the British Medical Association in 1913 he mentioned four abuses of these drugs: (1) the prescribing of hypnotics by patients themselves, (2) the use of the wrong class of drugs; (3) the increase of the dose to a poisonous extent in the endeavour to obtain sleep when the usual medicinal dose has proved ineffective; (4) leaving a patient on some hypnotic night after night without bearing in mind the effect that the drug might be having on the patient. A very large number of new derivatives of barbitone have been discovered since then and placed on the market, and they are now perhaps the most commonly used of all drugs for sleeplessness. The sales of, for example, medinal (sodium barbitone) and of dial (diallyl barbituric acid) must be enormous. Though a great deal has been learnt about hypnotics in general and barbiturates in particular during the past twenty years, we doubt whether Sir Maurice Craig's four "don'ts" need much amendment to-day.

¹ *British Medical Journal*, December 30th, 1933, p. 1213.

DISSECTING ANEURYSM

The current theory of the causation of dissecting aneurysm as found in even the best textbooks on pathology, which refers the condition mainly to external violence or atheroma, is very far from the truth. The matter has recently been examined thoroughly by Professor Theodore Shennan of Aberdeen, the results of his investigations appearing in a monograph on dissecting aneurysm included by the Medical Research Council in its Special Report Series.¹ Professor Shennan has personally examined twenty-eight cases and has analysed nearly three hundred from the literature, and as regards the above-named factors he finds that they seldom figure in the aetiology. External violence tends to produce complete, rather than incomplete, rupture of the vessel wall, and it can be excluded in the great majority of cases of dissecting aneurysm; it is mentioned in a few cases only. As regards atheroma, this, being a relatively common condition, is often found associated with dissecting aneurysm, but in only six out of 218 cases of recent rupture with dissection has this been definitely attributed to it. It is generally accepted that syphilitic aortitis is a less frequent cause of dissecting than of sacular aneurysms, and Professor Shennan's figures confirm this view; he gives 10 per cent. as the maximum incidence, although the diagnosis in some of the cases appears to be doubtful. The most important predisposing factors in the production of dissecting aneurysm are, according to the author's observations, primary degenerations of the middle coat of the aorta. These are known to occur as the result of various toxic conditions, among which are mentioned gout, diabetes, typhoid fever, diphtheria, scarlet fever, measles, influenza, and other infections. They include fatty and atrophic changes in the muscle, frequently with complete disappearance of the fibres in small areas of the wall; hyaline and mucoid degeneration of the connective tissue; swelling, varicosity, and fragmentation of the elastic laminae, and the development of "faults" in the middle coat. Weakening of the vessel wall by these changes may be of such a degree that rupture occurs under the influence of apparently normal blood pressure, as when it happens during sleep. The author's analysis shows, however, that in the majority of cases the direct cause of rupture is some actual physical strain, such as occurs in severe muscular exertion, hurrying to appointments, defaecation, mounting stairs, even slight strains such as sitting up in bed. In four cases the rupture occurred in a fit of passion, and five cases were epileptic. The degenerations are mostly generalized throughout the vessel, and consequently the prevalence of the ascending aorta as the usual site of rupture would appear to be determined mainly by mechanical factors. The author believes that the abrupt diastolic recoil meeting the resistance of the closed aortic valve is of greater importance as a factor in producing the primary tear than an increased systolic blood pressure. Professor Shennan's monograph is not confined to the matters referred to above, but deals with the subject of dissecting aneurysm in all its aspects, including the symptoms and clinical signs, and it will be of much value not only to pathologists, but also to clinicians who may encounter the condition during life.

VITAMIN C IN ARCTIC BERRIES

Professor Göthlin of the University of Upsala has recently reported² the results of an extensive research into the antiscorbutic properties of Arctic berries. Scurvy is a definite menace in northern latitudes, owing to the long period during which local supplies of green vegetables and fruits are unobtainable. In the eighteenth century scurvy was a common complaint in Scotland at the end of each winter, and it apparently still constitutes a problem in the northern parts of Sweden. The genesis of the present investigation was the report from physicians in the Norrland district that diets deficient in vitamins probably accounted for the undue frequency of certain diseases. Göthlin concluded that nearly 20 per cent. of the school children in certain districts suffered from vitamin C deficiency in the early spring. Searching for the possible local sources of antiscorbutics, he found that black currants, raspberries, and cloudbberries were all effective antiscorbutics, and that a considerable proportion of their activity was retained when they were preserved. Cloudberry juice in particular was found to be nearly as effective an antiscorbutic as orange juice. Other berries were much less potent; for example, whortleberries were found to have very little antiscorbutic action. The cloudberry plant (*Rubus chamaemorus*) grows in this country, but it is not well known, for it is only common in the Highlands at levels above 2,000 feet. Apparently it grows abundantly in certain areas in the Norrland, and Göthlin suggests that the picking and preserving of cloudbberries ought to be organized in order to provide an adequate local supply of antiscorbutics, which would save the cost of importing oranges.

CHILD GUIDANCE IN AMERICA

The child guidance movement began in America, and its development in that country will largely influence its development here. The position of the child guidance clinic in the United States is at present, according to Dr. D. N. Hardcastle,³ not at all clear-cut. Its work is somewhat nebulous, and is undergoing constant and rapid change. The lines of approach and goals of treatment are by no means stabilized, the focus of attention shifting from the child itself to the environment, and in the environment from the school to the parents, according to the way of thinking of the clinic in question. This way of thinking may itself change completely in a comparatively short time. In order to gather some information on the probable direction of child guidance work in the future Dr. Hardcastle circulated a questionnaire to twelve representative American clinics. His first question dealt with the services which the general practitioner can render to the clinic. The majority of replies complained that the general practitioner's lack of psychiatric education makes him unable to co-operate, but five clinics out of twelve report favourably on his sending of cases to the clinic and his value in looking after the physical side of the patients. Three clinics consider that, when adequately trained, he should treat the bulk of the patients who now come to the clinic; and one clinic records the close, all-round co-operation of

¹ No. 149. London: H.M. Stationery Office, 1934. (2s. 6d. net.)

² *Acta Med. Scand.*, 1933, Supplementum 53.
³ *Brit. Journ. Med. Psychol.*, 1933, xiii, 328.

medical practitioners. On the other hand, another clinic regards itself as in opposition to the medical practitioners, and three comment on the interest and co-operation of paediatricians in contradistinction to the apathy of the family doctors. Eleven clinics state that cases should be referred from all sources and not only medical ones; three stress the importance of medical references, and two will not treat cases until the general practitioner in charge has been informed and has given permission. In reply to Dr. Hardcastle's suggested criticism that the child is subjected to such a team of people that he becomes merely the hub of the complicated machinery of the clinic, eight clinics emphasize the very close personal contact which the child has with the psychiatrist, a closer contact than is obtained under any other conditions of medical treatment, for the parents are not involved, being dealt with by the social worker. Four replies consider that with the younger group of children the parents should often be the central point in treatment, the child's behaviour being regarded, until treatment has reached a certain point, as purely symptomatic. The typical reply concerning the aim of the clinic is that in the first place an attempt is made to evaluate the child's difficulties as within the child and as purely environmental, or as a combination of both. The general aim of treatment is to create in the clinic such a relationship with child and parents as to enable them freely to bring up the problems bothering them and to get a clear idea of their feelings about these and each other. The clinic will then make some attempt to remedy environmental defects and to give the school a better understanding of the situation. Correction follows rather as the outcome of this clarification of feelings and attitudes than as a result of success in attaining a specific goal. The technique employed is chiefly that which will suit the child; full use is made of psycho-analytic knowledge, but psycho-analysis is only practised by one clinic on a small group of selected children. All the facilities available at the clinic are employed to create a friendly feeling with the child. Play is used wherever possible with the younger group, and free conversation with the older group. Question and answer and re-education methods form part of the treatment. The director of a large clinic, who had the opportunity of criticizing these replies, declared to Dr. Hardcastle that the more progressive clinics had evolved a much more flexible and elastic approach during the last year or so. His own clinic was more and more tending to simplify its treatment and avoid unnecessary multiplicity of contacts with clinic workers, the team approach only being used when a full investigation could help that treatment. He strongly deprecated the attitude that any contact with the patient had to take a definite form in order to fit in with the set clinic procedure, and that clinic workers should have to conform, in dealing with the situation, to recognized clinic machinery. He also said that a much freer attitude towards treatment had been developed: after the first interview, when the patient had been shown what the clinic could offer, the responsibility for having treatment or not was shifted wherever possible to the parent. Patients should, he said, be encouraged to attend the clinic rather than be visited by the social worker in their homes.

PROGRESS WITH HEARING AIDS

In recent years, as Mr. Douglas G. Carruthers indicates in an interesting article,¹ a great effort has been made to put artificial hearing aids on a more scientific basis. The otologist, finding the difficulties of this task beyond his unaided powers, has invited the co-operation of the engineer, the physiologist, and others. The result of their combined efforts has thrown a new light on the question of hearing aids, and it is now possible to prescribe an apparatus which coincides in performance curve with the patient's hearing loss at varying frequencies as measured by an audiometric test. Coincidentally with this, the National Institute for the Deaf, under whose auspices much of the work has proceeded, has been active in its own endeavours to protect the public from falling victims to the vendors of some of the advertised hearing aids on the market. Mr. Carruthers mentions the work done in the Department of Industrial Physiology of the London School of Hygiene and Tropical Medicine on hard and soft carbons, and refers to this as only a rudimentary advance. Out of these early experiments, however, great progress has been made. Much attention has been given to the production of suitable carbons—a matter of considerable difficulty and importance—and investigators are now concentrating on hard, medium, and soft carbons, both large and small, which, when used in conjunction with receiver diaphragms of a correct residual frequency, may be found to yield the response peaks most nearly suitable to a patient's audiometric response curve. The General Post Office Research Laboratories have played an important part in determining these response curves, and it is now possible to define the frequencies picked up and amplified by various instruments as a guide to prescription. There is still much more work to be done along these lines, and room for further improvement. In other laboratories investigations are being conducted with wireless equipment, etc. Carbons are not used here, but valves, special tone control transformers, volume control, etc., are the rule, and the loud-speaker becomes the microphone when used as a deaf aid. These instruments give a clear and powerful reproduction, but are naturally not portable. An effort is being made by certain investigators working upon this class of instrument to overcome this problem, and to produce a portable instrument which gives an equally good reproduction. We understand that the difficulties are on the point of solution, in which case a very notable advance will have been made. All these instruments find their greatest usefulness in cases of deafness with a sound nerve. When the nerve is affected, the most suitable form of aid still seems to be the mechanical—for example, speaking-tube, trumpet, etc.—while lip-reading will of course always hold its place as the greatest aid the deaf can have. With regard to re-educational methods, though some otologists claim excellent results from the use of the electrophonoid of Zünd-Burguet, others give less encouraging reports, stating that while nearly all types of deafness improve to a greater or less degree—including cases of nerve deafness—the vast majority of them fall back and lose within a few months most

¹ *Med. Journ. Australia*, 1933, ii, 342.

and in some instances all, of what they have gained, a second course of treatment being as a rule not so effective as the first. It is comforting, however, to reflect that at last the question of artificial aids to hearing is engaging the serious attention of otologists and workers in pure and applied science, and to hope that the points so ably brought out by Mr. Carruthers as demanding the consideration of these investigators are now actually being dealt with.

LEAD IN CANNED SARDINES

A recent investigation on the occurrence of lead in canned sardines¹ provides an interesting example of an unusual form of food contamination. The chemical laboratories of Messrs. Lyons and Co. carry out routine examinations for metallic impurities on all foods which have been in contact with solder. Such analyses in respect of sardines showed that 88 per cent. of the samples contained less than 20 parts per million of lead, but that the remainder yielded larger quantities, and in one case 150 parts per million of lead were found. Examination of the tins revealed no obvious relation between the amount of exposed solder and the lead contamination. On investigation of the process of sardine packing it was found that the fish were cooked on metal grills, which were supposed to be made of tinned iron but which in some factories were in reality covered with soft solder. It was observed that contact of the fish with such grills resulted in a serious contamination with lead. The maximum daily quantity of sardines that anyone is likely to consume is so small that lead poisoning from this cause would be a great rarity, but the investigation is of interest because it illustrates the unexpected channels through which food contamination may occur.

NUTRITIONAL NIGHT-BLINDNESS

Drs. Wilbur and Eusterman² of the Mayo Clinic record a most unusual case of night-blindness due to short circuit of the intestines. They remark that hemeralopia was recognized in the time of Hippocrates, and that liver or liver and honey was a cure for it. Recent experimental work has demonstrated that the symptom may be produced by faulty nutrition, particularly deficiency in vitamin A. Although functional hemeralopia is not uncommon in the Orient and some European countries, it is thought to be extremely rare in the United States. The patient was a man aged 48, a civil engineer. In 1904 he had symptoms of duodenal ulcer for which gastro-enterostomy was performed at the Clinic in 1919. In 1929 he had symptoms of jejunal ulceration, and two years later a gastrocolic fistula appeared. From 1931 to 1932 he had a good diet, but he suffered from diarrhoea, passing daily many liquid stools. On admission in 1933 he was in a cachectic state. The gastrocolic fistula was repaired, and all the symptoms ceased. The night-blindness began early in 1932. He noticed that the street lamps were yellow and dim, and being an engineer he blamed the local power plant, until he discovered the fault in his own eyes. He saw well in daylight, but at dusk he tumbled over things, ran into people, and fell down steps. His power of

light adaptation was very slow. The attacks were periodic, lasting from two to ten days, at intervals of one to four weeks. Since the repair of the fistula there has been no recurrence of the night-blindness. Nutritional night-blindness depends on a disturbance in the metabolism of the visual purple of the retinal red cells. In bright light the purple is bleached, but it is constantly being regenerated. Experiments have revealed a close relation between vitamin A and the visual purple. Friderica and others have demonstrated that there is a delay or failure of regeneration of the purple of animals deprived of vitamin A. Also Yudkin and others have shown that hog's retina has a high vitamin A content. It is thought that there may be a reversible reaction—vitamin A being needed for the production of the visual purple and the latter, under suitable conditions, producing vitamin A.

STANDING ADVISORY COMMITTEE ON PUBLIC HEALTH

The standing advisory committee which the Minister of Health proposes to set up to assist him in public health matters will consist of three representatives of the County Councils Association (the body which made the suggestion that such a committee should be appointed) and of the Association of Municipal Corporations, two of the London County Council, of the Urban District Councils Association, and of the Rural District Councils Association, and one of the Metropolitan Boroughs' Standing Joint Committee. The London County Council proposes to appoint as its representatives the chairman of its central Public Health Committee and its medical officer of health for the time being. The reference of the committee is: "To advise the Minister on any question of policy or administration affecting the public health services in England and Wales which may be referred to the committee by the Minister." The Permanent Secretary to the Ministry will act as chairman of the committee.

TREATMENT OF ADDISON'S DISEASE

The Therapeutic Trials Committee of the Medical Research Council is arranging an inquiry into the value of extracts of suprarenal cortex in the treatment of Addison's disease. The work will be done on the committee's behalf by Professor T. R. Elliott (University College Hospital, London), Dr. Robert Hutchison and Dr. S. Levy Simpson (London Hospital), Dr. J. F. Wilkinson (Royal Infirmary, Manchester), and Professor D. Murray Lyon (Royal Infirmary, Edinburgh). As it is desired to admit to these hospitals sufficient patients for the inquiry as soon as possible, the committee would be very grateful if consultants and practitioners having suitable cases of Addison's disease under their care would communicate with one or other of the physicians named above.

We regret to announce the death of Dr. A. H. N. Lewers, F.R.C.P., consulting obstetric physician to the London Hospital, and author of the well-known textbook on diseases of women which went through seven editions. We have to announce also the death of Mr. J. F. Dobson, F.R.C.S., who retired last October from the chair of surgery in the University of Leeds.

¹ *The Analyst*, 1933, lviii, 733.

² *Proc. Staff Meetings Mayo Clinic*, 1933, ix, 457.

MARIE CURIE HOSPITAL

NEW X-RAY DEPARTMENT

The Duchess of York opened last week the new x-ray therapy department of the Marie Curie Hospital, Fitzjohn's Avenue, Hampstead. Her Royal Highness was welcomed to the borough by the Mayor of Hampstead, and to the institution by the Marquess of Reading and by Miss Maude Chadburn, the chairman of the Cancer Research Committee of the hospital. The French Ambassador and the Polish Minister were present, and Dr. Henry Coutard brought the congratulations of Professor Regaud, and of the Fondation Curie, Institut du Radium, l'Université de Paris. Miss CHADBURN reminded the company that during the last few years, the results having been tested by time, the importance of x-ray therapy had become more generally acknowledged. The Marie Curie Hospital had been working with radium with encouraging results—nearly every case taken in hand had been relieved, and it was hoped that a number had been cured, although that word was used with a proper hesitation until a sufficient number of years had elapsed without recurrence. The medical staff of the hospital, however, had increasingly felt that their results would be improved if the hospital could obtain a deep therapy x-ray plant to supplement the action of radium. The x rays would act in a similar manner to radium, but upon tissues which radium could not well reach. The opportunity arose of acquiring a house next door to the hospital, and here an apparatus had been installed which received the approval of the experts who had examined it. It was not always realized how costly such provision was—for example, the special windows in the cubicles for x-ray treatment cost £5 per square foot. The cost of the plant had been met by special gifts and bequests, but the maintenance of the new department, which included a ward for six patients and three single rooms for private patients, would add £2,000 a year to the maintenance cost of the hospital; and to find the means for pursuing the work had always been a problem since this medical women's venture was started. The MARQUESS OF READING added a few words testifying to the pride of those concerned at what had so far been accomplished at the Marie Curie Hospital. It was started originally as a clinic in 1925 by the London Association of the Medical Women's Federation, and later became a hospital; it had already treated over 2,000 cases of cancer in women with marked success. The Duchess of York then declared the department open, and made an inspection of it. An expression of thanks to Her Royal Highness on behalf of the committee of management was conveyed by Mrs. WALTER RUNCIMAN.

X-RAY THERAPY OF CANCER

Miss HURDON took the chair at a special meeting organized by the medical committee of the Marie Curie Hospital on February 15th. Dr. COUTARD, who had come over to represent the Fondation Curie, Paris, at the opening of the new x-ray department at the hospital, delivered a lecture on principles of x-ray treatment of malignant disease.

Dr. Coutard said that he would consider first some results, secondly the technique, and lastly some general principles. Certain cases could undoubtedly be cured. His figures for the years 1921-6 revealed that 17 per cent. of forty-five patients with lymphosarcoma of the mouth and tongue had been alive and well after seven years; of forty-six patients with epithelioma of the tonsil and soft palate 28 per cent. had been alive after five years and 17 per cent. after seven years. The extra two years made little difference to cases of epithelioma of the larynx, as the figures for five- and seven-year survival in seventy-seven cases were 28 and 27 per cent. respectively. Some years would show much lower figures than the average and some would show higher.

Dr. Coutard said that he used constant potential machines with a voltage of 180 to 200 kV, a current of 4 mA, and a distance of 50 to 60 cm. through a filter of 2 mm. zinc, 3 mm. aluminium, and 1 cm. wood. The

depth dose for radio-sensitive tumours measured from 3,000 to 4,000 r, and for radio-resistant tumours from 4,000 to 5,000 r or possibly more. The biological results were radio-epithelitis and radio-epidermatitis in the mucous membrane and skin respectively, and these were exactly measured. The mucous membrane showed a complete destruction of the germinal layers and the appearance of a false membrane some thirteen or fourteen days after the first dose; this lesion was healed by the twenty-sixth day. The skin damage involved loss of the surface layers and denudation of the dermis; it appeared just as the mucous membrane lesion disappeared, and healed fifteen days later. To get the reaction in this form the dose must be spread over about fourteen days, two daily sessions of an hour being given. If a shorter time were taken over the same dose both skin and mucosal reactions appeared later and lasted longer, and the connective tissue might be involved. If the period were prolonged, for example to eighteen days, the reactions were much reduced in amount and delayed in appearance. Repair should be completed in the skin in about a fortnight, and there should be no scar. The radiologist might anticipate a good healing if the edges of the denuded area showed advancing islands of epithelial cells. There was an optimum dose for each variety of growth. If the dose was increased beyond a certain point the results got worse and not better. Two important factors were involved: the quantity of the dose and the duration of the treatment. For radio-sensitive undifferentiated tumours, such as lymphosarcoma, the important element was the quantity, the duration being of less significance. The ideal length of treatment was one which would conserve the normal cells, but it was not known. The duration was more important than the quantity when the growth was radio-resistant—for example, gland epithelioma or adenocarcinoma. The dose must not be given in less than thirty days, and the period might be extended up to seventy days in breast cancer. The results were generally good if the total dose was divided into small daily applications of 200 to 300 r each. Cancer could be cured by x rays, but the treatment was very difficult and still dangerous. The patients should be examined daily in order that the dose might be modified if normal tissues were showing signs of damage.

Ireland

Royal College of Surgeons: Charter Day Dinner

At the one hundred and fiftieth Charter Day dinner at the Royal College of Surgeons in Ireland, Mr. Frank Crawley, the president, reminded his audience that at last year's dinner he had expressed the opinion that in the larger towns—for example, in Cork, Galway, and Dublin—there should be an amalgamation or federation of hospitals; for it was generally admitted that the economic unit for a hospital was one of 500 beds. In Dublin most of the hospitals had from 120 to 160 beds; if the three hospitals of 160 beds were amalgamated or made into a federation they would approach the economic unit of 500 beds. When contemplating any new hospital building, Mr. Crawley continued, they must recognize the necessity for more private beds. There could be no doubt but that the general public was awake to the fact that it was a wise thing to go where all the complicated machines necessary to modern medicine were likely to be found, together with the men who could work them. It was impossible, even if the sweepstakes continued to flourish, to contemplate the equipment of each small hospital as it should be equipped and staffed. They could therefore amalgamate or federate, and in his opinion amalgamation was the better way. The tendency of modern medicine was towards team work. Rumour, ever a lying jade, had it that throughout the twenty-six counties many small hospitals were to be built, each presumably with one or two

medical men attached. If this proved to be the case then the progress of medical science in Ireland would be put back fifty years. And worse, the treatment of the patients would be ineffective in many cases. He knew many excellent physicians and surgeons in the smaller towns in Ireland, and these towns could be thankful that they had such able members of the medical profession to look after the sick. But no one, having regard to the trend of modern medicine, the expensive mechanical equipment of an up-to-date hospital, and the large number of trained medical men and assistants that were necessary properly to carry out the team work, could hope to equip and staff a hospital in a small country town so as to fulfil the standard of a modern hospital. He hoped that there would always be the general medical practitioner, by whom nine-tenths of the medical cases could be efficiently dealt with, but if the general practitioner had to call in outside assistance he would need to have it as full and as free as possible. If there were to be small hospitals scattered over the country, they should be of the cottage hospital type. Continuing, Mr. Crawley said that the slums filled the hospitals. He knew that the corporation, under the enthusiastic guidance of the Lord Mayor, was making strenuous efforts to get rid of the slums. But it occurred to him that it was very little use to build new, clean houses, and put into them tenants who for generations had contracted insanitary habits. In truth, they had never had a chance of contracting any other habits. The Dutch were building what were called half-way houses, which were allocated to the inhabitants of the worst slums. After a time, when those inhabitants had shown that they could appreciate a more luxurious home, and when their behaviour warranted it, they were moved to a better-class house.

History of St. Vincent's Hospital

On January 23rd, 1834, Mary Aikenhead, of the Order of the Sisters of Charity, opened a hospital at St. Stephen's Green, Dublin, the first in these islands to be organized and staffed by women. Dr. Joseph M. O'Ferrall, single-handed, undertook the care of the patients and the teaching of the sisters, and was the first in a long chain of medical and nursing comradeship within its walls. To commemorate its founding a hundred years ago a handsome volume entitled *A Century of Service* has been compiled, the publishers being Browne and Nolan, Ltd. The story of the institution is told by a variety of authors, and with a personal touch which is often lacking from such histories. In this way the outstanding events are described rather as seen through the eyes of those immediately concerned, and the freshness of the narrative is heightened by excellent illustrations of the past and present buildings. D'Alton Williams, then medical student and poet, gave his services freely in the early days. At first an out-patient institution solely, in 1835 a ward was opened with twelve beds for female patients, the medical staff consisting of Dr. O'Ferrall, then surgeon to Dublin's Maison de Santé, who had already attracted attention by reason of his publication on "phlegmonous tumours in the right iliac region"—a precursor of appendicitis. He was a most active member of the Pathological Society, founded in 1837, and a forerunner of the Royal Academy of Medicine in Ireland. Until his death in 1859, O'Ferrall laboured for St. Vincent's Hospital, which by 1860 had grown to eighty beds, new wards having been opened for men and children. Something of his influence is discernible in the fact that the earliest reference to the equipment of a laboratory is to be found in the minutes of the medical board in 1872, where there is a note about the proposed extension of one already established. The first appearance of a whole-time pathologist was in 1906, and succeeding years saw rapid advances in technique and

equipment, until now it is again being found necessary to make provision for better laboratory accommodation. St. Vincent's Hospital to-day contains seven ward units with nineteen to thirty beds each, and never a bed unoccupied. Of the patients, 65 per cent. are treated without charge, and not more than 10 per cent. of the remainder pay the whole cost. Private wards (St. Anthony's) cater for paying patients, and there are also private homes, all of these being now worked as distinct economic units. In a sense the foundation of the nursing school preceded that of the hospital, for Mother Aikenhead had arranged for the first nurses to be trained in Paris before its opening. That there was something exceptional in the nursing atmosphere is shown by an application from Florence Nightingale for leave to spend three months in its wards. In 1894 the modern system of training secular nurses was introduced, and the nursing school of the present day was inaugurated. Medical students were catered for from the earliest days, and the report contains some amusing reminiscences. *A Century of Service* tells in a series of biographies and personal recollections how a renowned Dublin hospital came into being to meet a great need in a community oppressed by poverty and misery, and evolved with changing times to adapt itself to new opportunities for its work of mercy.

Central Midwives Board

The period of office of the Central Midwives Board for the Irish Free State having expired, the Board has been constituted to function as from February 1st under an Order issued by the Minister for Local Government and Public Health. The following members have been appointed: Dr. J. J. O'Kelly, Mr. M. Stafford, and Senator Kathleen Clarke (appointed by the Minister for Local Government and Public Health); Sir Edward Coey Bigger, M.D., Dr. J. J. Kearney, Dr. Thomas Hennessy, and Sir William J. Smyly, M.D. (elected by registered medical practitioners resident in the Free State); Miss A. Smithson, Miss N. Healey, Mrs. Martin, and Mrs. Margaret Price (appointed by the Minister for Local Government and Public Health after consultation with nursing Associations).

Local Services (Temporary Economies) Bill

Resolutions have been passed by medical practitioners in the county administrative areas protesting against the provisions in the Local Services (Temporary Economies) No. 2 Bill, 1933, for "cuts" in the salaries of medical officers and other officials in the service of local authorities. Many local authorities have also protested against the Bill on the grounds that in some instances the salaries are already on the small side, in others they are quite inadequate, and that, in the circumstances, a reduction would create such dissatisfaction in the services as to interfere with efficiency.

Medical Certificates for School Children

At the last meeting of Cushendall School Attendance Subcommittee the school attendance officer stated that the bad attendance during January was due to an epidemic of influenza colds in the district. While he was satisfied that this was the cause, many of the parents were unable to produce medical certificates in support. The clerk to the subcommittee stated that parents refused to obtain a certificate because it cost them 3s. 6d. Discussing this question of medical certificates for school children, a member of the committee said that no one could blame doctors for refusing to give such certificates free. Doctors had a right to their fees. He thought, however, that some arrangements could be made with the medical profession for the provision of free medical certification in deserving cases, and he

proposed that the committee should call upon the Ministry to take steps in the matter. The figures showing the number of children absent through illness during January were startling, and yet they had not a single proof that the children were actually ill. The percentage attendance returns for the various schools in the district during 1933 were as follows: Culraney, 81.2; Parkmore, 87.5; Kilmore, 83.6; Layde, 85.5; Glendun, 86.9; Ballyeamon, 85; Glennan, 75.6; Cushendall, 84.1; Knocknacarry—girls 76.9, boys 81.2.

Scotland

Glasgow Royal Infirmary

At the annual meeting of contributors to the Glasgow Royal Infirmary Sir James Macfarlane, who presided, said that demands upon the services of the hospital were still increasing, especially in the out-patient department, where the average number of attendances now amounted to 7,642 per week. The managers proposed to rebuild the out-patient department and the ophthalmic institution upon a new site, as additional accommodation was urgently required for both. It was stated that there had been a deficit of £6,343 on the past year's work, the ordinary expenditure having been £110,100, an increase of £1,500 over the figure for 1932. The expenses, excluding those of the out-patient department, had worked out at 7s. 6d. per patient per day. Principal Sir Robert Rait said that the difficult times of the past few years had inevitably led to a decrease in contributions; he believed, however, that they were entering upon better times, and that citizens would recognize their increased responsibilities in respect of those advances in medical and other sciences which cost the Royal Infirmary a large amount of money. Sir Ernest Morris, formerly house governor to the London Hospital, said that the duties of a medical staff were threefold: first, to bring about the recovery of the patients in the hospital or out-patient department; secondly, to make a study of disease; and thirdly, to teach so that knowledge might be passed on to the doctors and nurses of the future. There were 350 nurses in this Infirmary, which was recognized as one of the best training schools in the country.

Elsie Inglis Memorial Hospital

At the annual meeting of the Edinburgh Hospital and Dispensary for Women and Children, and the Elsie Inglis Memorial Maternity Hospital, Lady Ruth Balfour, M.B., who presided, said that a new ante-natal department was about to be started. The report showed that the expenditure on the hospital for the past year had been £7,254, but there had been a deficit of £2,004 at the end of the year. The total number of cases treated in the maternity hospital had been 1,376 as compared with 1,335 in the previous year, and among these had been 372 abnormal cases. The chairman referred to some valuable research work which had been done at the hospital during the past three years. It was known that the largest single cause of death in childbirth was sepsis, due chiefly to a haemolytic streptococcus, and in the Elsie Inglis Hospital investigation had been carried out to elaborate a system of isolation which should prevent this. The work had been increasingly successful until, in the year under review, there had not been a single case of fever due to this organism. The method consisted in examining every patient during ante-natal treatment, and every member of the staff once a month for this organism. Patients who were found to be free were isolated. Last year 17,000 bacteriological examinations were carried

out. Professor Sydney Smith said the practical application of this research work, which had almost eliminated maternal pyrexia, had been startling. In Scotland generally maternal mortality had risen last year to about 8 per 1,000, while in the Elsie Inglis Hospital it was 2.18. Miss Gertrude Herzfeld gave details of the work at Bruntsfield Hospital, where there had been an increase in both medical and surgical cases. A post-graduate course would now enable six or eight women doctors together to have a fortnight's whole-time course between the two hospitals. There were posts for twelve resident women graduates in the hospitals each year.

Doctors' Prescriptions

An address on "Pharmaceutical Sidelights from the National Health Insurance Central Checking Bureau" was delivered by Mr. A. B. Gilmour, on February 16th, at a meeting held in Edinburgh of the North British Branch of the Pharmaceutical Society of Great Britain. Mr. Gilmour said that the National Health Insurance Act had given to the insured person, among other things, free choice of chemist, and this had removed the objectionable arrangement of code prescriptions, by which doctors sometimes reserved the dispensing of their prescriptions to a particular chemist. A further advantage was that in the case of national health insurance prescriptions there were no bad debts, but a regular monthly payment to the chemists, under the supervision of the Central Checking Bureau. With a staff of fifty persons this bureau in Glasgow last year dealt with 3,700,000 prescription forms. Mr. Gilmour gave some amusing examples of difficulties that had arisen. In one case an assistant medical practitioner, after inserting the name of his principal in the place reserved for the signature, had added his own name, and his illegible signature had caused the dispensing of a porous belladonna plaster. In another, a doctor practising in a working-class district issued a prescription for a four-pound jar of malt and cod-liver oil whenever he called at a house where there were children. The object of this was disclosed when a woman asked the chemist if she might have the malt without the cod-liver oil, as it was nicer on the children's bread-and-butter. As the children were not insured persons this could hardly be regarded as proper and sufficient medicine for the person for whom it was prescribed. Supervision, Mr. Gilmour continued, was also employed to control the prescribing of medicines in extravagant quantities, as in one case where there had been a prescription for one gallon of liquid paraffin, a supply sufficient for half a year in tablespoonful doses. As evidence, however, that the cost of medicines was never allowed to restrict the supply necessary for treatment of an insured sick person, he gave two examples. In one case during a period of eight and a half years 7½ cwt. of boric acid ointment had been supplied at a cost of £113, and in another an insured diabetic in three and a half years had received insulin and other medicines at a total cost of £236.

Central Midwives Board

The examinations of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, have just concluded, with the following results. Out of 127 candidates who appeared for the examination 115 passed. Of the successful candidates twenty-three were trained at the Royal Maternity Hospital, eleven at the Elsie Inglis Memorial Hospital, and one at the Deaconess Hospital, Edinburgh; twenty-nine at the Royal Maternity Hospital, Glasgow; nine at Stobhill General Hospital; one at the Eastern District Hospital; seven at Govan Maternity Hospital; eleven at

Bellshill Maternity Hospital; three at Motherwell Maternity Hospital; three at Barshaw Hospital, Paisley; four at the Maternity Department, Royal Infirmary, Dundee; five at the Maternity Hospital, Aberdeen; three at the Royal Infirmary, Perth; three at the Royal Infirmary, Stirling, and the remainder at various recognized institutions.

England and Wales

Joint Tuberculosis Council

The winter meeting of the Joint Tuberculosis Council was held in London on Saturday, February 17th, and the members, together with a number of workers in allied fields, were afterwards entertained to luncheon by the chairman, Dr. G. Lissant Cox, at the Hotel Russell. Proposing the health of his guests, the chairman expressed regret at the absence of Miss Olga Nethersole, founder of the People's League of Health, and particularly welcomed Lord Dawson of Penn, who, he said, had not only survived a three-hours' talk with twenty tuberculosis experts in his own house, but had led them in the end to a unanimous decision. Lord Dawson, in an informal acknowledgement of the toast, paid tribute to Miss Nethersole's disinterested pertinacity in a good cause, and mentioned that the Royal College of Physicians had now before it the task of administering the Propit bequest for research in tuberculosis and in cancer. Sir Henry Gauvain, proposing the toast of the "Joint Tuberculosis Council," said that none of the visitors must imagine for a moment that this was merely a lunch club; it was a most important factor in the anti-tuberculosis campaign. Its members, representing many different aspects and interests, were united in their endeavours; they maintained contact with the general practitioner through the British Medical Association, with medical officers of health through their special society, with pathologists, surgeons, and administrators. They were very fortunate, he said, in their chairman, Dr. Lissant Cox, whose annual reports were masterpieces, and in still having Dr. Ernest Walker as their ideal honorary secretary. Dr. Ward, in his reply, cast a brief glance over the ten years of his secretaryship, and of the council's life, and offered some amusing reflections on the value of resource. Mr. G. S. Elliston, M.P., describing himself as a regular luncher with the society and one who had been associated with Sanatorium Benefit since its inception in 1912, proposed the health of the chairman. This was supported by Dr. Charles Porter, president of the Society of Medical Officers of Health, who said it was a rest for him to go among argumentative people, and by Dr. Jane Walker, who rounded off a sequence of light-hearted speeches with two good stories.

Society of Apothecaries

The Society of Apothecaries of London held a Livery Dinner on February 20th, with the Master, Dr. J. O. Wakelin Barratt, in the chair. In proposing the toast of "The Royal Colleges" Dr. Cecil Wall ably supported his reputation as historian of the Society. This year, he said, represented a triple centenary, for in 1634, 1734, and 1834 the Society of Apothecaries had been brought into contact, not always friendly, with the Royal College of Physicians of London. At the beginning of the seventeenth century the College, a small body of men, had tried to monopolize practice in London and to squash the apothecaries, who not only provided drugs, but gave advice as to their use. Towards the end of the seventeenth century the Apothecaries rented the Physic Garden at Chelsea, but this did not do much until it became the property of the Society through the munificence of Sir Hans Sloane, to whom the Society put up

a statue in the gardens in 1734. In 1834 Parliament inquired into the organization of the medical profession, and at this time the relations between the Apothecaries' Society and the two Royal Colleges was very close. Dr. Wall hoped that the amity between them would continue in the future. In a pleasant speech Sir Charlton Briscoe replied to the toast for the College of Physicians. The real foundation of the old dispute between the Apothecaries and the College of Physicians, he said, was that the Apothecaries of that day were a corrupt lot. Sir Holburt Waring, President of the Royal College of Surgeons, referred to the conference, at present sitting, on the reform of the medical curriculum. Although a report had not yet been drafted, he would make some anticipatory remarks on the matter. He favoured the selection of candidates on physical, mental, and moral grounds. Many men went in for medicine who had no aptitude or were unfitted for it. There should be some kind of vocational selection. We had, he said, gone too far in this country in making examinations everything and the training but little. There could be no skill before practice. Too much was learnt from books and too little from performance. He saw no reason why the curriculum should not be both shortened and lengthened. The elementary sciences might be taught in a more general way, with less detail, and greater attention to exact knowledge should be given in the later parts of the curriculum. In toasting "The Guests," Sir William Willcox, the Senior Warden, said that the Society of Apothecaries was a City company, and City companies excelled in hospitality, which they delighted to offer to their guests. The Society of Apothecaries had as its aim the encouragement of the general practitioner. Sir Francis Fremantle and Mr. G. A. Wathen, Master of the Mercers' Company, replied.

Infectious Diseases among Hop-pickers in Kent

The London County Council five years ago resolved that it was undesirable that London public health authorities should accept responsibility for cases of infectious disease occurring amongst persons who went to districts outside London for hop-picking, the question having been raised by various local authorities in Kent, who were supported by the Kent County Council. The view of the L.C.C. was that cases of infectious disease occurring in a district were the responsibility of the local sanitary authority, and there appeared to be no reason why any particular case of seasonal migration, such as hop-picking, should be exceptionally treated. The late Metropolitan Asylums Board at that time adopted the same attitude as the Council, though it realized that an outbreak of infectious disease among the population of an area largely augmented by temporary migrants might overtax local resources, and offered to assist by receiving suitable cases in its hospitals on the understanding that the authorities responsible would pay the cost incurred. Recently the attention of the Council has been called to two persons suffering from diphtheria who have been transferred from Kent to their home in St. Marylebone, one by ambulance and one by train, apparently with a view to their care becoming a matter for the London authorities. In a report of the borough medical officer of health it was indicated that this course followed some arrangement between the local medical officer of health concerned and the Council's medical officer of health. The St. Marylebone Borough Council has been informed that there is no foundation for the suggestion that the county medical officer was party to any such arrangement. The situation which has arisen, in the view of the Central Public Health Committee, is most serious. The transportation of patients to their homes and thence to hospital would cause delay in treatment which might be injurious to their health, and there

is also a risk to public health if they travel in public conveyances. The committee is proposing to ask the Minister of Health to consider the possibility and desirability of issuing regulations under Section 130 of the Public Health Act, 1875, to provide that the obligations of a local authority for the treatment of persons temporarily resident within their district, who were there found to be suffering from infectious disease, should be the same as for the treatment of persons who were inhabitants of the district. It is stated that after the hospitals of the Metropolitan Asylums Board passed under the Council's management the matter was again raised by the Kent County Council and other local authorities in Kent, and the Board's offer set out above was repeated, but was not accepted.

Moorfields Dinner

The annual dinner of past and present students of the Royal London Ophthalmic (Moorfields) Hospital took place at the Langham Hotel on February 8th. Mr. Elmore W. Brewerton, consulting surgeon to the Royal Westminster Ophthalmic Hospital, was in the chair, and the guests included Sir Holburt Waring, president of the Royal College of Surgeons, Surgeon Vice-Admiral Sir Reginald Bond, Lieut.-General Sir Harold Fawcus, Sir Harold Morris, Sir William Lister and Lady Lister, Professor Edward Mellanby, and Mr. Theodore Luling, chairman of the hospital. There were also present Sir John Parsons, Mr. R. Foster Moore, Mr. R. Affleck Greeves, Mr. Charles Goulden, dean of the medical school, and many other past and present students. In replying to the toast of the school, the dean stated that it was in a flourishing condition and there had been an increase in the number of students during the past year; that at the D.O.M.S. examination, of forty-four candidates from all sources thirty had been successful, of whom twenty-six had worked at Moorfields. At the D.O. examination of Oxford, of the six successful candidates four had worked at Moorfields. During the past year Mr. H. B. Stallard had joined the staff, and among the distinctions which had come to past students he mentioned Dr. Gordon Holmes's election as a Fellow of the Royal Society, Sir Stewart Duke-Elder's knighthood, and the K.C.V.O. bestowed upon Sir William Lister. Both Mr. Whiting and Mr. Goulden had delivered the Montgomery Lecture at the Royal College of Surgeons in Ireland at the invitation of the president and council. Mr. G. Black had been appointed ophthalmic surgeon to the Leeds Royal Infirmary. Mr. Stallard had been awarded the Gifford Edmonds prize, and that among the more senior past students Mr. Mayou had been elected president of the Ophthalmological Society and the dean had been appointed a member of the University of London Board of Advanced Medical Studies.

Testimonial to Dr. Mearns Fraser

The approaching retirement of Dr. A. Mearns Fraser from the post of medical officer of health for Portsmouth is to be the occasion of a testimonial, and an appeal for contributions, sponsored by prominent citizens, has appeared in the local press. Dr. Mearns Fraser has always been a most active member of the British Medical Association. As long ago as 1899 he was secretary for the Section of Public Health at the annual meeting at Portsmouth that year, and in 1923, when the Association again met at Portsmouth, he was president of the same Section. From June, 1925, to May, 1927, he was chairman of the Portsmouth Division, and both during his term of office and since he has shown unremitting zeal in arranging local functions on behalf of the Association's Charities Fund. Subscriptions to the testimonial may be sent to the secretary and treasurer, Mr. Ernest Edmonds, 70, Commercial Road, Portsmouth.

Reports of Societies

RADIO-DIAGNOSIS IN DISEASES OF CHILDREN

At a meeting of the Section of Radiology of the Royal Society of Medicine on February 16th, with Dr. R. S. PATERSON in the chair, a discussion was held on radio-diagnosis in diseases of children.

Dr. B. SMITH, speaking on conditions in the chest, said that, in children, one was concerned more with the lower two-thirds of the lung field than with the apices, which warranted on occasion a slightly different technique. A large number of cases came to Great Ormond Street Hospital from asthma clinics, and he demonstrated a table to illustrate the occurrence of lung damage in association with asthma. About one thousand cases had been investigated, and the statistics indicated that in the hereditary type only slight changes occurred in the lungs, whereas in the acquired type a large percentage showed lung damage, including basal fibrosis and bronchiectasis. In the early stage of tuberculous infection of the lung it was not possible from the radiographs alone to establish a positive diagnosis. With regard to mediastinal shadows, these caused much difficulty in interpretation, and it was quite impossible from the radiograph to decide the origin of a gland lesion in the mediastinum. In the absence of a biopsy, help might be afforded by means of radiotherapy, certain growths in the mediastinum responding rapidly to x-ray treatment, and disclosing their nature in that way.

Dr. C. G. TEALL mentioned certain bone dyscrasias of interest to the radiologist. In rickets, not only did the bones show signs of the development of the condition at an early stage in the disease, but at an equally early stage they gave radiological evidence of commencing healing. The anterior ends of the ribs would supply the earliest radiological evidence, but in practice the lower end of the forearm bones was examined. One of the signs of rickets, cupping at the bone end, was easily simulated by an incorrect position. Cupping was more pronounced in some bones than in others; it was well seen at the lower end of the radius and still better at the ulna, but not at the lower end of the humerus. As the condition progressed, changes occurred in the shaft of the bone. The bones had been described as looking like "ghosts of themselves." Another deficiency disease which concerned the radiologist was scurvy; here again the bone changes were diagnostic. The bones assumed what had been described as a "ground-glass" appearance. The changes were well seen at the lower end of the femur. In congenital syphilis the bone changes were osteochondritis, osteomyelitis—localized areas in the diaphyses—and periostitis, which might arise independently of the other lesions or in association with them. While in typical cases the diagnosis was quite evident, difficulty was sometimes experienced in distinguishing between rickets, scurvy, and congenital syphilis on the radio-diagnosis alone. In general, however, in congenital syphilis the bone changes were not only much more irregular than in rickets but much more irregularly distributed throughout the bones. Passing to certain other disturbances of the growth of bones in children, Dr. Teall mentioned achondroplasia. Here radiographs of the long bones sometimes revealed an apparent thickening of the shafts, but actually the thickening was normal for the age of the child, and it was the shortness which accounted for the abnormal impression. Chondrodysplasia gave rise to a much more varied picture, with irregular growth of the bone ends, curvatures and obliquity of the epiphyses, and unequal length of paired bones. Of osteosclerosis fragilis he had seen only one case in a children's hospital in fourteen years. In the affected parts there was no ordinary bone structure, but a dense sclerosis which was quite opaque to x rays; the areas of sclerosis tended to be towards the ends of the long bones. Another very rare condition of which he had seen only one example was the Schüller-Christian syndrome. Here the chief bone

changes were in the skull, which was affected by a kind of pressure atrophy. The appearance had been described as "map-like" and as "moth-eaten," and both descriptions were true. The bone defects were clear-cut, and the surrounding bone was normal. There were records now of about sixty cases.

Dr. N. B. CARON said that the children's physician owed a great debt of gratitude to the radiologist, because of the difficulties of paediatrics, the lack of symptomatology in many cases, and the occasional failure of the clinical examination to be a very thorough one. The physicians in Liverpool had the special advantage of working with the disciples of Thurstan Holland, whose skill and honesty had set an example which they followed very successfully. He agreed with Dr. Shires that the diagnosis of tuberculosis in its early stage was not possible in many cases by x-ray examination; it was of the greatest importance to take into account the history of the child's illness and the general appearance; to make a thorough examination, together with observations of the tuberculin reaction, particularly the intradermal reaction; and to search for organisms in the sputum or, if this was not obtainable, in the stomach washings. As to what the radiologist called evidence of an unresolved pneumonia—a small area of shadow—which often came as a great surprise to the clinician, he doubted very much whether these were pneumococcal areas. Very often in the history there was no clinical evidence of any attack of pneumonia, and when one followed the case up it happened that in about ten to fourteen days the shadow disappeared entirely. He believed that the shadow was due, not to the outpouring of exudate into the alveoli, but rather to small areas of collapse, and possibly in some cases to vascular changes such as congestion. Dr. WILFRED PEARSON appealed for closer co-operation, particularly in chest work, between the clinician and the radiologist. He found it still very difficult himself to learn about radiology in relation to clinical medicine, and that was specially obvious when he was trying to teach the student. In these days, when the tendency was to go to special methods first before examining cases, such co-ordination of clinical and radiological evidence became more important.

Dr. J. F. BRAILSFORD spoke of the radiological appearances in the Schüller-Christian syndrome, which, he thought, should be called Schüller's disease, Professor Artur Schüller having first described the condition and the characteristic skull lesion in 1915. The chondro-dystrophies, he thought, should be separated out, and as they were definite entities this could well be done. Achondroplasia had a distinct radiographic appearance. The shortening of different bones showed perplexing variations. He had recently seen a case of achondroplasia in which the shortening was confined to the extremities; but whereas in ordinary achondroplasia the fibula was longer than the tibia, in two cases in a family of eight the fibula was only half the size of the tibia. In chondrosteodystrophy the dystrophy occurred in the growing bone, and consequently fragmentation and irregularity were seen, either in the epiphyses or in the end of the diaphyses. In some cases the epiphysis only was involved, the diaphysis exhibiting no changes; in others the reverse was the case. In multiple chondromata the clinical condition might point to a unilateral dystrophy, while radiologically there were lesions on both sides. A proportion of patients with multiple chondromata at the age of about 30 developed sarcomatous changes. In multiple exostoses a definite bony protuberance was observed from the extremities of the diaphyses, not from the epiphyses. In hyperthyroidism the changes were such as might simulate those of osteochondritis. Dr. G. VILVANDRÉ considered that there was no justification for making a definite diagnosis of such a disease as hyperthyroidism on x-ray evidence of the bones only. Far more important was the investigation of the blood calcium. Some cases were typical, but many were marginal.

Dr. S. VERE PEARSON suggested that where tuberculosis was suspected in a child it might be well to take two or three films at the same time. It was desirable to have

the more highly penetrating rays in order to bring out the signs of hilar disease, and also desirable to take separate radiographs for the investigation of small and early lesions in the lungs. Very often the oblique—especially the right anterior oblique—positions would be helpful. Dr. TEALL suggested that another discussion should be held on diseases to which at present it had not been possible to put a name. The only thing to do with the bone dyscrasias was to make a broad classification; otherwise there might be a multiplicity of descriptions to each of which was attached the name of some individual.

RADIUM TREATMENT OF CANCER

At a meeting of the Liverpool Medical Institution on February 8th, with the president, Dr. J. MURRAY BUGH, in the chair, Mr. G. C. E. SIMPSON opened a discussion on *radium in the treatment of cancer*.

In an account of the cases of cancer of the breast treated under the auspices of the Liverpool Radium Committee in the last four years, he described the methods of interstitial and superficial radium treatment. The dosage, he said, had to be adjusted to each individual case, and there was need for careful observation. Radium treatment should entirely displace partial operation in the advanced cases, and should be used as an adjuvant to operation in the early or medium case. He hoped that in time a technique would be evolved that would replace radical operation by interstitial or other radium treatment.

Mr. F. STRONG HEANEY gave an interim report on ninety consecutive cases of cancer of the mouth treated by him with radium at the Liverpool Radium Institute since 1930. The cases were grouped according to the stage of the disease and the part affected (Stage I, limited primary, no glands; Stage II, limited primary, mobile glands; Stage III, extensive primary, and/or fixed glands). Regionally the cases were grouped as lip, tongue, and mouth fauces. The number of lip cases, Mr. Heaney said, was small, as excision of the primary was still considered the method of choice. Radium was employed when the disease involved a large part of the lip and when operation would mean a wide excision and complicated reconstruction. In all cases which could be traced the primary had healed. As regards tongue and mouth cases there was healing of the primary by radium in 100 per cent. of all cases treated in Stages I and II, and 65 per cent. in Stage III. Treatment of the glands in all cases in Stage II, and in some of Stage I, was by block dissection. In some instances this was followed by irradiation by radium pack. The glands in Stage III were treated with radium—sometimes interstitial, usually superficial—pushed to the production of vesication. The survival rate in tongue and mouth cases for all stages of the disease was: first year 50 per cent., second year 34 per cent., third year 25 per cent. In fauces cases the treatment of the primary at present consisted of the application of needles interstitially. The needles were threaded with dental wire, the end of which passed through the eye, being twisted round the main stem and cut short to form a barb. This was a modification of the barbed needle introduced by Mr. McGibbon. Better access was obtained in many cases by slitting the cheek and at once joining skin and mucosa. The number of fauces cases was not enough to work out survival percentages.

Mr. P. MALPAS gave the results obtained in a continuous series of 373 cases of carcinoma of the cervix referred for treatment from July, 1929, onwards. In eight of these the disease was found to be too advanced even for palliative treatment. In the remaining 365 radium therapy was employed as the primary method of treatment, although the series contained eleven cases in which a hysterectomy, either local or extended, had been performed elsewhere. All untraced patients were reckoned as dead. According to the League of Nations classification, thirty cases (8 per cent.) belonged to Stage I, the operable group; 105 (26 per cent.) to Stage II, the doubtfully operable group; 142 (39 per cent.) to Stage III, the advanced group; and ninety-six (26 per cent.) to Stage IV,

the hopeless group. The high percentage of cases in the later stages of the disease was due not to delay by doctors in referring their cases, but rather to neglect by patients of trivial haemorrhages, or to the fact that the lesion was in some cases quite symptomless until well advanced. The Stockholm technique was adopted throughout the series without any substantial variations. Most of the cases received continuation deep x-ray therapy after completion of the radium treatment. Both Dr. Whitaker, who gave this treatment, and the speaker considered this a necessary adjunct to radium therapy. There were sixteen deaths immediately or within one month of completion of treatment. Fourteen of the deaths occurred in the Stage IV group; the other two were in Stage III. The total operative mortality was thus 4 per cent., but the mortality in the earlier cases was nil. Including all cases referred, and observing Winter's criteria, the interim results were as follows: survival for one year or more after treatment, 56 per cent.; two years or more, 39 per cent.; three years or more, 36 per cent.; four years or more, 30 per cent. The corresponding survival rates for the cases classified according to the stage of the disease were as follows.

	Stage I	Stage II	Stage III	Stage IV
Survival of 1 year or more	Per cent. 83	Per cent. 83	Per cent. 56	Per cent. 22
" 2 years "	78	61	36	7
" 3 " "	73	61	31	0
" 4 " "	100 (2 cases)	50	20	0

While there were a few disappointments in the early cases, the results seemed satisfactory, certainly in cases falling into Stages I and II. In the majority of all cases a complete healing of the primary lesion was obtained, but treatment failed to prolong life in any of the advanced cases in Stage IV for more than two years.

Mr. M. J. BENNETT JONES said that he had tried to compare the results of the different methods of treatment of all cases of carcinoma of the breast treated by Mr. Woolfenden. Interstitial radium alone was employed in a small series of advanced and otherwise inoperable cases. One-third of these patients had lived for nearly two years without evidence of recurrence; the remainder had nearly all died of widespread metastases, but they usually obtained relief until a very short time before death. Radical mastectomy, followed by radium insertion, was used in a consecutive series of eighteen operable cases (61 per cent. had microscopical evidence of metastasis). Seven of these patients had lived for nearly two years without signs of recurrence. The remaining eleven were all dead, and yet there was only one local recurrence—a case of adenocarcinoma.

Dr. E. CRONIN LOWE said that there appeared to be growing evidence that the result of cytotoxicity of cancer tissue *in situ* was associated with some form of immunizing response in the patient. This had been noted as one of the results of experimental research by several observers in the last few years, and some had also recorded evidence of serological changes accompanying the local destruction of malignant growths in animals.

Mr. JOHN T. MORRISON said that his experience of cancer of the breast treated by radium was a very limited one, as he did not consider it justifiable, in the present state of our knowledge, to neglect the possibilities of cure held out by operation. Consequently, only strictly inoperable cases had been dealt with, and he did not believe that for these there was hope of survival. He was convinced, however, that much good was done by dealing with the local lesion by radium. In only one case had he seen any local recurrence. Mr. Morrison deprecated the idea that radium treatment was devoid of risk. In old people, in particular, local operation under local anaesthesia was to be preferred whenever possible. In old age there seemed to be a great risk of death from a low form of toxæmia coupled with hypostatic congestion during and after radium treatment.

SURGICAL TUBERCULOSIS

At a meeting of the Brighton and Sussex Medical-Chirurgical Society, on February 1st, Sir HENRY GAUVAIN gave an address on surgical tuberculosis in hospital and general practice.

Sir Henry said that tuberculosis might be defined, in all except a few cases, as a general disease in which the local lesion or lesions were a special manifestation. If that definition was accepted, treatment must obviously be directed both to the general condition of the patient and to the local lesions. By conservative treatment he meant the adoption of all measures tending to improve the patient's health, increase his resistance to tuberculous disease, and restore the part or parts specially attacked. This included the prevention or correction of deformities that might arise as a result of the disease. General treatment involved suitable diet, open air, rest, hygiene, discipline, and education. With regard to the last he laid emphasis on the following of an occupation for patients suffering from chronic disease. Suitable occupation or education could easily be arranged for children in special hospitals, but it was equally necessary for children treated in their own homes; the speaker emphasized the importance of handicrafts. Local treatment implied the care of individual lesions, with the avoidance, where possible, of their excision. It must be recognized, however, that operative treatment should have a place even in conservative therapy. An example of this was tuberculous disease of the knee-joint in an adult; in the majority of cases excision of the joint offered the best prospects of a speedy cure. Aids to treatment had rapidly increased in use and popularity in recent years, and among these were sun and artificial light treatment, other forms of radiant energy such as x rays and radium, vaccine treatment, chemotherapy, and balneotherapy.

Sir Henry Gauvain, with a series of slides, then illustrated the methods of treating the majority of forms of non-pulmonary tuberculosis. The way in which treatment by sun and artificial light, and by sea-bathing, was carried out at Hayling Island was demonstrated by special slides. These measures led to a raising of metabolic activity, and this had a beneficial effect on the healing of diseased tissues.

GOLD SALTS FOR ARTHRITIS

At a meeting of the Medical Section of the Royal Academy of Medicine in Ireland, held on February 2nd, with the president, Dr. W. G. HARVEY, in the chair, Dr. JACQUES FORESTIER of Aix-les-Bains gave a lecture on the use of gold salts in the treatment of rheumatoid arthritis and the different forms of inflammatory arthritis, in which he reviewed the basis, technique, and results of the method. He began by discussing the reasons for this treatment, rheumatoid arthritis being, in his opinion, an infectious disease, and then described the laboratory tests. These comprised the determination of the sedimentation rate of the red corpuscles and the resorcin flocculation test, which gave an indication of the activity of the disease and served as a control upon the effects of any treatment, regular examination of the blood being a necessary adjunct to the treatment of chronic cases. The gold salts employed by him were aurothiopropanol sulphate of sodium, thiosulphate of gold and sodium, thiomalate of gold and sodium, aurothioglucose, and aurothioglycolate of calcium. The dose of each drug, he said, depended on the type of case to be treated. He himself recommended series of small doses repeated at regular intervals. Discussing the principles of gold salt therapy in rheumatoid arthritis and the normal reactions, he said that with proper dosage and a good selection of cases severe reactions were rarely met with. Dr. Forestier then summed up the results in approximately 500 cases, followed up during periods of from two to five years. Early cases of under two years' duration were cured in the proportion of 50 per cent., the remainder being greatly improved; cases of older standing were improved in 80 per cent. and cured in 20 to 30 per cent. Lantern slides showing diagrammatically the improvements in the

changes in the joints, etc., were projected, and the lecturer, in conclusion, described the association of treatment by gold salts with different forms of physical therapy and spa treatment.

BASOPHIL PITUITARY ADENOMA

At the annual meeting of the Devon and Exeter Medical-Chirurgical Society, on January 25th, with Mr. R. WAYLAND SMITH in the chair, Dr. C. J. FULLER read the notes of what appeared to him to be a case of basophil adenoma of the pituitary body. The patient, a young man aged 21, was also shown to the meeting.

Dr. Fuller said that it had been noticed that the patient had become progressively red in the face during the past two years, and that this was associated with an increase in weight amounting to 21 lb. in the past twelve months. Recently there had been a complaint of headache, and of a pain shooting down the lumbar region of the back. The fields of vision and refraction appeared to be normal, but the eye muscles were easily fatigued. There was polyuria up to 116 oz. in twenty-four hours, and an occasional granular cast was noted, but no albumin. A blood count in 1932 had revealed a relatively high haemoglobin and a slight leucocytosis, but in a recent count the red cells were increased. The sugar tolerance test showed a high curve, but no glucose or ketones had been found in the urine. The basal metabolic rate was minus 16 per cent. The radiograph demonstrated a slight enlargement of the pituitary fossa. No changes were found in the long bones. The symptoms were further associated with a condition of complete virginity.

At the last meeting of the Cork Clinical Society, held in the University College, Dr. WILLIAM EVANS, who had come from London at the invitation of the society, delivered an address on "Angina Pectoris—its Problems and Treatment." The meeting was very well attended, doctors from the city and from all parts of the county being present. The lecturer dealt first with the clinical definition of the condition, and he reviewed the pathological basis, especially stressing modern ideas on the subject, dividing the cases into the two broad classes—*ischaemic* and *thrombotic*. He then surveyed the symptoms, signs, and other clinical points, and finally dealt with the treatment of the different types. The lecture was illustrated with numerous lantern slides showing comparative tables of symptomatology and of the trial of various drugs in treatment.

The twenty-first annual report of the Collis P. Huntington Memorial Hospital for Cancer Research, which is associated with the Cancer Commission of Harvard University, relates to the year ended June 30th, 1933, and outlines the investigations that are being conducted. Comparison of 1918-22 with 1923-6 shows that there has been an increase in the rate of cures of nearly 20 per cent. in cancer of the lip, and of 100 per cent. in cancers of the mouth. This improvement is continuing, thanks to improved methods of treatment and the rising ratio of early cases, and it is expected that a corresponding examination in five years' time will reveal still better figures. In the series of 1904 only 16 per cent. of cases of cancer of the breast were free from recurrence five years later; in later periods the percentage of cures advanced continuously until with the cases of 1926 there were 40 per cent. remaining well after five years. The main points being investigated at present in the chemical and medical departments are the influence of cell ferments upon the chemical activities of normal and tumour tissues, the influence of the internal secretions upon growth and upon ferments and the physico-chemical study of the cells of tumours as compared with normal cells. Another line of investigation is into the effect of the anterior part of the pituitary gland on the body ferments. No evidence was obtained that aluminium and lead had any effect on the acceleration or inhibition of tumour growth, nor that thyroïd extract influenced the effective concentration of the bone enzyme, phosphatase.

CORRESPONDENCE

Pathology of Cancer

SIR,—In the *British Medical Journal* of January 13th there is a short leader on "A Treatment of Cancer," based on the work of Professor Fichera of Milan, who has been experimenting for some years in a treatment by biological therapy. Other biologists have also recently made somewhat similar references. This has appealed strongly to me, as I have spent a great part of my life in pathological work connected with cancer, and have operated on and carefully investigated many thousands of cases of tumours of all sorts. From first to last I have consistently opposed the view that cancer was in any way associated with an infective germ, except in the way of sometimes preparing the ground for growth.

I have often given my reasons for this, but rarely obtained any appreciation of them. The last occasion on which I mentioned these reasons was about fifteen years ago, at a discussion on cancer at the Liverpool Medical Institution, and I still have the notes on which my remarks were based. I stated: (1) That all new growths were closely related to each other and to normal tissue. In fact, taking the whole series from a normal foetus, through monsters, teratomata, complex-tissue tumours, innocent growths, slightly malignant growths (recurrent fibroid, myeloid, etc.), to cancer and sarcoma, no definite line can be drawn. There are connecting links throughout. (2) New growths invariably reproduce the tissue, perfectly or imperfectly, of the structure in which they originate. In all innocent growths the structure is very closely allied to the normal, and in many malignant growths the normal is clearly copied, as in cancer of thyroid, liver, stomach, and bowel, and as in sarcoma of bone or cartilage. If there is no real dividing line between the different forms of new growth or between some of the growths and normal tissue, and if they, innocent or malignant, repeat the structure of the tissue in which they originate, surely this means that all tumours are merely an abnormal form of ordinary tissue growth, at first local and harmless, but later liable to take on malignant features. What we need to know is, How do new growths first come about? Throughout life all tissues can be stimulated into growth when necessary, and controlled when no longer necessary. The power to stimulate and control growth is always present. Nothing illustrates better the influence of stimulation and control than the effect resulting from the removal of one kidney when the other is healthy. We all know that the one which remains grows to about double size, and then stops. The natural call for more kidney tissue leads to its development, and when fulfilled no more is added. There is no doubt that normal tissues easily respond to the stimulus of a normal call for increase. Surely it can only be due to a somewhat similar though erratic call that causes a tissue to reproduce itself in the abnormal form of a new growth.

Also, on the other side, control or suppression is not confined to normal tissues, but is frequently met with in tumours. Apart from innocent tumours, I think there can be no doubt that malignant growths are sometimes definitely suppressed. I have seen several cases which I could account for in no other way, and accept the view that it is quite possible for a cancerous growth to undergo natural retrogression and disappear.

Suppression may be much more frequent in the early stages than we imagine. In 1900 I became much interested in involution mastitis (*Rep. Path. Soc. London*, 1900), and, recognizing it as a source of cancer, removed a very large number of breasts for this affection. The

specimens constantly showed, among the overgrown gland tissue and cysts, quite a number of small but definite tumours, some fibrous and some glandular. Now the present interest of this is that after a long series of excisions I began to ask myself if operation was always necessary, and decided that it was not. So from about 1910 to 1930, with few exceptions, I only removed these organs when the family history regarding malignancy was unsatisfactory. In this way for twenty years I was in touch with a large number of people who had very definite mastitis, and in whom it subsided, no harm resulting. Many of them must have had the small growths so frequent in such cases, and these must have been suppressed.

Another suggestion of suppression of a temporary nature is seen in cases of cancer of the breast after excision. Every now and then one would have a patient who continued well for from, say, seven to ten years, and then would get a recurrence. Such recurrence would generally be in the lymphatic system, and would always be definite breast cancer of the same type as the original growth. Now lymphatic tissues cannot originate breast cancer, nor would any fresh growth commence in such a scattered manner. These growths must have been there in minute size ever since the operation, but suppressed until the recent growth.

Other ways in which suppression occurs are met with. For instance, I have seen several tumours almost entirely disappear before a fatal termination, so that one could hardly find anything for the microscope at post-mortem examination. Professor Blair-Bell's lead treatment may do the same. Then there are the cases in which secondary growths are found without a primary, which has apparently been suppressed. There is much to suggest that more than one tissue in a tumour patient is prepared to take on new growth. Multiple innocent tumours are common. In malignant cases it is rare to find a multiple origin, but I have seen as many as five rodent growths start together; and in old people it is not very uncommon to find, after removing a small skin epithelioma, that others follow of like nature, sometimes several. Also it is quite common to find, when you have successfully dealt with a cancer, that another growth turns up of a different character in a different part of the body: such as epithelioma of tongue cured, and later a primary growth in the rectum; or a carcinoma cured, and a sarcoma starts later somewhere else.

These things suggest that when new growths take place, especially malignant growths, the tissues have already become generally unstable and are easily stimulated to grow, but the growth is erratic and very resistant to inhibition. This seems to indicate that the body tissues have lost that standard of perfect health which held them equally ready to respond to stimulation or inhibition. They have weakened on a fundamental point, have become unstable, and will grow without proper cause, and fail to respond to proper limitation. This is tumour growth.

In searching for the cause of such a change one must take into consideration a wide field. Cancer is a very old disease, but there is no doubt that it has been steadily increasing, and it is now more frequent than it has ever been before. It is widespread too, and affects some animals as freely as men. In men I believe it is more common, much more common, among the highly civilized races than those leading a natural wild life. In animals, too, it is much more common in the domesticated breeds than in wild beasts. Are there any allied features in the two which might suggest a similar possible cause for unstable tissues, after perhaps an influence extending through many generations? I think there are two. One is that since the days of prehistoric

man the evolution of a gradually increasing civilization has encouraged a steady increase of the condition referred to as "oversexed," and in the high breeding of dogs, horses, cattle, sheep, fowls, etc., a similar condition is induced. The second cause I believe to be high feeding, especially the too free use of stimulating meat foods and possibly an excess of vitamins. This holds good for animals as well as men. The prize dogs and other beasts are fed to the last degree that they may look well and be equal to the service required of them.

Research on these lines is a difficult matter, for it may be that such habits need to go on for countless generations before the normal control of tissue is weakened and ultimately overcome. But with the splendid opportunities now available, and so many good men trained to the work, it may not be impossible to determine how tissues become unstable, and produce growths in the highly fed and oversexed animals. If there is any truth in the views I suggest the lessening of malignant disease must be a long, long process. The instability of tissue which has developed through so many centuries will continue, because the circumstances which induced it will continue. But at any time a researcher may have the happy fortune to discover a control which might operate by inhibiting growth in one specific class of tissue, and, if so, others would follow, one by one, until all growths became controllable. Not, perhaps, as perfect a cure to aim at as regaining normal tissues; but this would involve a return to the simple habits of early man and wild animals. It would be a possible present-day cure, against the impossible return to wild nature.—I am, etc.,

Grayshott, Surrey, Feb. 14th.

FRANK T. PAUL.

Cancer Research

SIR,—For many years, at great expense, cancer research has been carried out by large numbers of devoted workers in the laboratories of this and of other countries. The continued failure of distinguished scientists to obtain any useful results, as far as the disease in man is concerned, shows that they must be working on unfruitful lines suggested by false conceptions of the nature of this human scourge. Clinical observation and experience and a study of the incidence and spread of cancer in man point to the conclusion that it is essentially a deficiency disease, and that the key to its prevention and treatment lies in the diet, the proper correction of which will ensure the reinstatement of man's natural resisting power. The British Empire Cancer Campaign experts appear to believe that the disease is unrelated to diet. "One cannot, therefore, be surprised that the campaigners are making no headway against this enemy of mankind."—I am, etc.,

Cardiff, Feb. 17th.

W. MITCHELL STEVENS.

"The Opportunities of Medicine"

SIR,—Pearls of great price are sometimes to be discovered in your leading articles, and I claim to find one in your appreciation of Sir George Buchanan's "Forty Years in Public Health" (February 10th, p. 247). Sir George, you say, "was one of the small body of men of different nationalities which since 1919 has insisted on the opportunities of medicine in the field of international co-operation." My first thought was that, just because of the paramount importance of internationalism in medicine, broad-minded leaders of our profession must surely, long before 1919, have seen the necessity of its recognition.

Sir William Osler constantly wrote on catholicity in medicine, and inveighed against "the cursed spirit of intolerance, conceived in distrust and bred in ignorance, that makes the mental attitude perennially antagonistic to

everything foreign, that subordinates everywhere the race to the nation, forgetting the higher claims of human brotherhood." In his address on Virchow he speaks of the physician as belonging to "a guild which owes no local allegiance, which has neither king nor country, but whose work is in the world." True, these words were written in 1891, before the world tragedy destroyed a generation and arrested all international co-operation. It is, of course, so obvious as to be a truism that without international co-operation preventive medicine and social hygiene are but empty names, and the essence of the sentence I have quoted from your editorial lies in the words "the opportunities of medicine." They open up a marvellous vista of possibilities.

The power of the profession of medicine, organized and directed to international co-operation, is unlimited, or rather, alas! limited only by one event—namely, war. But that event has proved so destructive of all co-operation that it is surely worth our while to pause and recognize its paralysing and deadly effect. Some of us, perhaps a small minority, have come to see in war the absolute evil, to realize that that is the lesson not only of the whole history of our civilization, but also of the present state of the world around us to-day. What is the attitude of our profession towards the fact that we, whose whole object is the saving of human life, must, in war-time, contribute to its destruction? Can some of our leaders state it? I am well aware that many would disagree with the statement that war is the absolute evil. Sir James Barrie, for instance, eloquently disputes it. In his address some years ago as Lord Rector of St. Andrews University he said: "There is a form of anaemia that is more rotting than even an unjust war. The end will indeed have come to our courage and to us when we are afraid in dire mischance to refer the final appeal to the arbitrament of arms." Can anyone point to a case of this anaemia, and has the appeal to arms ever given any arbitrament at all as to right and wrong?

I make no apology, Sir, for asking these questions in the columns of the *British Medical Journal*. They arise out of your article, and may go to the heart of the world's problems to-day. To refuse to face them, or to say that they do not concern us, is the only rotting anaemia and lack of courage I know.—I am, etc.,

Cannes, Feb. 12th.

A. A. WARDEN, M.D.

Education for General Practice.

SIR,—The suggestion made by Sir Cuthbert Wallace in his Hunterian Oration that "it might be helpful if a hospital could arrange with some of its sons to take qualified students for a limited period as apprentices, thus returning, in a way, to an old custom" (*British Medical Journal*, February 17th, p. 273) will, I am sure, meet with approval from many general practitioners. At a time when the whole scheme of medical education is being submitted to a critical survey, I venture to suggest that this proposal deserves a very thorough consideration by those in whose hands rests the fate of future generations of students.

In view of the fact that by far the greater number of students, whether they like it or not, will have, from force of economic necessity, to adopt general practice as their means of livelihood, it is rather remarkable that the teaching from start to finish is entirely in the hands of specialists. For obvious reasons it must to a great extent always remain so, but I submit that the general practitioner would have information of value to impart were he given the opportunity. The outlook of the hospital consultant must to a certain extent differ from that of the family doctor, whose contacts with his patients are so intimate and personal, who has to take into account

when giving advice so many other considerations than a pure diagnosis and the ideal form of treatment.

I dare to say that in whatever branch of the profession a student may ultimately find his life's work, even if it is to be as a pure laboratory worker, some experience of the ways and shifts necessary in general practice would prove of the greatest value. It should not be a difficult matter for the schools to exercise a wise discrimination when making a selection of those men to whom apprentices might be assigned. Such a plan would do a great deal to raise the professional status of the general practitioner, which has probably never been lower for a hundred years than it has been of late, thanks to legislative oppression, economic depression, public suspicion, and the progressive multiplication of extra diplomas.—I am, etc.,

Bridlington, Feb. 17th.

C. J. GORDON TAYLOR.

** We publish in this week's *Supplement* a paper on "Medical Education as a General Practitioner sees it," by Dr. Arnold Gregory, who concurs in the suggestion made by the British Medical Association's Committee on Medical Education, that during the final year of training a student might be given the opportunity of gaining experience as "pupil assistant to an approved general practitioner."—Ed., *B.M.J.*

Sudden Circulatory Failure and Diabetic Coma

SIR,—In reply to the letter by Dr. Fuller and Dr. Himsworth, in the *Journal* of February 17th (p. 305), I think it would be helpful to refer them to an illuminating article by Dodds and Robertson (*Lancet*, 1930, i, 852), dealing with the cause of death in diabetic coma. These workers showed that there is no constant relation between diabetic coma and the degree of acidosis or of ketosis. On the other hand, circulatory failure, as evidenced by a persistently falling blood pressure, invariably precedes death in coma.

Since reading this publication I have had the opportunity of witnessing four patients in diabetic coma who responded to the usual treatment, in so far as they fully recovered consciousness with control of the diabetes, but who, nevertheless, died suddenly in twelve to twenty-four hours afterwards. In each case the blood pressure during coma was 70 mm. Hg or less, and with apparent recovery this failed to rise more than 10 mm. Hg.

The questions posed by Drs. Fuller and Himsworth can then be answered: (1) Intravenous administration of fluid had nothing to do with death. (2) Collapse was probably accelerated by the sudden raising of the patients from a recumbent position, on account of the profound circulatory weakness. Presumably the blood pressure in their cases was very low.—I am, etc.,

London, W.1, Feb. 19th.

A. H. DOUTHWAITE.

Radiology and Chronic Appendicitis

SIR,—Mr. Muir Dickson, in his article in the *Journal* of February 3rd (p. 184), suggests that the radiological examination for this condition is disappointing in its results. I have examined a considerable number of cases in the East Suffolk and Ipswich Hospital during the last few years. The operative findings in every case have been compared with the radiological report by myself, and these have been found to agree in a most satisfactory manner.

The technique consists in giving the patient 1 oz. of castor oil on the night before the examination; by this means it is possible to see the appendix filled in over 90 per cent. of cases. The stomach is examined early the following morning, and subsequent attendances are usually required at the end of

three, eight, and twenty-four hours. The appendix is generally seen at the eight- and twenty-four-hour examinations. During the first two attendances the stomach and duodenum are examined thoroughly. This is of importance, because duodenal ulceration may accompany or may be difficult to differentiate from chronic appendicitis. The gastric emptying is observed closely, because in a number of cases of this condition an intermittent pyloric spasm has been noticed. Delay in the emptying of the small intestine is also of significance when taken together with other signs.

The most important observations are those made when the appendix is filled with barium and so can be visualized on the fluorescent screen. In the normal it is seen to fill well and to move freely on palpation. When it is the seat of pathological changes it will frequently fill imperfectly. It will not move freely on palpation, and definite tenderness can be localized to it. Kinks can be clearly defined, and by taking skiagrams while palpation is being maintained this can be demonstrated in subsequent radiograms.

A radiologist is not expected to inform a surgeon that a gastric or duodenal ulcer demands operation. He is expected to show, so far as possible, the nature and extent of the ulceration. Similarly, when investigating a case in which chronic appendicitis is being considered clinically, he is able fully to demonstrate whether the appendix is normal, whether it is fixed partly or wholly by adhesions, and whether the patient's tenderness is localized to this organ or to a point removed from the appendix; he is further able to give suggestions as to whether these changes are active or not. I would illustrate this by a child I saw recently, who undoubtedly had adhesions in the region of his appendix, but his tenderness could be definitely localized to a spot a small distance from this point. This confirmed the clinical diagnosis of inflamed mesenteric glands.

Finally, the important differential diagnosis of visceropituitary can be determined or excluded with certainty.—I am, etc.,

Ipswich, Feb. 8th.

C. H. C. DALTON.

Artificial Pneumothorax in Children

SIR,—I append a summary of the cases of pulmonary tuberculosis treated by artificial pneumothorax at the East Anglian Sanatorium, Nayland. The first case was induced in 1912, and since the opening of the children's section forty-six cases in all have had this form of treatment. I have divided the cases into those who were T.B. + and those T.B. —, and naturally the results in the latter are very much better. The extreme seriousness of the nature of the disease in girls in the early teens will be observed, and the high mortality rate.

Cases with T.B. + Sputum.

Ages 5 to 8 years: 1 girl, died.
1 boy, recovered.

Ages 9 to 11 years: 1 girl, died.
1 boy, recovered.
1 girl, recovered.

Ages 12 to 15 years: 9 girls, died.
3 boys, died.
12 girls, recovered.
1 boy, recovered.

Cases with T.B. — Sputum.

Ages 4 to 8 years: 2 girls, died.
1 girl, recovered.
1 boy, recovered.

Ages 9 to 11 years: 2 girls, recovered.
1 boy, recovered.

Ages 12 to 15 years: 1 girl, died.
5 boys, recovered.
3 girls, much improved (not finally traced).

—I am, etc.,

G. ELEANOR SOLTAU,
Assistant Medical Superintendent,
East Anglian Sanatorium.

Nayland, Colchester, Feb. 12th.

SIR,—As Dr. William Stobie puts to me some definite questions in his letter of February 4th I feel I must trespass further on your space to reply to him, and in doing so I would like to mention that a great many of the cases about which I wrote were under the care of my predecessor, Dr. Cuthbert Agassiz, with whom I have discussed the matter before replying. I agree with Dr. Stobie that many cases of tuberculosis in children are of the benign type, which get better without special treatment, but this is certainly not true of the cases about which we wrote—namely, those with positive sputum, in which the prognosis is generally recognized to be very bad.

In reply to his questions I would like to say:

1. That in the majority of cases the evidence for diagnosis of pulmonary tuberculosis was based on definite physical signs plus evidence of tubercle bacilli in the sputum.

2. Of the 132 cases of artificial pneumothorax mentioned in the previous letter, 124 (94 per cent.) had positive sputum. The few remaining cases showed ample clinical and radiographical evidence of disease, most of them with cavitation, which were not responding to the usual methods of treatment.

3. It does not appear necessary to answer the third question, as in the majority of cases tubercle bacilli were found in the sputum.

Dr. Stobie also says that experience of so many cases must be very rare, and in reply to this criticism I would like to remark that since 1925 we have records of 533 cases in which tubercle bacilli were found in the sputum in children of 15 and under; ninety-one of these were aged 10 and under, the youngest being 1 year old.—I am, etc.,

A. G. L. READE, O.B.E., M.R.C.S.,

Brentwood, Essex,
Feb. 19th.

Medical Superintendent, High Wood
Hospital for Children.

Pruritus Ani

SIR,—In your issue of February 17th (p. 309) Dr. F. Hernaman-Johnson says: "The causes [of pruritus ani] enumerated by Mr. Morley are well known to the family doctor—more particularly the role of parasites." This has not been my experience. Four of my patients who had suffered for years from pruritus ani, which eventually was proved to be due to *Enterobius vermicularis*, were medical men, who, moreover, had been examined by many colleagues, but the cause of the irritation had not been discovered; among the varied treatments prescribed two of them had received courses of x rays.

The following brief case history is instructive. A gentleman who had suffered from pruritus ani for about two years was informed that this was due to some small haemorrhoids, which demonstrably were present. On medical advice he had decided to have them removed. I asked permission to examine him when pruritus was active. A very rapid examination, carried out with the help of an electric torch while the patient was in bed at midnight, resulted in the capture of three adult *E. vermicularis*. Appropriate treatment brought about a complete cure of the pruritus. The haemorrhoids are still present, but give no trouble.

The presence of *E. vermicularis* in adults is so often overlooked because the parasites are difficult to demonstrate. One patient, on my request, passed a motion at a moment when these parasites were active in the rectum. The motion contained no worms, nor did I find any eggs in the material in the course of a prolonged microscopical examination.—I am, etc.,

W. P. MACARTHUR.

Royal Army Medical College, Feb. 16th.

SIR,—May I ask you to grant me space to reply to Dr. Hernaman-Johnson's letter of February 17th? I never doubted that in certain cases of pruritus treatment by means of x rays is able to afford some relief. The more

experience I have of this symptom—and I use the term advisedly—the less frequently do I meet with cases in which a thorough and painstaking examination with the speculum and sigmoidoscope fails to reveal a local—that is, in the large majority of cases, a *rectal*—cause. In my opinion there is no such thing as “idiopathic” pruritus: all that that term implies is that a cause has not been detected, not that a cause is not present. One used to hear a great deal of “idiopathic” erysipelas, but most surgeons now agree that there is a breach of surface in every case of that disease, although it may be impossible to find it.

Nor can I agree with Dr. Hernaman-Johnson that most cases of pruritus are sent by the general practitioner after all possible causes have been eliminated. My experience has been that most cases are sent to the proctologist in order that he may make a diagnosis. In the cases I have had in which the *Enterobius vermicularis* has proved to be the cause I have usually found that the general practitioner is as astonished to hear of it as is the patient—sometimes, indeed, he is even sceptical, unless he is present at the consultation and sees the parasite with his own eyes. In my experience, also, few general practitioners are familiar with inflamed crypts, submucous tracks, and so on. Dr. Hernaman-Johnson's suggestion that cases of pruritus should be treated by x rays, and then, if a failure or relapse occurs, that that fact should be accepted as an indication to make a more intensive search for a cause, or to regard the patient as neurotic, strikes me as thoroughly unscientific. It leaves me unrepentant, and I shall continue to follow the more usual course of making a diagnosis—where possible—first and prescribing treatment afterwards.

It is hardly fair of Dr. Hernaman-Johnson to misquote my letter in order to contradict it. Nobody who read my letter in your issue of February 3rd could have imagined that I classed local anaesthetics and x rays in conjunction as though there were any similarity between them. I referred to local anaesthetics as rendering the skin anaesthetic for a longer or shorter period, and to x rays as rendering it more healthy—which they do, as Dr. Hernaman-Johnson points out, by destroying germs in, and possibly under, the skin. My wording was perhaps a little clumsy, but I do not think that anyone (excepting Dr. Hernaman-Johnson) would have attached to it the inference which he suggests. It betokens that he has a weak case that he drags in the fact that in my earlier days I had considerable experience as an anaesthetist in order to imply that my knowledge of all other subjects must be deficient!

I am glad to know that Dr. Hernaman-Johnson does not object to the treatment of haemorrhoids by injection. It is better, however, not to class this treatment as an “operation,” because that word, especially as regards the treatment of haemorrhoids, has a very sinister meaning to patients who are suffering from that condition.—I am, etc.,

London, W.1, Feb. 17th.

ARTHUR S. MORLEY.

Inheritance of Mental Deficiency

SIR.—It is, as Professor Ruggles Gates says (February 10th, p. 264), a question “of adopting the most reasonable interpretation” of the “familial concentration” of mental abnormality; but this involves an examination of alternative hypotheses. My case against the eugenists is: (a) that they will not consider the possibility of any interpretation but their own, and (b) that their interpretation is unverifiable in regard to indefinite characters such as mental illness and defect, particularly when we take into account the smallness of human families and the length of “generations” and impossibility of experiment.

In regard to (a) Professor Gates stands convicted of bias by his two letters. In the first of these he dismissed Dr. Penrose's suggestion of an environmental factor as “hardly worthy of serious consideration.” In the second he states that the germinal theory of transmission “fits all the known facts,” and rhetorically asks whether we can suppose “that a feeble-minded mother and a father suffering from paralysis and dementia would create a better home environment than two normal parents?” I answer that the Mendelian theory fits the facts only in virtue of its infinite elasticity and prodigal use of *ad hoc* supplementary assumptions. Further, it is virtually certain that the father in the case in point was *not* in a state of paralytic dementia during the formative years of the children's lives. (Incidentally, Professor Gates says in his earlier letter that the inheritance of dementia is “unknown.” This is another tendentious assumption. Dementia paralytica is known to be a syphilitic disease and *not* inherited at all.)

But, treating Professor Gates's question quite seriously, there is no reason to suppose that a feeble-minded mother and a father who is *not yet* suffering from general paralysis should not create as good a home environment in certain vital respects as normal people. There are reasons to believe that for the development of healthy minds in children the environmental factors can be arranged in this order of importance: (1) affective harmony between father and mother (which existed in the case in question); (2) equanimity, self-assurance, and a proper distribution of affection on the part of the mother; (3) maternal character; (4) paternal character. The absolute quality of the parental minds is of less importance than any of these, and probably material circumstances are of still less significance. The child's first requirement is a sense of security in the affection of the mother or substitute; its second requirement (for mental health) is the progressive deflection of its interest from its mother on to the world of reality.

It is, of course, impossible to adduce evidence here in support of this hypothesis, which is advanced merely as an illustration of conceivable factors in psychopathogenesis which have never been considered by the geneticists.

There is only one group of facts which might afford decisive evidence in favour of one or other theory. Schizophrenia and cyclothymia are the most markedly “hereditary” of mental diseases (vide Report on Sterilization, *Journal*, January 27th, p. 163); they are also the most definite symptomatically and the least likely to pass wholly unnoticed. For these reasons they are the most favourable for statistical genetic study. They also occur together in the same families with great, but, so far as I know, unmeasured frequency. This frequent concurrence of the two disease-forms suggests that they are the allelomorphous expressions of certain combinations of Mendelian factors. For example, we might be dealing with common formula 9 AB (normal); 3 Ab (præcox); 3 aB (cyclothymia); 1 ab (unknown result). On this supposition, and taking into account all the members of families in which more than one case occurs, we should expect to find the following ratios:—(a) normal to affected members—between 10 to 6, and 9 to 7; (b) cases of præcox and cyclothymia—equal in numbers; (c) taking into account only families where two of the brothers and sisters are affected, the incidence of the two diseases would be as follows: two cases of dementia præcox together, 20 per cent.; 2 cases cyclothymia, 25 per cent.; one case of each disease together, 50 per cent. of 100 cases of dual incidence.

As I pointed out in your issue of January 27th, any possible ratio of affected to normal offspring can be interpreted on Mendelian lines owing to the observational

error; so that here it is a case of "heads we win, tails you lose" for the geneticists. If, however, the facts are found to agree with some such complex group of ratios as that I have indicated, the error of observation would be largely discounted, and the demonstration conclusive as between the Mendelian theory of psychopathic inheritance and such a theory as I have outlined of psychopathic reactions by children to parents.—I am, etc.,

London, W.C.1, Feb. 10th.

IAN D. SUTTIE.

Mind and Body

SIR,—We must, I think, agree with Dr. Richard Eager (*Journal*, February 10th, p. 262) as to "the close relation of mind and body," and with his statement that "any physical illness, no matter how slight, has its mental accompaniment, just as most mental states have their physical counterparts." I should like to know, however, what Dr. Eager and other mental experts mean by "mind." To me, various functions and faculties of the body are classified under the term "mind." We all know what the "body" is, though we know much less about it than we would like. I do not even admit the existence of any actual thing called the "mind." There is no such thing known as a mind apart from a body, any more than such a thing as motion apart from moving bodies. We have, I know, been told that matter is itself motion; but I am not aware that anyone has yet definitely asserted that the body is itself really mind. Using the Greek word "psyche" instead of "mind," or the Latin word "mens," only increases the difficulty, because *psyche* is sometimes translated as "life" or "soul."

Infection with malaria has been used as a psychotherapeutic agent. Does the mind become infected with malaria, or only the poor body, which is already afflicted by the presence of a "diseased mind" as well as certain spirochaetes?—I am, etc.,

Blindley Heath, Feb. 12th.

HUGH WOODS, M.D.

The Nutrition Report

SIR,—Your correspondent Dr. D. Campbell Watt writes: "In view of the political use which has been made of the Association's Nutrition Committee's excellent report, and for other more practical reasons, it is unfortunate that the terms of reference were not more specific." He goes on to criticize the high standard of the minimum scales of diet recommended, and is anxious that his criticisms "should be impressed upon all those who take an interest in the dietetic requirements of the unemployed individual leading an indolent life" (*Journal*, February 17th, p. 304).

Possibly Dr. Watt, who writes from Southern Rhodesia, has not seen the recent reports of many of our medical officers of health, with their tales of widespread malnutrition and debility, nor the many published actual diet scales of English working-class families. A short period of practice in one of our industrial towns, or, better still, a few weeks' attempt to live "an indolent life," making payment for rent (at English rates!), heating and cooking, food and clothing, out of an unemployment allowance, might modify his views. No one would grudge him spending what money remained over on "beer, tobacco, artificial silk stockings, dances, cinemas, and football matches."

Many doctors, so far from sharing Dr. Watt's suspicion that the English working-class is unnecessarily well fed, are becoming seriously alarmed at the poor physique, due to underfeeding and bad housing conditions, of millions of their fellow men and women. Their dissatisfaction is not lessened when they learn that meanwhile large quantities of herring are

thrown back into the sea or used as manure, potatoes dug into the ground, and millions of gallons of milk fed to the pigs or sold at a ridiculously cheap rate to manufacturers to be converted into buttons and other 'commercial articles'; while its price for human consumption is artificially raised.

Though political bias must never be allowed to influence us in our professional services to the community, as citizens we are entitled to fashion our political opinions in the light of our medical experience. The fixing of the rates of both unemployment benefit and public assistance is a political matter. So, to an increasing degree, is the regulation of food prices. In the eyes of a large number of both doctors and laymen the prestige of the British Medical Association has been enhanced by the Nutrition Report, and by the Association's courage in upholding its minimum scales of diet against the Ministry of Health.

I submit that the report could be put to no more "practical" use than that it should be utilized as a political weapon, to secure a higher standard of living for our unemployed, by all whose concern is to improve the people's health.—I am, etc.,

London, E.10, Feb. 19th.

HELEN M. JARDINE.

Colonic Irrigation

SIR,—In your issue of February 10th Dr. Ray inquires what amount of training is expected on the part of those who carry out colonic irrigation. "Are they State-registered nurses, members of the Chartered Society of Massage and Medical Gymnastics, or bath assistants who have acquired a knowledge of the correct procedure by constant practice?" This question is pertinent at the present time, because the Chartered Society has undertaken to issue a diploma in medical hydrology to such of its members as desire to take the necessary training; and the syllabus of the course of instruction will shortly be under consideration. The question of the inclusion of colonic irrigation in this course will have to be considered, and may give rise to differences of opinion. It must, however, be settled by the medical hydrologists themselves—that is, by Dr. Ray and his colleagues at spas and elsewhere.

It is really a question of the convenience of organization and of the patient. If the medical men concerned consider that the masseuse-hydrologist should be trained in this treatment it will be done.—I am, etc.,

R. C. ELSLIE.

London, W.,
Feb. 19th.

Chairman of the Council of the Chartered
Society of Massage and Medical
Gymnastics

Prevention of Deafness

SIR,—My Medical Committee, in considering Circular 1337 (a), Prevention of Deafness, by the Minister of Health, made the following recommendations, which have received the approval of my Executive Committee.

1. That the committee welcome the suggestion of the Minister that whenever practicable the treatment of ear diseases should be entrusted to a medical practitioner who has had experience of this work, and that the services of such a specialist should be made available to all maternity and child welfare centres.

2. That notification should be made to the proper authority by the parent or guardian or medical attendant of every child who at the age of 2½ years appears to be deaf or hard of hearing or who has not acquired some degree of speech, or, having acquired it, has lost it. Notification should be on the lines already existing in the case of infectious diseases.

3. That the existing school service for the treatment of ear, nose, and throat diseases should be developed to greater efficiency, and that otorrhoea should not be regarded as a minor ailment by the ordinary medical service, but be referred for specialist treatment after it has continued for one month.

4. That the present teaching of hygiene in the schools, particularly with regard to the care of the nose, ear, and throat, should be more strongly emphasized both to the teachers and to the children.

5. That definite propaganda work is necessary in order to call attention to the prevention of deafness by the proper care and treatment of ailments which may eventuate in it, and that in this connexion popular lectures and addresses on this subject should be given as widely as possible to meetings of various kinds interested in social welfare.

6. That it is desirable that periodical addresses on the prevention of deafness should be broadcast by the British Broadcasting Corporation.

7. That in order to ascertain the early onset of deafness the testing of school children by the audiometer should be general, and that such tests should be available to other persons.

—I am, etc.,

A. J. STORY,

2, Bloomsbury Street, W.C.1,
Feb. 13th.

Secretary, National Institute
for the Deaf.

Labour in the African Negro

SIR,—May I answer Dr. W. M. Hewetson's criticisms of the figures of difficult labour in African negroes, in the *Journal* of December 2nd, 1933 (p. 1048)?

1. He wonders "how it happens that three hospitals in the same area show a variation from 5 per cent. to 25.6 per cent." These hospitals may be in the same area continentally speaking, but 500 miles puts them in entirely different areas ethnologically speaking. All of them are among different tribes, which vary in origin, stature, skin colour, customs, etc., including birth customs. For example, the old women of one tribe will not allow the woman in labour to rest between pains if beating, holding nose and mouth shut, cold water, haranguing, etc., will prevent resting. The result is that the woman is often tired out before the second stage of labour is over, and uterine inertia follows. Two of the institutions quoted are located in capitals of their respective Colony and Protectorate. The other is in a native reserve, where the native women are naturally more backward about presenting themselves to foreign male doctors before necessary. The result is that a smaller proportion of hospital cases in the native reserve received ante-natal treatment or care from the beginning of labour.

2. He asks: "Can one blame the whole of this [variation in percentage] on the ambulance alone?" In 1933 the hospital in the reserve had only fifty-nine patients admitted before delivery started (that is, they walked in); of these there were only two forceps cases. During the same period 169 women were brought in by car after labour had started and they had given up hope at home; of these there were fifty high or medium forceps cases, or 29.9 per cent. Where does Dr. Hewetson place the blame?

3. Dr. Hewetson forbears "to repeat much that has already been drummed into us on the point of intervention," and quotes the case of premature application of forceps before the cervix was dilated reported by Dr. Owen-Jones in the *Journal* of July 29th, 1933 (p. 214). Why would there be premature application of forceps in an institution with two European doctors (with post-graduate work in obstetrics) who live within a hundred yards of the delivery room if they could produce "a 7 lb. L.O.A. live foetus with the aid of 1/4 grain of morphine twelve hours later," especially if there were two European nurses and native attendants to administer the hypodermic?

4. Dr. Hewetson, trying to read between the lines, suggests an answer, remarking "that mission hospitals with ambulances, and subscribers in England to be 'touched' who provide them, should be more careful to exclude obviously, but also quite unconsciously, tendentious arguments." One of those "mission hospitals" happens to be a Government institution for training native midwives; another similar institution was mission-founded, and is now partially supported by another Government. The third does confess to be nothing but a mission hospital. But it does not, and never did, have an ambulance. Ambulance service is rendered by the doctors personally in their own box-body safari cars; nobody was "touched" to buy them except their respective wives and children, who were short of cash for a year or more afterwards! If any subscribers would have been "touched"

they would have not been in England, as the said hospital gets (or tries to get) its support from another country.

5. He asks us "to correlate their own figures before entering the field of scientific discussion." That may be impossible; but it is possible to make them at least equal to the presumably scientific objections that have been answered. Let us attempt to reduce the highest figure (25.6 per cent.) by limiting it to the last two years, when there were two doctors at the hospital, with presumably more time to make accurate records; also by ruling out all low forceps cases for fear they yet may be considered premature intervention. Let us consider as low forceps any case in which the caput (not skull) touches the perineum, regardless of whether the foetus is alive or dead, regardless of the condition of its heart, regardless of the uterine response to pituitrin, in spite of the fact that some of those cases are difficult deliveries. Then, of the 353 deliveries in the F.A.M. Hospital in 1932 and 1933, there were six high forceps, twenty-eight mid-forceps, and eight craniotomies, making a total of 11.89 per cent. difficult deliveries, to compare with the 5 per cent. and 12 per cent. of the other two institutions. The only comparative "European" figures I have at hand are for high and medium forceps in an American institution, where the percentage for ward patients was 3.29 and for private patients 9.18 (*Amer. Journ. Obstet. and Gynecol.*, April, 1932), and "6 per cent. forceps incidence" in the Rotunda Hospital (*Proc. Roy. Soc. Med.*, January, 1932).

But what were those thirty-one low forceps cases in which the forceps were possibly prematurely applied? Five foetuses were dead before admission or before labour started; fourteen patients had uterine inertia, and twelve of them received pituitrin without any effect; the hearts of five went bad; three presentations were abnormal; and in five there was insufficient information to classify. I will grant, for the sake of argument, that the last five were cases of premature intervention, and should have had 1/4 grain of morphine to tide them over their third, fourth, or fifth twelve-hour period of labour!

I still maintain that the facts show that such statements as "Childbirth in African negro mothers is a thing to marvel at—that is, for Europeans"—is misleading unless limited to a specific tribe. I trust these replies will be received in the same kind and courteous way in which I am sure the criticisms were made.—I am, etc.,

Kisumu, Kenya, Jan. 21st.

R. B. MICHENER, M.D.

* * This correspondence is now closed.—Ed., B.M.J.

Carbon Dioxide in General Practice

SIR,—During one single hour of general practice last week the value of carbon dioxide-resuscitation was very strongly brought home to me: first, a mother with respiratory failure under chloroform during an instrumental labour; secondly, the child, which required artificial respiration before it breathed; and finally, a road accident as soon as I returned home. The road accident, in which a youth received fractured ribs and severe multiple injuries through collision with a motor vehicle, demonstrated most emphatically the value of carbon dioxide resuscitation for victims of road accidents. When I arrived on the scene he was unconscious, almost pulseless, and his breathing was almost imperceptible. I applied a diluted carbon-dioxide-air mixture from a facepiece for a few moments while I examined him. His breathing and pulse improved, and he was fully conscious when he was loaded into the ambulance, although his injuries included broken ribs, fractured shoulder, and a leg crushed from thigh to ankle.

I feel confident that many of our road fatalities are due to respiratory failure within the first few moments after the accident, and that carbon dioxide, made available by a portable supply, will serve a purpose and meet a need for which nothing seems to be available at present in the majority of accidents.—I am, etc.,

GILBERT BURNET, M.C., M.B., Ch.B.

Hemel Hempstead, Feb. 17th.

Nitrous Oxide: History and Development

SIR,—In your issue of January 27th you published an interesting paper by Mr. H. Edmund G. Boyle under the above heading. In it he shows how much good work he has done towards popularizing the method in major surgery in this country. As he has mentioned my efforts towards the same object, I should like to correct one or two mistakes in the paper where he refers to me.

The international conference to which he refers was held in August, 1913—not 1912. Dr. Teter gave his demonstration at Guy's in August, 1913. My first paper on "Gas and Oxygen and Ether in Major Surgery" was read at the West London Medico-Chirurgical Society in 1912, and my second paper on the same subject at the Royal Society of Medicine (Anaesthetics Section) in February, 1913. My efforts were therefore made before Teter's demonstration at Guy's, not after, as recorded in Mr. Boyle's paper. It was very interesting to see Dr. Teter using his apparatus for anaesthesia in major surgery, but the method was not a novelty at Guy's, as I had imported the Teter gas and oxygen apparatus a few years before 1913, and had used it frequently at Guy's for the administration of gas and oxygen and ether in major surgery with rebreathing before Teter's demonstration. I showed this instrument at the Royal Society of Medicine when I read my paper referred to above.—I am, etc.,

H. M. PAGE,

London, W.1,
Feb. 19th.

Consulting Anaesthetist, West London
Hospital; late Honorary Anaesthetist,
Guy's Hospital.

Is there a "Fourth Disease"?

SIR,—The existence of a "fourth disease" in addition to the common exanthemata—measles, scarlet fever, and German measles—has often been suggested, and the occurrence of two abnormal cases seen recently would seem to justify a consideration of the possibility.

Case 1.—A female, aged 12 years, recovering from a mild attack of chicken-pox, suddenly developed a temperature of 103° F. on November 23rd, 1933, but showed no signs or symptoms of any disease. Koplik's spots were absent. On November 24th there was a patch on one tonsil which, on culture, showed Vincent's spirillum. November 25th: temperature, 104°; petechial rash on neck and clusters on the body; leucopenia—4,000 white cells per c.mm.; urine—trace of albumin. November 26th: patchy erythematous rash on body; enlarged cervical and axillary glands; temperature 104°; patient seen in consultation with Dr. C. C. Beatty, who suggested an unusually severe German measles. November 26th: typical measles rash on face and neck, spreading to the body and limbs. Temperature remained at 103° to 104° until December 2nd, after which recovery, though slow, was uneventful. On December 7th the patient's sister developed a fever. Koplik's spots were present, and measles developed in the ordinary way and ran a fairly ordinary course. On December 26th the original patient began to desquamate freely, and showed a severe and complete desquamation of the hands, legs, and feet.

Case 2.—A male, aged 28, shivered on January 24th; when seen the next day he had a severe headache and sore throat; temperature, 102°; pulse, 88; no Koplik's spots were present, and the throat looked like a "scarlet." January 26th: temperature, 104°; pulse, 88; no rash; a few glands in the neck. January 27th: temperature, 104°; no rash. January 28th: a few scattered papules on neck and face; rough morbilliform eruption on buttocks, legs, and arms; leucopenia—3,000 white cells per c.mm.; urine—trace of albumin; ulceration of lips and tongue. The rash did not develop on the body, but did on the neck and face, where it became confluent. Temperature remained at 104° till February 4th, and then dropped by lysis. On February 12th patient began to desquamate, and showed a severe and complete cast-like desquamation of pinnae, hands, and feet.

Both cases might well be accepted as severe measles, but the desquamation, in the first case about four weeks after the eruption appeared, and in the second fifteen days afterwards, is so unusual as to warrant the suggestion that the condition was one of simultaneous scarlet fever

and measles. The absence of Koplik's spots and the glandular enlargement is in favour of German measles, but the development in the patient's sister of a typical measles fourteen days after contact is against this diagnosis. The presence of a leucopenia in both cases is in favour of the measles group. One is tempted to speculate on the significance of a leucopenia in these infections, as also in typhoid, influenza, and undulant fever. Leucocytosis is the usual response to infection or injury; but in the diseases mentioned, is a leucopenia evidence of a lack of response to the infection or to a specific action of the organism or virus on the leucopoietic tissues? If a specific action, is there any other evidence connecting these diseases, in two of which—namely, influenza and measles—the aetiology is still obscure?—I am, etc.,

London, N.7, Feb. 18th.

W. LEES TEMPLETON.

Medical Examination at the Police Station

SIR,—Mr. Justice Rigby Swift, at the Liverpool Assizes on February 12th, criticized a doctor for telling the police the opinion he formed as to the sobriety of a man on whose behalf he was called upon to make an examination. The brief report in the *Daily Sketch* of the following day does not permit one to judge the merits of this particular case. Clearly the accused's doctor is not justified in telling the police his conclusions till he comes into court—or at least has his patient's consent. Is the police surgeon under similar obligation? This question affords an opportunity for considering from an ethical point of view the procedure of medical examinations at the police station in cases of charges for drunkenness. First of all, the police surgeon is called in and proceeds to examine the accused without saying "By your leave," or "Would you like your own doctor to be present?" This obviously is incorrect. If he is drunk he cannot give consent, and therefore the examination is strictly not legal; if he is capable of giving consent he is not drunk, and therefore the examination for that purpose is unnecessary.

In my long experience of metropolitan police stations I have found that invariably the police surgeon made his examination in your absence, yet he remained, or returned, for your examination on behalf of the accused. Another questionable procedure I have found usually followed the examination of the private doctor—namely, the inspector asks him to write down in the station book his report of such examination. The suggestion is made in such a way that a doctor inexperienced in such matters would be inclined to believe that it is a legal duty, and that the patient would be adversely affected if he declined, and, indeed, the attitude of the police rather conveys that impression when refusal is made. This certainly is not as it should be, and the senior police surgeon is obviously the proper authority to regulate such matters.—I am, etc.,

London, S.W.1, Feb. 15th.

REDMOND ROCHE.

P.S.—Since writing the above I notice in to-day's *Times* (February 15th) that the same judge (Mr. Justice Swift), in another case in the Liverpool Assizes, protests against the methods of medical examination of motorists suspected of being drunk. The judge asked by what right the police surgeon examined the accused, and went on to say: "The police are entitled to ask a doctor to come and observe a man they have in their cells, but they have no right whatever to put him through tests unless he consents. If they say he is able to give consent, then they have no business to come here and say he is drunk, because drunkenness destroys consent." The learned judge later protested against these "inroads on British freedom." It is clearly most desirable that these problems should be solved.—R. R.

Trachoma

SIR,—In your annotation "Ophthalmology in Egypt" (February 3rd, p. 204), and referring to my paper on the Prowazek-Halberstaedter body, you write as follows. "He comes to the conclusion that trachoma without inclusion 'bodies' may be the pure disease, and trachoma with inclusions a secondarily infected form." (Italics mine.) I am afraid that my writing must have been obscure, and I would certainly substitute "is" for "may be."—I am, etc.,

Giza, Egypt, Feb. 11th.

F. H. STEWART.

Obituary

EDWARD JOHN CAVE, M.D., F.R.C.P.

Consulting Physician, Royal United Hospital, Bath

Dr. Edward John Cave died in Bath on February 16th, after a few days' illness, and the city lost one of the most brilliant of the many able physicians that have served her.

Born in 1859, educated at Chard Grammar School, and a medical student at Bart's, Cave graduated M.B.Lond. —with gold medal—in 1885, and two years later obtained the M.D. degree, qualifying for the gold medal. In 1912 he was elected F.R.C.P. After serving as resident medical officer at the Royal United Hospital, Bath, and subsequently at Leeds and Newcastle, he started in general practice in Crewkerne, Somerset, where he was soon recognized as a practitioner of unusually high skill, and medical men who knew his worth when he was resident in Bath persuaded him to return to that city, where he rapidly made a great and widespread reputation as a consulting physician.

Dr. Cave had been a member of the British Medical Association for forty-nine years. He served for two periods on the Central Council, and was a past president of the Bath and Bristol Branch. At the Annual Meeting of the Association in 1925 he was vice-president of the Section of Medicine. He was one of the founders of the Bath Clinical Society, a member of the Bristol Medico-Chirurgical Society, and a member of the Association of Physicians of Great Britain. Though not a voluminous writer, what he wrote was good; among his papers were: "Recent Applications of Bacteriology to Clinical Medicine," "Pneumococcal Arthritis," and "Spa Treatment of Neurasthenia." His contributions to discussions at medical meetings were not frequent, but highly valued for their convincing logic. He went to Bath at a time when a scientific outlook in spa treatment was peculiarly valuable, and he found and inspired able colleagues who have continued the same high tradition which has placed Bath in the position it now holds in the medical profession. He had a large practice among visitors to the baths, mostly sent to him by medical men, among whom his reputation stood so high. But it was chiefly as colleague and consultant that he was known to and valued by the medical men in that part of England.

Gifted with a remarkable memory, a logical mind, and rapid perception, he had all the qualifications for a physician and consultant; a sound, thorough, and up-to-date knowledge of his calling, the result of much reading with critical induction of new ideas of pathology and treatment and a large experience of hospital and private practice; deliberate and thorough in examination, yet a rapid thinker; a quiet but genial manner with a real sense of humour and a sympathy born of the knowledge of the import of illness to the patient. A man of the world, his opinion, given with a dignity peculiarly his

own, with due regard for his colleagues' views, was rational in its appeal and practical in its suggestion for treatment. With nothing whatever in manner or word of affectation or pretension, he had that peculiar personality which gave confidence and satisfaction both to patient and to doctor. Never in a hurry, quiet and unassuming, shunning anything that might savour of advertisement, he was not so much in the public eye as he might have been, but he held that position in the profession and among his patients that nothing could disturb. At one time he talked of retiring and living in the country, for he enjoyed farming and shooting, but the call of his profession kept him to his work, and although of late years he preferred to do less and to take life more leisurely, he kept himself to the very last fully conversant with the literature and practice of the day. He was a brilliant chess player, president of the Bath Chess Club, and played for the county of Somerset; he was also a good billiards player. A man of liberal views and sound judgement in all manner of things, his colleagues and friends looked on his opinion as that of a judge, and now, alas! he is no more there when we may want him. He was a widower, and leaves a daughter, Mrs. Marshall, to whom our sympathy is extended.

Dr. Cave was buried on February 20th at St. Andrew's Church, Bath. A very large congregation of medical men testified to the appreciation and affection of all who knew him.

E. CANNY RYALL, F.R.C.S.I.

Senior Surgeon, All Saints' Hospital for Genito-Urinary Diseases

We regret to announce the sudden death, on February 11th, of Mr. Canny Ryall, at his home in Harley Street. He was senior surgeon to All Saints' Hospital for Genito-Urinary Diseases in Austral Street, E.C., which he himself had founded on a small scale twenty-three years ago in Vauxhall Bridge Road.

Born on May 6th, 1865, Edward Canny Ryall traced his descent from one of Cromwell's officers who settled in Ireland at the termination of the Irish wars. His father, E. C. Ryall, M.R.C.S., served through the Crimea and the Indian Mutiny as surgeon to the 18th and 86th Regiments. His brother, Sir Charles Ryall, senior surgeon to the Cancer Hospital and the Bolingbroke Hospital, London, died in 1922. After studying medicine in Dublin and at several London hospitals, and also in Continental clinics, Canny Ryall obtained the diploma L.R.C.P.Lond. in 1890, and the M.R.C.S.Eng. in 1893, and was elected a Fellow of the Royal College of Surgeons in Ireland in 1900. At the Westminster Hospital he served for some years as surgical registrar, curator of the museum, and senior demonstrator in anatomy and physiology; he was then appointed surgeon to the Westminster General Dispensary and to the Kensington and Fulham General Hospital. A growing interest in genito-urinary surgery, and the possession of ample means, led him, in 1911, to found the All Saints' Hospital, and thenceforward his professional life largely centred in that institution. He was also consulting genito-urinary surgeon to the Clacton-on-Sea and District Hospital, and to the Musicians and Concert Artists' Benevolent Society.

Canny Ryall's book *Operative Cystoscopy*, published in 1925, incorporated the results of many years of study, with an abundance of illustrations by Mr. Thornton Shiells. Many of the instruments described in that work had been invented or modified by the author, and still bear his name. As in his other writings, the letterpress was marked by a strong individual flavour and a dramatic touch seldom found in English surgical authors. The operative measures he advocated have not found favour

with all urological surgeons, though his industry and enthusiasm were widely recognized. A paper on the treatment of calculi impacted in the pelvic portion of the ureter appeared in these columns in 1920, and as long ago as 1907 he had written on the value of spinal analgesia. He was an enthusiastic golfer, and well known to all the members of the Sandy Lodge Club. A challenge cup presented by him, and bearing his name, is competed for regularly at the meetings of the Medical Golfing Society, of which he had been president.

COLIN MACKENZIE, O.B.E., M.D., F.R.C.S.

Surgeon, Bradford Royal Infirmary

We much regret to announce the sudden death of Mr. Colin Mackenzie on February 10th, while on a cruise in the West Indies. He was born in 1883, and was educated at Eastbourne College and Emmanuel College, Cambridge, where he took his B.A. (Natural Sciences Tripos) in 1904. He then went to the Middlesex Hospital, where he obtained the M.R.C.S. and L.R.C.P. diplomas in 1908, and the F.R.C.S.Eng. in 1912. In 1914 he graduated M.B., and also M.D.Cantab. He was junior Broderip Scholar at Middlesex Hospital in 1908. After graduating he served as house-physician and house-surgeon at the Middlesex Hospital, and in 1913 he was appointed resident surgical officer at the Bradford Royal Infirmary. On the outbreak of war in 1914 he volunteered for service, and went to France in the very early days, where he served with a casualty clearing station as surgical specialist, and took part in the retreat from Mons. In 1916 he was appointed surgical specialist at No. 14 General Hospital, Wimereux, under, the then, Colonel John Goodwin. During the latter part of the war he was appointed officer in charge of the surgical division of the same hospital, and had over two thousand beds under his care. For his services he was awarded the O.B.E. (Military Section), and he held the rank of major on demobilization.

After the war Mackenzie returned to Bradford and commenced practice as a consulting surgeon. He was appointed honorary assistant surgeon to the Bradford Royal Infirmary in 1919, and was promoted to the full staff in 1923. He was also appointed surgeon to St. Luke's Hospital, Bradford, in 1920. Both of these posts he held at the time of his death. He was a member of the British Medical Association, and from 1925 to 1931 served as honorary financial secretary of the Bradford Division, and in 1932 he was chairman of the Division. He was a very keen Freemason, and was a Past-Master of the Middlesex Hospital Lodge, and also of the Pentalpha Lodge, Bradford. In his younger days Colin Mackenzie was a Rugby football enthusiast, and he also took great interest in amateur theatricals. Later in life fishing and flying were his recreations, and recently he obtained his pilot's certificate.

As a surgeon, he was a man of outstanding merit; his diagnoses were remarkably accurate, while his judgement and operative technique were very sound. He was a man of sterling qualities, possessing an attractive manner and a keen sense of humour, both of which inspired confidence in his patients, and also brought him a large circle of friends. He would go out of his way to do a kindness, and, no matter what time of day or night it was, he would always respond cheerfully and promptly to a call for assistance. Those who had the privilege of knowing him and working with him feel that they have lost a loyal friend and colleague, whom it will be difficult to replace. He will long be remembered with affection and esteem in the medical and social life of Bradford.

Truly the following might apply to him:

"One who never turned his back but marched breast forward,
Never doubted clouds would break,
Never dreamed, though right were worsted, wrong would triumph,
Held we fall to rise, are baffled to fight better,
Sleep to wake."

A memorial service was held at St. Barnabas' Church, Heaton, Bradford, on February 15th, and this was attended by a very large number of his professional brethren, fellow Masons, and friends. He leaves a widow and four young sons.

W. N. W.-W.

We regret to record the death, on January 29th, of Dr. EMILIEN EDOUARD FROSSARD, who had practised in Bishop's Lydeard, near Taunton, since 1889. Of distinguished French descent, he was born at Bagnères de Bigorre in 1865, and was educated in Bordeaux. He received his medical training at King's College, London, obtaining the diplomas M.R.C.S., L.R.C.P. in 1889. At one time he was assistant house-surgeon and dresser to Lord Lister. He built up a large practice in Bishop's Lydeard, in the general social life of which he took great interest from the beginning of his residence there. He was public vaccinator for the district, and formerly medical officer to the board of guardians. During the war he served as medical officer to the local prison camp for German officers. In his younger days he captained the local cricket team. He was chairman of the working men's institute, and organized many concerts and other entertainments. About twenty years ago Dr. Frossard's services were recognized by the presentation to him of a motor car and an illuminated address. Although in failing health for several years, he had continued actively in practice, and his death occurred suddenly a few hours after he had been called out at midnight to an urgent case. He had been a member of the British Medical Association since 1892, and was president of the West Somerset Branch in 1902-3. He is survived by his widow and three sons, one of whom is in the medical profession.

The following well-known foreign medical men have been reminded: Dr. J. CANTACUZÈNE, professor of bacteriology and director of the Institute of Serums and Vaccines at Bucarest, representative of Rumania at the International Health Office in Paris, and former Minister of Health for Rumania, aged 70; Dr. ALBERT HOGGE, professor of the Liège Faculty of Medicine and member of the French Urological Association, aged 66; Dr. WLADYSŁAW FILIPOWICZ, director of the surgical clinic of the Protestant Hospital at Warsaw; Dr. J. GORTANI of Terzo Aquileia, near Trieste, probably the oldest practitioner in the world, aged 106; Professor EUGEN JOSEPH, for many years director of the urological department of the Berlin Surgical University Clinic, aged 54; Professor GEORG ABELSDORFF, a Berlin ophthalmologist, aged 64; Geheimrat Professor ERNST VON ROMBERG, director of the First Medical Clinic at Munich, aged 68; Professor GEORG ROSENFELD, an authority on metabolic diseases, aged 73; and Dr. ALFRED FABIAN HESS, professor of clinical paediatrics at the University and Bellevue Hospital Medical College, New York, aged 58.

The Services

MEDICAL DIRECTOR-GENERAL R.N.

The Admiralty announces that the appointment has been approved of Surgeon Rear-Admiral Robert W. B. Hall, C.B., O.B.E., M.R.C.S., L.R.C.P., to be Medical Director-General of the Navy, in succession to Surgeon Vice-Admiral Sir Reginald St. G. S. Bond, K.C.B., F.R.C.P., F.R.C.S., M.B., C.M., D.P.H., to date July 2nd, 1934.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The committee stage of the Unemployment Bill and the second reading of the Rural Water Supplies Bill were the chief business of the House of Commons this week. On the former Bill discussion was renewed about the allowances for the children of the unemployed, and references were made to their nutrition.

Sir Hilton Young headed a deputation to Sir Hilton Young on February 19th from the Conservative Health and Housing Committee. The deputation explained that it did not advocate a reintroduction of the housing subsidy, but urged that slum clearance should be supplemented by a vigorous effort for reconditioning houses and encouraging rural housing.

Mr. Hugh Molson, having a favourable place in the ballot, has given notice that in the House of Commons, on February 28th, he will call attention to mental deficiency and to the report of the Departmental Committee on Sterilization; and move: "That this House considers that the facts set out in the report of the Departmental Committee on Sterilization indicate a state of affairs calling for action, and respectfully requests His Majesty's Government to give immediate consideration to the unanimous recommendation of the committee in favour of legislation permitting voluntary sterilization in certain classes of cases." Dr. O'Donovan has tabled an amendment asking the House to declare that "prior to any action on the departmental report, the present law and the origin of the law on the matter of voluntary sterilization should be the subject of a further departmental inquiry." On the same day, if time permits, Mr. Rhys Davies will call attention to national health insurance, and move a resolution.

Mr. Boothby gave notice that on February 21st he would present a Bill to regulate the practice of osteopathy and to prescribe the qualifications of osteopathic practitioners.

Contraceptives Bill

The committee stage of the Contraceptives Bill is set down in the House of Lords for February 27th. The Earl of Listowel has handed in amendments to exempt from the Bill the sale or offer for sale of contraceptives when the offer is made by a registered medical practitioner, a midwife, or a duly authorized representative of any birth control clinic that is not conducted for profit. He also proposes that periodical publications or medical journals recognized by the profession shall be exempted from the embargo against the dispatch to unmarried persons below the age of 18 of all documents containing information relating to any contraceptive.

Duty on Insulin

On February 12th, on the motion for the adjournment of the House of Commons, Commander OLIVER LOCKER-LAMPSON called attention to what he described as a recent most unsatisfactory answer by the Government on the subject of insulin. He said that the decision of the Tariff Commission to impose a duty of 33½ per cent. on imported insulin was a mistake in morals as well as in medicine. A small and unrepresentative committee came to this decision, and recommended legal action. This committee consisted of chemists, and was presided over by a lawyer. After hearing the evidence only of other chemists, the committee decided that insulin was a fine chemical and, in accordance with the legal regulations, the duty was imposed. The truth was that a committee, on which neither the doctors nor the public nor the inventor were represented, sat and imposed, by a technical trick, this tax on poverty and disease. The imposition of this duty had kept out foreign insulin. Before, it was sold from Denmark, and could be purchased at about 6d. After this duty was imposed, insulin could only be

purchased in this country for 1s. 10d., or occasionally 1s. 6d., although this drug could be made at a cost of 2d. a dose. In ordinary illnesses there were many rival drugs, which could be purchased in competition, each of which might achieve a cure. In the case of diabetes there was only one treatment—that was insulin. To-day there were 100,000 helpless and otherwise hopeless victims whom this tax not only exploited but blackmailed. He begged the Government to reconsider its decision, to take over the making of insulin itself, and to stop commercialization of misery.

Mr. SHAKESPEARE said that our experience since the introduction of safeguarding had shown that the imposition of a tax did not necessarily mean an increase of price. On the contrary, safeguarding had enabled home manufacturers to produce articles at a steadily falling price. When insulin was first manufactured in this country at the beginning of 1923 the price was 25s. per 100 units. It rapidly fell to 2s. 8d. Imported insulin was made subject to the general 10 per cent. duty until 1933. Two firms in this country were, in 1933, producing it at 2s., and the third firm at 1s. 8d. per 100 units retail price. The retail price of imported insulin was 1s. 5d. After the inquiry was held, it was decided that insulin was really a fine chemical, and the result of the imposition of the 33½ per cent. duty was that there had been a reduction of the British price; instead of 2s. per 100 units, two firms were now producing it at a retail price of 1s. 10d. A third firm was actually retailing it at 1s. 5d. per 100 units. The price of the imported product had not risen, in spite of the duty, but remained at 1s. 5d. per 100 units. Insulin was cheaper in this country, probably, than in any other country in the world, except, possibly, Scandinavia. Quite recently representations were made by American and Canadian producers to British producers that if the price was reduced any more it would be impossible to compete and produce at an economic level. Only a few months ago the price of the American article was 4s. 9d. per 100 units, compared with 1s. 10d. Commander Locker-Lampson, intervening, asked if it could not be got for 6d. in Denmark. Mr. Shakespeare replied that the retail price from Denmark was 1s. 5d. The hon. member was perhaps thinking of the fact that, apart from this retail price, insulin was supplied by a British firm at 1s. per 100 units to all the hospitals, and every person suffering from diabetes who was an insured person got insulin free. In view of the fact that the Americans could not produce it at anything like our price, and that it was cheaper here than anywhere, except Scandinavia, he could see no reason for the apprehensions of the hon. member. One could only hope that the stabilization of the duty would enable the home producers of insulin to do what other producers had done, and, by a reorganization of production behind the duty, and with an assured market, steadily to reduce the price of the commodity. There were reasons why Denmark, with her strong organization of the pig industry, could produce insulin more reasonably than other people. The Minister of Health was watching the matter, and there was no cause for apprehension. On the contrary, we could congratulate ourselves that, in spite of the duty, the price had fallen, and was falling.

Insulin Manufacture under Licence.—Sir HILTON YOUNG told Commander Locker-Lampson, on February 8th, that insulin was manufactured in the United Kingdom under licences granted under the Therapeutic Substances Act, 1925, subject to compliance with the regulations made under the Act. He did not think that any was made by the Government. Commander Locker-Lampson gave notice that he proposed to raise the subject shortly on a motion for the adjournment of the House.

Dangers of Oxy-acetylene.—Mr DOUGLAS HACKING told Mr. Dingle Foot, on February 14th, that new legislation would be required to extend to ships being repaired in wet dock the regulations concerning oxy-acetylene apparatus. He had no reason to think ship-repairing firms did not take similar precautions when using oxy-acetylene apparatus, whether the ships were in a wet or a dry dock. The Ship-building Employers' Federation was circularizing its members on the special dangers revealed by a recent fatality at Millwall and on the precautions necessary.

Rehousing in London.—In reply to Major Nathan, on February 15th, Sir HILTON YOUNG said it was estimated that about 15,000 persons living in the county of London would be displaced and rehoused during 1934-38 by the combined operations of the London County Council and the metropolitan borough councils. The number of persons to be displaced and rehoused by local authorities wholly or partly in the metropolitan police district but outside the administrative county area was estimated at about 19,000.

Protection from Poison Gas.—On February 20th Captain GUEST asked whether any education of the masses was being undertaken to instruct how they should behave in case of gas attack from the air. Mr. RAMSAY MACDONALD referred to a reply given on November 23rd last year by the Home Secretary. He added that the problem of protection had engaged the attention of successive Governments, and precautions were being taken to safeguard the civil population as far as possible against air attack.

School Medical Inspection.—Mr. RAMSBOTHAM told Sir E. Campbell, on February 15th, that medical inspection of children in elementary schools did not normally extend below the waist or necessitate the entire stripping of every child. In cases where there was reason to suspect the existence of a defect which required a more complete examination, suitable arrangements were made for this to be carried out. He was not satisfied that the advantages of making a complete examination as a routine practice would justify its adoption in view of the objections which might be raised by parents.

Inadequate Slum Clearance Schemes.—Sir HILTON YOUNG, answering Mr. D. G. Somerville on February 15th, said that, as the result of inquiries which he had caused to be instituted into the adequacy of the slum clearance schemes at eleven towns, eight had furnished information necessary for the discharge of his responsibilities in respect of slum clearance under the Act of 1930. He had communicated with the authorities concerned his conclusions on the reports made to him. The report on the inquiry at Bootle was receiving his consideration, and he awaited an inspector's report on the inquiry at Leicester. He was also making further inquiries of the corporation of Croydon.

Diluent of Calf Lymph.—Sir HILTON YOUNG informed Mr. Groves, on February 15th, that the diluent used in the preparation of calf lymph was a mixture containing 50 per cent. of sterilized glycerin and 50 per cent. of distilled water.

Foundling Hospital Site.—Replying to Dr. Howitt, on February 14th, Mr. SHAKESPEARE said the Minister of Health could not promise a Government grant towards the purchase of the Foundling Hospital site.

Prosecutions under the Poisons Act.—Mr. HACKING told Mr. Grenfell, on February 15th, that the Pharmaceutical Society initiated proceedings in Great Britain for breaches of the Pharmacy and Poisons Acts in 170 cases in 1931, in 169 cases in 1932, and in 161 cases in 1933. In addition, the police in England and Wales, who had power to intervene only in cases in which they had reason to suspect a breach of the law, prosecuted in eighteen cases in 1931, and in ten cases in 1932. Figures of police prosecutions for 1933 were not yet to hand. The duty of enforcing the provisions of the Act of 1933 was placed upon the Pharmaceutical Society and the local authorities, according to the classification of the poison in the Poisons List. Both were given full powers of inspection. Hitherto routine inspection had been confined to the Pharmaceutical Society, with undoubtedly inadequate powers. The new Act considerably increased those powers, but had not yet come into force, and the House must wait to see whether those powers were sufficient.

Evasion of the Medicine Stamp Duty.—Mr. HORE-BELISHA said, on February 15th, that he knew certain manufacturers of medicines had taken steps, one being a disclaimer of proprietary rights, to bring their preparations within the scope of the exemption from Medicine Stamp Duty. He had noted a suggestion of introducing a penny stamp for such packages, if of small value.

Notes in Brief

The Prime Minister states that it is not yet possible to fix a date for the introduction of the Housing Bill.

Medical News

Sir George Newman will deliver four lectures, illustrated by lantern slides, on Florence Nightingale and hospital services, at Gresham College, Basinghall Street, E.C., on February 27th and 28th and March 1st and 2nd, at 6 p.m. Admission free.

The Hunterian Oration will be delivered before the Hunterian Society at the Mansion House, E.C. (by kind permission of the Lord Mayor), on Monday, February 26th, at 9 p.m., by Dr. B. T. Parsons-Smith, on "Cardiac Failure in the Eighteenth Century and its Modern Conception."

The Council of the Metropolitan Counties Branch has invited the recently qualified and all fifth- and fourth-year students to an address and cinematograph display by Dr. R. G. Canti, on "The Cultivation of Living Tissues," on Tuesday, March 6th, in the Great Hall at B.M.A. House. Tea will be served after the guests have been received by the president of the Branch, Dr. Chas. F. T. Scott, at 5 p.m.

At a drawing-room meeting, on behalf of the Institute of Ray Therapy, Camden Town, N.W., to be held at the Mansion House on Friday, March 2nd, at 3.30 p.m., the speakers will include Lord Horder, Sir William Hale-White, Sir Robert Stanton Woods, and Dr. W. J. O'Donovan.

The 160th anniversary dinner of the Medical Society of London will be held on Tuesday, March 6th, at the Trocadero Restaurant, at 7.30 for 8 p.m., with the president, Sir John Thomson-Walker, in the chair.

A dinner in aid of the Metropolitan Hospital will be held at the Savoy Hotel on Wednesday evening, February 28th, when Lord Moynihan will be in the chair. Particulars can be obtained from Mr. G. Cooling, secretary, Metropolitan Hospital, Kingsland Road, E.

The Royal Sanitary Institute has arranged a sessional meeting at the Central Middlesex County Hospital, Acton Lane, Willesden Junction, N.W., on Saturday, March 10th, at 10 a.m., when a discussion on "Maternity and Children's Hospitals" will be opened by Mr. A. Saxon Snell, F.R.I.B.A., with Dr. George F. Buchan in the chair. After the discussion members will be conducted over the new children's wing of the hospital. Professor James A. Doull, M.D. McGill, D.P.H. Lond., Western Reserve University, Cleveland, Ohio, has been elected an Honorary Fellow of the Institute.

The annual general meeting of the Medical Officers of Schools Association will be held at 11, Chandos Street, W., on Friday, March 2nd, at 5 p.m., when there will be a discussion on the necessity for greater reciprocity between parents, consultants, home doctors, and school authorities, more especially in matters relating to health, to be opened by Sir Montague Foster and Dr. H. C. Cameron. Tea at 4.30 p.m.

Some two years ago Sir G. Buckston Browne, F.R.C.S., offered to present to University College Hospital Medical School a number of valuable pictures and articles of furniture from his collection in Wimpole Street. It was suggested to him that a common room for the senior staff would be an appropriate place in which to house his handsome gifts. Sir Buckston Browne fell in with this idea, and the room was finished and formally opened in July last. A descriptive catalogue of the pictures and furniture has now been compiled by the donor, and is printed in pamphlet form, together with a portrait and brief biography.

To honour the occasion of his approaching marriage, Dr. M. J. Nolan, resident medical superintendent of Down County Mental Hospital, was presented by the consultant and resident staffs of that institution, on February 9th, with a radio-gramophone. Dr. Nolan is a consulting visitor in lunacy to both the Lord Chief Justice of Northern Ireland and to the Chief Justice of Southern Ireland. He is also a justice of the peace for County Down.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the seventh lecture-demonstration, by Dr. Clark-Kennedy, on jaundice, will take place at the Medical Society of London on Tuesday, February 27th, at 2.30 p.m. The subject of the eighth lecture, on March 6th, will be anaemia. A demonstration on the treatment of recent and old fractures will be given on February 27th, at 2.30 p.m.; by Mr. Alan Gairdner, at the St. George-in-the-East Hospital. A whole-day course in medicine, surgery, and gynaecology will be given at the Royal Waterloo Hospital, March 5th to 24th; a course in orthopaedics at the Royal National Orthopaedic Hospital, from March 5th to 10th; and an all-day course in proctology at the Gordon Hospital, from March 5th to 10th. Courses of instruction arranged by the Fellowship of Medicine are open only to members and associates.

The German Society of Internal Medicine will hold its forty-sixth congress at Wiesbaden from April 9th to 12th, under the presidency of Professor Schittenhelm-Kiel. Joint sessions are being arranged with the German society for the study of diseases of the digestive system and metabolism. Among the subjects to be discussed are the part played by vitamin D in metabolism and digestion, the physiology and chemistry of the sex hormone, normal and pathological ovarian function, the physiology and pathology of nutrition, and the significance and distribution of localization in the nervous system. Further information may be obtained from Dr. J. F. Bergmann, Trogerstrasse 56, Munich.

Two medical tours of the Mediterranean and its vicinity have been arranged for Easter. One, under the patronage of the Marseilles Faculty of Medicine, opens at Marseilles on March 27th, and includes Aix-en-Provence, Cassis, Toulon, Hyères, Saint-Raphael, Cannes, Juan-les-Pins, and Antibes, terminating at Cannes on April 3rd. Extensions can be arranged to Avignon, Saint-Remy, Arles, and elsewhere. The other, sponsored by the Strasbourg Faculty of Medicine, from April 1st to 8th, starts at Cannes and ends at Nice, having included in its scope Antibes, Grasse, Nice, Monaco, Villefranche, and adjacent towns. Further information about these tours may be had from the Federation of the Health Resorts of France, Tavistock House (North), Tavistock Square, W.C.1.

The Departmental Committee which is considering the question whether it is desirable that the law should be altered so as to enable definitions or standards of food to be prescribed held a meeting on February 20th, when evidence was given by Mr. E. W. Cemlyn-Jones, Mr. W. L. Platts, and Lieut.-Colonel T. R. Ubsdell, on behalf of the County Councils Association, by Dr. W. G. Savage and Dr. Charles Porter on behalf of the Society of Medical Officers of Health and the Association of County Medical Officers of Health jointly, and by Professor J. C. Drummond and Dr. W. M. Willoughby on behalf of the People's League of Health.

Ever since the British Red Cross Society's Blood Transfusion Service has been in existence there has been difficulty in keeping the individual members together as an organization. Living widely apart, some as far as fifty miles from London, and possessing no interest in common beyond the anxiety to be of service to suffering humanity, there has been a lack of cohesion that has been felt in far too frequent droppings out from the service. The Society has now sanctioned as an experiment for a year the issue of a general circular to members, containing notes of interest, statistical returns, reports of cases, dates of forthcoming lectures and social gatherings, and answers to questions often raised in connexion with the technical side of blood transfusion.

Mr. F. W. Hampshire, chairman and managing director of the well-known firm of manufacturing chemists of Derby, has promised the sum of £35,000, spread over seven years, to the fund which University College Hospital is raising in celebration of its centenary.

The address by Dr. H. L. Gordon on "Amentia in the East African," of which a report appeared in these columns on November 18th, 1933 (p. 923), has now been published in full in the *Eugenics Review*.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, *British Medical Journal*, B.M.A. House, Tavistock Square, W.C.1.

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Chronic Gonococcal Infection

"PERPLEXED" asks for suggestions on the following case: A male had gonorrhoea eighteen years ago. Two years ago he came to me with a very slight urethral discharge. Since then I have constantly been treating him with irrigations of pot. permang. and of zinc permang., injections of autogenous vaccine, capsules of santal-wood oil, caprokol, pyridium, and also massage per rectum. In spite of all, smears taken every now and then show the gonococcus.

Treatment of Chronic Herpes

Dr. R. W. H. TINKER (Painswick, Glos.), in reply to the query of "Vesicle" in the *Journal* of February 10th (p. 268), writes: May I suggest that he should try pituitrin injections if he has not already done so? During the last six months I have been treating all herpes cases with daily doses of five international units of Messrs. Duncan and Flockhart's pituitary (posterior lobe) extract. Most cases have only required one or two doses, and the maximum number I have had to give has been four. The effect of this treatment is astounding. Not only is the pain rapidly controlled, but the lesions themselves quickly disappear. I have rough notes on most of these cases, whose ages range from 40 to 84, and pregnancy seems to be the only contraindication.

Dr. HERBERT J. GREEN (Banff) writes: I have found that auto-injection of 25 c.cm. of the patient's whole blood injected deep into the gluteus muscle, along with small doses of calomel, has the most dramatic effect in a very resistant case of herpes. A slight pyrexia results, causing little discomfort, but the reaction seems to have the desired effect. I first saw this treatment advocated by Dr. Roxburgh, in his book *Diseases of the Skin*.

"W. H. B." writes: I would suggest trying filtered doses of x rays over the site of the lesion. The dosage suggested is one skin unit through three millimetres of aluminium every fortnight for three applications, and a fourth application three weeks thereafter. I cannot explain its action, but I have seen beneficial results in similar cases.

Income Tax

"Child Allowance"

"R." has a son, 21 years of age, who has been a pupil at a school of chiropody. A premium has been paid, and the son is required to study for a year at least. The "child allowance" has been refused on the ground that the school in question is "not a recognized educational institution."

** The question is governed by Section 21 of the Finance Act of 1920. Subsection (1) requires that the "child" shall be receiving full-time instruction at any university, college, school, or other educational establishment, and Subsection (4) provides that "if any question

arise the Commissioners of Inland Revenue may, on request of the Income Tax Commissioners concerned, consult the Board of Education." Taken as a whole the section appears to contemplate general rather than vocational education, at least unless the vocational training is in connexion with a recognized university, etc. If it has not already been done, we suggest that "R." should send up the prospectus, etc., of the school of chiropody in question to Somerset House and ask for a specific ruling—or perhaps the school, being indirectly interested, would take the matter up for him. If that decision is adverse, it is probably useless contesting the point further.

Tax on Interest Received: Repayment

"TINTAX," in a letter supplementary to that summarized in our issue of January 20th, page 131, asks what repayment he can claim.

•• The income liable to assessment and allowances due are as follows:

Interest, £197 + £10	...	...	...	...	...	£207 0
Annual value of house...	...	...	...	...	...	£54 0
						£261 0
Allowances due:						
Personal	...	...	...	...	...	£150 0
"Child"	...	...	...	...	...	£ 50 0
Dependent relative	...	...	...	...	...	£12 10
						£48 10

Tax chargeable at 2s. 6d. on £48 10s. amounts to £6 1s. 3d.

As against this "Tintax" has paid at 5s. in the £ on the remainder of his income—that is, he has had the "relief" at 2s. 6d. in the £ on the above £48 10s. only. He is therefore entitled to repayment on £175 - £48 10s. = £126 10s. at 2s. 6d. = £15 16s. 3d. less the £6 1s. 3d. payable direct—that is, to a net repayment of £9 15s.

Replacement of Car

"OCTAVIUS" paid £325 for a car five years ago. He is now selling it for £65 and buying another for £318. He has made no claim for depreciation in the past. What can he claim now?

•• He can claim as a professional expense of the year in which he buys the new car the amount of the actual out-of-pocket cost—that is, £318 - £65 = £253. If he makes his accounts up to March 31st, for instance, it will reduce his profits for the year ending at that date and his assessment for 1934-5; if, on the other hand, the usual ending date of his accounts is December 31st, then the transaction will reduce his profits for 1934 and will affect the assessment for 1935-6.

Professional Premises—Part Sublet

"DOUBTFUL" used to rent a lock-up surgery. He has since taken larger premises, sublet a part, and uses the other part as his surgery. How should the rent received by him be dealt with for income-tax purposes?

•• "Doubtful" may adopt one of two alternatives: (1) treat the rent received as professional receipts and deduct the whole of the rent, rates, etc., paid for the premises as professional expenses; or (2) divide the expenses into two parts by estimating how much applies to the sublet portion, and exclude the rent receipts and the relative part of the expenses. The former alternative is simpler, as it avoids the necessity for estimating the ratio between the two portions.

Salary Inclusive of Board and Lodging

"S. B." receives £350 as resident medical officer at a hospital, but, instead of being provided with rooms and board, receives a further £150 and the use of a small house. The previous M.O. was under a different arrangement, and had to pay tax only on his salary.

•• "S. B." is liable to assessment on the £350 + £150 = £500. The difference in taxation as compared with his predecessor may seem to him unfair, but "S. B." is in the same position as the great majority of salary earners—his predecessor was in the smaller but fiscally more fortunate group who receive benefits tantamount to an addition to income but in a form which leaves them free from assessment.

LETTERS, NOTES, ETC.

Surgery of the Biliary Tract

Mr. MAKHAN SINGH KHERRA, F.R.C.S.Ed. (surgeon to the Machwi Mines, Ltd., Burma), writes: In the recent correspondence on biliary lithiasis in the November issues of the *Journal* there are two opinions as to treatment: (1) removal of the gall-bladder, and (2) external drainage. The first stands on the grounds that drainage is inefficient in the treatment of gall-stones, and the latter that the removal of the gall-bladder is a serious procedure. I enclose a reprint of my paper which appeared in the issue of the *Indian Medical Gazette* for October, 1933, where I stated my opinion that the *via media* between the two operations is anastomosis of the gall-bladder to the second part of the duodenum in a normal stomach, and to the stomach in the case of an active stomach. My reasons are laid out in that paper, and I shall welcome the opinions of your readers on the subject.

Barbiturates and the Poisons Regulations

Mr. N. E. MORGAN, M.P.S. (London, N.W.5), writes: May I be allowed to correct Dr. Eric A. Freywarth's statement in the *Journal* of February 17th that dial (diallyl barbituric acid) and other barbituric acid derivatives *ought* to be included in Part I of the Poisons Act? He will find that Part I of the Poisons Regulations states: "Diethyl barbituric acid and other alkyl, aryl, or metallic derivatives of barbituric acid, whether described as veronal, propional, etc." As dial comes within this designation pharmacists have always considered it a Part I poison. The consumption of these drugs could be greatly reduced if doctors would take the trouble to mark their prescriptions "Not to be repeated."

Textbook Discrepancies

Mr. LIVINGSTONE POW, F.R.C.S.Ed. (Wrexham), writes: It is a notorious fact that one textbook will make a statement which is flatly contradicted by another dealing with the same subject. This, while a source of bewilderment to the young student who has yet to learn how "fluid" oftentimes is medical truth, can frequently enough be pardoned in the case of rare or difficult conditions; but I have recently become aware of a remarkable trio of such statements on such a common question as the incidence of breast carcinoma. They emanate from very recent textbooks, all of which, I imagine, are widely read by the younger members of the profession and by senior students. Two are textbooks of surgery, while the other deals with surgical pathology. They are as follows: (1) *Short Practice of Surgery* (Bailey and Love, vol. i, p. 183): "Women between 40 and 50 years of age who have borne and suckled children are its [breast carcinoma's] most frequent victims, but the disease is not rare in spinsters." (2) *Textbook of Surgical Pathology* (Dick and Illingworth, p. 338): "Nulliparae are somewhat more liable to be affected than multiparae, perhaps owing to the frequency of chronic mastitis in the former." (3) *The Science and Practice of Surgery* (Romanis and Mitchener, vol. ii, third edition, p. 475): "There appears to be no difference in its incidence in multiparae or nulliparae, nor does the question of whether the breast has been used for suckling make any difference." On this particular question the above should satisfy even the most broad-minded of students.

Childbirth at 50 Years of Age

Dr. F. W. STANSFIELD (Reading) writes: In connexion with Dr. E. L. Bunting's case, reported in the *Journal* of January 27th, I remember attending a woman in her fifty-first year some twenty-five years ago. She had had a long interval without any children, and was a healthy, muscular woman. The presentation being normal, I gave her plenty of time for a spontaneous delivery, but although she had strong pains for several hours and made vigorous voluntary efforts, she was unable to deliver herself. I applied forceps and delivered her, after a time, of a strong and lusty baby. Both mother and child did well, and neither had a bad symptom.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 80.

HYPOCHONDRIASIS: INDIVIDUAL, VICARIOUS, AND COMMUNAL*

BY

ROBERT HUTCHISON, M.D., F.R.C.P.

PHYSICIAN TO THE LONDON HOSPITAL AND TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET

The term "hypochondriasis" has been defined in various ways, but I propose to understand by it, for the purposes of this lecture, any morbid interest in or over-anxiety about health. Hypochondriasis in this sense may affect an individual in regard either to his own health or to that of those near and dear to him, or it may take a collective form and involve a whole community. These different manifestations may be spoken of as individual, vicarious, and communal hypochondriasis respectively, and my purpose here is to consider each of them separately, and to discuss what our attitude as doctors should be towards the affection.

THE GENERAL HYPOCHONDRIAC

Over-anxiety about individual health may take several forms. Perhaps the commonest type is the general hypochondriac: the man who is always fussing about his health and fears that he is getting, or has already, some disease. Such a patient is usually a man in advanced middle life, generally retired from business, who makes his health his hobby, and who collects symptoms as others collect stamps or old china. Retired-Army men seem to be particularly subject to the complaint, just as they are apt to make a hobby of interpreting Old Testament prophecies or tracing the fate of the lost tribes. In most cases this form of hypochondriasis is harmless enough, but it must be remembered that it is sometimes the beginning of an involutional psychosis, and that he who begins by having delusions about his health may end in delusional insanity. I well remember, for instance, the case of a man who began by walking the streets of London, even in winter, with a stout green umbrella to protect him from sunstroke, and who ended with delusions of persecution.

In the management of such a patient our chief duty is to keep him out of the hands of quacks, of whom he is the predestined prey. To attempt to cure him is useless, and would be unkind if it were possible, for why deprive the patient of his main interest in life? (I say nothing of the unwisdom of killing the goose that lays the golden eggs.) Further, one should never tell the patient that there is nothing wrong with him, for that is the sure way to lose his confidence for ever. Listen to him patiently, examine him thoroughly, reassure him confidently, give some explanation of his symptoms, prescribe a placebo, and you send him away happy—until the next time.

THE NOSOPHOB

The nosophobe is a slightly different type of the individual hypochondriac. He is the man who goes in fear of some particular disease—cancer, appendicitis, venereal disease, "blood pressure," or whatever happens to be the particular dread of the day. I remember such a patient a few years ago sitting himself down in my consulting room and, after staring at me lugubriously for a moment or two, hurling at me in a sepulchral voice the devastating question: "Am I damaged goods?" Not

being much of a frequenter of the cinema I was not aware that a propagandist film with that title had been on exhibition shortly before the visit, so I had to ask him what on earth he meant. Needless to say he proved to be quite sound "goods," but even two negative Wassermann reactions by two separate pathologists failed to convince him of it, so deep-rooted was his syphilophobia. He was a good example of the fact that nosophobia is apt to result from health propaganda acting upon an anxious temperament—a fact which enthusiastic health propagandists would do well to note. I am told, to take another example, that nowadays when "health talks" on maternal mortality are being widely broadcast many young married women are contracting a morbid dread of childbirth, a new form of phobia for which someone will no doubt soon invent a name. It must be remembered, however, that just as general hypochondriasis may be a manifestation of a psychosis so may nosophobia, and I have known of more than one sad example of a man beginning with the delusion that he had cancer or syphilis and ending in a madhouse. In dealing with such patients all we can do is to try to persuade them by the most thorough examination that their "fears are liars," and to this end special methods such as x-ray examination or laboratory tests, even when unnecessary—may be more convincing than the ordinary clinical procedure.

But it is more in the prevention than in the cure of such cases that we doctors have a responsibility. I have spoken of the share of health propaganda in their creation, and I shall have something more to say about that later on, but individually we have much to answer for, because by shadowed hints about a "grumbling appendix," a "slightly raised" blood pressure, a "flabby" heart, or a "suspicious" apex, the seeds of nosophobia are implanted in many patients, never again to be eradicated.

THE CRANK

The third variety of individual hypochondriac is the crank or health faddist: the man who believes that health is only to be attained by following some special rule of life. The particular fad varies from year to year. Often it is dietetic, and health is only to be secured by drinking sour milk, by eating raw vegetables, by abstaining from salt, by taking in vitamins, and so forth; or fresh air and deep breathing are the panaceas, or, as recently, dress reform, or lying in the sun with little or no dress on at all.

In our management of cranks it is well to remember that there is "something in" most fads, and that they are often only virtues pushed to excess. Argument is of no use in such cases, but ridicule is sometimes effective, though it must be applied to the mass and not to the individual. On the whole, unless the crank is actually doing himself harm by his practice, he is best left alone, and after all he often contributes to a grey world an element of comedy for which we should be thankful. But here again we cannot divest ourselves of all responsibility, for almost every one of these "cranks" can claim some medical authority for what he does, and it will be time to deal with the laity when we have purged our own profession of faddery, especially among those of us who undertake to enlighten the public on health matters in the daily Press.

* A British Medical Association Lecture delivered before the St. Pancras Division, October 10th, 1933. Part of the material in this lecture was also used for addresses before the Harrogate Medical Society and the Oxford Medical Society; and, in a more popular form, in an address on "The Pursuit of Health" at the British Medical Association Meeting at Winnipeg in 1930, afterwards published in the *Canadian Medical Association Journal*, 1931, xxi, 1E.

THE PHYSICAL PRIG

Last among individual hypochondriacs are those whom we may designate physical prigs as opposed to the moral and intellectual varieties of that species. These are mostly young men with an exaggerated standard of health and well-being, who wish, as I have seen it put, to be "utterly fit," and who seek to attain their ideal through exercise, of which in time they become addicts. We do not, as doctors, have much concern with this class of hypochondriac, although as citizens we may agree with *Punch* that "if the whole of England were to concentrate to-morrow on being fit the result would be far more terrible than a general strike."

It is competent for us, however, to ask whether, even from the health point of view, the maximum of muscular development is a good thing to aim at, and whether athletes are sounder "lives" than other people. Every doctor has known young men who have become exercise addicts at school or the university, and who, when they have settled to work in a large town and could no longer get the amount of exercise to which they are accustomed, have suffered in health in consequence. I would suggest, therefore, that as a profession we should encourage the movement towards a more scientifically directed physical education for the young which aims at the harmonious development of the whole body, and discourage a lopsided athleticism; but when the middle-aged man takes up exercise with enthusiasm, or tries to do "physical jerks" to the wireless, it is time that we put in a word of warning in the interest of his heart and arteries.

PARENTAL HYPOCHONDRIASIS

We may turn now to the case of those people who are over-anxious, not about their own health, but about the health of others—the vicarious hypochondriacs. The commonest example is the parent who is over-anxious about his children, but one also finds many among unmarried daughters who are fussy about the health of an aged parent. The wife who has a husband much younger than herself is also apt to be vicariously hypochondriacal about him, although, curiously enough, one does not often meet the young husband who is over-anxious about the health of an elderly wife.

Parental hypochondriasis has now become almost a national danger partly because, no doubt, children, like the Sibylline Books, have become dearer as they have become fewer. Over-anxiety begins almost from the word "go," for no sooner has the *anti-natalist* allowed a child to be conceived than the *ante-natalist* gets busy; the infant is surrounded by an atmosphere of fuss while still in the womb, and the birth is anticipated as a major operation fraught with terrible possibilities both to the child and to the mother. Arrived in this vale of tears, the child falls into the hands of a "scientifically trained" nurse, who considers it her duty to disregard his wailings to be comforted and to make all his infant routine as regular as the movements of the planets. From her care he may pass to that of a welfare centre, where he is weighed and measured and physically criticized week by week, or, if born in a higher sphere, he is made over to the ministrations of a paediatrist, who measures out his meals with the meticulous nicety of an analytical chemist, and plies him assiduously with orange-juice, glucose, and fish-oil. During the "pre-school" age, however, he has a short respite, and may, if lucky, come under the maternal care of an old-fashioned nanny, and it is an ironical fact worth pointing out that this is the very period of childhood at which mortality has fallen most sharply in recent years. But soon, in the lower

classes at least, he passes into the clutches of the school medical service, and he has hardly escaped from that when he becomes a panel patient, with the right to call in a doctor freely for the most trivial symptoms, and by that time he is fully qualified to be an individual hypochondriac on his own account.

Among the so-called intelligentsia parental hypochondriasis is even worse. Not content with keeping a progress book in which the child's physical development is noted down from day to day, the mother is apt, with the aid of an elementary treatise on psychology, to insert clumsy fingers into the delicate mechanism of the child's growing mind, while at the same time she vicariously applies to his body any fad of diet or management which happens to be the fashion of the moment. Apropos of this subject I read some years ago an article entitled "The Antiseptic Baby,"* the first paragraph of which was as follows:

"I hold no brief for the good old days—at least, so I supposed until I saw Philip in his basket. Basket, however, is hardly the word: bath-tub is more descriptive of a 'washable' white canvas affair surrounded by a washable screen to shut out the draughts. Philip's small person was covered with white washable porous woollen. He was dressed in soft woolies, light, absorbent, and easily laundered. His nursery was painted with white washable paint, had bare floor, bare walls, no curtains to take up the dust, no pictures to distract the infant eye, no fire to send out soot, central heating kept at an even temperature throughout the day. I say throughout the day, though how should I or anyone else know it? For no one, except the antiseptic nurse, ever set foot in that nursery during the day. From five o'clock to five-twenty Philip was on view, provided he was not handled or excited."

The writer, after contrasting the very different methods of an old Irish nanny, concludes:

"Yet it was only yesterday that I heard Philip's mother making an appointment with an eminent authority on child problems. 'I am anxious about my son, Philip,' she said over the telephone. 'You know I depend on you. I wish you to advise me how to make him more adventurous.'"

Things are just as bad for children of the boarding-school age. I remember, for example, a boy of 11 whose mother was one of the worst vicarious hypochondriacs possible; her case is typical of many. A private letter from the head master of the preparatory school said:

"By to-morrow the boy will have seen eight doctors in the last two months. We do not doubt his having had asthma at home, and we think it probable that he has an unhealthy appendix and that an operation may be necessary, but we think you ought to realize that Mrs. — is so over-anxious about the boy's health that there is a risk of her making him into a physical and moral wreck. The boy, at present, takes every opportunity of feeling as well as his mother allows him to, but he is so trained to regard himself as an invalid that he may not be able to hold out much longer. The following are the instructions she sent to us with regard to his daily regime:

Colds. Avoid all chance of colds when possible. Go to bed directly a cold begins, and stay there until the cold has gone. Special prescription to be given if a cold starts.

Spray. A new solution. To be used after breakfast, lunch, tea, and senna pods. Three times each nostril, twice on throat each time.

Pains in head. Assigned to bromide medicine, or neuralgia. Pains in stomach. To be watched for appendix trouble.

Not to have bromide, potatoes, starchy food, spinach, bread, pastry, fruit with pips.

Not to swim. Not to go out before breakfast. To have one teaspoonful liquid paraffin before breakfast, lunch, tea; seven senna pods; warm water before breakfast; flat-foot exercises; one and a half teaspoonfuls bicarb. soda after lunch; two sticks of barley sugar.

* *Norland Quarterly*, August, 1927.

To put on coat or sweater directly after exercise. To avoid dust.

Temperature to be taken night and morning.

So afraid, too, is the modern parent of "microbes" that children are carefully shielded from all possible contact with infection, with the result that they fail to get the ordinary infectious illnesses at the safest age, 5 to 10, but contract them later on, often in a much severer form and at a more inconvenient time. Any medical officer of a public school will confirm this.

You may say that child mortality has fallen greatly in recent years. True, though it is doubtful to what extent all this fuss and over-anxiety are responsible for the fall; but, mortality apart, how about morbidity? Are children really any healthier than they were? Are they as full of vitality? Are they, in a word, as good animals? I gravely doubt it. More and more the modern child seems to me to suffer from lack of appetite, from poor digestion, and from unstrung nerves, and what I am convinced he needs above everything else is more neglect.

Now what should be our attitude as doctors to all this parental hypochondriasis? It has gone too far, I fear, to be stopped altogether, but at least we might refrain from adding to it by giving people the impression that the rearing of a healthy child is a task of superhuman difficulty. When we meet it in the parents of children for whom we are professionally responsible great tact and self-control are required. It is fatal to give the mother the impression that one thinks her "fussy" or "spoiling," since in that case she will simply go elsewhere. All one can do is to be as complaisant as one can, to give in or to moderate when the fad is unimportant, and only to forbid when it is likely to do definite harm to the child's mental or physical health.

FILIAL HYPOCHONDRIASIS

But vicarious hypochondriasis also occurs at the other end of life, and we see every day old people being fretted and fussed by the well-meant anxiety of others for their health. (Father must not go out for fear of bronchitis, he must not smoke because it is bad for his heart, he must not play bridge in the evening because it interferes with his sleep, and so forth: you all know the kind of thing.) Here, I think, we should use our influence in favour of the old being allowed to do in reason as they like, even at some risk to their lives. After all, why keep them lingering superfluous on the stage, and, if liberty to do as they like makes them happier, may it not on that very account make them healthier as well? And surely to try to prolong life merely for the sake of living is no very worthy ambition.

COMMUNAL HYPOCHONDRIASIS

Finally, over-anxiety about health may affect a whole community. It is true that this attitude of mind has not yet, fortunately, got much hold upon the people of this country, though it seems to be rampant in America, but there are plenty of agencies at work even here whose object is to produce what is termed a "health conscience," but which is better termed "disease consciousness." We all know by what methods of lectures, talks, leaflets, and slogans they set about the work, and those of you who saw Jules Romains's amusing comedy *Dr. Knock* a few years ago will realize how easily such methods may succeed in infecting a community with hypochondriasis. Our legislators also take a hand in the game of demoralization, for how many hypochondriacs have the Workmen's Compensation Act and the National Insurance Act, to take only two instances, produced? The morbidity statistics of insured persons provide the answer.

INDIVIDUAL HEALTH PROPAGANDA

Now what should be our attitude as doctors to all this? I think we must first distinguish clearly between environmental hygiene and individual health propaganda. The former is the business of the public health service, and must command our full support and co-operation. Individual health propaganda, however, is in a totally different category. I believe it to be both useless and mischievous. It is useless because there are no general rules of health of universal application, but only the one old rule of moderation in all things—even in being moderate—and doctors are the last people on earth to observe it. And health propaganda is mischievous for the reason I have already given, that while it runs like water off a duck's back in the case of the healthy-minded, it creates nosophobia wholesale among the anxious. Attempts are constantly being made to rope in the practitioner in this work. He is told that his teaching and practice must be made more "preventive," and that he does not detect disease early enough. As to this matter of early detection I believe there is a lot of nonsense talked. To listen to some exponents of the doctrine one would think that it had descended from heaven as a special inspiration in the neighbourhood of St. Andrews only a few years ago. That, of course, is a delusion. Doctors have always been trying to detect the beginnings of disease, and I well remember as a student many years ago how the importance of the early diagnosis of pulmonary tuberculosis and of cancer was rubbed into us. The trouble, as every clinician knows, is that disease can hardly ever be detected until it has begun to produce symptoms, and not always with certainty even then. "Oh, but," it is said, "if people were periodically inspected every few months a lot of unsuspected disease would be discovered." Would it? I am very doubtful. How many cases of unsuspected cancer, for instance, are revealed by examination for life assurance? And suppose that you do detect a slightly raised blood pressure, say, in an otherwise healthy man, what are you going to do about it? Advise him to give up his livelihood and lead a sheltered life? And by telling him about his blood pressure will you not create an anxiety which will tend to drive it up still higher? No; I am convinced that the amount of early disease which would be detected by periodic examination is negligible, and that it would be more than offset by the amount of nosophobia that would be created by it.

And as regards prevention, surely every doctor worth his salt has always been doing all he can to prevent disease. When in charge of a case of illness does he not do everything to guard against complications and sequelae? When consulted does he not impress upon the patient such rules of health as seem applicable to his special case? Does he not do all that can be expected of him if he gives advice to individuals how to maintain their health as he has opportunity, and if he encourages them to come to him for examination as soon as they feel anything wrong? Of course, if the practitioner had a larger share in the public health services he could do more in the way of prevention, but that line of approach is often closed to him.

In conclusion one may ask, To what is the prevalent and increasing hypochondriasis due? I believe it is largely the result of causes over which we, as a profession, have no control—of the philosophy of the age in which we live, and especially of an exaggerated fear of life and a decay of belief in a Divine providence. Be that as it may, it is surely our duty to use our influence both with our patients and with the public not to yield to it, and to urge them rather, in the words of Robert Louis Stevenson, to stop their ears against paralysing terror and to run the race that is set before them with a single mind.

THE SIGNIFICANCE OF MONILIA IN THE SPUTUM

BY

BERTRAM H. JONES, M.D., M.R.C.P.

PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK; ASSISTANT PHYSICIAN, PRINCE OF WALES'S GENERAL HOSPITAL, TOTTENHAM

During the last twenty-five years numerous investigators have noticed the association of chronic diseases of the chest with the occurrence of monilias in the sputum, and although much work has been done from the clinical, pathological, and experimental aspects, there is still considerable doubt as to the relation between the organism in the sputum and the concurrent respiratory disease.

Monilia are classified by Hans Zinsser in his *Textbook of Bacteriology*¹ under the heading of Hyphomycetes or Fungi Imperfecti, and the definition reads as follows:

"Monilia.—This name is applied to organisms which appear in the tissues or recently isolated cultures as round or oval cells which reproduce by budding. In older cultures and sometimes in the tissues they show a primitive mycelium made up of elongated cells or long coarse filaments. The absence of ascospores differentiates them from the saccharomycetes or true yeasts."

MONILIA AND LUNG DISEASE

For a time monilia infection of the lungs was regarded as a disease of countries with a hot and moist climate, but cases have now been described in many parts of the world, and the condition can therefore no longer be regarded as a tropical disease. Castellani² found that the workers in tea factories in Ceylon were apt to develop respiratory disease, the manifestations varying from a mild bronchitis to an illness simulating phthisis, in that cough, expectoration, haemoptysis, and emaciation were among the symptoms in severe cases. This series is unique, for the investigator not only demonstrated the fungus in the sputum, but also found it in the tea dust; moreover, in many cases the symptoms abated when the patients were removed from their work. Ellman³ demonstrated a case in which the clinical appearances suggested a diagnosis of pulmonary tuberculosis, but examination of the sputum showed the disease to be due to a monilia infection, and the patient improved on being treated with large doses of potassium iodide. Similar cases have been reported by Stokes, Kiser, and Smith.⁴

Asthma and bronchitis associated with monilia in the sputum have been described by Steinfeld⁵ and by Oliver.⁶ In both series considerable benefit was obtained when the patients were treated with monilia vaccines and large doses of potassium iodide, and Oliver notes that as the condition improves the organisms disappear from the sputum. Beneficial results from the use of a vaccine were obtained by Pijper,⁷ in the case of a patient suffering from cough, copious expectoration, and loss of weight. In this case the sputum contained large numbers of monilia, which were still present after the mouth and pharynx had been washed with a sterile solution. In a later communication Pijper⁸ expressed the view that "vaccine treatment of cases proved satisfactory in a few instances only." In a series of one hundred cases of supposed pulmonary tuberculosis occurring in Bangkok, Mendelson⁹ found that 5 per cent. were due to mycotic infection of the lungs, and at post-mortem examination the lungs were studded with numerous small white masses, some being as large as filberts. On microscopical section these masses were found to resemble somewhat those present in tuberculosis, but they differed in that there

was no caseation and no abscess formation, and the fungus could be seen in the lesion. In England a series of six cases were recorded by Joekes and Simpson.¹⁰ In the milder forms bronchitis was present; in others the signs were those of bronchopneumonia, although the general health was but slightly impaired, and in the more severe cases marked wasting occurred and the signs were suggestive of pulmonary tuberculosis. One of these cases proved fatal, and at the post-mortem examination small white nodules were found to be scattered throughout the lung tissue. Unfortunately no examination was made to prove that these nodules were due to monilia. The pathological changes produced in the lungs as the result of blastomycotic infection occurring in two cases have been described by Medlar¹¹ and Millar.¹² In one case the lungs were the site of a caseous pneumonia with numerous small cavities, and in the other case the presence of firm, white, pearly nodules without caseation and cavitation was found. This latter case was thought to be due to tuberculosis, but microscopical section showed that the lesions were due to a fungus in both cases. Pulmonary tuberculosis is sometimes complicated by the presence of yeast-like organisms in the sputum, and Ferris¹³ described a case of this nature, but concluded that in his case the yeast-like organisms were "secondary invaders of low virulence to animals and low, if any, pathogenicity for man."

ITS OCCURRENCE IN THE SPUTUM

In the ordinary routine examination of the sputum monilia are not commonly found, but if special methods of cultivation are employed they can be demonstrated in quite a high proportion of specimens. Pijper⁷ examined a series of sputa from sixty-seven consecutive cases, and, by using a special technique for staining the films, was able to identify the organisms with ease in seven cases, and also, after a careful search, in nine other cases. By cultural methods he found monilia to be present in as many as thirty-six of the specimens.

Marett¹⁴ has made it a practice for many years to examine all the specimens of sputum submitted to him for these organisms, and during the five years ending 1931 he made nearly two thousand such examinations. Monilia were present in 75 per cent. of the specimens, and he has come to the conclusion that this organism plays an important part in the production of chronic lung infections, and that bronchiectasis may in some cases be caused by this type of fungus.

One method of determining the pathogenicity of an organism found in the sputum is to treat the patient on the assumption that it is the cause of the disease, and to draw conclusions from the results obtained. Marett and Oliver, using this method, have treated their cases with monilia vaccines and large doses of an alkaline potassium iodide mixture, with the effect that many cases have been cured, and the majority have been improved. They are of the opinion that, when monilia are present in the sputum, the patient is suffering from bronchomonilliasis. A second method is to reproduce the lesions in experimental animals and to recover the causal organism from the lesions found. Wade¹⁵ found that subcutaneous injections of a bouillon culture of *Blastomyces dermatitidis* into a monkey caused chronic disease in the lungs with cavitation, and he was able to demonstrate the causal organism in the resulting lesions. Using the organisms grown from the sputum of their cases, Stovall and Greeley¹⁶ obtained comparable results in their experiments on white rats. Joekes and Simpson¹⁰ were unable to produce any pathological lesions in rabbits when the monilia obtained from their patients was used in similar experiments, but were successful when a moderately turbid emulsion of *Monilia pinoyi* was injected intravenously.

Castellani¹⁷ is of the opinion that "the mere presence of a monilia fungus in the sputum should never be considered sufficient to establish the diagnosis of primary bronchomoniliasis," and that the production of septicæmic manifestations in experimental animals should not be regarded as evidence that the organism is capable of producing respiratory disease in man. The criterion that he regards as diagnostic is the production of a characteristic localized nodular affection of the lungs at the site of inoculation, when the organisms have been inoculated by intrapulmonary injection.

Using monilia obtained from milk and monilia from sputum, Pijper⁴ carried out a series of experiments on rabbits, and found that he was unable to distinguish the source of the organism by the changes produced in the animals; nor was he able to make any distinction between the organisms obtained from the sputa in which they were visible in direct films and those found by cultural methods alone. He sums up the results of his investigations in the following words: "Bronchomoniliasis, therefore, either does not exist, or the majority of chronic affections of the respiratory organism must be called bronchomoniliasis."

PRESENT INVESTIGATION

It will thus be seen that there are many cases of pulmonary disease with monilia in the sputum, and that in a few cases the diagnosis has been confirmed by post-mortem examination; but the difficulty is to know whether the presence of the organism in the sputum is sufficient to make a diagnosis of bronchomoniliasis, or whether the presence of monilia can be disregarded. If it can be proved that monilia are not necessarily present in the bronchi when they are present in the sputum the problem is to a great extent simplified, and it was therefore decided to approach the subject from this point of view.

The modern procedure of bronchoscopy is carried out in such a manner that conditions are ideal for obtaining a swab specimen of the bronchial secretion without fear of contamination from the upper air passages. A laryngoscope with a sliding back is introduced over the tongue until a direct view of the larynx is obtained, and then the bronchoscope is inserted through the glottis into the trachea, the sliding portion of the laryngoscope is removed, and the handle readily comes away. Therefore any swab taken through a bronchoscope, which has been inserted by this method is taken with precautions similar to those that have been used for obtaining smears from the post-nasal space or the uterine cervix. This method has been used by Chevalier Jackson¹⁸ as an aid to the diagnosis of pulmonary mycoses, and when he addressed the Royal Society of Medicine in 1930 he expressed his approbation of its value in the following words: "The great usefulness of the bronchoscope in the diagnosis of these conditions is due to the fact that practically all fungi to be found in suppurative pulmonary foci are found also in the mouth. It is therefore difficult, if not impossible, to be certain that the organisms found in the sputum are really from the bronchi."

In the present investigation the cases examined in this manner were in no way selected, apart from the fact that bronchoscopic examination was thought to be necessary for the purposes of diagnosis or treatment. The bronchial swab was taken from such bronchi as were seen to contain purulent secretion or to be pathologically changed; but if no such changes were present it was obtained from one of the lower bronchi, and in every case the specimen was taken prior to the insertion of any therapeutic substance. The swab having been withdrawn from the bronchoscope, it was at once plunged into a tube containing a solution of sterilized malt extract (specific gravity 1040), which was incubated at 37° C, for one week, at the end of which

time subcultures were made on ordinary agar media and on Sabouraud's medium for moulds. This is the technique recommended by Craik¹⁹ and used by Marett.

In the first twenty-five cases examined by this method monilia were absent from the bronchial secretions, and it was therefore decided to continue the investigation. In the second series the sputum was examined as well as the bronchial swab. In the second series of twenty-five cases monilia were found in the sputum in eleven cases and in the bronchi in one case. Thus there appeared to be no relation between the nature of the bronchial secretion and the presence or absence of the fungi from the sputum. For example, in the second series there were nine patients in whom the bronchial secretion appeared to be normal—that is to say, it was not obviously purulent—and yet, of these nine cases monilia were found in the sputum in no fewer than five. In one of the fifty cases examined monilia were found to be present in the bronchial secretion and also in the sputum. This patient was suffering from pulmonary tuberculosis, with a positive sputum, and had a cavity at the right apex, which could not be collapsed by an artificial pneumothorax owing to the presence of an adhesion. The appearance of his bronchial tree was normal, apart from some purulent secretion in the right upper bronchus. There was no evidence of adherent membrane and no other change which might be ascribed to the presence of a fungoid infection that could be detected with the bronchial telescope. From the clinical aspect his signs and symptoms were those of pulmonary tuberculosis, and there was nothing to suggest that he was in any way adversely affected by the presence of monilia in the bronchus.

The results obtained may be tabulated as follows:

Disease	Examination of Swab from Bronchus for Monilia		Examination of Sputum for Monilia	
	No. of Cases Examined	Monilia Present	No. of Cases Examined	Monilia Present
Abscess of lung	14	0	8	4
Asthma	1	0	—	—
Bronchiectasis	13	0	3	1
Bronchitis	3	0	—	—
Fibrosis of lung	3	0	2	1
Pulmonary tuberculosis ...	3	1	2	2
Carcinoma of bronchus ...	6	0	5	1
Simple growth	2	0	1	1
Mediastinal tumour	5	0	4	1
Total	50	1	25	11

CONCLUSIONS

From a review of the literature there can be no doubt that infection of the lungs with fungi of the monilia group does occur, and that the disease can be reproduced in experimental animals; but the cases in which the disease in man has been confirmed by examination of morbid specimens are rare.

Monilia are commonly present in the sputum obtained from patients suffering from respiratory disease.

The finding of monilia in the sputum is not evidence of their presence in the bronchi.

Bronchomoniliasis cannot be diagnosed from the examination of the sputum alone.

This investigation was carried out on the suggestion of Dr. P. Janvrin Marett, after consultation with Dr. S. Roodhouse Gloyne, and was made with the kind permission and assistance of my colleagues Drs. Scott Pinchin and Morlock, who took the swabs for me from patients attending

their bronchoscopic clinic. I have also to thank Dr. Gloyne and those working in the pathological department at Victoria Park Hospital for undertaking the bacteriological examinations.

REFERENCES

- ¹ Zinsser, Hans: *Textbook of Bacteriology*, 1927, Appleton and Co.
- ² Castellani, A.: *British Medical Journal*, 1910, ii, 868.
- ³ Ellman, Philip: *Proc. Roy. Soc. Med.*, 1931, xxiv, 528.
- ⁴ Stokes, Kiser, and Smith: *Journ. Amer. Med. Assoc.*, 1930, xcv.
- ⁵ Steinheld, E.: *Journ. Lab. and Clin. Med.*, 1923, viii, 744.
- ⁶ Oliver, H. Gordon: *London Hosp. Gaz.*, September, 1933.
- ⁷ Popper, A.: *Med. Journ. South Africa*, 1917, xii, 129.
- ⁸ Idem: *Ibid.*, 1923, xiv, 101.
- ⁹ Mendelson, R. W.: *Journ. Amer. Med. Assoc.*, 1921, lxxvii, 110.
- ¹⁰ Joekes, Th., and Simpson, R. H.: *Lancet*, 1923, ii, 108.
- ¹¹ Medlar, E. M.: *Amer. Journ. Pathol.*, 1927, iii, 305.
- ¹² Millar, W. S.: *Ibid.*, 1927, iii, 315.
- ¹³ Ferris, H. W.: *Amer. Rev. of Tuberculosis*, 1933, xxviii, 348.
- ¹⁴ Maret, P. Janyrin: *British Medical Journal*, 1923, i, 917; *Lancet*, 1932, i, 511.
- ¹⁵ Wade, H. W.: *Philippine Journ. Med. Sci.*, 1918, xii, B, 271.
- ¹⁶ Stovall, W. D., and Greeley, H. P.: *Journ. Amer. Med. Assoc.*, 1928, xci, 1346.
- ¹⁷ Castellani, A.: *Journ. State Med.*, 1926, xxiv, 202.
- ¹⁸ Jackson, Chevalier: *Proc. Roy. Soc. Med.*, 1930, xxiv, No. 1, 1.
- ¹⁹ Crank, R.: *Med. Press and Circular*, April, 1928.

A NOTE ON THE STUDY OF PULMONARY TUBERCULOSIS IN INFANTS AND CHILDREN

BY

G. GREGORY KAYNE, M.D., M.R.C.P.

DOROTHY TEMPLE CROSS RESEARCH FELLOW IN TUBERCULOSIS

Considerable confusion still exists at the present time on the subject of pulmonary tuberculosis in children. The widely divergent views on frequency, type of disease, and prognosis, held by men of apparently equally high authority, may partly be accounted for by the following factors: (1) conclusions based on the observation of different types of material will vary with the nationality and status of the author, who may be a tuberculosis officer, medical superintendent of a sanatorium for children, physician to a general, children's, or chest hospital, morbid anatomist, or finally, a public health statistician; (2) diagnosis depends on the extent of investigations carried out, particularly as regards radiography, searching for tubercle bacilli when no sputum is available (the rule in children), and employing a tuberculin test; (3) the number of diagnoses confirmed or otherwise must depend on the opportunities for performing necropsies; and (4) the features of the "primary complex" or "primo-infection" are by no means universally appreciated.

I have had the opportunity of studying the methods employed by Armand-Delille and Lestocquoy on the vast material available in the children's department at the Hôpital Hérod in Paris. Their scheme seems logical and complete; moreover, it enables pulmonary tuberculosis in children to be studied in a manner impracticable otherwise. It consists of the following features.

1. Enquête Sociale

For every child admitted a complete inquiry is made by a specially trained health visitor into its past and family history, surroundings, and possibility of contact.

2. Clinical Examination

This implies: (a) a physical examination; (b) x-ray films of the chest, both in the antero-posterior and in the lateral or oblique position; (c) a tuberculin test. The von Pirquet test is used here, as it is almost exclusively elsewhere in Paris. While admitting the greater sensitivity of the intradermal test in dilutions of 1 in 1,000 or 1 in 100, the von Pirquet test is considered sufficient for all practical purposes; (d) the search for tubercle bacilli. These are

looked for as a routine in a gastric washout. A suitable-sized stomach tube is introduced in the morning before the first feed, and 80 to 100 c.cm. of warm water (with a trace of sodium bicarbonate) allowed to run in by holding the container about two feet above the child's head; the gastric contents are then siphoned out by lowering the vessel, and examined by a concentration method, and, if necessary, by inoculating a guinea-pig. Armand-Delille and Lestocquoy claim eminently satisfactory results from this method, and consider it no more inconvenient to the child than swabbing the back of the pharynx after a cough, or removing a small piece of mucus during a laryngeal examination.

3. Necropsy with Anatomical Control of X-Ray Photographs

The method employed here is of particular interest, and is the main object of this note. A necropsy is performed automatically on every fatal case unless the parents take the initiative of objecting immediately after death. The usual post-mortem technique employed elsewhere, which consists in detaching the lungs from the heart either in the thorax or after removal from the body and slicing them with a few vertical or radial cuts, may fail to discover small pulmonary lesions; moreover, the true relation of the lesions to the lung and the heart is

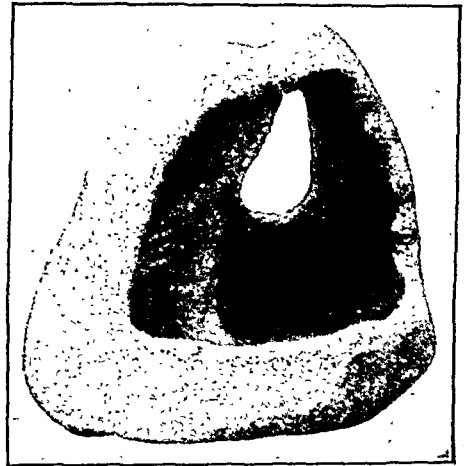


FIG. 1.

difficult to estimate. Preliminary hardening of the organs in formalin causes retraction and loss of normal outline, particularly as regards the costo-vertebral and costo-diaphragmatic portions. Accurate comparison of the lesions with the x-ray photographs is therefore impossible. To obviate these disadvantages Armand-Delille and Vibert devised the following technique.

Hollow moulds representing thoracic cages of various sizes are made by pouring plaster-of-Paris into the thoracic cavities after the contents have been removed through a small sternal opening in bodies with unopened abdomens; while the plaster sets pressure must be maintained on the abdomen to retain the convexity of the diaphragm; plaster bandages are applied over these solid blocks, as in the preparation of a plaster jacket, and the mould thus obtained is subsequently varnished with paraffin. A photograph of such a mould is reproduced in Fig. 1. At the necropsy the whole of the thoracic contents are removed *in toto*, cutting the oesophagus and trachea as high as possible in the neck and leaving the diaphragm *in situ*. A little formalin is injected into the trachea, and the whole mass placed in a mould of the appropriate size, where it is kept in position

by inserting on the inside of the mould a very thin layer of cotton-wool. The mould is then immersed in a 10 per cent. formalin solution for about fifteen days. The whole block, which keeps its form extremely well, is easily dislodged afterwards and cut into frontal slices 1/2 to 1 cm. thick with a brain knife. The slices are washed in running water for two days, then immersed in methylated spirit for twenty-

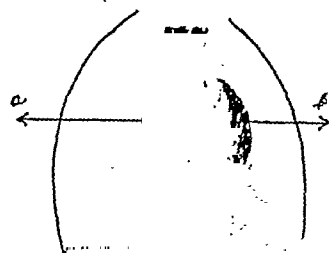


FIG. 2.—Sketch of x-ray photograph showing left perihilar shadow.

four to forty-eight hours, which causes the return of the normal post-mortem tissue colour. To obtain permanent specimens the sections are placed in large Petri dishes filled with the following solution: gelatin, grains 105; thymol, m5; glycerin, 31.75; distilled water, 315. Sagittal, oblique, or lateral sections may be obtained in a similar manner.

Examination of the sections enables their situation, form, and relation to other parts to be studied accurately, and permits easy comparison with x-ray photographs taken with the same orientation.¹ Two examples may be

given to illustrate the great importance of such a comparison. A good deal has been written about "perihilar tuberculosis." Figs. 2, 3, and 4 explain how an antero-

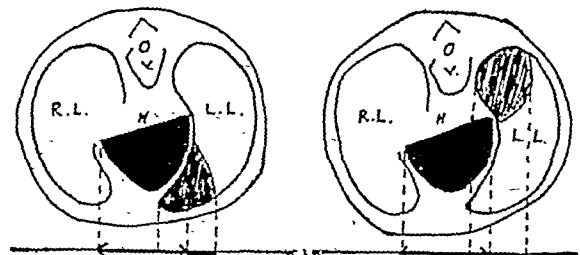


FIG. 3.

FIG. 4.

FIG. 3.—Sketch of sagittal section of thorax at *a b* (in Fig. 2), showing area of infiltration in left lung (anteriorly) giving rise to the left perihilar shadow. H = heart; V = vertebra; R.L. = right lung; L.L. = left lung.

FIG. 4.—Similar sagittal section showing area of infiltration in posterior part of left lung, also giving rise to a left perihilar shadow in an antero-posterior x-ray.

given to illustrate the great importance of such a comparison. A good deal has been written about "perihilar tuberculosis." Figs. 2, 3, and 4 explain how an antero-

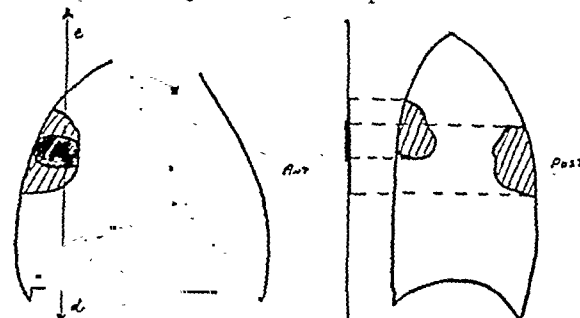


FIG. 5.

FIG. 6.

FIG. 5.—Sketch of x-ray photograph showing shadow of varying density in right lung.

FIG. 6.—Sketch of lateral section of right lung at axis *c d* (in Fig. 5), showing that varying density of shadow is due to superimposition of two areas of similar density.

posterior photograph may easily suggest a perihilar lesion if one only thinks in terms of two dimensions. An antero-posterior x-ray photograph will often show a shadow of varying density, suggesting different types of lesion. Comparison with the post-mortem sections may, however,

demonstrate that the difference in appearance is due to the superimposition of lesions situated at different depths in the antero-posterior diameter, and actually at the same stage of the pathological process (Figs. 5 and 6). It may therefore be pertinent to conclude by stressing the importance of lateral or oblique x-ray photographs in every case of pulmonary tuberculosis.

It is a pleasure to express my thanks to Dr. Armand-Dehille and to Dr. Lestocquoy for their kindness in giving me the opportunity of becoming familiar with their methods, and for the loan of the photograph.

REFERENCE

- ¹ Armand-Dehille, P. F., Lestocquoy, Ch., and Huguenin, R.: *La Tuberculose Pulmonaire et les Maladies de l'Appareil Respiratoire chez l'Enfant et l'Adolescent*, Legrand, Paris, 1933.

ON THE LACK OF EVIDENCE OF TRANSMISSION BY HUMAN BEINGS OF TUBERCULOSIS DUE TO THE BOVINE TYPE OF BACILLUS

BY

GILBERT WALKER, M.B., CH.B., M.R.C.P.
LATE ASSISTANT MEDICAL SUPERINTENDENT, GLENLOMOND
SANATORIUM, KINROSS

The stimulus for research into the incidence of disease due to the bovine type of tubercle bacillus, and the virulence of that organism for the human subject, was supplied by Koch when, at the Washington Congress in 1908, he asserted that it was less virulent than the human type, and that it had never been demonstrated as a cause of chronic pulmonary tuberculosis in human beings. Investigation has gone on in several countries since that time, and has led to a fuller appreciation of the role of the bovine bacillus in the pathogenesis of human tuberculosis.

The results were summarized in a paper by Griffith and Munro,¹ which also gave an account of ten new Scottish cases of chronic pulmonary tuberculosis due to bovine organisms. Munro, in 1925, began to isolate and type the organisms from every case admitted to the sanatorium with tubercle bacilli in the sputum, and this work is still going on. For the past two years I have been privileged to assist in this, and am indebted to Dr. Munro for permission to use his figures and clinical notes. Up to September, 1933, 595 Glenlondond strains have been isolated and typed, and of these twenty-three proved to be bovine, while in one case a mixture of bovine and human type bacilli was found, giving a percentage incidence of bovine type of 4. In addition two bovine strains were isolated from a total of forty specimens examined from Ayrshire. Isolation was effected chiefly by cultural methods, rarely by animal inoculation, and in no case did failure to isolate occur, so that no anomalous virus was missed.

Consideration of the group of cases of chronic pulmonary tuberculosis due to the bovine organism reveals several interesting points, and we are concerned here with only one of these. While they are clinically and radiologically indistinguishable from cases due to human bacilli, there is an apparent epidemiological difference at present unexplained—namely, the complete lack of proof of transmission from one human subject to another. How otherwise it is with tuberculosis due to human type bacilli is well known. It is recognized that the disease is produced as the result of contact, more or less prolonged and repeated, with some source of infection, usually an open case of pulmonary disease, and therefore becomes manifest as a "familial" or, more accurately, a "household" disease. So much is this the case that careful inquiry is always made into the family history with a view to

discovering the source of infection, and when two or more members of a family are found suffering from tuberculosis it is assumed that transmission occurred from one to the other.

It is a matter of some practical importance to ascertain whether, in the case of the bovine bacillus, similar transmission from human to human does occur. There is no apparent reason why it should not, but only examination of a large number of cases and full bacteriological investigation of those which show a family history of tuberculosis can settle the issue. Out of the twenty-four cases in the Glenlomond series only four instances occurred in which more than one member of the family suffered from tuberculosis, and in only one of these was an opportunity of full bacteriological examination available. In his series of English cases Dr. W. M. Cumming also had one opportunity to type the bacillus where two brothers were found suffering from open pulmonary disease, and he has kindly allowed me to include notes of that case here. These two cases will be reported in some detail, since they show how presumptive evidence of familial disease due to the bovine bacillus was disproved by bacteriological examination.

CASE I

A female, aged 20, was admitted to Glenlomond on January 28th, 1933. Her mother had had treatment (not in Glenlomond) in 1931, and her sputum at that time was positive for tubercle bacilli. She died at home in September, 1933. The daughter was said always to have been fit as a schoolgirl, and, apart from scarlet fever at 14, had had no previous illness. From the time she was 7 until she was 16 she went for a holiday every summer to a farm. She began to train as a nurse in 1929, and developed a cough in the winter of 1932. This lasted a fortnight and returned a month later, but she remained at work until the time of her admission to Glenlomond. On admission she was found to have a root-spread into the left lung and infiltration in the right upper lobe. The tonsillar glands were palpable, but no other glands were felt. Sputum was positive for tubercle bacilli, and a bovine type organism of full virulence was isolated. When it was realized that this organism was a bovine type, a specimen of the mother's sputum was obtained and a human type organism was isolated.

Bacteriological Examination

Sputum from the daughter was inoculated on Corper's potato and modified Loewenstein's egg medium on January 30th, 1933. The virus was dysgonic. On February 28th, 0.01 mg. of pure culture was injected intravenously into a rabbit of 2,500 grams. Thirty-five days later it was killed when very ill and weighing 2,200 grams. Generalized tuberculosis typical of bovine infection of full virulence was found at necropsy. A dysgonic virus was isolated and grown from the spleen. Sputum was sown on egg medium on three subsequent occasions, and each time a dysgonic virus was isolated. On two tubes sown on April 22nd several heaped-up colonies appeared when the culture was about two months old. One of these was subcultured on glycerinated egg medium, and a moist dysgonic growth resulted. Another colony was lifted off and 0.01 mg. inoculated intravenously into a rabbit of 2,000 grams. Necropsy forty-three days later showed the same picture as previously, except that no prominent superficial tubercles were seen on the kidneys. These examinations were done in order to exclude the presence of human type bacilli. This sputum contained only bovine bacilli.

Sputum from the mother sown on potato and egg medium gave rise to a luxuriant growth typical of human type tubercle bacilli. In order to detect the presence of bovine bacilli, 2 mg. of pure culture were inoculated subcutaneously into a rabbit of 2,510 grams. After fourteen weeks it was killed when apparently healthy, and minimal lesions were found in the lungs. No tubercles were present in the kidneys and spleen. This sputum contained only human type bacilli.

CASE II

This case was investigated by Dr. W. M. Cumming at Bradford City Sanatorium, Grassington, Yorkshire. A miner,

aged 48, was found to be coughing up sputum containing bovine type tubercle bacilli, and the strain was isolated on two occasions in 1932. In February, 1933, sputum from his brother, aged 60, was examined, and yielded a typical eugonic strain. This was inoculated into a rabbit, which was killed when in good health two months later. Necropsy showed the typical picture of human type infection, and the strain isolated from the kidney of the rabbit was also typically eugonic.

CASES WITH PRESUMPTIVE EVIDENCE OF FAMILIAL INFECTION

In the cases reported above there was presumptive evidence of familial infection with bovine bacilli, but this was disproved by complete bacteriological examination, which showed that one member of the family was coughing up bovine bacilli alone and the other human bacilli alone. In addition to these cases there were three instances in the Glenlomond series in which two members of the family suffered from tuberculosis, but where bacteriological confirmation was not available.

Case 1.—A female, aged 11, was admitted to Glenlomond on May 12th, 1933, suffering from advanced bilateral pulmonary tuberculosis with cavitation. She had a gland abscess in the neck at the age of 2. A bovine organism of full virulence was isolated from the sputum on three occasions. Her mother died of pulmonary tuberculosis at home in December, 1931.

Case 2.—A male, aged 33, was admitted to Glenlomond in 1933 suffering from generalized tuberculosis, and died at home in August, 1933. A bovine organism of full virulence was isolated from the sputum. A brother died at home of pulmonary tuberculosis in 1926.

Case 3.—A male, aged 31, was admitted to Glenlomond in 1921 suffering from tuberculosis of spine and lupus, and died there in August, 1923. Ten days before he died he coughed up material from which a bovine organism of attenuated virulence for the rabbit was isolated. A daughter, aged 6, had excision of glands of the neck in 1926.

One of the ten cases reported by Griffith and Munro is that of a female, aged 32, who had two sisters and one brother, who died of "acute tuberculosis" several years previously.

DISCUSSION

The measures taken for the control of tuberculosis depend upon a knowledge of the epidemiology of the disease, and in the case of human type infection the mechanism of spread is sufficiently well understood to permit the promulgation of preventive measures, which are—at least theoretically—adequate. The purpose of this paper is to draw attention to a serious gap in our knowledge of the epidemiology of bovine type infections—namely, whether transmission can occur from one human being to another, or whether the condition is self-limiting and the extent of bovine type infection in man is dependent solely on the amount of tuberculosis in cattle.

At present, administrative measures designed to eradicate human tuberculosis of bovine origin are directed towards improvement of milk supply and the quality of dairy herds. The value of such is less apparent if proof of propagation of the disease from human to human is forthcoming. Of possibly greater economic importance is the danger of the introduction of tuberculosis into a clean herd by a person working among cattle while suffering from open pulmonary tuberculosis and coughing up bovine type bacilli. It is a common experience that a person who is delicate and has a "weak chest" is sent to the country and often to a farm for a "change of air." In five out of twenty-six cases of pulmonary tuberculosis due to the bovine bacillus investigated at Glenlomond there was close association of the patient with cattle. If such people move about from one farm to another, as, for example, in changing their employment, the possibilities are obvious.

It is realized that the mere occurrence of familial disease due to the bovine bacillus will not prove transmission by humans unless infection from a common source is definitely excluded, and, indeed, it is remarkable that heretofore no instance of this kind has been recorded.

In the absence of proof of transmission to contacts, it is of interest to inquire whether there is any peculiarity of the bovine bacillus or of the disease produced by it which would point to a limitation of spread of the disease by infected human subjects. An outstanding feature of tuberculosis of bovine origin is the high incidence of glandular disease in children in the 0-5 years group, and the disproportionately low incidence of visceral disease in the later age periods. This disparity is not related to the virulence of the bovine bacillus, but suggests that it has a lower invasive power than the human type, so that extension beyond the lymphatic system occurs less readily and so the majority of bovine infections in childhood do not lead to late visceral disease. But when spread does occur beyond the lymphatics the organism shows a high virulence and a tendency to produce multiple lesions and in some cases a marked degree of generalization, similar to that resulting from experimental inoculation in rabbits. This combination of low invasive power and high virulence recalls the cultural characteristics of the organism, and may be in some way related to the latter. Bovine bacilli are dysgonic on all artificial media, and are difficult (as compared with human bacilli) to establish in primary culture, but by subculture they can be induced to grow luxuriantly. Their persistence and tenacity of life when once established in culture is well illustrated in the case of a mixed growth of human and bovine bacilli which, when kept in the incubator for some months, yielded only dysgonic cultures, the eugonic element having apparently died out.²

If it is not accepted that the bovine bacillus has a lower invasive capacity, and has greater difficulty in causing progressive disease in man, is there an alternative explanation of the low incidence of visceral tuberculosis in adults? It has been suggested that mutation of type occurs in the human body, so that an infecting bovine organism after many years in human tissues acquires the characteristics associated with human type bacilli, and becomes manifest as such in chronic pulmonary tuberculosis in adults. Against this it may be pointed out that the type characteristics of tubercle bacilli are remarkably stable, less than 3 per cent. showing divergence in cultural character or virulence from standard types, and no range of transitional strains is found. Further, attenuation does not appear to be related to the age of the patient. For example, a bovine strain isolated at Glenomond from a case of hyperplasia of the large bowel in a patient aged 58 was found to be of standard virulence, and strains isolated from pulmonary cases where the personal history of tuberculosis extended over periods of three, five, and seven years were also of standard virulence. One strain was isolated from sputum on two occasions with an interval of four years between, and no alteration in virulence was found.

Another point worthy of consideration is the number of bacilli observed in the sputum of cases due to the bovine bacillus. In the earlier cases investigated at Glenomond it was noticed that the bacilli were present in very small numbers, but this does not hold good for the more recent cases, where sputum rich in tubercle bacilli has been obtained. In one case they were present in enormous numbers, and this virus was grown from the sputum only after many attempts, although easily isolated by animal inoculation. So far as contact infection depends upon the number of bacilli thrown off in sputum, there seems to be no reason why it should not occur as easily with bovine as with human type cases.

CONCLUSION

There is no proof that spread of bovine type tuberculosis by humans occurs.

There are opportunities for contact infection under conditions similar to those which cause spread of tuberculosis due to human type bacilli.

It is suggested that the bovine bacillus has a lower invasive capacity than the human, and produces progressive disease less readily.

REFERENCES

- ¹ Griffith, A. S., and Munro, W. T.: *Lancet*, 1933, i, 399
- ² Griffith, A. S.: *Journ. Path. and Bact.*, 1930, XXXII, 1160

ARTIFICIAL PNEUMOTHORAX

AN AFTER-HISTORY OF 113 CASES

BY

R. R. TRAIL, M.D., F.R.C.P.

PHYSICIAN, ROYAL CHEST HOSPITAL; LATE MEDICAL SUPERINTENDENT,
KING EDWARD VII SANATORIUM, MIDHURST

In a recent paper on the effect of fluid complicating artificial pneumothorax the after-history of forty cases was considered in detail. These forty were exactly half the number of sputum-positive cases in which I was able to induce a pneumothorax between 1924 and 1930, and in which for various reasons refills have ceased. All cases have been followed up to November, 1933, so it is now possible to compare results (1) in forty cases that did not develop fluid and forty that did, and (2) in the total eighty cases with "successful" inductions, and thirty-three "control cases" where induction was not successful. At the time when induction was decided on, each case was allocated to a "choice" I, II, or III in accordance with the type and extent of disease, but these subdivisions have not been included in the present summary.

TABLE I.—Cases Successfully Induced; No Fluid. Still Alive

	T.B. +	T.B. - and No Sputum	Totals
Completed treatment ...	4	21	25
Re-expanded ...	1	2	3
Refills stopped for fresh disease in other lung	2	3	5
Totals ...	7	25	33

Thirty-three of the forty cases that did not develop fluid during the treatment are alive, and twenty-six of these are sputum-free or have negative sputum. Four of these had laryngeal tubercle: all four are soundly healed. Under the heading "completed treatment" are given those in whom refills were carried on for at least three years and until such time thereafter as it was considered safe to re-expand the lung. Four of twenty-five in this category are now sputum-positive; two became positive again soon after re-expansion, and in both phrenic-evulsion was performed, while one of them also had sanocrysin, but both have developed signs of disease in the better lung. The other two became positive at intervals of a year and two years after the re-expansion.

"Re-expanded" cases are those where for no apparent reason the lung re-expanded during the treatment by refills. Of three such patients two again became sputum-positive; one refused any surgical intervention, and has now extensive bilateral disease; the other had severe haemoptysis, and Mr. Tudor Edwards performed thoracoplasty with such success that the patient has been symptomless and fit for work for two years.

In five cases refills were stopped because fresh disease appeared in the better lung; two remain sputum-positive;

of the three who have again become negative two had phrenic evulsion and one sanocrysin.

Seven of the forty patients are dead. In six the immediate cause was extension of disease; one of these was treated with bilateral pneumothorax for a year; though the larynx healed the patient went steadily downhill. Only two of these six cases had become sputum-negative at any time during the treatment. The seventh died of lymphadenoma.

Thirty-three cases of "controls" have been followed up over the same period. These are cases which were chosen for pneumothorax on the same criteria as the eighty where induction was successful but where induction was not possible as no free pleural space or only a small pocket was found, or where a pneumothorax could not be maintained beyond a few refills owing to the presence of adhesions too gross and too numerous to justify submitting them at that time for cauterization.

TABLE II

	Alive		Dead	Totals
	T.B. +	T.B. - or No Sputum		
No space or pocket only...	6	4	11	21
Adhesions	—	1	11	12
Totals	6	5	22	33

Table II shows that the prognosis in these "control cases" is grave, and is much more so in those cases with adhesions as against those with no free pleural space, as only one of twelve is still alive as against ten of twenty-one. All were treated or advised on treatment by extensive rest, and forms of ancillary treatment were given full consideration. Only three of the twenty-two dead would consider even the minor operation of phrenic evulsion; of the six alive sputum-positive cases one has had phrenic evulsion and one thoracoplasty, and both are in fair condition.

For purposes of comparison the eighty cases where it was possible to induce pneumothorax have been grouped under the heading "successful," and they have been subdivided into those which did and those which did not develop signs of fluid during the treatment, while the thirty-three "control cases" have been labelled "unsuccessful." Table III summarizes the results; it gives the numbers and percentages alive and dead under each subdivision, and among those alive the numbers and percentages sputum-positive, sputum-negative, and fit for work.

TABLE III

		Alive						Dead		Totals
		T.B. +		T.B. - or No Sputum		Fit for Work				
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	
Successful	{ No fluid ...	7	17.5	25	65.0	27	67.5	7	17.5	40
	{ Fluid ...	6	15.0	25	62.5	24	60.0	9	22.5	40
Unsuccessful	... ..	6	18.2	5	15.2	6	18.2	22	66.6	33

From this table the following points emerge:

With a three-year to nine-year after-history,

1. Of eighty "successful" cases, sixty-four (80 per cent.) are alive, and of these fifty-one (63.75 of the total) are now tubercle-negative or have no sputum.

2. Of thirty-three "unsuccessful" cases only eleven (33.3 per cent.) are alive, and of these but five (15.2 per

cent. of the total) are now tubercle-negative or have no sputum.

3. Of eighty "successful" cases, fifty-one (63.75 per cent.) are now fit for work, as against six (18.2 per cent.) of thirty-three "unsuccessful" cases.

4. Of eighty "successful" cases sixteen (20 per cent.) are dead; of thirty-three "unsuccessful" cases twenty-two (66.6 per cent.) are dead.

5. The end-results in "successful" cases, with fluid and without fluid, are practically parallel.

OCULAR TORTICOLLIS: INFERIOR OBLIQUE TENOTOMY AND ITS INDICATIONS

BY

E. TEMPLE SMITH, M.B., F.R.C.S. Ed., F.R.A.C.S.,
D.O. OXON

HONORARY OPHTHALMIC SURGEON TO THE ROYAL ALEXANDRA HOSPITAL
FOR CHILDREN AND THE ROYAL NORTH SHORE HOSPITAL, SYDNEY

For many years I have been vaguely aware of a syndrome associated with overaction of the inferior oblique muscle of the eye, but it is only during the last two years that I have given the subject the attention it deserves. Duane of New York published an article in the *Archives of Ophthalmology* in 1916, but since nothing, so far as I am aware, has appeared in British literature on the subject, I feel that some further reference based on personal experience may not be out of place.

It may not be amiss to remind the reader that, when looking straight ahead, elevation of the eyes is effected by the action of the superior rectus muscles. When, however, the eyes are directed sideways—for example, to the left—elevation is accomplished by the co-ordinated action of the left superior rectus and the right inferior oblique. This is another way of saying that, for purposes of elevation, when the eyes are directed to the left, the right inferior oblique and the left superior rectus are complementary muscles. The reason for this will be obvious on looking at the diagrams (Figs. 1 and 2). When either eye is directed outwards its long axis lies virtually parallel with the line of action of the rectus muscles. Elevation (or depression) as it affects this (outward-turned) eye will find the rectus muscle in a position of mechanical advantage. When, however, the right eye, for example, is turned inwards to the left, its rectus muscle forms, in relation to the long axis of the eyeball, a very obtuse angle. The superior rectus is now at a mechanical disadvantage as an elevator. Indeed, such action can only be minimal. The task of elevation of the right eye when turned to the left is now relegated to the right inferior oblique, which, it will be noted, now lies with its line of action parallel with the long axis of the eye.

ALTERNATIVES: OCULAR TORTICOLLIS OR SQUINT

It would appear that weak action (paresis) of a superior rectus is not very uncommon. Whether it is due to a congenital defect or to a birth injury I do not know; I suspect the latter. The mechanism of the co-ordinated movement referred to above is a delicate one, and when it is deranged the following is what I conceive happens. For the movement of the eyes upward and, say, to the left, a certain amount of nerve energy is available. That moiety which would normally act on the left (weak) superior rectus cannot now act with the usual effect, and so overflows to the other component, the complementary right inferior oblique, causing overaction. This hypertrophies, the initial diplopia becomes accentuated, and the overgrown muscle habitually overacts, resulting in the pronounced upshoot of the eye characteristic of the condition when looking laterally upwards.

To avoid inconvenience from the diplopia the child subconsciously seeks relief in one of two ways. If his refraction (hypermetropia, and especially anisometropia) favours it, he develops a convergent squint and suppresses the offending image. This, I believe, is what most frequently occurs. I have found a considerable number of

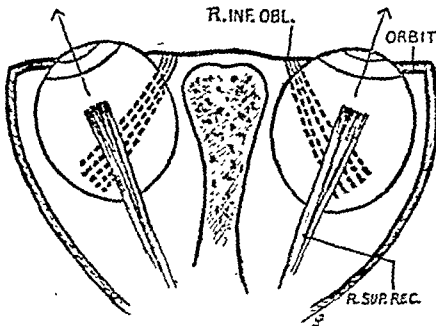


FIG. 1.—Primary position.

my case notes, both private and hospital, in which, in addition to the description of the squint, I have noted that, on looking up and to one side, the opposite eye "shoots up." I was not at the time fully alive to the importance and significance of the observation, and merely recorded it. The other way in which the discomfort of

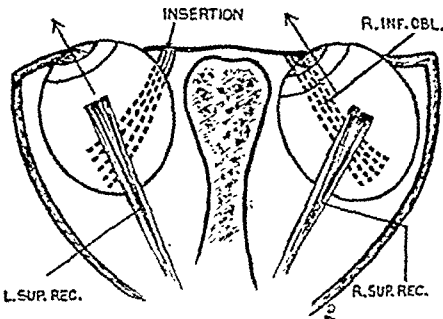


FIG. 2.—Eyes looking to left.

diplopia is subconsciously avoided is by tilting the head to one shoulder, the so-called ocular or pseudo-torticollis. This expedient will occur, as I imagine, where the refraction is normal, and where there is no tendency to lack of fusion, and therefore to the ready suppression of one image. The appearance is quite typical. The boy (I have only met with it in boys, which lends force to the suggestion of birth injury, since boys have bigger heads than girls) carries his head on one side, rather like a bird, and it is this peculiarity which attracts the notice of the parents.

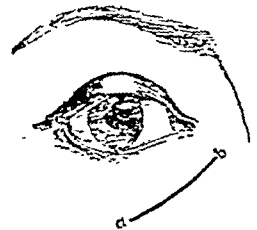


FIG. 3—a-b, Line of incision.

REMEDY

Since the inferior oblique is inserted at the back of the lower surface of the eyeball it can only be reached at its origin. This is from a small shallow depression on the orbital floor, just within the inferior orbital margin, close to the opening of the naso-lachrymal canal. A skin incision an inch and a half long is made, commencing at the naso-orbital angle exactly over the inferior orbital margin (Fig. 3). A lachrymal speculum (Müller's) is now inserted, and the incision deepened through fascia and muscle on to the periosteum of the orbital rim, which is felt for with the gloved finger. This is defined in its whole length as far as the naso-orbital angle. Any bleeding points are clamped with forceps, and the deep fascia

lightly incised just within the orbital margin. Some orbital fat may appear, but it may be ignored. A squint-hook is now passed just within the orbit towards the naso-orbital angle, and the muscle will be withdrawn upon it, and will resemble a flat, grey earthworm. It is muscular throughout, and is also hypertrophied. A quarter of an inch is excised and the wound closed with two or three deep sutures. On two occasions I have encountered some difficulty in defining the muscle, but usually no trouble is met with if the deep fascia is carefully incised. The appearance of the muscle on the hook is quite spectacular, owing to its unexpected bulk.

The result in the head-tilting cases is very satisfactory. The head becomes straight, and diplopia is not complained of. I have performed this operation, apart from three head-tilters, on many old squints which had been rectified but in which this factor of an up-shooting eye remained. In future, in such cases I propose to tenotomize the oblique muscle first and see what effect this will have on the convergence, which was probably first induced by this delinquent factor; but this, of course, will depend on the duration of the squint.

CONSTRUCTION OF A VAGINA FROM A LOOP OF SIGMOID

BY

E. ROCK CARLING, F.R.C.S.

SURGEON TO WESTMINSTER HOSPITAL

In February, 1933, a young woman, aged 26, who was contemplating matrimony, sought advice because she had never menstruated. Her figure and general conformation were those of a well-developed young woman; the breasts were full and well formed; the anterior part of the vulva with the clitoris was normal, but there was no vagina. At the vaginal site it was possible, by pressure, to make a very slight dimple. Per rectum no uterine parts could be felt, though the pelvis appeared to be of normal dimensions. The girl stated that she had sexual feeling.

There was a large reducible left inguinal hernia, the contents of which were tender and seemed solid. The hernia was operated upon, and the opportunity was taken to make a thorough examination of the parts. Both ovaries were normal; the tubes with their frimbriated extremities were normal, but each ended in a long, thin, conical body, which appeared to be the rudimentary half of a uterus. In the peritoneal fold behind the bladder each tailed away into nothing. The left tube and uterine remnant entered the hernia, and possibly the ovary also, but this was not verified.

Inquiry elicited a hesitating admission that monthly periods had been recognized, in spite of there being no loss; it is very doubtful if that was really the case.

The operation for formation of a vagina was thus conducted. The whole sigmoid loop, freed on its left aspect, was examined to determine exactly the arrangement of the blood supply. By dividing the vessels so as to leave the springs of successive arcades intact, a length of seven inches of bowel was so isolated as to receive its blood supply from the lowest branch of the inferior mesenteric. Pulsation at the anatomically proximal—but henceforth the distal—end of the isolated loop was full and strong. Both ends were closed by inversion—the anatomically distal end with great care and thoroughness. The divided parts of the large bowel were then united end to end. An incision was now made in the skin, at the posterior part of the vulval site, and a passage enlarged upwards between the bladder and rectum. As soon as it was large enough a full-size tubular speculum was passed up to its full length.

Returning to the abdomen, it was found a little difficult to locate the upper end of the speculum, so as to make the safest possible aperture for the isolated loop of gut; but when well placed, the peritoneum over it was incised and the open end of the speculum cut down upon.

A pair of sponge holders was passed up from below, and a ligature on the closed end of the freed sigmoid loop seized and pulled down to the perineum. The peritoneum and such subjacent parts as could be gathered, together with the lower ends of the rudimentary uterine halves, were attached to and round the upper closed end of the new vagina. The lower end was now opened and the mucosa and muscular wall sutured to the skin margin.

At first there was some tendency of the new tube to diminish in diameter, but an obturator of stent, and later one of vulcanite, was provided, so that the lumen might be kept patent. After a few months an interesting observation was made: about a couple of inches within the orifice a band of circular muscular contraction, about one-half to three-quarters of an inch in extent, was encountered by the examining finger. The first stimulus to the mucosa excited a very strong contraction, which gripped the finger, but if gentle pressure were maintained the muscle relaxed completely, and the whole of the rest of the passage could be reached. Eventually the new vagina admitted a full-sized tubular speculum.

At first there was a considerable discharge of mucus, but with simple douching that was controlled, and generally has been very much less, though it has not entirely stopped. Moreover, on two or three occasions there has been a slight loss of blood, which appeared to come from a little ulcer in the mucosa high up in the passage. The mucosa itself is slowly losing its distinctly intestinal appearance, so that, with the speculum in place, it might pass for a normal vaginal lining.

Marriage, which was postponed for nine months, has been followed by sexual intercourse, believed to be normal. The patient experiences normal sensations, and states that she is able to relax and contract the sphincter-like muscular tract, if not quite at will, certainly with conscious effort. It is an interesting question whether this very definite sphincter-like section of the sigmoid loop represents the sphincter responsible for Hirschsprung's megacolon and allied conditions.

In this case the mesentery of the small intestine was very short, and to have carried a double loop successfully to the perineum would have been a difficult task; indeed, it appeared impossible without putting such tension on the vessels as would have made the life of the loop extremely precarious.

Upon a review of all the circumstances it seems to be wiser to use colon rather than small gut; at any rate, this case indicates that, as an alternative, the colon is available.

The prospective husband was informed of the circumstances, the findings, and the implications. The psychological and other aspects of the whole undertaking were carefully considered.

This is not the first use of sigmoid for the construction of the vagina. At least five cases are recorded—those of Albrecht, (three), Boldt and Rüge¹—and probably there are others.² A short bibliography is attached to Mr. Norman Hodgson's report of a successful case, using small intestine, in the *British Medical Journal* of May 13th, 1933 (p. 822).

For the success of this case I am indebted to the skilful and patient co-operation of Miss Burton, the ward sister.

REFERENCES

- ¹ Liehl: *Zentralbl. f. Gynak.*, 1919, xliii, 288.
- ² Wallace: *Buffalo Med. Journ.*, February, 1911 (unverified).

LEAKING CEREBRAL ANEURYSM

BY

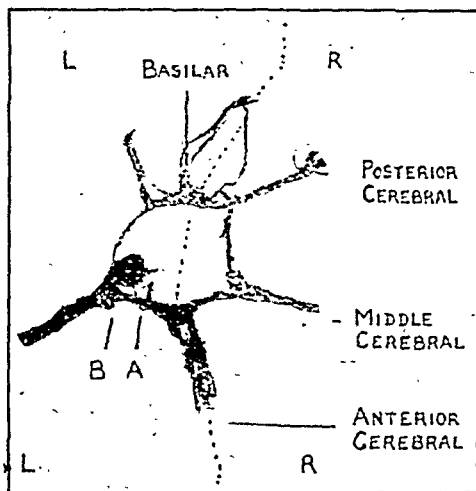
G. D. KERSLEY, M.D., M.R.C.P.

MEDICAL REGISTRAR, ROYAL UNITED HOSPITAL, BATH

As cases of leaking cerebral aneurysm diagnosed *intra vitam* are unfortunately still rare, the case mentioned below seems worthy of record. It is of additional interest, moreover, in that the leak occurred during an eclamptic fit, which somewhat complicated the diagnosis.

CASE REPORT

A multipara, aged 38, was sent into hospital as a case of ante-partum haemorrhage. The history revealed nothing of note except that six months previously she had experienced a sudden intense occipital headache, which had gradually subsided. There was no history suggesting renal involvement. On admission the patient did not appear very ill, but there was marked albuminuria and a blood pressure of 215/140; there was no oedema. There were no labour pains, but the cervix was three fingers dilated; the placenta could not be



A = Ruptured aneurysm. B = Second aneurysm, unruptured.

felt. The following night the patient suddenly fainted, labour pains began, and there was a large discharge of blood from the uterus. The membranes were ruptured, and shortly afterwards a stillborn child was delivered. The mother was very collapsed, with a pulse rate of 130 and a blood pressure of 140. Two hours later she had a fit, lasting six minutes, with opisthotonos and clonic movements of the limbs. Under treatment for eclampsia with morphine and chloral she improved a little, but remained somewhat cyanosed. Till the fourth day there was little change, the patient remaining drowsy. The temperature rose to 101°, the breasts became very tender, and at the same time the patient became more lethargic. The blood pressure had now risen to 180.

On the sixth day after delivery the patient developed a right hemiplegia. The diagnosis at this stage appeared to lie between that of a leaking cerebral aneurysm or of an embolic cerebral abscess. A uraemic hemiplegia was also considered, as was a syphilitic thrombosis, but this was thought to be unlikely. After due consideration it was decided that the most probable diagnosis was leaking aneurysm, and this was confirmed by lumbar puncture, when the cerebro-spinal fluid was found to be intimately mixed with blood, with a coloured supernatant fluid after centrifugalization. The only other findings in the fluid of note were a urea content of 40 mg. per cent. and a negative Wassermann reaction. The patient gradually became more comatose, and died on the tenth day. On post-mortem examination a small ruptured

aneurysm was found at the origin of the left middle cerebral artery, and another aneurysm, about 3 mm. in diameter, was situated close by on the posterior communicating artery.

On reviewing the case it seems likely that six months previously the patient had a slight leak from a congenital aneurysm. In the latter months of pregnancy she became toxæmic, and this resulted in an accidental hæmorrhage and, finally, in an eclamptic fit, which caused the aneurysm to start leaking again, with a fatal result.

COMMENTARY

Cerebral aneurysms, both symptomless and as a cause of cerebral hæmorrhage, certainly occur more frequently than has in the past been recognized. They are found in about 1 per cent. of all necropsies where the arteries of the brain are examined, but Busse records the presence of small aneurysmal dilatations on the anterior communicating artery in as many as 10 per cent. of all post-mortem specimens. Their origin, in the majority of cases, is due to a congenital weakness of the pars media, usually at the junction of two vessels, and they have been found as early as the second year of life. Embolic phenomena are, however, responsible for a certain number of aneurysms, as also, occasionally, are arteriosclerosis and syphilis.

The infrequency of *intra vitam* diagnosis of cerebral aneurysm is not surprising when it is realized that until hæmorrhage occurs, as eventually it nearly always does, there are no symptoms unless calcification or clotting has taken place, for then, and only then, do pressure symptoms arise. These, of course, vary according to the site of the aneurysm, and can only be diagnosed from those due to neoplasm by the observation of calcification in the wall of the sac on x-ray examination, or, better, by means of an arterio-radiogram. When bleeding occurs it may be sudden, with a rapidly fatal result, or there may be a series of leaks, with subsequent clotting at intervals of months or even years, and death may not occur until as long as twenty years after the first hæmorrhage. It is in this type of case, where there are repeated small hæmorrhages, that a diagnosis is frequently possible. The leak may be subdural, with the formation of a hæmatoma, sometimes causing symptoms similar to those of encephalitis lethargica; it may be into the subarachnoid cavity, causing meningism, or into the brain substance, with transient hemiplegia, aphasia, or an attack simulating severe migraine. The attack may be accompanied by albuminuria or glycosuria.

Of great value in the diagnosis of aneurysm leaking into the subarachnoid cavity, as of subarachnoid hæmorrhage from any cause, is lumbar puncture, when the fluid will be found to be evenly mixed with blood, which will have caused staining of the fluid after the cells have been removed by centrifuging. Red cells may be found in the cerebro-spinal fluid for about three days after a hæmorrhage, but the fluid will be coloured for a period of three or four weeks.

The ultimate results of treatment are not promising, as hæmorrhage, even if it ceases for a time, nearly always recurs. Collier advises repeated lumbar puncture so long as the cerebro-spinal fluid pressure is above normal, and Schmidt suggests pressure on the common carotid artery followed later by ligation of the internal carotid. This seems rather a heroic procedure, but it is certainly justified by the poor results of more palliative treatment.

BIBLIOGRAPHY

- Brain, W. R., and Strauss, E. B.: *Recent Advances in Neurology*. Churchill, 1929.
 Busse, Otto: *Virchow's Archiv*, 1921, cxcix, 178.
 Collier, J.: *British Medical Journal*, 1931, ii, 519.
 Schmidt, Max: *Brain*, 1930, liii, 489.

Clinical Memoranda

EXTREME HYPERGLYCAEMIA IN DIABETIC COMA

From time to time various figures of extreme hyperglycaemia in diabetic coma have been published from different countries, almost vying with each other, as sportsmen do, for the record. None has to date exceeded the blood sugar concentration of 2.06 per cent. observed in 1930 in one of my cases. This sounds more like a urinary than a blood sugar analysis, but the figure was confirmed by multiple analyses of the blood filtrate by McLean's method.

The case was one of profound and prolonged diabetic coma in an elderly woman, who was almost pulseless and so weak that air-hunger was replaced by rapid shallow breathing. Two hours before this high blood sugar figure 40 units of insulin had been given; another 40 units afterwards, with abundant saline, reduced the blood sugar to 1.568 per cent., so that the initial figure may have been even higher before any treatment. The patient died in spite of all efforts.

R. D. LAWRENCE, M.D., F.R.C.P.,

Diabetic Clinic, King's College Hospital.

A CASE OF HEART-BLOCK

The following notes on a somewhat unusual case would appear to be worth recording.

The patient was a medical man, seen in consultation with Dr. R. O. Eades and Dr. Bessie Armour. At the time he was taken ill he was carrying on a large general practice. He was very active, and was a golfer. In his time he had been an athlete and also a climber and a shot. Some years ago, when in the sixties, I had advised him to give up swimming, because of transient attacks of precordial pain. During this period he had been subject to pains of the nature of angina, and on one or two occasions had had fainting attacks. He had, however, never been laid up, and had led a regular, normal, hard-working life.

On the night of May 27th, 1932, he was awakened with violent pain in his chest and intense dyspnoea. He was greatly distressed, and became very restless. His pulse was very weak at the wrist, and the rate was below 40. His doctor was called in, and he was given morphine, with a certain measure of relief. The next day, when I saw him, the pulse rate was 36 and the rate at the apex was the same. The heart sounds were distant, and an apical systolic murmur was present. His blood pressure was 120/80 mm. Hg. and the respirations were rather rapid—36. He was cyanosed and suffering a great deal of respiratory distress. He was constantly clutching at his chest, which appeared to relieve him.

It seemed clear that he was suffering from heart-block. The suddenness of the onset and the urgency of the symptoms suggested a coronary occlusion of some kind, but the extreme slowing of the pulse indicated that a complete heart-block was present. Morphine was given at intervals; strychnine at his request, and oxygen and CO₂ from a Yandell Henderson apparatus, were administered. Two electrocardiograms were taken the same afternoon and are here reproduced (Figs. 1 and 2). They show a four-to-one heart-block with idio-ventricular beats. Fig. 1 shows a normal QRS in Lead 1, but suggests a left bundle-branch block in Lead 3. Fig. 2 shows the left bundle-branch block well marked in Lead 1, with a very evident negative T-wave. There is complete dissociation of the auricles and the ventricles.

On the third day the patient had severe hæmoptysis, accompanied by pain on the left side of the chest. At the same time his temperature, which had been normal, ran up to 101.6°. Friction subsequently developed over the area

of pain, with a patch of dullness and numerous rales. There had been an infarction of the left lower lobe. Gradually the haemorrhage ceased. His distress to some extent was mitigated while he was on oxygen and CO₂, but the precordial pain never entirely went, nor did the dyspnoea leave him. The pulse rate ranged from 28 to 32, his temperature remaining subnormal.

On the night of June 11th he had another attack of agonizing pain, when it was thought he most certainly must succumb. This lasted for some hours, but he was not given morphine, lest it should administer the *coup de grâce*. The next morning he was still very ill, but his pulse rate began to rise and reached 60. The following day he expressed himself as quite a new man; something appeared to have

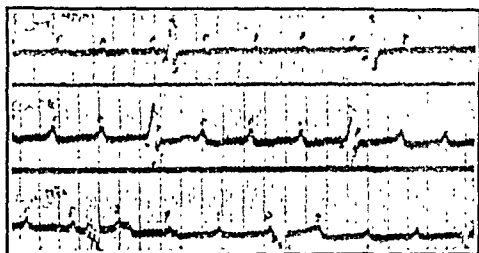


FIG. 1.

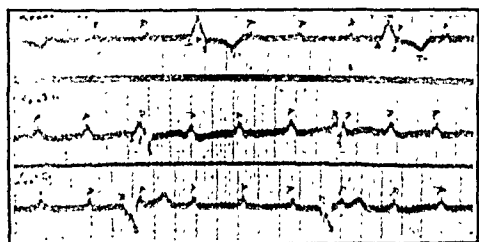


FIG. 2.

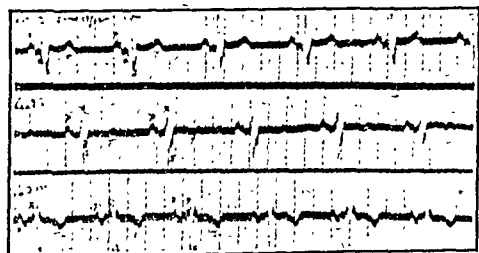


FIG. 3.

"moved" in his chest. He breathed perfectly comfortably; he did not wish for any oxygen. When I saw him he had a pulse rate of 72, and the rate at the apex was the same. Another electrocardiogram was taken at this time (Fig. 3). In it will be noted: a regular rhythm; normal relations of auricular and ventricular complexes; and that the appearances of damage to the right bundle have completely vanished, but a left axis deviation persists.

Whether anything actually happened in the patient's coronary circulation must be a matter of conjecture. It would seem as if the blocked vessels had almost suddenly become patent, with the result that normal conduction of impulses from auricle to ventricle re-established itself. From this time onwards recovery was uneventful. It was difficult to keep him even in bed until the end of six weeks. He gradually got about, but wisely decided to retire from practice, and is now able to garden and play nine holes of golf.

W. F. ADDEY, M.D., M.R.C.P.

Ipswich.

Reviews

GASTRO-DUODENAL HAEMORRHAGE

For their monograph on large haemorrhages of gastro-duodenal origin¹ Professor TIXIER and Dr. CLAVEL have made a study of seventy-four cases of haemorrhage observed in the clinic of Professor Tixier, and seventy-nine haemorrhages among 400 cases of gastric diseases in the clinic of his colleague Professor Savy, together with 200 cases from the literature. The authors are aware of the considerable divergence of opinion within the profession as to the proper method of dealing with these cases, and in their view this hesitancy about methods is due to an inadequate recognition of the causes of gastro-duodenal haemorrhage and the inferences to be drawn from a study of the mechanism by which the haemorrhage is brought about.

The surgical treatment of gastric haemorrhage has a "bad press" because operations are done too late and they often deal inadequately with the cause. In making a case for earlier surgical rather than expectant treatment in these patients the authors divide them into four groups, each with a distinctive mechanism causing the haemorrhage. In the commonest—the haemorrhage from the erosion of a vessel in a callous ulcer, usually on the lesser curvature of the stomach or in the upper duodenum—the mechanism is that of a secondary haemorrhage from a large vessel, such as occurs in an infected wound elsewhere in the body; the artery wall is eroded and damaged, and spontaneous haemostasis is exceptional. Though the first haemorrhage rarely is fatal, it almost certainly recurs. Medical treatment is therefore unlikely to be satisfactory, and direct procedures are necessary—early operation, ligation of the vessel, followed by excision of the ulcer or partial gastrectomy. In a second group haemorrhage occurs in pyloric or duodenal stasis. In these cases it is not the ulcer or cancer which bleeds, but the mucous membrane, which has become infected as the result of retention. The haemorrhage may be slight, but in many cases is enough to endanger life. Treatment should be devised to relieve the stasis—gastro-enterostomy in pyloric stenosis, duodeno-jejunostomy in duodenal stenosis. In stenosis caused by bands and adhesions externally, simple division of these is enough. Operation should not be pushed, but time given to prepare the stomach by lavage. Gastrectomy is unnecessary. In another group haemorrhage occurs from local or diffuse gastritis; it is usually in the nature of a capillary oozing, unless an associated ulcer has eroded a vessel. The treatment is essentially medical, dieting, haemostatics, and transfusion of blood if necessary; intravenous saline solution is to be avoided. Where ulcer is suspected—for example, in men over 40, with a history of indigestion, or where bleeding continues—exploration is indicated. Should an ulcer be found it should be resected if in the stomach or gastro-enterostomy be done if in the duodenum. When no ulcer can be found it is unsafe to do simple gastro-enterostomy, though sometimes successful; it is better to incise the stomach and search further, even to perform a considerable gastrectomy or jejunostomy. The indications for surgical intervention are a reduction of the red cells to 2½ millions per c.mm. or haemoglobin to 40 per cent. of normal.

A fourth large and varied group of haemorrhages arises from causes outside the stomach, whether in neighbouring abdominal viscera, cirrhosis and lithiasis of the liver, splenomegaly, appendicitis, or from general states of infection, intoxications (uraemia), anaemia, arteriosclerosis,

¹ Les Grandes Hémorragies Gastro-duodénales. Par L. Tixier et C. Clavel. Paris: Masson et Cie. 1933. (Pp. 240; 56 figures. 45 fr.)

and hypertension. These haemorrhages of extragastric origin are by no means rare; they are at least as frequent as haemorrhages arising from ulcer. Their treatment requires the active collaboration of physician and surgeon. It is dangerous to treat all cases only medically; it is even more serious to deal surgically with all cases. Certain other varieties of gastric haemorrhage are described, such as those following operations on the stomach, immediately from faulty technique with relaxation of the suture line or following infection, from gastrojejunal ulceration, associated with perforation; or the obscure form where no cause can be found (gastrostaxis, Hale-White). All these varieties are discussed, and the indications for treatment, while a good bibliography follows each section. Finally, there is a section on methods of operative technique, and a number of plates illustrating the operations advocated. The book is well worthy of perusal.

THE INTERVERTEBRAL DISKS

A well-illustrated monograph on the Anatomy, Physiology, Pathology, and Treatment of the Intervertebral Disk,² by G. MAURIC, who has had special experience at the well-known hospital at Berck-sur-Mer, and has carried out investigations on the anatomy of the disk, is the first work on this subject to appear in France, and follows the Special Report publication of the Medical Research Council by Dr. O. A. Beadle in 1931, to which references and deference are duly made. The author has also made a critical survey of foreign literature, especially of Schmorl's observations on ten thousand spinal columns between 1925 and 1931 at Dresden, where Beadle also worked. The references to Mauric's monograph amount to nearly four hundred. In the section on anatomy it is pointed out that the intervertebral disk may undergo an early senile change after 30 years of age as an isolated lesion, no other part of the body being affected, and without any obvious disability. Four-fifths of the text are devoted to the pathological and clinical aspects. Attention is drawn to hernial protrusions of the intervertebral disks into the spinal canal, which are commoner in women than in men, are more frequent in the lower dorsal and lumbar region, more often lateral than median, and project from the posterior surface of the disk from the gelatinous nucleus, undergo cartilaginous transformation and ossification, and may press on the spinal cord. The subject of compression of the spinal cord by these fibro-cartilaginous nodules when of considerable size, which has been comparatively recently recognized, is dealt with at length and illustrated by twenty-six collected cases; laminectomy, however, has not always given entirely satisfactory results. Other morbid changes in the intervertebral disk are described, but the most detailed account is that just mentioned.

-HISTORY OF EPIDEMICS

In his *Short History of the Epidemic Infectious Diseases*³ Dr. E. W. GOODALL has carried out with success the difficult task of condensing the main points of importance in a subject which forty years ago was examined voluminously by that tragic figure Charles Creighton and before that by August Hirsch. Since then this task has certainly not become any easier—for example, the carrier problem has necessitated an account in which it is pointed out that Sudhoff has unearthed the statement, in the *Treatise on Fevers* of Bartholomew of Santa Sophia in

the fifteenth century, to the effect that a person may be infected with, but not be ill of, plague and yet infect others. Celsus, in the first century of the Christian era, wrote: "Rarely, yet occasionally, a new disease appears," and in the accounts of subsequent writers on diseases the adjectives "new" and "unknown" abound; but with regard to infectious diseases Dr. Goodall would not admit that this ever occurs, though observers may think so, as in the case of Brill's disease in 1898 and encephalitis epidemica in 1918, which were rechristened with new names. In the chapter on notable epidemics the nature of the much-discussed plague of Athens, during the second year of the Peloponnesian War, 430 B.C., is considered, and while regarded as more probably typhus or small-pox, may just conceivably have been "an unknown disease which has long disappeared"; the unusual epidemic character of erysipelas experienced in North America seventy to a hundred years ago in some respects recalls the plague of Athens. It is remarkable that there is not any mention of infectivity in the Hippocratic corpus, especially as the contemporary account of the plague of Athens given by Thucydides supplies distinct evidence of it. The first medical writer to suggest that the spread of disease is due to infection was Aretaeus in the second century A.D., when Galen also pointed out the risk of associating with those suffering from the plague, scabies, and ophthalmia. An interesting point brought out is that both inoculation and vaccination against small-pox were first in vogue among the poorer classes, methods of the first being known as "sowing" and "buying" the small-pox.

A FREUDIAN VIEW OF MENTAL DEFECT

Although a vast amount has been written on the psycho-analytical investigation of the normal and the mentally disordered, no book has hitherto been published dealing with this subject in relation to the mentally defective. This omission has now been remedied, and in *The Nature and Treatment of Amentia*,⁴ by Dr. L. PIERCE CLARK, we have a volume dealing with the subject of mental deficiency entirely from the standpoint of the Freudian psycho-analyst. To the ordinary reader with no knowledge of Freudism, perhaps even more so to the one who has made a study of mental defect, the book may at first be unintelligible; it may possibly even strike him as unmitigated nonsense. If, however, he will read the author's preface and his introductory outline of the main tenets of the Freudian doctrine, and if he will try to look at the question impartially, he may then succeed in appreciating the author's point of view, and he may, in some measure, be able to understand the purport of the detailed case studies which comprise the greater part of the book.

The author does not ignore the possibility that mental defect may be based upon inadequate neuronic development, or even that this, in its turn, may be due to germ variation or to cerebral injury; he also agrees that "the ego defect lies within such capacities as perception, memory, ideation, judgement, and reasoning"; but he believes that such lesions may "cripple mental development, not directly, but through its burden of handicap upon the ego and the libidinal processes necessary for mental growth and functioning." In case this may not be clear it will be well to give a quotation from the author's summary of the problem of idiocy, which will, no doubt, make the matter quite intelligible. He says:

"We have attempted to show how much and how far we may detach libido from the primary narcissism and place it

¹ *Le Disque, Intervertebral. Physiologie, Pathologie, Indications Therapeutiques.* Par G. Mauric. Préface du Pasteur Valléry-Radot. Paris: Masson et Cie. 1933. (Pp. xii + 195; 46 figures. 35 fr.)

² *A Short History of the Epidemic Infectious Diseases.* By E. W. Goodall, O.B.E., M.D. London: John Bale, Sons and Danielsson, Ltd. 1934. (Pp. 113. 3s. 6d. net.)

³ *The Nature and Treatment of Amentia.* By Dr. L. Pierce Clark, assisted by the staff of the Psycho-Analytic Sanatorium at Rye, N.Y. London: Baillière, Tindall and Cox. 1933. (Pp. xvi + 305. 12s. 6d.)

to the service of the oral function, thus starting these infants on the road towards a real objective cathexis. Even when the primary narcissism is to some degree broken down in establishing an oral identification, it is extremely difficult to gain displacements upon persons and things other than those belonging specifically to the mother pattern. It all becomes a test of our ability to engender a good counter-transference of the narcissistic type. Only then will these little charges, caught up in the maelstrom of a more or less enduring state, find it worth while to be enticed away from their self-engrossment and accept satisfactions to the secondary narcissism. . . . Yet we shall have to look to the higher levels of mental arrest if we are to hope for demonstrable therapeutic results."

Unfortunately, these results do not appear to be forthcoming, for towards the end of the book Dr. Clark says: "If it is at all possible to analyse the feeble-minded, they certainly need much more time than the average in which to carry out such a process of absorption." It would therefore appear that the doubts which have been expressed in some quarters as to the possibility of benefit resulting from psycho-analysis in cases of mental disorder are even more justified in the case of the mentally defective. This being so, the person who is not already a fervid disciple of Freud will probably consider it a waste of time to read this book. On the other hand, the thorough-going Freudian may conceivably think it a useful addition to his knowledge.

PRACTICE OF SURGERY

It is almost exactly twenty years since *The Practice of Surgery*,⁵ by RUSSELL HOWARD, first saw the light of day—the preface to the first edition bears the date January, 1914. Now a fourth edition, in which Mr. ALAN PERRY has collaborated with the author, has recently been published. In this, particular attention is paid to methods of diagnosis and treatment, and the central idea of maintaining the work as a textbook for students preparing for examination, and a groundwork for more specialized study, has been adhered to. Methods of treatment of controversial value and highly specialized operative procedures and laboratory tests have been omitted or very briefly indicated, so that the mind of the student should not be burdened with matters which may soon be of no practical value. Mr. Russell Howard has been known to generations of London Hospital men as a teacher of the very first class, at whose feet disciples have ever been known to crowd in almost inconvenient numbers. This experience, coupled with that as an examiner at the Royal College of Surgeons, must have given him an exceptional knowledge of the needs of the student, and how best they can be met. For *The Practice of Surgery* he drew upon this rich store of experience, and the publication of a fourth edition may be taken as evidence that it has met and continues to meet with the full approval of those whose requirements it is designed to serve.

The book is well illustrated by photographs, line drawings, and many excellent radiograms. If we might offer a little gentle criticism it would be that in future editions more care might be exercised in the literal reading of the proofs: we should then be spared such a sentence as appears on page 505: "With these splints, as in all cases of fractured tibia and fibula, and should be taken that the foot is not placed vertically on the foot-piece, etc." A similar revision of the index is also necessary, as, for instance, a reference to poliomyelitis is given for page 294, whereas in the text it appears on page 298. These are slight blemishes on an admirable textbook.

⁵ *The Practice of Surgery*. By Russell Howard, C.B.E., M.S., F.R.C.S., and Alan Perry, M.S., F.R.C.S. Fourth edition. London: Edward Arnold and Co. 1933. (Pp. 1,338; 8 coloured plates and 584 figures in text. 30s. net.)

PHOSPHORUS METABOLISM

The scope of the monograph entitled "Phosphorus,"⁶ by Professor M. LABBÉ and Dr. M. FABRYKANT, is indicated in its subtitle, "Chemical Technique, Physiology, Pathology, and Therapeutics." The authors give a full account of the functions of phosphates in the body, the normal metabolism of these substances, and the chief pathological derangements which may be encountered in relation to it. They have taken a wide view of the subject, for they include an interesting summary of existing knowledge regarding the part played by phosphate compounds in muscular contraction, whilst another chapter is devoted to phosphatases. The absorption and excretion of phosphorus and the physiology of blood phosphorus are also fully dealt with. The discussion of the last-mentioned subject includes an account of certain important experiments carried out by one of the authors.

The second half of the book is concerned with the pathology of phosphorus metabolism—rickets and tetany, and the influence on these conditions of vitamin D and parathormone. It is pleasant to note that the authors have given an adequate account of the remarkable work of Schabod, who between 1908 and 1912 demonstrated quantitatively that administration of cod-liver oil caused rickety children to retain phosphorus. Unfortunately, the pathology of both rickets and tetany is still obscure, because of the difficulty in determining the relative importance of derangements in the metabolism of calcium and of phosphorus. Furthermore, it is still uncertain whether rickets is due to a failure to absorb these minerals from the gut or to a failure to utilize them after absorption. The authors incline to the latter view, but give a full record of the existing evidence. Finally, phosphorus metabolism is discussed in relation to a large number of pathological conditions—osteoporosis, anaemia, diabetes, liver disease, nephrosis, etc.

This brief review indicates the general scope of the work. The two chief qualities we look for in such a volume are that it should provide a guide to all the important evidence available, and that it should present a readable summary of the chief conclusions that can be drawn from this evidence. The monograph fully satisfies both these requirements. It gives a full and impartial account of work published in all languages, and the conclusions are clear.

Notes on Books

John Bale, Sons and Danielsson have published new editions of *Efficiency in First Aid*,⁷ by Dr. N. CORBET FLETCHER, and of *Accidents and Emergencies*,⁸ by A. T. GOODING. The former has now reached its third edition, totalling 10,000 copies, and thus indicating its popularity with senior students of first aid. The subject is dealt with critically as well as comprehensively, and ambulance instructors will find it useful for that far from uncommon person who finds the official handbooks too compressed and unimaginative. Both diagnosis and treatment are discussed in detail and systematically, and hints are given which should help to make training and examination more vivid and searching. Mr. Gooding's booklet, now in its second edition, is described as "an ideal memorizer and a quick reference"; it has been compiled from the textbooks of the St. John Ambulance Brigade and the British Red Cross Society. It should prove of service to those preparing for examinations and others wishing to revise and check their knowledge. The injuries are listed in alphabetical order.

⁶ *Le Phosphore*. Par M. Labbé et M. Fabrykant. Paris: Masson et Cie. 1933. (Pp. 393. 55 fr.)

⁷ *Efficiency in First Aid*. By N. Corbet Fletcher, M.B. Third edition. London: J. Bale, Sons and Danielsson, Ltd. 1934. (Pp. 196. 1s. net.)

⁸ *Accidents and Emergencies*. By A. T. Gooding. Second edition. London: J. Bale, Sons and Danielsson, Ltd. 1934. (Pp. 62. 1s. net.)

Organic and Biochemistry,⁹ by Professor R. H. A. PLIMMER, is a well-known textbook, which was first published in 1910, and has now reached its fifth edition. During its career it has twice changed its title, for the first edition was called *Practical Physiological Chemistry*, the next three editions *Practical Organic and Biochemistry*, while the present edition has been amplified to cover both the theoretical and the practical aspects of the subject. In spite of these changes in title the general form of the book has been maintained fairly constant. The book provides a very clear introduction to organic chemistry, and particular attention is devoted to compounds of special biological interest. Great care has been taken to bring the present edition up to date, and accounts are given of all important recent advances, such, for instance, as the chemistry of carotene and vitamin A, of ergosterol and calciferol, of the oestrogens, and of ascorbic acid. About three-quarters of the volume deals with organic chemistry, whilst the last quarter is devoted to the chemistry of the digestive processes, blood, urine, and foodstuffs. The book therefore covers a wide range of subjects, and the latter portion of necessity presents a somewhat condensed account of the material with which it deals. Adequate accounts are given, however, of all the most important methods used in clinical medicine, and the author has saved space by describing methods actually in use and

by omitting accounts of methods that have become of historical interest only. The present edition fully maintains the past reputation of the textbook for accuracy and for careful selection of material.

We would again recommend *The Annual Charities Register and Digest*¹⁰ to all who seek authentic information concerning the special institutions, hospitals, hostels, and educational establishments which provide relief for the distressed in sickness and misfortune. In the forty-first edition, which is now available, a new section has been included which lists the relief stations, children's receiving homes, training centres, etc., of the Public Assistance Committee of the London County Council. The volume may be obtained from the Charity Organization Society, Denison House, Vauxhall Bridge Road, London, S.W.

The tenth edition of PARK and WILLIAMS's well-known textbook *Pathogenic Microorganisms*¹¹ has been enlarged and thoroughly revised, especially in the sections dealing with active immunization against diphtheria and scarlet fever, yellow fever, poliomyelitis, bacteriophage, and undulant fever. The authors are to be congratulated on the care which they take to keep this useful reference book up to date, and so well indexed and lavishly illustrated.

⁹ *The Annual Charities Register and Digest, 1934*. Forty-first edition. London: Longmans, Green and Co., Ltd. (Pp. 523; 8s. 6d. net.)

¹¹ *Pathogenic Microorganisms*. By W. H. Park, M.D., and A. W. Williams, M.D. Tenth edition. London: Baillière, Tindall and Cox. 1933. (Pp. 868; 215 figures, 11 plates. 35s.)

Preparations and Appliances

A SIMPLE METHOD OF APPLYING A PLASTER JACKET TO CASES OF FRACTURED SPINES

Mr. R. JACKSON, M.B., C.M. (consulting surgeon, St. Helens Hospital), writes:

In a mining area such as this, where the roof of the mines is not very high, and where "falls" are liable to occur, a fracture of the spine is of quite common occurrence. It may be a simple crushed fracture of the body of a vertebra, or a fracture of the spinous process and laminae, or a combination of both. Such fractures are commonly caused either by a fall of roof on the shoulders of a miner when in a sitting or stooping position, or by a blow on the shoulders or at the seat of the fracture when illegally riding on a "tub" to

The patient is then rolled over on to a loose pole canvas stretcher, face downwards, on which he is lifted to the hammock, his head, arms, and shoulders resting on the head of the bedstead. The canvas stretcher is withdrawn, and the plaster bandages are applied round the patient's body and the hammock. The patient is very comfortable in this position and remains so until the plaster is set, when he is released by cutting across the towelling above and below the jacket, the intermediate portion of the towelling remaining as part of the jacket. The "dinner-pad" is then removed. When the laminae or spine of the vertebrae are fractured,

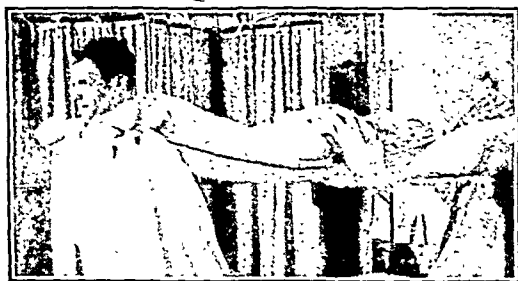


FIG. 1.—The patient in position on hammock ready for encasing in plaster.



FIG. 2.—The patient encased in plaster jacket waiting for plaster to set.

or from his work, from a low bar or projecting portion of the roof. A convenient and easy way of applying a plaster jacket to these cases, and a method I have used for many years with success, is as follows.

A hammock is made by stretching a piece of roller-towelling on a suitable frame, which can readily be made by removing the foot-piece from a hospital bedstead and putting a head-piece with smooth top-rail in its place. The towelling is then stretched across this frame, and, by tightening or slackening the towelling, the necessary hollowing can be given to the patient's back. The patient is then prepared by being fitted with two singlets: the outer one becomes part of the jacket, while the inner one can be changed as required during the wearing of the jacket. A "dinner-pad," about 8 in. by 6 in. and $1\frac{1}{2}$ in. thick, to which tapes are attached for withdrawal, is placed under the singlets over the abdomen.

and the bodies are not crushed, the patient may be placed face upwards.

This is a method which is easily carried out anywhere, and I have used it for jackets in tuberculous spines, etc., when suitable. The jacket is much lighter and stronger if a long strip, about one inch wide, of roughly perforated tin (such as is used by tinmiths for making bread-graters), is incorporated in the plaster as a reinforcement on each side of the spine. When the jacket is dry it may be varnished with a solution of celluloid—for example, acetone collodion.

During the three years ending in March last I had seventeen cases of fractured spine—one, who had fifteen other bones broken, died at the end of twelve months from cystitis, eleven have been certified as fit for suitable work, the remaining five are able to walk, four of them being over 55 years of age, and one having a large diaphragmatic hernia.

THE HOSPITAL OF THE FUTURE

BY

DUNCAN C. L. FITZWILLIAMS, M.D., CH.M.,
F.R.C.S.

There is a saying that the old order changeth, giving place to new; but change is not always manifest, and in some departments of our civilization it seems, for a time, imperceptible, and then characterized by a period of great activity. One sees this in the building of new hospitals. I am not here referring to the style of architecture, though that has changed quite suddenly, but to the internal arrangements and the ideas which pervade them.

Originally, hospitals were charitable institutions founded, for the most part, by religious orders out of pity for their fellow men, for the relief of suffering humanity—for those who rotted in the streets, beggars who could no longer beg, men broken in the wars, those in the last stages of disease, and for few else. Shelter and sustenance were of primary importance, and the medical side took second place. Once admitted to the institution the inmates could remain there indefinitely. Gradually through the ages the almshouse features were lost and the medical side grew until it became the all-important feature of the institution as we see it to-day.

Lister's discoveries revolutionized hospital organization, and his influence spread far beyond surgical confines. It introduced cleanliness everywhere, and banished the "smell of new-mown hay" which pervaded the institutions owing to the number of pyæmic cases in the wards. The tiled or terrazo floors, the rounded corners, the new paint, and the general air of freshness associated with these institutions to-day are all due to Lister's genius. Since those great changes consequent upon his discoveries, we have been experiencing one of those pauses already hinted at. Public health authorities have influenced the water supply, sanitary arrangements, lighting, and other social services, but there has been no great revision of ideas and no marked changes. If we were to ask any of the charitably inclined members of the boards of our institutions what reforms they would recommend, ninety-nine out of a hundred would be hard put to it to think of any. In other words, we are quite content with things as they are. But to those who understand the evolution of the hospital another long stride forward is due, and it is time that the finger of criticism, or even of scorn, should be pointed at some of our customs. I shall cite two which are anachronisms embodying some of the most barbaric features of the Middle Ages.

DEATH IN PUBLIC

It is customary in our hospitals to allow a patient to die in the public ward. Nothing could be more crude or unnecessary, for surely dying is as private an affair as birth to the patient and his immediate relatives. Imagine the scene in a large ward at night with the darkened lights casting mysterious shadows on the walls, screens round one of the beds, and nurses gliding to and fro as noiselessly as possible, but with evident hurry and anxiety. The deathly silence preserved by the other patients in the ward is broken only too audibly by the strange and horrible noises emitted by the semi-conscious patient. Then there is the hurried sending for the house-surgeon, the consultation with the sister outside the screens, in view of everyone except the patient and his friends, the gestures of helplessness and inability to do more which everyone can understand. The oxygen is hurried in by the porter and pushed behind the screen. Silence is broken by a loud hiss which startles all but the dying as the over-anxious nurse turns on the tap a little too vigorously, or the silence is broken in a still more alarming manner by a loud pop as the buckled tube is blown from the end of the cylinder. Every noise is multiplied a thousandfold by the tension of the nerves of the listeners. The sounds from behind the screens become fainter and fainter till at last the silence is broken only by the sobs of the relatives. Later there are the almost silent flittings of

the nurse behind the screens as she performs the necessary last rites, and lastly the arrival of the porter with the dismal covered trolley on which the body is removed. In circumstances such as these little sleep can come to the other patients, as they lie awake with straining, horror-struck eyes which gaze timidly about to see what the others are doing and how they are taking it. Imagine the psychological effect of all this upon a nervous individual fighting for his own life and health in a near-by bed—nothing could be more cruel, more unnecessary, or worse, medically, than to subject him to such an ordeal.

OPERATION CASES IN THE WARDS

There is another feature of our hospitals to which we are equally callous—namely, the admission of a young and inexperienced man, about 18 years of age, into a surgical ward preparatory to an operation, say, for hernia. He enters a strange building where, after a wait of variable length, he is shown up into a ward. He is not ill, but he is told to undress and get into bed. Like the new boy at school, he knows no one, and understands little of his surroundings. He notices that there is a curious arrangement like a small house under the blankets of the next bed, which at the moment is empty. A nurse may come from time to time to examine it, and he sees that the house-like contrivance is full of electric lights over which the bedclothes are draped, and he wonders what all this is for. Presently steps are heard coming along the corridor and the door is bumped open by the end of a trolley pushed by a porter. The nurse whisks away the small house, and arranges the bedclothes as the trolley is brought alongside the bed and a groaning patient is transferred from the trolley to the bed next to him. A towel is arranged under the head of the patient, and an ominous-looking basin placed near at hand. Then the ordeal begins. The new patient is horrified at the sights and sounds that follow—the groaning, the incoherent talk, the vomiting, and all the disgusting features of a patient, his actions shorn of human semblance, slowly regaining consciousness after an operation. Timidly he may inquire what it is all about, and a nurse may inform him shortly that it is only a case of hernia which has been operated on that afternoon. Only a case of hernia! He is a hernia case too! But this may not be all; the surgeon of the ward may be operating that day, and three or four similar cases may be placed in the same ward that afternoon—perhaps a case operated upon for tonsils and adenoids, in which the sight of quantities of blood-stained expectoration are added to the other horrors. Is the new patient, in this environment, likely to pass a pleasant night? And what must be his thoughts of his own approaching ordeal? I have instanced a case of hernia, but the deleterious effect would be multiplied a thousandfold, and might assume serious features, if the case was one of exophthalmic goitre awaiting operation.

When I hear some of the leaders of our profession speak proudly of the march of science and the progress of medicine, and lay stress on the growing importance of psychology, I sometimes wonder if their tongues are in their cheeks, for they must know the two scenes I have endeavoured to depict are everyday occurrences in the wards of their own hospitals.

THE REMEDY—"DEATH ROOM" AND "RECOVERY WARD"

Now let me deal with the remedies for these two anachronisms which, now they are pointed out, will, I hope, soon become customs of the past.

In the first place, each hospital should provide one or two small wards into which a person about to die can be removed. This should be insisted upon both for the convenience of friends and relatives and even more so in the interests of the other patients. During the war I organized three hospitals, and in each a ward for the dying was provided. I never saw wards for the dying provided in any military hospital except my own, but I have heard that something approaching them was arranged at Salonika. It might be argued that the act of being transferred to the ward for the dying might have

a detrimental effect on the patient. A moving picture of such an occurrence is portrayed in the novel *All Quiet on the Western Front*. To me, with experience in this matter, the scene was totally false; the patient was never removed until he had lost sense of his surroundings. Incidentally, it showed that the need for such wards was recognized even in the German hospitals, where we should hardly look for sentimentalism. In Archangel, during the 'flu epidemic, we had a ward of sixteen beds set apart for such cases, and for a time it was almost continually filled. I only knew of one mistake being made, where the man actually lived and returned to the general ward. Being a bit of a "wag," he never failed to make reference to his little excursion when I made my rounds.

To remedy the second state of affairs recovery wards should be provided, where patients recovering from the effects of the anaesthetic can be nursed till the disagreeable effects have passed off. Most of them could be returned to the general wards in twenty-four hours, and the worst cases would only remain in the recovery ward for two, or at the most three, days. When the new Freemasons' Hospital was being built I strongly recommended the provision of these recovery wards of six beds for each sex—a low partition between each bed, with, perhaps, a curtain at the foot to make supervision easy. To the patient in his semi-conscious condition, with the senses dulled by morphine, his surroundings would not matter, and he would not be made more miserable by the presence of neighbours in like state. I could not, however, get all the surgeons to agree upon the subject, and some to whom the idea was new said they much preferred their patients to be nursed in the wards in which they would subsequently lie. The point of view of the other patients did not appeal to them. Nevertheless, the suggestion was considered by the building committee, who have wisely set aside small wards for this purpose and, although they are not quite what was originally suggested, their value is already appreciated.

OTHER REFORMS

There are other, but perhaps less important, reforms needed in our hospitals. To my mind it is pathetic to see patients sitting in low chairs eating meals from high bedside tables, or, still more inappropriately, from their beds. A dining room should be provided for those who are up and about, or, failing this, there should be a central table in the ward at which they could have their meals. Some of the features of a hydropathic establishment are sadly needed in our hospitals, for what is useful in one establishment would be equally useful in the other. The next suggestion, which obviously goes with the last, is the provision of a sitting room, reading room, or library, where papers, periodicals, and books are provided. He who wishes to cavil at these suggestions may say that the pressure on our large hospitals is such that we do not have convalescent cases. Such, however, is not the case, for at least 10 per cent. of the patients could get up if there was room for them. In our present hospitals the provision of space for these changes is almost impossible. I am, however, speaking of the hospital of the future, where provision could and should be made for these improvements.

Another necessary feature sadly wanting in many hospitals is the provision of a good convalescent home. A hospital without a good convalescent home is like a man with one leg. By a convalescent home I do not mean a place where a patient is sent to and lost sight of, but somewhere where he can convalesce after his operation. After the seventh or, at the most, the tenth day, a case operated on for hernia occupies a bed and needs little attention. He could quite well be looked after in a convalescent home. Most of the so-called convalescent homes to which patients are now sent are merely boarding establishments, with no resident medical staff. There is usually a proviso that the patient must be able to get up and about and must not require any dressings; no medical treatment can be undertaken, and there is no touch with the establishment from which the patient came, except through the almoner who

arranges the admission. It is to these establishments that the term "convalescent home" is now applied.

A definite feature of every hospital should be an efficient follow-up system. It is only needed for a very few diseases, but they are of vast importance, and include all slowly fatal ones—chiefly blood and lymphatic diseases—and all forms of malignant disease. It would, perhaps, be best for the follow-up system to be under the management of the public health authorities, so as to ensure uniformity, efficiency, and the collection and good use of the statistics produced. The notes of the patient would follow him from institution to institution if necessary. The follow-up department would keep in touch with the patients, who would report themselves at certain times. There are most excellent follow-up departments in connexion with the cancer institutes on the Continent, and we have copied them at our cancer centres, though it seems more difficult here to make the patient see the importance of this department. In Sweden free railway tickets are issued to patients who wish to report at the centres. The follow-up system also keeps the hospital in touch with the general practitioner who supervises the patient at his home.

FUTURE DEVELOPMENTS

There are many reasons why the ideal hospital will not be built in this country for some time to come, for we have become wedded to two opposing systems—(1) the voluntary hospital, which prides itself on its efficiency and advertises its unbusiness-like behaviour by exaggerating its debts in the hopes that it will thereby appeal more strongly to the generosity of the public; and (2) the municipal hospital, recently brought up to date by the Board of Health, under the skilful guidance of Sir Frederick Menzies. From now on the latter type of hospital is going to be an efficient and serious rival of the voluntary hospital for public favour. This is already recognized by the voluntary hospital; considerable jealousy has been evinced, and the medical profession has even been induced, half-heartedly, to take sides. Neither side is likely to scrap its methods, but the bringing up to date of the municipal hospital is going to have a far-reaching effect on the voluntary hospital, and whether the voluntary hospital will survive remains to be seen. If in the future the Government were to take over the whole hospital system of this country they would have central purchasing boards for food, dressings, drugs, and equipment, and a great saving would result. Such central boards could be introduced now with the same advantages if the hospitals could be induced to combine. At the moment many of the voluntary hospitals cannot provide the equipment specified by the staff as they cannot find the money, and some of the reforms mentioned cannot be introduced for the same reason. It is perfectly possible to visualize a fusion of the two systems at some future time, simply because many voluntary hospitals may not be able to compete with the Government establishment, where everything would be provided. Thus the municipal hospital may become the more favoured by the public.

Where does the opposition to fusion come from at the present moment? Partly from the leaders of the medical profession, many of whom are conservative in outlook and do not take readily to new ideas. What is the attitude of the younger men? Have they shown any repugnance to entering the service of the municipal hospital and being paid for the services they render to the State? Not at all; they clamour for the posts. The day of the honorary staff is passing. The pressure of life and taxation is rendering it impossible for a medical man to give his services for nothing in the way he used to do. He should be the last to regret the change. Far more serious opposition will come from the Government, who will not want the added expense or the responsibility. If charitable people will provide the money, it is unlikely that the Government will wish to shoulder the burden, though the Government has built and staffed nearly all the hospitals in our Crown Colonies. They are, incidentally, excellent institutions.

Alongside the general hospitals, voluntary and municipal, and perhaps because of them, there will appear another sort of hospital for the better-class patient. These private hospitals ought to cater for the middle class and contain private rooms and small wards for two, four, six, or eight patients according to their means, wards for the dying, recovery wards, dining rooms, and reading rooms. Few people really object to small wards. The upper middle classes, as represented by officers in His Majesty's services, are provided with wards in Millbank Hospital if they are under field rank, and a very well run private hospital for officers does the same thing for nearly all ranks. This also is the experience of anyone who has worked in large nursing homes where small wards are provided—they have been the greatest success in the Freemasons' Hospital.

Doubtless there will be fashionable institutions run by titled ladies with a gift for nursing or management, and in my experience these places are run with remarkable efficiency—their vogue would not endure long if they were inefficient. Smart society and the plutocracy would insist upon admission. There would be no difficulty in making prices to correspond in every way.

SILICOSIS: RIVAL THEORIES

The discussion on silicosis, held under the auspices of the Institution of Mining and Metallurgy, of the first part of which some account appeared in the *Journal* of February 10th (p. 254), was completed on February 15th. It was noteworthy for a brisk exchange between Professor J. S. Haldane, who holds the view that the cause of silicosis is a dust with a high percentage of quartz, and Mr. W. R. Jones, D.Sc., of the Royal School of Mines, who maintains that it is the minute acicular fibres of sericite.

At the resumed meeting Professor S. Lyle Cummins sent a communication stating that the information which Dr. Jones had collected about the distribution of sericite in rocks and its close correspondence with the distribution of silicosis had brought to the problem of pneumoconiosis an entirely new concept, which fitted in better with the observed facts than that based on the theory that what was called silicosis was due entirely to free silica. Those who had studied the problem in the South Wales coalfield, said Professor Cummins, had always been conscious of the underlying uncertainty as to how some of the miners had managed to breathe in sufficient free silica to explain the condition found. The possibility that it was combined silica which was causing the damage was now supported by very convincing evidence, and he for one was deeply impressed by Dr. Jones's findings. He suggested that they might be finally established by the production of experimental silicosis in animals by means of sericite.

On the other hand, Dr. S. W. Fisher, medical inspector of mines, said that he still adhered to the view that silicosis was a pathological condition of the lungs due to the inhalation of silicon dioxide in a chemically uncombined state. To his mind the evidence regarding the danger of the inhalation of dust containing a high percentage of free silica was overwhelming; whether sericite played a part in this remained to be proved. Dr. J. S. Owens also contested some of Dr. Jones's conclusions, and said that he felt that Dr. Jones had not advanced any acceptable proof of the absence of large numbers of very fine quartz particles from the air of mines where silicosis was common—that is, particles well below one micron in diameter. He considered that the presence of sericite fibres and the absence of silica from the lung tissues which Dr. Jones had examined might be due to the greater solubility of the silica, and did not necessarily mean that sericite was the cause of the disease present.

MEASURES FOR PREVENTION

A good deal of the discussion was occupied with measures for the prevention of silicosis. Dr. Jones had put forward a twofold proposal: that the less mobile

workers should be provided with a light cover for the mouth and face and a supply of fresh air from compressed-air pipes, and that the more mobile workers should be provided with a supply of compressed air carried on their backs; but Mr. F. H. Wynne, deputy chief inspector of mines, considered that very few coal miners in this country could be included in the first category, and as regards the self-contained supply from a cylinder, he was very doubtful as to its practicability. The better way was to attack the dust either at its source—the borehole, for example—or, in so far as that was not possible, by means of respirators. He said that the method of extracting dust before it reached the atmosphere, by means of a so-called dust-trap, and depositing it in a filter, was now largely employed in South Wales. Professor B. W. Holman, however, suggested that the provision of a separate supply of air for each man was not so impracticable as it sounded, and according to some calculations he gave, it worked out at one penny per hour per man.

Professor Haldane said that he looked for a remedy in the stone-dusting of a dangerous mine with a dust which would sufficiently dilute the free silica. Other speakers suggested a reinvestigation of ventilation in mines, the possibility of blanketing the fine dust after it had settled by a layer of innocuous dust, or the addition of a chemical to the water spray to assist in wetting the sericite (supposing that to be the culprit), sericite being not easily wetted by water alone. Professor J. G. Lawn, as one intimately concerned with silicosis-prevention in South Africa, spoke of the disappointing results there. Nearly twenty years ago the Miners' Phthisis Prevention Committee in South Africa succeeded in laying 97 or 98 per cent. of the dust, but no very striking diminution of silicosis incidence had followed, although in addition to laying the dust other hygienic measures had been taken, and it had been ensured that only healthy workers were recruited. It was mentioned by another speaker that the incidence of new cases in South Africa was now slightly under 2 per cent. per annum, as compared with about 2.6 per cent. some ten years ago.

Dr. Jones, in replying to the discussion, warmly defended his hypothesis. He quoted the figures recently given in Parliament showing that while the South Wales coalfield employed only 18 per cent. of the coal miners in this country, it accounted for 89 per cent. of the cases of silicosis. Dr. Jones contended that the bulk of these cases came from a localized anthracite area, where sandstones occurred just above or just below the coal seams, and these and the sandy shales had been shown to contain myriads of minute fibres and scales of sericite. In the Scottish coalfield, on the other hand, where there were few cases of silicosis, the sandstones contained very few such fibres.

The fourth International Congress on Rheumatism will be held at Moscow, May 3rd to 6th, 1934. The following subjects will form the basis for discussion: (1) the problem of the clinical aspects of rheumatic fever; (2) indications for the balneological treatment of rheumatic patients; and (3) social and occupational aspects. Among other speakers Dr. G. P. Cawadias will contribute to a discussion on metabolism in rheumatism; Dr. B. Schlesinger, on clinical aspects of rheumatic fever in children; and Dr. R. Fortescue Fox, on balneological treatment. There are two ways of travelling in order to attend the congress. (1) To take a three-week tour (giving twelve days in Russia), leaving London on April 21st for Leningrad, by boat, and then on to Moscow; the inclusive cost of this (boat and railway travel and hotels) is £23 third class, £38 second class. (2) Those who have less time can travel overland via Harwich, The Hook, Berlin, Warsaw, Negoreloje, to Moscow; the return ticket from London to Moscow is £46 first class, £36 second class with sleepers, £28 10s. second class without sleepers, £19 third class. Accommodation in the U.S.S.R., by the day (covering all expenditure), costs £3 first class, £1 15s. second class, £1 5s. third class. Further information can be obtained from the secretary, S.C.R., 1, Montague Street, W.C.1.

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PHYSICO-CHEMICAL BASIS OF ANTIGEN-ANTIBODY REACTION

During the last decade the work of chemists and physicists who have been engaged upon the fundamental problems of immunity has contributed much towards their solution by bringing them into relation with the theories of modern chemistry and physics. A recent account,¹ written by Dr. J. R. Marrack and issued by the Medical Research Council, provides an excellent summary of the chemical and physical studies which have served to elucidate certain specific immunological reactions in terms of the fundamental sciences. It may be well at the outset to recall some of the more important researches which have advanced our knowledge of the nature of the antigen-antibody reaction, and to note in particular those which have illuminated the subject of immunological specificity and its relation to chemical composition and structure.

The changes in the immunological specificity of proteins which result from modifying their chemical and physical structure were investigated at the beginning of the present century by Obermeyer and Pick, who showed that the nitration, diazotization, or halogenation of proteins brings about the disappearance of the original specificity and gives rise to a quite different specificity which is characteristic for the nitro-, diazo-, or halogen-protein that is formed. Landsteiner and his co-workers extended these observations, and demonstrated that the specificity of a protein may also be altered by reactions such as esterification, acetylation, or methylation, which involve the salt-forming groups of the protein molecule as well as those of the hydrogen atoms in its aromatic nuclei. Proteins that were altered by such chemical treatment were found to behave as foreign proteins when injected into animals of the species from which they were derived; the corresponding immune sera exhibited a specificity which depended on the simple chemical grouping that now formed part of the synthetic antigenic complex. An antigen prepared by introducing the same chemical grouping into a different protein from that used for the immunizing antigen reacted in a completely specific manner with the immune serum.

Although these methods of investigation have yielded results of the greatest value, and have definitely established the paramount part played by the dominant chemical groupings in the antigenic constitution of artificially altered proteins, Landsteiner realized that

more exact knowledge could only be obtained by determining the serological properties of simple chemical substances of known structure that had been rendered antigenic by linking them with protein. Examination of the serological properties of the antigens derived from the dextro-, laevo-, and meso- forms of tartaric acid² after combination with protein indicated that the steric configuration, as well as the chemical nature of the dominant chemical grouping, is a material factor in the specificity of these artificial antigens. These results are of especial interest and significance because the chemical constitution of tartaric acid is closely allied to that of the sugar acids which have been isolated from certain specific bacterial polysaccharides. Further evidence concerning the nature of chemical structure in its relation to antigenic specificity has been procured by coupling simple carbohydrates of definite stereochemical configuration with protein of known antigenic properties and analysing the new antigenic complexes so obtained. Thus it has been observed³ that when the two simple carbohydrates— β -methyl-glucoside and β -methyl-galactoside—which differ only in the spatial configuration of a single carbon atom, are combined separately with the same protein, the antigens so formed possess distinct specific characters.

It has long been known that filtrates from bacterial cultures frequently contain a soluble product which gives specific precipitation with the homologous immune serum. Dochez and Avery isolated type-specific substances from actively growing pneumococcus cultures which were identified later as complex polysaccharides derived from the bacterial capsule. This work forms the basis of current theory concerning the antigenic structure of the bacterial cell. The researches into the variable morphological characters of bacteria and their colonies that were initiated by Arkwright and extended by many other workers have proved that variations of this kind are intimately related to antigenic structure and to virulence. In some instances—for example, the pneumococcal types—the antigenic variation can be explained in terms of chemical composition. The virulent forms of the three classical types of the pneumococcus possess a capsule which is composed of a polysaccharide that is absent from the corresponding non-virulent forms of the organism. It is now certain that the capsular substance, which is different for each type, is responsible for the strictly type-specific serological reactions of the pneumococcal strains, and in some way not yet fully understood for their virulence in an infected animal host.

When the specific polysaccharide substances were first isolated from the "smooth" or virulent forms of bacteria, they were regarded as partial antigens, because they failed to induce antibody formation but gave specific precipitation when mixed with an anti-bacterial immune serum prepared against the corresponding whole organism. In theory there is no known reason why polysaccharides, which are colloidal in form

¹ *The Chemistry of Antigens and Antibodies*. By J. R. Marrack. Medical Research Council Special Report No. 194. H.M. Stationery Office, 1934. (2s. 6d. net.)

² Landsteiner and van der Schoor: *Ann. Rev. Med.*, 1929, 1, 47.

³ Goebel and Avery: *IBI*, 1929, 1, 521, 573.

and of large molecular weight, should not be antigenic ; nevertheless, until quite recently, no complex carbohydrate of bacterial origin had been discovered which possessed the property of forming antibodies. It seemed reasonable to believe that the bacterial polysaccharides that had been isolated and found to be devoid of antigenic power had in some way become degraded during the process of isolation. With this idea in mind Avery and Goebel^{*} re-examined the chemical and immunological properties of the capsular substance of pneumococcus Type I. They have ascertained that this polysaccharide is extremely sensitive to the action of alkali, and that if the process of isolation from the bacterial cell is carried out with the careful avoidance of alkaline treatment an acetyl-polysaccharide is obtained which is antigenic in mice and, in its highly purified form, accounts for all the serological type-specific properties of the whole organism.

Dr. Marrack's monograph deals in a very lucid manner with such investigations as have been reviewed above, and it explains in terms of modern chemical theory many facts which the immunologist has brought to light by his own special methods, but has found difficult of exact interpretation in purely biological terms.

THE PROBLEM OF MEDICAL CARE

The Medical Secretary of the British Medical Association from time to time sends out from the head office a circular letter, on matters of current professional interest, to the presidents, chairmen, and honorary secretaries of home Divisions and Branches, representatives, and members of Council, and central committees. In his "Occasional letter" for September, 1933, Dr. Anderson dealt with the problem of medical care, and asked each Division to study this from the particular point of view of its own locality. The appeal was not in vain, and in his February letter he is able to record that many Divisions have now got to grips with that part of the problem which appears to be of major importance in their areas. But—such is human nature—there still remain areas in which members have so far had no opportunity of voicing their opinions about matters that cannot fail to affect their professional relationships with the community. Many Divisions have given serious attention to the advisability of establishing a local public medical service under the control of the profession, and since the beginning of this session many requests have come from Divisions for a speaker from headquarters to explain in detail the working of such a service. Some Divisions have already established a public medical service, and in others schemes are in process of formation.

Other Divisions are tackling the proposal for the "open choice" method of attendance upon the public assistance patient (known in former days as the Poor Law patient), and it is good to know that in this

endeavour Divisions are receiving the active co-operation of the medical officers of health concerned. Perhaps the most complete scheme now in operation is in Wiltshire, where the local authority, acting on the advice of the county medical officer of health, has agreed to give free choice of doctor to the public assistance patient in those localities where the district medical officer does not still retain a vested interest. The capitation fee paid to the doctor is per patient attended, and works out at 25s. a year inclusive of medicine but exclusive of mileage, which is paid in addition at the rate of 6d. a mile both ways beyond the usual two-mile radius. Any complaints that may make themselves heard, or difficulties that may arise, are to be considered by a medical advisory committee set up by the Wiltshire Branch of the British Medical Association in conjunction with the medical officer of health, so that the interests of the patient, the Public Assistance Committee, and the practitioner himself may be conserved ; but no serious interference with the smooth working of the scheme is anticipated. An account of the scheme appeared in the *Supplement* of February 17th. What has been done in Wiltshire can be done elsewhere, given good will on all sides.

The need for consideration of the hospital problem has impressed itself on other areas, and meetings have been held to give the members of these Divisions an opportunity of listening to an exposition by someone who is familiar with the British Medical Association's Hospital Policy in its general application. Adaptation of the Policy in detail to suit local circumstances must necessarily wait upon understanding and appreciation of the broad outlines. Personal contact between centre and periphery is of the utmost value in elucidating the many linked problems that make up the problem of medical care. London, with a dozen undergraduate medical schools, with a vast array of voluntary hospitals both general and special, and with seventy-four municipal hospitals managed by the L.C.C., forms an area of peculiar difficulty when a common professional policy is on the anvil. For this reason we welcome the announcement at page 390 of a meeting of the medical staffs of teaching hospitals called by the Metropolitan Counties Branch for March 22nd to discuss the problem of London's hospital development.

FOOD STANDARDS AND LABELS

A memorandum recently presented to the Departmental Committee on the Composition and Description of Foods by the People's League of Health affirms that in not a few instances statements made in advertisements and on labels relative to the composition and nutritive values of foods are unjustified and misleading, and that the public consequently is deceived and prejudiced. Illustrations in support of this claim are quoted from various sources. Meat extracts, for example, are often presented as "body-building food," "a steer in a tea-cup," and so on, when it is known

^{*} Avery and Goebel: *Journ. Exp. Med.*, 1933, lviii, 731.

that while of value as stimulants such preparations are of little or no value in the direction which the labels announce. Other so-called "potted" meats often contain an almost negligible content of meat, and the bold name on the label is sometimes qualified in very small print by the phrase "sold as a mixture." "Custard" and "egg" powders, often coloured to convey a suggestion of "richness," may be innocent of either of the substances named on the label; baking powder similarly treated offers itself quite unjustifiably as "egg substitute"; "lemon cheese and lemon curd" may decorate a package with contents so prosaic as sugar, tartaric acid, glucose, starch, margarine, gum, and artificial flavouring agents, instead, as the purchaser fondly believes, of lemon juice, egg, sugar, and butter; and "lemon squash," announced as possessing "all the virtues of fresh lemons," may depend for justification of its alleged virtues entirely on a minute amount of lemon flavouring. Among dairy products "cream" is used in various food preparations, including ice-cream, even though the percentage of milk fat present is but a minimum quantity; milk, butter, cheese, margarine, may be artificially coloured in order to suggest high nutritive value; and the proportion of water and of milk fat in various types of cheeses is quite without legal standard or definition. The memorandum pays particular attention to wholemeal flour and bread, and insists that in each instance there should be present a minimum value of 80 per cent. of the whole wheat berry. The employment of any bleaching agent applied to flour is condemned, and the practice is recognized to be widely prevalent. Claims made for various preparations as "rich in vitamins" are often quite without justification, and will doubtless continue to be so until the law demands on the label a quantitative statement which can be tested by reliable methods of assay.

These and similar facts, the League's memorandum urges, demand new legislative and administrative developments in order to protect the public health and the private purse. It is allowed that in some directions the proprietors of certain food preparations have, on their own initiative, adopted standards of quality and purity, but these standards have not the sanction of the law and cannot be enforced in a court of law; and thus the unscrupulous trader benefits at the expense of his more conscientious rivals. What is needed is that the Minister of Health should obtain statutory powers for the regulation of standards, composition, labelling and advertisement, addition of colouring matters, and presence of injurious substances in all materials offered for human food; and the establishment of a standing committee to watch developments in the science of nutrition and in the technology of food manufacture so that such developments could be promptly applied in the public interest. In support of the League's memorandum Professor J. C. Drummond, University College, and Dr. W. M. Willoughby, medical officer of health for the City of London, gave evidence before the Departmental Committee.

GLYCOGEN DISEASE

A famous surgeon, with a great interest in freaks and monsters, animal or human, once justified his hobby by saying, in effect, that when Nature exaggerated or made a mistake it was often possible to learn a great deal about some normal process of development or physiology. So, too, the accurate study of a rare disorder of metabolism may throw some light upon the normal chemistry of the body, and although the number of cases of excessive glycogen infiltration of the liver now on record is still small, investigation of what is usually termed "von Gierke's disease" has revealed many points of interest. In the current number of the *Archives of Disease in Childhood* Dr. S. van Creveld of Amsterdam describes his experience with two children suffering from this complaint. Briefly, the clinical picture is that of a child with infantilism, a very large smooth liver, adiposity, and a combination of low blood sugar and ketosis in the fasting state. The injection of adrenaline fails to produce the usual distinct rise in blood sugar, and the ketosis is increased. After the ingestion of glucose the blood sugar curve is abnormal, with a prolonged period of increase above the fasting level. The glycogen content of the blood is increased, and there is an increase in the blood cholesterol. Dr. van Creveld has been particularly concerned with the chemistry of glycogen in this condition. He finds that the blood and urine possess a normal degree of diastatic activity, and at first sight it is difficult to understand why glycogen accumulates in the liver. After injection of insulin there was no "initial hyperglycaemia" in the two cases studied, and this is interpreted as indicating that though there was abundant glycogen in the liver it could only be mobilized with difficulty. Investigation of the increased quantities of glycogen in the blood, for which a new method has been devised, showed that the glycogen present in the blood of the two patients could only be split with difficulty after incubation at body temperature, although glycogen added to the serum of these two children was normally split. The results of adding normal serum to the blood of the two patients were not conclusive. The next steps have been to study the nature of the glycogen present in these abnormal conditions. The possibility of some unusual combination with protein, as suggested by earlier workers, has not so far been confirmed. Certain facts suggest that other internal secretions than insulin may in part control the glycogen metabolism of the body. It is significant in this connexion that the first case reported by von Gierke had atrophy of the suprarenals, while other cases described have shown abnormal pigmentation and growth of hair. The possibility of a persistence of what may be termed a foetal type of glycogen metabolism has also to be considered, especially in view of the congenital nature of the affection. Dr. van Creveld discusses also the occurrence of glycogen infiltration in other organs of the body, such as that found by him in the so-called idiopathic hypertrophy of the heart and by other observers even in the pyloric muscle in congenital pyloric stenosis. The differential diagnosis from other affections of the liver in childhood is easy once the peculiar features of the disturbance of carbohydrate metabolism are realized.

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Many problems of the disease still remain unsolved, and, in view of its rarity, it seems justifiable to suggest that other workers should also attempt what Dr. van Creveld has done in the way of an extremely careful and detailed study.

GINGIVITIS OF PREGNANCY

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THE SCREW-WORM BROUGHT TO BOOK

The question of myiasis, or the parasitism of human and animal tissue by the larvae of flies, is one of considerable interest in medicine. In most cases, the habit of invading actual living tissue is an optional one, practised as occasion arises by species which normally breed in dead and decaying animal material. The blow-fly group affords many instances of this, and the habit has even been put to practical use for surgical purposes in the United States and on the Continent. A similar but somewhat cruder practice has long been in vogue among the peons of South America to remove dead flesh from the backs of their horses. But some of the blow-fly group have become more strictly parasitic, and their larvae have become adapted to live only in living tissue. For many years *Cochliomyia macellaria* was regarded as such a species, and its larvae were known as "screw-worms." Recently, however, E. C. Cushing and W. S. Patton¹ have found that *C. macellaria* is probably a harmless fly, and that its misdeeds should be attributed to quite a different one, which they have called *C. americana*. Its larvae are the real "screw-worms," attacking living tissue and producing a true specific myiasis. That is the reason why it has so long remained undiscovered. The adults closely resemble *C. macellaria*, and so are likely to have been overlooked; the eggs are never laid in decaying meat, so that the usual breeding experiments would yield only adults of the harmless species. In addition to exculpating a relatively useful species from the stigma of compulsory parasitism, Cushing and Patton have pointed to the need for using an accurate microscopical technique in describing insects. The days when the hand lens was the entomologist's most important instrument are passing—albeit somewhat too slowly—and the classification of insects is becoming a much more scientific and accurate affair.

"THE MEDICAL, SICKNESS"

The fiftieth anniversary of the Medical, Sickness Annuity and Life Assurance Society, Ltd., is being celebrated by a dinner this week, and a pamphlet has been prepared for the occasion, giving a short history of this enterprise. It was Mr. Ernest Hart, Editor of the *British Medical Journal*, who first conceived the idea of a self-supporting mutual provident association that should provide for medical and dental practitioners a payment in the event of sickness, an annuity in old age, and a sum payable at death. Hart talked it over with various practitioners; he opened a discussion on the subject at a meeting of the British Medical Association, and through the columns of this *Journal* he was able to bring his project under the notice of many members of the profession. The society began work on March 1st, 1884, and by July 31st 540 members had joined. For over eight years the headquarters were in a private house in South London. In 1893 a one-room office was taken in Chancery Lane, but this was not big enough for meetings of the executive committee, which were held in one of the rooms of the British Medical Association in the Strand. Next year the members

numbered nearly 1,500, and the total funds were over £77,578. Ernest Hart resigned the chairmanship in favour of Dr. F. de Havilland Hall, who in 1912 was succeeded by Dr. F. J. Allan; he in turn was succeeded by the present chairman, Dr. F. C. Martley. In 1914 office accommodation was secured at Lincoln House, High Holborn, and during the war years the executive had to deal with many new and complex problems. In 1920 the status of the society was changed from that of a friendly society to a mutual company limited by guarantee under the Life Assurance Companies Acts. This required a new constitution, new rates, tables, and policies, and a modernization of all internal systems of business. Further rapid growth followed this change, which included the appointment of a board of directors instead of the old executive committee. By 1924 the membership was 4,111, the premium income nearly £54,000, and the total funds £391,000. Now in March, 1934, with a membership of 7,000, the funds exceed a million. The history told in this pamphlet passes lightly (for reasons that can be guessed) over the services rendered by Mr. Bertram Sutton, who began as "the solitary clerk" in the early 'nineties, then became assistant secretary, and since 1912 has been manager and secretary.

HOSPITAL DEVELOPMENT IN LONDON

The Metropolitan Counties Branch of the British Medical Association has arranged a meeting of the medical staffs of the London teaching hospitals to consider the problem of London's hospital development. It will be held at B.M.A. House, Tavistock Square, W.C., on Thursday, March 22nd, at 5 p.m., with Lord Horder in the chair. The discussion will be opened by Dr. J. S. Fairbairn, president of the British College of Obstetricians and Gynaecologists, Sir Crisp English, Mr. V. Zachary Cope, and Dr. Geoffrey Evans. It is hoped that there will be a full and representative attendance. A leaflet dealing particularly with the Hospital Policy of the British Medical Association as it concerns London has been prepared for the occasion.

HASTINGS POPULAR LECTURE

The sixth of the series of Sir Charles Hastings Popular Lectures, arranged by the British Medical Association, will be given in the Great Hall of the Association's House in London on Wednesday evening next, March 7th, by Dr. Robert Hutchison, whose subject is "The Food of the Growing Child." The chair will be taken at 8 o'clock by Lord Horder, and after the lecture relevant questions, in writing, are invited. Admission is free, by tickets obtainable on application to the Financial Secretary, B.M.A. House, Tavistock Square, W.C.1. Seats not occupied by ticket holders by 7.50 p.m. will be available for other members of the public.

The subject chosen by the British Orthopaedic Association for the Robert Jones Prize and Gold Medal for 1933 was Pott's paraplegia. In accordance with the decision of the judges that the essays written by Mr. R. W. Butler and Mr. H. J. Seddon are of equal merit, the executive committee of the association has awarded a gold medal and prize of £50 to each of these successful candidates.

¹ Reprinted from the *Annals of Tropical Medicine and Parasitology*, vol. xxvii, No. 4, December 20th, 1933. Issued by the Liverpool School of Tropical Medicine.

ONE HUNDRED AND SECOND ANNUAL MEETING
of the
British Medical Association
BOURNEMOUTH, 1934



THE one hundred and second Annual Meeting of the British Medical Association will be held in Bournemouth next summer. The Sectional Meetings for scientific and clinical work will be held on Wednesday, Thursday, and Friday, July 25th, 26th, and 27th, the morning sessions being given up to discussions and the reading of papers, and the afternoon to demonstrations. The Annual Representative Meeting for the transaction of medico-political business will begin on the previous Friday, July 20th. The full list of presidents, vice-presidents, and honorary secretaries of the sixteen Scientific Sections, together with the provisional time-table, was published in the *Supplement* for January 27th. Other details of the arrangements for the Annual Meeting will appear in subsequent issues. We publish below the second of a series of descriptive and historical articles on the town and its medical institutions. The first, on Bournemouth and its attractions, appeared on January 6th (p. 22).

HOSPITALS AND BENEVOLENT INSTITUTIONS OF BOURNEMOUTH

The Royal Victoria and West Hants Hospital

General hospital provision for Bournemouth was first made in 1859 by the founding of the General Dispensary and Cottage Hospital in Madeira Road. In 1877 the Provident Dispensary was opened in Boscombe, and in 1882 the Boscombe Cottage Hospital was inaugurated. In 1889 the Royal Victoria Hospital at Poole Road was founded, and in the same year a dispensary for out-patients was opened in Holdenhurst Road. In 1897 a new hospital, now the West Hants branch of this hospital, was opened in Shelley Road, Boscombe. Eventually, in 1911, an amalgamation, confirmed by Act of Parliament, was brought about between the Royal Victoria Hospital in Poole Road (now sixty-eight beds), and the West Hants Hospital in Boscombe (now 168 beds), and the Royal Victoria and West Hants Hospital, of which His Majesty the King is Patron, came into existence. Recently a very fine hospital of fifty-eight beds for private patients of moderate means was completed as an extension of the Boscombe branch; it comprises all that is newest and best in hospital planning and construction.

This, the general hospital of Bournemouth, provides for the county borough and a wide area of adjacent Hampshire and Dorset, and is administered by a board of management. Except for cases of infectious fever and of acute mental disorder, all types are admitted for care and treatment, and the hospital forms a unit complete in all departments. Thirty-five cots are set aside for children; four beds for venereal disease cases; sixteen for maternity patients, the hospital now being recognized by the Midwives Board as a training centre for midwives; two for incipient mental cases; eight for ear, nose, and throat patients; and beds are available for surgical and complicated cases of tuberculosis, and, as necessary, for orthopaedic cases, patients with puerperal fever, and for cases of ophthalmia neonatorum. The special departments are complete, each being in charge of a specialist in his particular subject. The resident staff consists of a medical officer, a casualty officer, and four house-surgeons. Recently, large improved laboratories have been built and equipped for the departments of pathology, bacteriology, and biochemistry; and new spacious post-mortem examination rooms have been completed.

Although a large sum of money had to be raised during the year for capital expenditure, chiefly upon the private ward block, the generosity of supporters has enabled the hospital to pay its way. The increasing population of Bournemouth (117,000), and the ever-widening radius

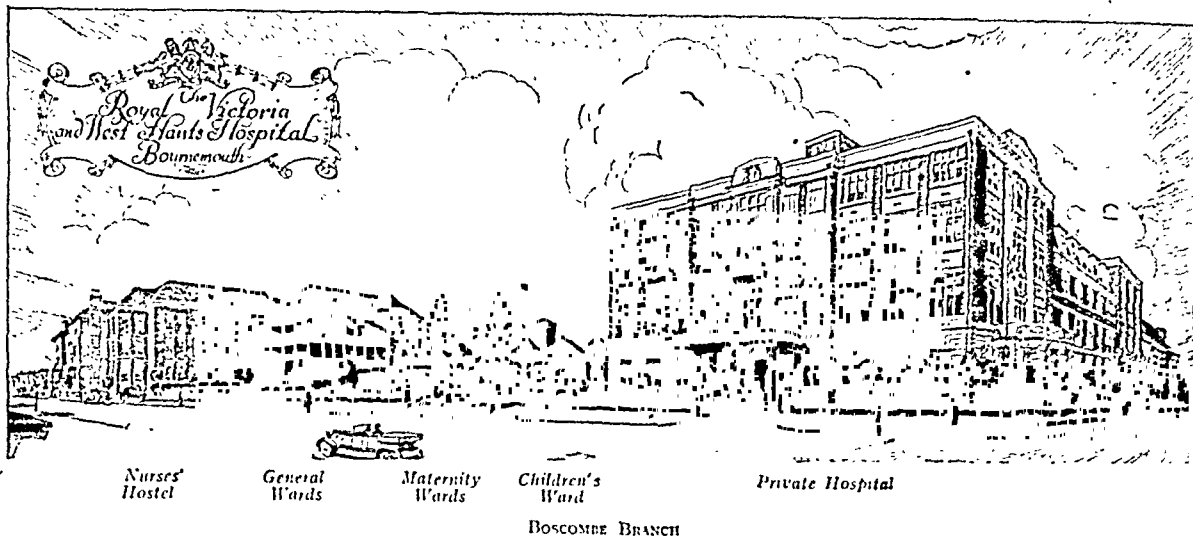
served by the hospital, mean a continual pressure upon the accommodation available, so that every effort has to be made to extend both in-patient and out-patient departments. In the near future steps are to be taken to add forty-six extra beds, and to build further operating theatre accommodation, and additional quarters for the nursing staff. Last year (1933), the total number of in-patients was 4,745, while out-patient attendances totalled 111,616. The daily average number of in-patients was 230.48, and the average duration of stay 17.73 days. The number of surgical operations was 5,659, and of casualties 7,895. The total ordinary expenditure was £42,435.

Cornelia and East Dorset Hospital, Poole

Also a general hospital and the largest in the county of Dorset, this hospital serves the borough of Poole and the whole of East Dorset, and draws a considerable number of patients from other parts of the county. It was founded in Poole forty-five years ago, and at first had accommodation for thirty in-patients. Since then numerous additions have been made, so that now the beds and cots number 110. Last year a new operating theatre was added, and a new block for maternity patients is nearing completion. There is accommodation for eleven private patients, each of whom is admitted on the recommendation of his medical adviser under the care of a member of the honorary medical or surgical staff. Thirty-five years ago the number of in-patients was 231; last year the figure exceeded 1,500. The number of operations performed was 1,400. During 1933, 26,000 attendances of out-patients were registered.

The Royal National Sanatorium for Consumption and Diseases of the Chest

This hospital, of which His Majesty the King is Patron, is, as its name implies, a national institution, and is supported by voluntary contributions. Accommodation is provided for ninety-three patients of both sexes, who are drawn from all parts of the kingdom. Preference is given to those with early disease. The minimal age for treatment is 16. This sanatorium, built in 1855, is the oldest of the local charitable institutions and, by its establishment at that time, did much to popularize Bournemouth as a health resort. It is situated in Bourne Avenue on rising ground in the centre of the town, and faces south, being well protected from north and east by the shelter of its position and by the many surrounding pine trees.



The objects of the institution are: "To afford an asylum for patients afflicted with chest diseases who, being convalescent, may yet require further medical treatment and change of air to establish their health, or may be labouring under such incipient form of disease as to afford reasonable hope of their obtaining benefit from temporary residence in a dry and salubrious climate." This institution was one of the successful pioneers in the campaign against tuberculosis.

The Firs Home

The Firs Home, Trinity Road, was established in 1868, and is administered by a board of trustees and a committee of management. It admits patients with advanced pulmonary tuberculosis only, and has accommodation for twenty cases: ten male and ten female. Eight beds are retained by the Bournemouth Corporation. It is an interesting fact that this hospital was one of the first established for the specific purpose of caring for incurable cases of pulmonary tuberculosis. Until 1913 the home was maintained entirely by voluntary subscriptions. Since then patients have been received under the terms of the Health Insurance Acts, and latterly others have been admitted referred by public bodies under tuberculosis treatment schemes.

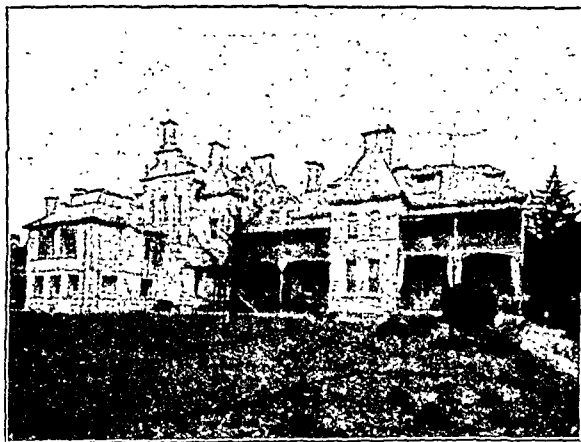
The Victoria Home for Crippled Children

This home, situated in Burnaby Road, Alum Chine, was first opened in 1898. Since then it has been enlarged several times. A branch of the Shaftesbury Society and Ragged School Union, the home is controlled by the council of the society, assisted by a committee of Bournemouth residents. There is room for seventy-three cripple children of 2 to 10 years, who are admitted for prolonged periods, and are given skilled nursing along with electrical, sunlight, and massage treatment. Children suffering from various types of paralysis, surgical tuberculosis, diseases of bones and joints, rickets, and deformity are admitted. As to relative numbers, those

suffering from paralysis head the list. The usual length of stay is three to twelve months. The home is certified by the Board of Education and approved by the Ministry of Health for the reception of selected cripple children referred by local authorities.

The Herbert Convalescent Home

This convalescent home in Alumhurst Road, Westbourne, was established in 1851 for the benefit of patients from Salisbury Infirmary, and for other necessitous sick persons recommended by the governors of the Infirmary, to which the home is attached in perpetuity. Patients admitted are those already convalescent and in no further need of any special medical or surgical attention. The tuberculous are not admitted. A committee of management of Bournemouth subscribers appointed at the annual Court of the Salisbury Infirmary meets quarterly, and administers the institution. There are sixty beds available, and the patients come from all parts of England. The duration of stay is a fortnight, but this period may be extended at the discretion of the committee. It is interesting to know that the original building in Alumhurst Road was planned by Florence Nightingale.



THE ROYAL VICTORIA BRANCH, POOLE ROAD

The Russell Cotes Home and School of Recovery

Opened in 1922, and recently enlarged, this institution at Parkstone, Dorset, accommodates 117 children of both sexes, with the necessary staff.

The home is really a residential school of recovery for children of 7 to 14 who are debilitated, anaemic, or crippled, and who are selected by the school medical officers of the various London education authorities as being most in need of change of air and surroundings. Some twelve different metropolitan educational authorities send subnormal children to the home. Each child spends six weeks under care and treatment; a few remain for twelve weeks. Situated among pine trees on Constitution Hill, overlooking Poole Harbour and Brownsea Island, the

home grounds cover over ten acres of hillside, which King Edward was heard to declare afforded "one of the finest views in the kingdom."

Douglas House

Douglas House, in West Southbourne, was opened in 1924 by the United Services Fund as a convalescent and holiday home for tuberculous ex-service men of the Army and Royal Air Force. It was established for men with quiescent tuberculosis who needed a period of convalescence under medical supervision so as to render them fit for employment. Preference is given to men with sputum negative for the tubercle bacillus. The home is not a sanatorium or a training colony, but is designed to give a few weeks' seaside holiday combined with a regime suitable for the tuberculous. Up to October 31st, 1933, the total admissions numbered 5,326; the yearly average number of residents being 583. The total number of beds available is eighty, the daily number occupied sixty-one. The average stay of each patient is five weeks; the average gain in weight $2\frac{1}{2}$ lb. There is a resident medical superintendent and one assistant superintendent, a matron, a trained nursing sister, a male nurse, six attendants (exclusive of kitchen staff), and one housekeeper. An admirable arrangement exists whereby the Fund gives a money grant towards the support of a man's family while he is at the home.

Hahnemann Convalescent Home and Dispensary

Founded in 1879, this home was enlarged in 1883, and in 1914 a chapel was added. There are thirty-two beds for patients of both sexes, and ample balcony accommodation. Those eligible for admission are patients with incipient tuberculosis and convalescents from hospitals and dispensaries requiring rest and medical supervision, and they are admitted on a governor's recommendation, which is valid for twelve weeks' residence. Patients with any infectious fever, bronchitis, or bronchial asthma are not admitted. Males under 17 and females under 15 are not eligible for admission. The dispensary was originally established for the sick poor not receiving parochial relief: such were entitled to advice and medicinal remedies.

The House Beautiful

This was opened in 1894 for the reception of the many delicate children recovering from illness and in need of special care and attention. Eligible children are those convalescent after illness, or injury, or surgical operation. Girls between the ages of 6 and 14, and boys between 6 and 12, are admitted. When possible, the children are kept until they are completely restored to health.

MUNICIPAL HOSPITALS

The Infectious Fever Hospital at Gloucester Road (78 beds) is available for all cases of notifiable infectious disease, and, where beds permit, for those not notifiable but believed by the medical officer of health to be best segregated. The management is in the hands of the Health Committee of the Borough Council. With a rapidly increasing population this hospital no longer affords sufficient accommodation for all the cases which demand isolation. Present and future needs, however, are being considered so that a modern hospital, with room for necessary expansion, is likely to be built on an extensive site on the outskirts of the town.

The Small-pox Hospital at West Howe is situated within the borough, about three miles from the centre of the town, near to the Bournemouth, Poole, and Ringwood crossroads. There is accommodation for six patients only; but since the site is an extensive one any emergency can be met by the erection of temporary wards. This hospital also is managed by the Health Committee.

Fairmile House, Christchurch, serves the area of the former Bournemouth and Christchurch Union, and now, by agreement with the Hampshire County Council, is controlled by the Public Assistance Committee of the Bournemouth County Borough Council. There are avail-

able 276 beds for the admission of all patients, whether chronically sick (medical or surgical), venereal, tuberculous, maternity, borderline mental patients, or the mentally deficient; and there is accommodation for patients who need temporary isolation. No provision is made for out-patients or for those requiring operative surgical treatment. There is no resident medical officer, a part-time medical man in active medical practice being responsible for the medical care of all patients—an arrangement which has worked so far efficiently and well.

S. W. S.

A CONSPECTUS OF GENERAL MEDICINE

WELLCOME MUSEUM OF MEDICAL SCIENCE

There is a tendency for intensive-specialization to cramp the field of medical vision. Its growth has been largely dependent upon the rapid progress in knowledge which has taken place during the last few decades; no man can be expected to become familiar with all the newer methods of diagnosis, clinical investigation, and treatment. In technical skill specialization finds its fullest justification; even games such as cricket and football have acknowledged this need, and the building up of an international side nowadays calls for a carefully balanced choice of specialists in different departments of the game. But the "all-rounder" in medicine, as in sport, is a man to be relied upon.

"TROPICAL" AND "NON-TROPICAL" DISEASE

There is one medical specialty which, in spite of its obvious advantages, involves special dangers—namely, tropical medicine. There are very few diseases which are strictly tropical. Malaria was at one time common in this country; during the Great War many cases occurred, not always among those who had returned from tropical or subtropical climates. Yellow fever has in the past occurred at European ports. Plague is a constant menace to shipping, and port authorities have to be alive to this ever-present danger; country districts in England have been attacked within living memory, and the history of Europe has been changed by calamitous epidemics of this disease. Yaws, which might with more justification be labelled a tropical disease, is so closely linked up with syphilis that it cannot be neglected by practitioners in temperate countries. Climatic bubo, or lymphogranuloma inguinale, is now classified as a sixth venereal disease, and may occur anywhere. Helminthic diseases, which are well taught at the tropical schools in London, Liverpool, and elsewhere, are largely neglected in the general medical curriculum. Possibly recent work on epilepsy due to cysticercus infection will do something to remedy this. Relapsing fever, bacillary dysentery, typhus, undulant or Mediterranean fever, leprosy, and many other diseases which have, in the past, been regarded as especially suitable for textbooks on tropical medicine are more a question of environment and social conditions than of climate.

To take the argument a stage further, increasing facilities for rapid transport are daily bringing within our reach diseases of which the average medical student has little knowledge. As an example of this may be mentioned schistosomiasis, which will shortly be a possible danger to the "week-end" visitor to Egypt.

It is essential to eliminate from the minds of medical men this arbitrary distinction between "tropical" and "non-tropical" diseases. In this way alone will it be possible to avoid such calamitous diagnostic errors as, for instance, regarding amoebic dysentery as tuberculous ulceration of the intestine, sleeping sickness as Hodgkin's disease, schistosomiasis as malignant disease of the

bladder, kala-azar as Banti's disease, yellow fever as Weil's disease, leprosy as ringworm, or the reverse.

ARRANGEMENT OF THE MUSEUM

The Wellcome Museum of Medical Science is designed to provide a comprehensive review of the medicine both of tropical and of temperate climates in such a way that, without unduly encroaching upon the time demanded by the regular curriculum, a student may obtain this broader view of medicine.

The museum is arranged on an aetiological basis, and thus, even from a rapid survey of the various sections, the visitor is able to orientate his conception of medicine as a whole. Commencing with the protozoal diseases, he passes to the metazoal, and so on to virus diseases, bacterial diseases, endocrine diseases, deficiency diseases, and diseases of mixed or unknown origin. Special sections are devoted to blood diseases, nerve diseases, skin diseases, and new growths.

In its method of display the museum differs radically from the classical medical museum, which is mainly pathological. Each disease is considered as a whole—*aetiology, pathology, symptomatology, treatment, and prevention*. By means of photographs, charts, drawings, models, and specimens it is possible to study each disease visually, and in such a way that the memory is stimulated and the interest sustained. It makes the student observe and reflect, it provides a ready means of revision, it supplies the busy practitioner with a reference museum where he can polish up any therapeutic or diagnostic weapon which has tended to rust through disuse. Most emphatically it is not "spoon-feeding."

Every effort is made to keep the museum up to date. The short descriptions of each disease, labels, illustrations, and specimens are constantly being revised. As the museum is becoming better known, specialists in the various subjects are giving generous assistance in its development. In each section files are kept in which are placed classified cuttings from the journals on the more recent work. These are kept up to date daily, so that a piece of important new work appearing in a journal one week will be found in the museum files before the next number has appeared.

FUTURE DEVELOPMENTS

The museum has already been visited by representative medical men from more than twenty different countries, and all have borne generous testimony to its national and international value. At present it is in process of development. Such an ambitious scheme will, of necessity, take many years to perfect; indeed, it is doubtful if finality can ever be reached, for the art of medicine is ever moving forward. Stagnation is the curse of most museums. It is only in the realization of its shortcomings that a museum can find salvation. Every visitor becomes a factor in its development by his suggestions and constructive criticism. It is hoped that the medical profession will support the scheme by taking a sympathetic interest in its progress; that teachers will bring their classes and use the various sections for demonstration purposes; that students—and especially senior students—will extend their range of knowledge by making free use of its facilities.

The museum owes its inception to the scientific enthusiasm of its founder, Sir Henry Wellcome, and its foundations were laid by that great apostle of hygiene, Sir Andrew Balfour. Their object can only be achieved when it has become a living force in medical education. The address of the Wellcome Museum of Medical Science is 183, Euston Road, London, N.W.1, and the director is Dr. S. H. Daukes.

England and Wales

Liverpool Medical School Centenary

This year (writes a correspondent) the Liverpool Medical School celebrates its centenary, for, although there are records of ship surgeons training in the town in 1789, it was not until 1834 that the Liverpool Royal Institution Medical School (as it was then called) was founded. Tales have been handed down from those early days of a camouflaged dissecting room within the precincts of a respectable boarding school for young gentlemen. How hastily did the scandalized parents remove their offspring when the news leaked out. The students at this time did four years dispensing and dressing in the wards, taking a final year in London, and, as the nursing staff was totally inadequate, they were probably far more adept in dealing with the drugs and dressings than are modern students, who tend to watch deft nurses doing the job. In 1845 the Royal Infirmary and the Medical School joined to form Queen's College, and the same year the Northern Hospital came into existence. A few years later the present Southern Hospital was built to complete the trio. The charter of University College was granted in 1881 and the Medical School became a faculty of the University. In the ensuing years the nucleus of the Gynaecological-Obstetrical Museum was collected, and much valuable work was done in all departments. The new century found the tropical medicine department outgrowing its quarters, until it had to break off and form a school of its own. During these years, also, the pioneer work in orthopaedic surgery brought honour to the school from all quarters. The medical students have added their quota to history. There are records of a famous "hot-pot supper," which lasted from Friday evening to Saturday afternoon. In 1874 the Medical Students' Debating Society was formed, and it exists to-day as the oldest and most flourishing society of the University. Under its auspices the students are arranging a medical ball to celebrate the centenary. This is to be held in the Adelphi Hotel, Liverpool, on Wednesday, March 14th. Lord Horder will be the guest of honour. The students hope that all who have an interest in the Liverpool Medical School will come and help to make the function a great success. Details and tickets may be obtained from Miss M. F. Procter, honorary secretary, Medical Students' Debating Society, the Medical School, University of Liverpool.

Small-pox in England and Wales

In a recent communication¹ to the permanent committee of the International Office of Public Health Sir George Buchanan states that the number of cases of small-pox notified in England and Wales decidedly decreased in 1933, and that the disease was tending to disappear from London and the South of England. Since the *Tuscania* episode in 1929 there has been no evidence of cases of variola major due to importation of the disease, nor, if one may judge by the clinical features and fatality rate among unvaccinated persons, has there been any increase in the gravity of the cases. During the period 1922-32 the deaths from small-pox in England and Wales, exclusive of the *Tuscania* cases, were 242 among 79,780 cases notified. It is impossible to state the exact number of uncomplicated cases of small-pox among these 242 deaths, or the number of cases in which the cause of death had nothing to do with concurrent small-pox, although small-pox figures on the death certificate in accordance with the regulations.

¹ Bull. Off. Internat. d'Hyg. Publ., January, 1934, p. 52.

Out-patients at Guy's Hospital

A report on out-patient statistics for 1933, just presented to the house committee of Guy's Hospital, includes a table showing the number of visits made per out-patient in the various departments. That the out-patient department of the hospital as a whole is now being used more and more in a consultative capacity is indicated by the small number of visits made to the department by each individual out-patient. Taking the general average over all sections of the department throughout the year, the number of visits per out-patient works out at 2.6. This suggests that in a large proportion of cases patients are sent by their private or panel doctors to get the benefit of examination and consideration of their cases by the visiting specialists at the hospital, and then return to their own doctors to continue treatment in the light of the advice given them. For six months of 1933 a detailed record was made of the visits of patients attending the out-patient physicians. It was found that 69 per cent. of these patients attended only once or twice (the second visit being almost invariably for the result of an x-ray or other examination being recorded), 15 per cent. attended for two to five times, and 16 per cent. attended more than five times.

St. Pancras House Improvement Society

The ninth anniversary of the St. Pancras House Improvement Society was celebrated a few weeks ago. There has been in the past twelve months another considerable extension of the society's activities. Last year a large block of property with frontage on Seymour Street, including the offices of the society, came into the market, and the committee was faced with the alternatives of increasing its commitments or of allowing a closely populated area to be exploited by commercial development. There was a balance in hand of £16,000 towards the purchase price, and the remainder required—namely, £22,000—was subscribed in three weeks. The new site covers one and a half acres, and has been housing 700 inhabitants. During the last twelve months two other sites in the neighbourhood have been taken over for commercial purposes, and it was felt, therefore, to be essential that a special effort should be made to preserve the Drummond Street site for housing. Generous help in the way of donations and investments during 1933 has enabled the society to go forward steadily. An illustrated pamphlet has been issued by the society indicating the amount of building which has been accomplished since 1924 and the slum conditions which have thus been replaced by healthy homes.

Tuberculosis Returns

The Minister of Health has issued a circular (1368) to county and county borough councils, tuberculosis joint committees, and the authorities of sanatoria and other residential institutions, approved for the treatment of tuberculosis in England, with reference to the furnishing of annual returns. It has been found that the value of Part G of the annual return, which relates to the immediate results of the treatment of definitely tuberculous patients in residential institutions, has been seriously impaired during recent years by the inclusion of a considerable number of patients who remain in an institution for a few days only, and who may be readmitted several times during the year. This defect is stated to be most pronounced in areas where such patients who were previously in Poor Law institutions are now accommodated in public health hospitals, and are accordingly included in Part G of the annual return. The Minister has decided, therefore, to amend Part G so as to exclude from its scope all patients whose stay in residential

institutions has not exceeded twenty-eight days. For the year 1934 and onwards the form described in Part G of the first schedule to Memorandum 37/T (revised) will be amended so as to relate only to patients who have been discharged from approved residential institutions after a continuous period of treatment exceeding twenty-eight days. The second section of Part D of the first schedule to the Memorandum (in which short-stay patients should continue to be included) will be subdivided so as to distinguish the numbers of pulmonary and non-pulmonary patients, in order that information may be available as to the total numbers of pulmonary and of non-pulmonary patients dealt with in residential institutions during the year. The Minister does not anticipate that any variation in the records kept in pursuance of paragraph 2 of Memorandum 37/T (revised) by tuberculosis officers and the medical officers of residential institutions approved by him for the treatment of tuberculosis will ordinarily be needed to enable the annual returns for 1934 and future years to be prepared in the amended form now prescribed. This alteration of the requirements of the Memorandum became effective on January 1st; the returns for 1933 are not affected. The necessary changes will be made in the forms to be issued towards the end of 1934 for the purpose of the return for this year.

Scotland

Glasgow Royal Maternity and Women's Hospital

The annual medical reports of the Glasgow Royal Maternity and Women's Hospital illustrate the value of the standard scheme for unifying the clinical reports of maternity hospitals which was drawn up by the committee appointed by the Royal Society of Medicine. The seventh of these reports, for the year 1932, is exceptionally comprehensive, a new case sheet having been designed for the purpose of obtaining more detailed records. The institution, which is solely devoted to maternity cases, contains 175 beds, seventy-eight being reserved for ante-natal cases, seventy-eight for lying-in cases, and nineteen for "suspect" cases. These last are situated in an isolation block, under the charge of one of the assistant obstetric surgeons, who holds the post for four months at a time, assisted by a special house-surgeon, neither of whom during their tenure of office have any dealings with patients in other parts of the hospital. Such cases as those of "failed forceps" or of manipulation before admission are sent direct to the isolation block. Septic cases are transferred to the city fever hospitals. The remainder of the institution is conducted on the permanent unit system, each unit being staffed by a chief obstetric surgeon, a visiting obstetric surgeon, two assistant obstetric surgeons, and one extra assistant obstetric surgeon. During 1932, 4,391 patients were admitted, the average daily number of in-patients being 164. The average length of stay of patients in the wards was 13.6 days. The number of children born in the institution was 3,137, 2,740 (87 per cent.) being born alive. During the year there were eighty-two maternal deaths, a mortality of 1.8 per cent. A working agreement with the Corporation of Glasgow has enabled the hospital to continue its policy of not refusing treatment to any woman in labour, without overcrowding the wards. In 1932 the municipal hospitals received 1,022 patients as overflow cases. From the ante-natal dispensary, which is on the premises, many cases are admitted to the obstetrical department and to the ante-natal wards; in 1932 the number of patients treated in these wards was 1,561, representing 35.5 per cent. of all admissions. With this dispensary is combined a post-natal dispensary, and an infant con-

sultation (child welfare) centre; the total attendances at all these numbered 20,988 during the year. The hospital also conducts a large amount of obstetrical work in the patients' homes. Many patients are sent into its wards as emergency cases by general practitioners and midwives. In 1932 there were 2,873 abnormal cases—65 per cent. of all admissions. The prevalence of rickets in the population of Glasgow is responsible for this high proportion, and it is a factor that has to be borne in mind when comparing the morbidity and mortality figures with those of maternity institutions elsewhere. There were 213 cases of puerperal sepsis, and 235 of puerperal pyrexia. It was not found easy to apply to the hospital the simple division of cases into "booked" and "emergencies" suggested by the committee of the Royal Society of Medicine. For the purposes of this report three categories have been defined: patients who were under ante-natal supervision long enough to allow of the diagnosis and treatment of any abnormality which might be present; patients sent in as emergency cases by doctors or midwives, or by members of the hospital staff working on "the district"; and patients who had not been under ante-natal supervision. It will be noted that this classification is based upon the time during which the patient had been under supervision rather than upon the type of supervision. In the first category there were 2,940 cases; in the second 1,050; and in the third 401. From these figures it emerges that of a total of 4,391 patients treated in the wards of the hospital, 66.9 per cent. had had ante-natal supervision, 23.9 per cent. were sent in as emergency cases, and 9.1 per cent. were without recommendation of any kind.

Leith Hospital

At the annual meeting of contributors to Leith Hospital it was reported that the ordinary expenditure had exceeded the ordinary income by £4,284. During the year, however, sums amounting to £35,626 had been received in legacies. The amount received in subscriptions from the people of Leith and Edinburgh had been about £8,800; this was equivalent to about 2s. per head of the population of Leith. It was suggested that if the public could add another 1s. per head per annum, the difficulties of the hospital would be solved. The number of patients in the wards during the year had been 1,835, a decrease of 161 on the number for 1932. In the children's wing 810 patients had been treated, a decrease of seventy-two. The ordinary income had been £15,715, and the ordinary expenditure £19,999. Mr. David Bell was elected president of the hospital in succession to Mr. John A. Lindsay, who is retiring after twenty-five years' valuable service to the institution.

Training of Nurses in Municipal Hospitals

At a meeting of the Public Health Committee of Edinburgh Corporation on February 20th it was intimated by the medical officer of health that an application had been made to the General Nursing Council for recognition of the Western General Hospital, one of the municipal hospitals, as a training school for nurses. If this application were granted all nurses beginning at this hospital would be able to receive a complete training. Hitherto nurses in municipal hospitals had required to leave the city for one year in order to receive their training in surgical nursing. This incomplete training had reacted adversely on nurses applying for training in municipal hospitals, and to overcome this difficulty salaries had been paid to probationers in excess of those in other institutions. It was now proposed to reduce the salary scales for probationers to £20, rising to £40 per annum; this would effect a considerable saving, which would be utilized to increase the salaries paid to sisters, trained staff nurses, and matrons.

Aberdeen Post-graduate Course

The Aberdeen Medical School has arranged a course of post-graduate study at the Aberdeen Royal Infirmary and the Royal Aberdeen Hospital for Sick Children, on Tuesdays and Thursdays, at 3.15 p.m., from May 1st to June 14th, both dates inclusive. In order to enable practitioners if possible, to attend the complete course of instruction, the lectures and demonstrations given on Tuesdays will be repeated on Thursdays. The fee for the course will be £3 3s. Those desiring to take part in it should notify Mr. H. J. Butchart, secretary of the University, Aberdeen, not later than April 27th.

Springfield Asylum at Cupar

At a meeting of the Fife County Council Finance Committee, held at Cupar on February 14th, the question of an extension of the Joint Asylum at Springfield, estimated to cost £100,000, was considered. At a previous meeting, held on January 3rd, an adverse report upon the institution by the Board of Control had been discussed. This report had pointed out that the county of Fife had no institution for the mentally defective, and that the presence of mentally defective children in the same institution as mentally deranged children was detrimental to the recovery of the latter. It was also pointed out that the institution was overcrowded, that the accommodation for the nursing staff was too small, that the hospital conditions for the mental patients were unsatisfactory, and that there was no building specially devoted to worship for the 900 resident patients. Unless these matters were improved, the report continued, the Board of Control would be compelled to take action. The meeting on February 14th included delegates from Dunfermline and Kirkcaldy Town Councils, Perth County Council, and members of the Joint Asylum Committee. It was decided that there was a shortage of some 130 beds, and that the hospital accommodation was too small, and that an operating theatre should be provided. It was resolved to proceed at once with the erection of a central kitchen at a cost of £5,000, and to recommend to the various councils concerned that the proposed extension scheme should be undertaken.

Victoria Infirmary, Glasgow

At the annual meeting of the Victoria Infirmary, Glasgow, Lord Provost A. B. Swan, who presided, said that the Infirmary required to meet an annual ordinary expenditure of £69,000; the figures for the past year had been satisfactory, although it would be desirable to have many more subscribers. Mr. William Gray, chairman of the governors, mentioned that the twelve principal voluntary hospitals in Glasgow provided 3,087 beds, and that during last year the number of patients treated had been 64,519, while in addition nearly 200,000 out-patients had attended the dispensaries. The cost of maintenance of these twelve hospitals had been £401,700 and the deficit on their maintenance accounts had amounted to £80,000, which had had to be met from legacies that ought to have been placed to capital account. The report of the Victoria Infirmary showed that the income had been £53,198 and the expenditure £69,186, leaving a deficit of £15,988 to be met out of the extraordinary income of £30,044. During the year the endowment fund had been increased by £15,290. The number of cases treated during the year, including those in the auxiliary hospital, had been 8,986. Extensions had been necessary, involving an expenditure of £23,000 for the paying patients' wing and £50,000 for the Nurses' Home. Accommodation would be provided in the section for paying patients for a further fifty beds.

Reports of Societies

VACCINATION: THE MODERN VIEW

At a meeting of the Section of Epidemiology of the Royal Society of Medicine on February 23rd, with Dr. J. D. ROLLESTON in the chair, a discussion took place on vaccination.

HISTORICAL

Dr. S. MONCKTON COPEMAN, in a historical and introductory address, mentioned that the actual word "vaccination" was not introduced by Jenner himself, but by a Dr. Dunning, of Plymouth Dock, who was evidently an enthusiast in the early days of vaccination. Indeed, in his inoculation of cow-pox as an efficient preventive of small-pox, Jenner apparently had been anticipated by Benjamin Jesty, who had vaccinated his wife and two children two years before Jenner made the experiment. It was Jenner, however, who compelled the world's acceptance of the truth of vaccination—a truth slow of realization, for although the outcome of an inquiry by the Royal College of Physicians on the subject was reported to the House of Commons in 1807, it was not until 1840 that the first legislative enactment was made whereby a non-obligatory vaccination was enabled to be carried out at the expense of the State. The Act of 1853 made vaccination compulsory, imposing penalties on parents and guardians for default. In the preparation of that enactment the old Epidemiological Society, the forerunner of the present Section, played a part of no small importance, as was acknowledged by Lord Lyttelton in presenting the Bill to the House of Lords. The next enactment was in 1867; this repealed the previous Acts, and gave very wide powers to Poor Law guardians. Evidence of opposition to the Act soon became apparent, and a Select Committee was set up, which declared in favour of obligatory vaccination but against the multiple penalties for default which had been imposed. The recommendations were incorporated in the Act of 1871. In 1889 a Royal Commission was set up, in view of the increasing opposition and resistance to vaccination; its report was not finally published until 1896, and some, not all, of its recommendations were embodied in the Act of 1898, including the introduction of the "conscience clause," the use of glycerinated calf lymph in place of the arm-to-arm procedure, and domiciliary vaccination. The speaker gave some account of the foundation of the Government lymph establishment, in which he had participated. Turning to the relationship of small-pox and vaccinia, Dr. Copeman said that the anti-vaccinationists had been accustomed to stress the absurdity of trying to protect against one disease by the inoculation of another, as they said, totally different disease. Yet, in coining the term "vaccinia," Jenner had seemed to have put on record his belief that small-pox and cow-pox were definitely related in some way, though, as Professor Greenwood had pointed out, down to the end of the nineteenth century vaccinia as a prophylactic rested solely upon an empirical basis. Dr. Copeman described his own experiments about 1902, which involved the passage of the variola virus through one or more monkeys from which calves were vaccinated, eventuating in the production of typical vaccinia. Public prejudice was aroused by the nature of the experiments, and it was ordered that all the strains of lymph should be destroyed; but before this order was made a number of children had been quite successfully vaccinated, and the experiments had proved decisive, as Professor Greenwood had also pointed out, on the point at issue. It was no longer possible for the anti-vaccinationist to claim that the two diseases were totally different. Of late years a change had come over the scene by the occurrence of variola minor. It had been suggested that in dealing with these outbreaks a policy of *laissez-faire* might be followed, which might have the result of protecting the exposed population. In view of the fact that practically all the small-pox of recent years had consisted of this mild type, and that the major type had been almost unknown in this country

for thirty years, the question of retaining compulsion had become more prominent. Another factor was the occurrence of post-vaccinal encephalitis. This was a condition which the Rolleston Committee had indicated, if certain measures advised in its report were followed, was likely to be of quite negligible importance. But in all the circumstances there would seem nowadays to be a fairly good case for the removal of the compulsory element from vaccination, provided always that the necessary administrative machinery was retained for possible emergencies.

SEROLOGY OF VACCINIA

Dr. MERVYN GORDON said that numerous studies had shown that, like the pathogenic bacteria, the vaccinia virus evoked the presence in the serum of specific antibodies. These were of three kinds: (1) a viricidal antibody that inactivated the virus *in vitro*, (2) a complement-fixing antibody, and (3) an antibody which produced a visible flocculation of the virus. Craigie had recently shown that this flocculation reaction included the action of both agglutinin and precipitin, and that the elementary bodies of vaccinia were the antigen concerned in it. Absorption experiments had proved that the antibodies present in the serum of animals hyperimmunized against vaccinia were equally specific for the viruses of vaccinia or variola major or minor. Antibodies evoked by vaccinia, therefore, could be applied in the diagnosis and treatment of small-pox. As regards diagnosis, the basis of the flocculation reaction for identifying material from cases of variola had been carefully and ably investigated by Tulloch and Craigie, and their observations were contained in two special reports to the Medical Research Council. They had shown that this specific flocculation test had definite practical value for identifying cases of variola and for distinguishing them from cases of varicella and other conditions. The specific treatment of small-pox with serum prepared against vaccinia had still to be tried. In their last report Tulloch and Craigie described some experimental observations on passive protection, which suggested that flocculating serum had valuable anti-infective properties, and these experiments, in the words of the introduction, "raise a hope that small-pox contacts might be passively immunized with a reasonable expectation that the disease would be aborted even in circumstances where vaccination might fail to prevent infection." In discussing cutaneous allergy to vaccinia, Dr. Gordon said that it was now widely recognized that the early skin reaction encountered on revaccination was specific, and it was also known that this reaction could still be obtained when the virus had been killed by heat. Wilson Smith had recently shown that a boiled extract of tissues heavily infected with vaccinia virus gave a specific precipitin reaction with immune serum, and also excited a specific allergic reaction in the skin of previously vaccinated subjects. Craigie, who had encountered a similar precipitable substance in Seitz filtrates of vaccinia virus, had then satisfied himself that this precipitable extract was nothing more or less than an extract of the elementary bodies. Accordingly, he undertook some field observations on skin sensitivity to these elementary bodies. The suspensions of elementary bodies were prepared from a rabbit strain of vaccinia virus, and were repeatedly washed and concentrated by centrifuge: the suspension which showed microscopically a very high degree of purity was then killed with formalin and carefully tested in order to prove that no living virus was left. With flocculating serum this suspension gave a positive result up to a dilution of 1 in 100. As intracutaneous injection even of the diluted suspension gave too severe reactions; he employed needle puncture through a drop of it placed on the skin. The observations were controlled by making tests in the same way with heated calf virus and living calf virus. The results were as follows: (1) of seventy-five individuals who had a history of vaccination and showed one or more scars, all reacted to the killed elementary bodies as well as to the living and dead calf virus, but by the seventh day all the former reactions had regressed, whereas in twelve cases the living virus lesion had progressed; (2) the next group consisted of fifty-two

individuals said not to have been previously vaccinated, and showing no scars on the arm. These all failed to react to the suspension of killed elementary bodies, and by the seventh day all showed a positive "take" with the living virus. Although the suspension of elementary bodies gave positive results in the previously vaccinated individuals, the Seitz filtrate of this suspension proved inert. The reactions, therefore, were due to the presence of the bodies themselves. Dr. Gordon concluded by presenting some photomicrographs which suggested that Buist, who was public vaccinator in Edinburgh in 1887, had succeeded in showing the elementary bodies of vaccinia and variola.

EXPERIMENTAL WORK WITH THE VIRUSES

Professor J. C. G. LEDINGHAM recalled that five years ago he had opened a discussion on this same subject. At that time the new facts were the presence of a mild small-pox, which apparently first showed itself in 1922, and the recognition of post-vaccinal encephalitis as a possible sequel of vaccination. During the last five years the incidence of mild small-pox had fallen rather precipitately; the case mortality rate had risen from 1.4 to 4.2 per thousand, figures very similar to those recorded in the United States, where for thirty years the prevailing small-pox had been of the mild type, but very dissimilar from the Alexandria outbreak of 1932-3, which had a mortality rate of about 210 per thousand. The incidence of post-vaccinal encephalitis, which usually coincided in time and place with mass vaccination, had fallen to very small figures during the last five years. Coming to the nature of the viruses of small-pox and vaccinia, he said that knowledge had advanced very materially. By special methods it had been possible to secure the elementary bodies in pure suspension, and to show that such suspensions could be employed for agglutination tests with the sera of vaccinated animals. Similarly, prepared suspensions of elementary bodies extracted from the mild small-pox in England had also been shown to be agglutinable in the presence of serum from small-pox cases, and suspensions of varicella were agglutinated by the sera of chicken-pox cases and convalescents. The diagnosis of small-pox should no longer be regarded as the peculiar province of specially trained clinicians; the laboratory was now able to give valuable help in doubtful clinical cases. When the diagnosis rested between variola and varicella the serum of the case would in proper time make the diagnosis clear. The new knowledge must eventually revolutionize much of the technical procedure concerned with lymph production, culture on artificial media, and diagnosis. It would be necessary to employ for accurate experiment only the pure elementary bodies, and this was now an entirely practical proposition. There seemed to be good evidence that the bacteria-free lymph retained its potency for months or years. For the future there might be available bacteria-free lymph (1) grown in the chick embryo membrane; (2) grown in association with living cells or in media containing no living cells; and (3) pure suspensions of elementary bodies obtained by high-speed centrifugalization of filtrates of vaccinia. The period was fast drawing to a close throughout which vaccination against small-pox, the various cultures, and everything connected therewith had been surrounded with a cloak of mystery. The speaker also discussed the problem of post-vaccinal encephalitis in the light of further experience and recent experimental work on neurotropic viruses. It was doubtful whether there was any fresh information since the last discussion on this subject, but the problem must remain in the forefront of interest, and the hope of its solution a stimulus to more intensive investigation. The condition had not disappeared from this country, although the recorded figures had been very small. Information as to the condition in other European countries and the United States had been available for some time in the shape of reports of various national committees—Dutch, German, and Swedish, for instance. In Italy, which only a few years ago was thought to be free from this type of disturbance, there would appear to have occurred probably about 100 cases in ten years. In

the histological examination of fatal cases there had been practically no diversity of opinion, though certain authorities had felt constrained to ignore the characteristic histology of typical cases in their belief that the vaccinia virus was most likely to be the one and only cause. The search for an unknown virus must still proceed, and one encouraging sign was the realization that if one likely animal did not react to a suspected virus an unlikely animal might do so. With regard to vaccination practice, infant vaccination was rarely if ever followed by post-vaccinal nervous disturbance. The greater local and general disturbance following primary vaccination of young adults needed no emphasis. It was borne out again in a recent outbreak at Malmo, Sweden, where a number of cases of nervous disturbance had followed primary adult vaccination, not to speak of widespread complaints of sore arms. In spite of the fact that the Association of Public Vaccinators at their meeting in 1933 predicted the most lugubrious results if compulsory vaccination went—and with it the public vaccinator—he thought that the bulk of responsible opinion favoured abolition of the compulsory element, and the placing of vaccination on a free and voluntary basis, beginning with the infant, repeating at school age and early adult life, such a system to be supported by proper methods of education.

THE QUESTION OF COMPELSION

Dr. J. D. ROLLESTON said that he supposed he was in a minority in holding the view that vaccination should be compulsory. He only wished it could be made much more compulsory, and that the conscience clause could be abolished. Although he was too much of a cosmopolitan and anti-militarist to have much sympathy with the Nazi Government, he read with some satisfaction that the Prussian Minister of the Interior had issued an order that all anti-vaccination societies, including those which apparently existed among medical men, should be abolished, and that all anti-vaccination activities were forbidden. The reason why he held so strongly the view that vaccination should be compulsory was the comparative absence of small-pox throughout Europe. In countries like Bulgaria, Czechoslovakia, Austria, and Hungary, according to the last reports issued by the League of Nations, there was no case of small-pox at all, and in many other countries small-pox was only sporadic. This was due, of course, to the enforcement of vaccination. It was agreed that the present type of small-pox was very mild, and it was also urged that measures could at once be taken should the more severe type return; but the question was whether the measures would be taken in time. He reminded the members of the *Tuscumia* incident of several years ago, when at least fifty-three cases were spread over the country; also the smaller but rather severe outbreaks of recent years in Willesden and Hendon. England was not alone in having the mild type. From 1921 to 1926 there was a similar mild outbreak in Switzerland, and it was interesting that in the German-speaking part of Switzerland, such as Basel, where vaccination was not compulsory, this small-pox, with some evidence of the more severe strain, was rife, whereas in French-speaking Switzerland—for example, Geneva and Lausanne—where vaccination was compulsory, there was comparatively little small-pox. Post-vaccinal encephalitis first became prominent in 1924, though there were isolated cases occurring earlier. He thought it was generally accepted now that vaccination was at any rate one factor in its causation. But it was essential to realize its extraordinary rarity; he had never himself seen a case. He also touched on the question of intracutaneous vaccination, about which a good deal had appeared in literature lately, especially in Austria. Many clinicians were in favour of performing intracutaneous vaccination, the chief reason apparently being that it did not leave a scar. The objections to it were that it seemed to be painful, the technique was more difficult, and it did not protect from encephalitis afterwards.

Dr. E. W. GOODALL said that it was generally recognized that encephalitis had grown up entirely of recent years, and it occurred not only after vaccination, but after small-

pox, chicken-pox, mumps, and rubella. As regards compulsory vaccination, he agreed with Dr. Rolleston. When one remembered that voluntary immunization against diphtheria did not seem to have gained much ground, in this country at any rate, it seemed unlikely that there would be a better vaccination against small-pox on a purely voluntary basis.

Dr. J. A. H. BRINCKER said that as an officer of a county council he himself had been drawn more and more to a conclusion against retaining compulsory vaccination. The psychology of the population had to be studied. As vaccination was now in the hands of the public health authorities they had the opportunity of dealing with it in a scientific way, and he thought the voluntary method was worth consideration. He wanted to know why variola minor should be so different from variola major. Had there been something in the evolution of the disease which rendered it of a milder character? Was the loss of its toxic properties due to some biochemical action?

Dr. R. P. GARROW said that it had been suggested that variola minor should be allowed to "rip"; the trouble was that it would not "rip." It was incapable of spreading furiously in a community and causing disfigurement, or even so high an incidence as to bring about inconvenience. He believed that at a previous discussion Professor Ledingham had said that variola minor was a fixed variant of small-pox. But what was a fixed variant of disease? Were not all infectious diseases fixed variants of something? It was true they were not all so closely related to one another as variola minor and variola major, but neither were diphtheria and scarlet fever so closely related as typhoid and paratyphoid. For practical purposes variola minor was a different disease, and that had been recognized now and the disease had obtained a separate name. But the position in this country was that although the dualist view prevailed in the literature, official and otherwise, nevertheless the official figures were presented as if the diseases were one, so that it was not possible to tell whether the deaths were due to variola major or variola minor. That was a state of confusion in which it was not easy to form definite views. With regard to vaccination, this was the best measure of prevention ever devised, but if it was a question of vaccination in relation to variola minor he was in agreement with those who definitely preferred to have the disease rather than the vaccination. About ten years ago it was asserted that London had an immunity from this mild disease, and London was held up as a marvellous example of administrative efficiency. For some years that was true, but a very different story had now to be told, for London, like every other town in which the disease had been well introduced, had a very good "salting," and neither vaccination, nor isolation, nor any other measure adopted had really stamped the disease out. At present, although the country in general was free from small-pox, London was still having from half a dozen to a dozen cases a week. The chief need in coming to a clear view on the question of vaccination was to make a distinction between the two diseases, and he was in favour of giving them names even more distinctive than variola major and variola minor.

Dr. COREMAN, in a brief reply, took up a point about generalized vaccinia, describing experiments which showed that the secondary vesicles contained the living virus just as much as the original vesicles at the point of vaccination. Dr. MERVYN GORDON answered a question about the flocculating serum; he said that it was obtained by Tulloch by immunizing rabbits against a virulent strain of vaccinia virus, and it was found that it gave good protection. These experiments had raised the hope that eventually it might be possible to apply passive immunity to small-pox contacts, so that even if they were vaccinated too late to prevent them from getting small-pox, by the administration of the immune serum they could be tided over. Professor LEDINGHAM said that the two things which had changed his view regarding compulsory vaccination were the recognition of post-vaccinal encephalitis and the fact that small-pox now in this country was of such a mild order. Post-vaccinal encephalitis was not a rare

disease; he thought about 1,000 cases had been recorded. He believed that variola minor was a fixed variant of small-pox, but the only evidence that it was a fixed variant was experience. There was cultural evidence from the bacteriological point of view that such variants did exist.

PROBLEMS OF FAT METABOLISM

At a pathological meeting of the Liverpool Medical Institution on February 15th Professor H. J. CHANNON read a paper on the dietary production and prevention of fatty livers.

Professor Channon gave an account of the researches of the Toronto school into the question of the prevention of the occurrence of fatty livers in depancreatized dogs maintained on a diet of lean meat and sugar and receiving an adequate daily amount of insulin. The earlier observations that the inclusion of fresh pancreas in the diet was preventive of this condition led to the later findings by Best and his collaborators that both lecithin and its constituent choline would prevent or cure fatty livers in diabetic animals. Subsequent researches by these workers showed that fatty livers could be induced in rats by feeding a diet of high fat content, and that these were prevented or cured by choline administration. The fatty liver in rats brought about by cholesterol feeding was likewise prevented by choline. Experiments carried out in collaboration with Best and Ridout with a view to further elucidating the preventive action of choline were described in some detail. Professor Channon then discussed the nature and amounts of the neutral fat, phosphatide, and cholesterol and its esters in the two types of fatty liver caused by diets of high fat content and containing cholesterol respectively, and considered the modifications from these constituents induced by the addition of choline to the diet. He referred to the mechanisms by which choline might exert its action, and to the possible clinical application of these laboratory findings.

The President suggested that in the results of Professor Channon's work there was possibly an explanation of the occasional failure of a ketogenic diet to relieve in epilepsy and in *B. coli* infection of the urinary tract, and a hint as to how such failure might be avoided. The speaker had not obtained the good results reported by others in the treatment of these states in children by ketogenic dietary, and they soon acquired a dislike of it and failed to thrive. It might be that the unfavourable effects of such dieting led to early disordered functioning of the liver, if not to actual fatty degeneration. The experimental results obtained by Professor Channon suggested that if lecithin or one of its derivatives was included in sufficient amount in the ketogenic diet the tendency to fatty degeneration would be controlled and the diet better tolerated.

Dr. HENRY COHEN welcomed the new avenue of approach which had been opened up to many problems in which disturbance of fat metabolism appeared to be associated with those endocrine disorders in which phosphatide depots seemed to be affected. He instanced the Achard-Thiers syndrome and pituitary basophilism. One fact the work described by Professor Channon did appear to establish was the advantage of a high carbohydrate-low fat diet in diabetes mellitus as opposed to a fat content of the diet as high as consistent with a suitable ketogenic-antiketogenic balance. The principle underlying the biological assay of choline—that is, by conversion into acetylcholine and measurement of its effect on the isolated rabbit's intestine—had been successfully used in the treatment of paralytic ileus in man.

The Mental After Care Association (founded 1879. Patron: H.R.H. The Prince of Wales) earnestly appeals for help to carry on and extend its work for recovered patients, and also for the early care of those suffering from nervous and mental illness, for whom it provides homes of recovery and expert care. Contributions gratefully received and further particulars given by the Secretary, Miss Vickers, Church House, Dean's Yard Westminster, S.W.1.

CORRESPONDENCE

Basal Narcosis in Anaesthesia

SIR,—In the most interesting paper by Dr. H. W. Featherstone in the *Journal* of February 24th (p. 322) there is an unfortunate printer's error in the figures of avertin administrations conducted by myself. I am stated to have given avertin in more than 12,000 cases, whereas the number which appeared in my letter to Dr. Featherstone was 1,240.

The same issue (p. 327) contains "A Warning Regarding Basal Narcotics," by Mr. R. J. McNeill Love, and in support of it he quotes a fatal case following the administration of avertin, which, in the summing up, he attributes to this drug, although in his introductory remarks he states that narcotics were "indubitably a contributory cause." There seems to be every reason for accepting the latter explanation, for the patient had received morphine grain 1/4 and hyoscine grain 1/100, the depressing effect of which on respiration must have been profound. I have drawn attention elsewhere (*Clinical Journal*, March 18th, 1931) to the all-important action of morphine in intensifying the action of avertin, and would wish to support Mr. McNeill Love's warning.—I am, etc.,

London, N.W.1, Feb. 24th.

FRANCIS E. SHIPWAY.

*. We much regret the misprint.—Ed. B.M.J.

SIR,—I am particularly interested in Mr. McNeill Love's article, and also in your leader on the same subject. It is time that the whole question of premedication before operation should be carefully considered. There is too great a tendency to-day to consider the wishes of a patient who has heard, either from friends or through the popular press, that insensibility can be produced before leaving the bedroom. For a long time now I have refused to allow premedication in my cases as a routine measure. Avertin is perhaps in a different category, and I must confess that I have at times succumbed to the pleadings of a patient. Premedication, either by barbiturates or even by doses of morphine, is unnecessary and sometimes dangerous. That such drugs assist the anaesthetist in getting the patient under cannot be gainsaid. This, however, is often offset by the alarm of shallow breathing—sometimes even cessation. It is, in my view, unfair to accede to a patient's desire for pre-anaesthetic medication without warning the patient first of the risk that is being run. The administration of any drug of value is accompanied by its own peculiar dangers. The potent drug that has no dangers has yet to be discovered. Premedication makes no provision for idiosyncrasy.

Anaesthetists look upon this question from a very different aspect from the surgeon. Their responsibility ends with getting the patient off the table. But patients are sometimes exceedingly ill after these premedicatory measures, and especially is this true in diseases such as exophthalmic goitre. The old-fashioned, very light, open ether—as practised and taught by my old teacher, Sir James Berry—is, I am convinced, the most satisfactory method in these cases. This is especially true to-day, when the operation is rendered so much safer by the previous administration of Lugol's solution. Of course, cases must be considered on their merits, and there are patients for whom premedication may be desirable; but I cannot believe that patients have changed so much in the last few years as to require the routine use of premedication before an operation can be satisfactorily performed. After all, it is for the anaesthetist, and not for the surgeon, to anaesthetize.—I am, etc.,

London, W.1, Feb. 23rd.

A. E. MORTIMER WOOLF.

SIR,—In the article by Mr. McNeill Love the death of a patient after an operation for a toxic goitre is attributed to the use of avertin for basal anaesthesia. It appears to us, however, that the facts as related in the article point to an entirely different conclusion.

It is well known that the combination of avertin with more than a very small dose of morphine and hyoscine introduces a real danger of respiratory depression. If not more than 1/8 grain of morphine is given the danger is almost non-existent; but the dose which Mr. McNeill Love's patient received—1/4 grain of morphine with 1/100 grain of hyoscine—was, in our opinion, almost certainly responsible for the failure of respiration. We believe that it is also wiser to reduce the strength of other drugs, such as novocain, in combination with avertin, and in our experience it is quite unnecessary to use novocain of a greater strength than 0.5 per cent., whereas this patient received 1 per cent. of novocain. It would also perhaps have been wiser to administer a carbon dioxide mixture rather than oxygen, if stimulation of the respiratory centre was required.

In our experience the administration of rectal avertin for operations upon patients with toxic goitre is a particularly safe form of basal narcosis, provided that the dosage of associated drugs is carefully regulated in accordance with knowledge of their action. Mr. McNeill Love observes that it is his practice to administer two-thirds of the official dose, and to supplement its effects with gas and oxygen. With the latter part of this observation we are in agreement, though it might be remarked that patients with a metabolic rate that is higher than normal are better able to deal with a full dose of avertin than individuals whose metabolic rate is normal. This constitutes an additional safeguard in using avertin as a basal narcotic in treating toxic goitre.—We are, etc.,

GEOFFREY KEYNES.

C. LANGTON HEWER.

London, W.1, Feb. 24th.

SIR,—The present attempts to assess the place of the barbiturates in therapeutics is of interest to all anaesthetists, in view of the wide differences of opinion displayed by experienced clinicians. There seems no doubt that these drugs can be dangerous. But so can morphine and chloroform in untrained hands, and no one refuses to use them on this account. By reason of accumulated experience we have learnt when to use them, in what doses, and, what is more important, when not to use them. In the case of the basal anaesthetics we have not yet reached this desideratum. Thus fatalities are attributed to their use which are due in reality to their misuse.

The article by Mr. McNeill Love fully illustrates this point. In the first of the two cases there described avertin was combined with an injection of 1/4 grain of morphine and 1/100 grain of hyoscine—a highly dangerous procedure. Moreover, the author states that he gave "4.4 c.cm. of avertin, which is the recognized dose for a patient weighing 7 stone" (the italics are mine). Even with avertin there exists idiosyncrasy, and it is safer to regard the dose calculated according to body weight not as the recognized dose, but as the maximum dose. Satisfactory narcosis will often occur with two-thirds of the calculated dose, in which cases the calculated dose would constitute an overdose.

In the author's second case oral nembutal with 1/6 grain of morphine was combined with open ether. Here I only wish to point out that, since nembutal entirely masks the signs of anaesthesia, it is easy to give an overdose of ether using this method. I feel myself that, with nembutal, open ether unnecessarily increases the risk to the patient, and that nitrous oxide and oxygen, with such small

amounts of ether as may be necessary from time to time, is better.

It is only by articles such as that by Mr. McNeill Love that the profession will be enabled, by pooling its experience, to arrive at the correct technique for basal anaesthetics, the correct dosage, their indications and contraindications,—I am, etc.,

London, W.1, Feb. 24th,

R. BLAIR GOULD.

Medical Education

SIR,—With the general trend of Dr. Arnold Gregory's paper (*Supplement*, February 24th, p. 75) there will no doubt be general agreement. In some details, however, it seems to me open to criticism. I doubt, for example, whether it would be wise to spend less time in teaching students the signs and symptoms of disease in order to teach them something of the psychology of each individual patient. Psychology is a very difficult subject; a mere smattering of it would be of little or no practical value.

Sir James Mackenzie's work requires no recommendation; but can an undergraduate be expected to feel much interest in "the earliest deviations from the normal" or in incipient diseases until he has learned their classical features when fully developed? The general practitioner has this field of incipient diseases all to himself, but I am not aware that anything of much practical importance has resulted hitherto—nothing that an undergraduate might be expected to know. When he enters practice he will have almost daily opportunities of supplementing his standard textbooks.

Bearing in mind that the educational problem of the moment is how to lighten the present curriculum, and at the same time turn out men with a better general education and better equipped for service to their patients, one doubts whether it is really necessary to stress the importance of purely clinical work. This may seem heterodoxy to some. But it goes without saying that facts ascertained by the unaided senses must always be the foundation on which a diagnosis is based. Every general practitioner has to employ his senses every day in clinical investigations, and if he employs them conscientiously he will automatically acquire in time "clinical instinct," more or less. The fact is that "clinical" work is imperative before and after graduation. What is not so imperative but, occasionally at any rate, more important is, for example, how to distinguish "the flu" from early pulmonary tuberculosis; a primary from a secondary anaemia; glycosuria from diabetes; a pneumococcal or streptococcal tonsillitis from diphtheria; or how to judge of the functional efficiency of the kidneys in a case of albuminuria. One might mention other common examples in which "the clinical instinct of the master clinician" usually requires to be supplemented. Can the general practitioner of the future be expected to apply up-to-date methods in arriving at important decisions in such common ailments as these, or must he continue to delegate all but purely "clinical" diagnosis to others?

I do not presume to answer this question, but I feel very strongly that every medical student should have a sound practical training in laboratory technique in so far as it is relevant to his future work. If he has such a training he may utilize it in after years, or he may not. But if his training is defective in this respect he will not acquire a laboratory technique in general practice automatically, as he will in some measure acquire a "clinical instinct," this being conditioned by experience and natural aptitude rather than by pre-graduate training.—I am, etc.,

Manchester, Feb. 26th.

J. SEAVELY DICK.

Ovulation and Menstruation

SIR,—In his paper on ovulation and menstruation in the *British Medical Journal* of January 6th, Dr. Wilfred Shaw makes rather ungracious reference to the views which have been expressed by Corner, Hartman, and myself as to the possibility of anovulatory menstruation in the human female. He particularly seems to find fault with my own statement that the discussion as to what is meant by "menstruation" has become a "mere play on words," as I believe it to be. The time-honoured definition of menstruation is that it is a periodic physiologic bleeding from the uterine mucosa, occurring most often at about four-weekly intervals. That such a bleeding can occur without ovulation permits of no doubt, and it is not clinically distinguishable from the far more common ovulatory type. If Dr. Shaw knows of any method of making this distinction short of histological examination, we would all be grateful for the information. That the two types of menstruation present both histological and physiological differences we know as well as he, and I have repeatedly emphasized this point.

Every gynaecologist accepts the fact that functional menorrhagia, often very slight, and characteristically periodic, is not associated with ovulation. That in some women with normal periods ovulation does not occur I have shown by the examination of the mucosa just before the expected menstrual bleeding, and others have done the same. If Dr. Shaw would systematically study the premenstrual mucosa of sterile women in whom other causes of sterility have been eliminated, I feel sure that he likewise would find some instances of this sort. One would get the impression from Dr. Shaw's critique that we look upon this type of menstrual bleeding as common when exactly the reverse has been stated in my several papers touching upon the subject. The other viewpoint of menstruation is that it is a periodic uterine bleeding, dependent upon ovulation, and associated with characteristic post-ovulatory secretory changes in the endometrium. If Dr. Shaw likes this definition, the "American school," to which he makes such unkind reference, has no objection. It is this distinction which I designated as a "play on words," a mere matter of definition. There are other instances of anovulatory periodic bleeding which offer unimpeachable evidence on this point, such as, for example, the often typically menstrual bleeding seen with granulosa-cell tumours in very young children or in women far beyond the menopause. Here there is an abundance of the follicle hormone, with no ovulation or corpora lutea.

The whole subject of reproductive endocrinology is still too unsettled to justify any such dogmatic criticism as Dr. Shaw has indulged in. Many of us, for example, do not agree with him in some of his views, not always supported by scientific evidence, on uterine haemorrhage, and I feel sure that there will be no general agreement with the statement in his recent paper, based on a relatively small material, that "ovulation is restricted to about the fourteenth day of the cycle." Nor do I share his un-Hunterian disdain for comparative studies, especially upon the monkey, from which we have already learned so much as to reproductive physiology. My own work, I should add, is, like that of Dr. Shaw, practically entirely with human material. There can be no objection to honest differences of opinion, but no worker in this field has as yet won the right to the oracular position which Dr. Shaw appears to have assumed in summarily waving aside the views of others no less anxious than he to arrive at the truth.—I am, etc.,

Baltimore, Md., U.S.A., Feb. 10th.

EMIL NOVAK.

A Milk Ration for Children

SIR,—I have read with interest the article in your issue of February 24th, in which you discuss the proposal of the Children's Minimum Committee "that a daily ration of fresh milk should be made available for all children attending State-aided schools, and for younger children through the Public Health Department." I agree that our use of the term "fresh" is ambiguous, and it has laid us open to a good deal of misunderstanding. It was intended simply to exclude dried and tinned milk, and had no reference to treatment of ordinary liquid milk before consumption.

The chairman refused to accept Sir Ernest Graham-Little's amendment that the words "pasteurized at a low temperature" should be substituted for "fresh," not because the committee is not alive to the dangers of infected milk, but because it does not feel, as a lay body, competent to lay down either the means or the standard of safety. To have accepted this amendment would have excluded raw milk produced under any conditions, and would also have excluded your own very useful suggestion that in places where it is not possible to obtain a supply of such milk safe for children, nor of properly pasteurized milk, that the milk should be boiled immediately before use. Many children dislike boiled milk, but the difficulty might be overcome by the addition of cocoa, etc.

On the one hand we have great numbers of children whose diets are deficient in the nutritive qualities which milk can give them, on the other we have a surplus of milk ready for their consumption, but produced under widely varying conditions and of very different qualities. Probably a certain amount of elasticity will have to be allowed in any practical scheme; in the large towns pasteurization may be the solution, and I think my committee would agree that in any case the responsibility should rest with the medical officers of health in the district to ensure that the milk supplied to the children is either of a sufficiently high quality to make it safe for consumption or is made safe by treatment.

The other measures which the committee is pressing upon the Government are: (1) That it should be made compulsory on local authorities to provide school meals for children who, by reason of the poverty of their parents, are inadequately fed. (2) That the allowances for the children of unemployed persons should be substantially increased. (3) That encouragement should be given to the extension on municipal housing estates of schemes of rent rebates where the family income is insufficient for minimum needs. We very much hope that we shall have the support of the medical profession in our efforts to secure for every child a minimum of healthy living.—I am, etc.,

MARJORIE E. GREEN,

Secretary, Children's Minimum
Organizing Committee.

116, Thames House, London,
S.W., Feb. 27th.

Is there a "Fourth Disease"?

SIR,—I suggest that the cases recorded by Dr. W. Lees Templeton in the *Journal* of February 24th (p. 358) may be explained without supposing a "fourth disease," in the usual definition of that term. That Case 1 was one of measles is proved by the occurrence of measles in the patient's sister, notwithstanding the absence of Koplik's spots, which are not to be observed in a small proportion of the cases of measles. The rash which was noticed on November 25th and 26th was one of the prodromal rashes so frequent in that affection. The case may also be regarded as a mixed infection of measles and Vincent's angina. But tonsillitis is occasionally present at the beginning of an attack of measles.

Case 2 appears to have been one of acute faucial inflammation (also with stomatitis) accompanied by a morbilliform erythema. Such cases are by no means rare. May I be allowed to refer to an illustration of an extreme example which will be found in my *Text Book of Infectious Diseases* (1928), p. 136?

Two other points are raised by Dr. Templeton's letter—namely, the value in diagnosis of (1) enlarged superficial lymph glands, and (2) desquamation. (1) These glands are not enlarged in all cases of rubella, but in about 75 per cent. Moreover, they may be enlarged in many cases of measles and scarlet fever. (2) Though scarlet fever is the disease in which peeling is most frequently seen, yet I have met with not a few cases of measles, rubella, and erythema other than that of scarlet fever which have been followed by the most profuse desquamation (see the above-mentioned book, p. 267).

May I add a word or two on the use of the term "fourth disease"? This name was first applied, tentatively, by Dr. Clement Dukes to that disease which the majority of clinicians believe to be a variety of rubella—namely, the scarlatiniform variety. Dukes was of the opinion that it was a quite different disease. But he would not have admitted under the heading of his "fourth disease" cases in which there were a "petechial rash on neck and clusters on the body," and "a patchy erythematous rash on body," or "a few scattered papules on neck and face, rough morbilliform eruption on buttocks, legs, and arms." The rash of "fourth disease," according to Dukes, was much more like that of scarlet fever than that of measles.—I am, etc.,

Hampstead, Feb. 25th.

E. W. GOODALL.

Pathogenesis of Cancer

SIR,—Mr. Frank T. Paul's letter under the above heading in the *Journal* of February 24th is a most welcome contribution, as it indicates a line of approach in our investigation of the cancer problem which I am afraid has been rather overlooked by most of our pathologists up to now. After drawing attention to the fact that, when one kidney is removed, the other one grows to about double its size and then stops, he goes on to state that "Surely it can only be due to a somewhat similar though erratic call that causes a tissue to reproduce itself in the abnormal form of a new growth." Now that mysterious erratic call which, when it comes to a cell, forces it to grow and proliferate at a rate out of all proportion to that of the normal cells around, with results disastrous to the host, is really the elusive factor we have been so long seeking; in fact, it is the alpha and omega of the pathology of cancer. Let us once discover its nature and the manner in which it works, and the great cancer problem is solved.

Cytologists have done much for us in explaining what actually happens in the cell during that complex series of changes collectively known as mitosis. Geneticists have extended our knowledge immensely when they demonstrated that the chromosomes are made up of small units called genes, which determine the form which the future individual will take. And the biochemists have done their part nobly in isolating numerous catalytic or activating substances which have been proved to be capable of exerting definite specific actions on the cells, and to cause them to respond in various ways. But, notwithstanding this progress, there yet seems to be something seriously wanting, either in the co-ordination of the work which is being done by the different branches or in the opening up of new lines of approach. We may know all about the changes which take place in the cell during its life, we may know all about chromosomes and genes, but unless we understand the dynamics of the cell and

know all that is to be known of the forces which bring about these changes, our knowledge is incomplete and the problem will remain unsolved.

An intellectual savage, finding a motor car with an empty petrol tank abandoned in the wilderness, might possibly take the car to pieces and examine the cylinders, pistons, crank-shaft, clutch, etc., and, being an intelligent savage, he might say to himself, "If these parts could only be got to move, this car might take me to the next village"; but yet he would be at a complete loss as to how he could get the car to go. To him it would be a dead thing, as dead, in fact, as far as he was concerned, as the tumours which we have preserved in our museums. Are we not also only intelligent savages, concentrating our attentions on dead machines and wondering how they go?

The unfertilized mammalian ovum, if it does not meet with an appropriate spermatozoon, will lie dormant indefinitely and never undergo further change; in other words, it is like the motor car which our savage found in the wilderness. If, however, a friendly spermatozoon were to come along and push his head through the zona striata, then the whole mechanism would come to life at once as if by magic. Growth and cell division would immediately start on a gigantic scale, and in no time a new organism would be taking definite shape. Biologists tell us that each of the cells (ovum and spermatozoon) possesses a complete set of factors necessary for the development of the organism, but neither of them can start developing until it unites with the other. The force necessary to put the different parts of the mechanism into motion in the kinetic state at least does not come into existence until the gametes join to form the zygote. It has usually been held that the spermatozoon brings in that force element in the shape of the centrosome, but I think it is much more probable that the element in question is a complex one, consisting of two complementary entities; and as one of these exists in the ovum and the other in the spermatozoon, neither of the cells can by itself proceed to further development, and until union occurs the ovum will remain a mere static individual.

Biochemists have recently not only succeeded in isolating several substances which have been proved to exert definite specific actions on living cells and to cause them to respond in various ways, but they have also succeeded in manufacturing some of these substances synthetically, and Sir Frederick Gowland Hopkins, in his presidential address before the British Association last year, stated that it has now been definitely established that there is a distinct group connexion chemically between such substances as vitamin D, oestrin, and a cancer-producing substance. Are we now at last on the eve of great discoveries? Be that as it may, we are much in the debt of the biochemists for having given us a most promising and valuable lead, and it is up to our leaders now to see that properly co-ordinated team work is started forthwith, and that both the dynamics of the cell and the forces which operate within it are thoroughly investigated.—I am, etc.,

Harrold, Bedfordshire, Feb. 25th.

E. G. FENTON.

SIR,—Mr. Frank T. Paul, in his letter published on February 24th, states his conviction that cancer is much more common among the highly civilized races than in those leading a natural wild life. This agrees with the well-substantiated reports of McCarrison, Hallilay, and others, who have proved the high degree of immunity from cancer (and from many other diseases) of the alimentary tract of certain tribes that live on a healthy "natural" diet and earn it by hard physical work in the

open air. The people of Hunza afford an instance of this, fully reported by Sir Robert McCarrison (*Practitioner*, January, 1925, and elsewhere); the total cancer incidence among the people of Hunza is negligible.

It is agreed, I take it, that the undoubted increase in the cancer rate of recent years among civilized races is due almost solely to cancer of the digestive organs. Moreover, Dr. W. Cramer (*Lancet*, January 6th, 1934) insists that it is the alimentary tract that provides the great bulk of the cancer of civilized countries, yet he scarcely even hints at the prominent part that our highly sophisticated diet may play (I should like to say *must* play) in producing the susceptibility to cancer to which he refers throughout his paper. Mr. Paul, on the other hand, is fully alive to this influence of diet.

In my presidential address to the Hunterian Society on "Stasis and the Prevention of Cancer" (*British Medical Journal*, December 25th, 1920), and more fully in Chapter XX of my book *Chronic Intestinal Stasis: A Radiological Study*, I give facts and reasons that seem to me conclusive for the view that susceptibility to cancer is brought about ordinarily by long-continued fouling of the blood stream by the products of intestinal putrefaction. Thus every cell of every tissue and organ is affected adversely and its resistance to disease impaired. Anyone who, like myself, is engaged daily in the x-ray investigation of disorders of the digestive organs can testify to the extreme frequency of pathological changes in the stomach and intestines due to bacterial action. It is not possible within the limits of a letter to describe in detail the changes that occur and the manner in which those changes lead to cancer, but I would commend the matter very earnestly to the consideration of all who are interested in, and more particularly of those who are actually working upon the causation and prevention of cancer.—I am, etc.,

ALFRED C. JORDAN,
M.D., M.R.C.P., D.M.R.E.

London, W.1, Feb. 23rd.

SIR,—I am in entire agreement with my fellow student, Dr. Mitchell Stevens, when he says that cancer is a deficiency disease, but I differ from him when he says the deficiency is entirely in the food. I have found that all cases of industrial cancer occur only in workers who have been exposed for a prolonged period (fifteen to twenty years) to a certain amount of CO gas. CO gas, by its powerful attraction for haemoglobin, displaces a certain amount of the oxygen, and consequently less oxygen is circulated to the tissue cells. A reduced supply of oxygen tends to lower the vitality of the cells and to reduce their capacity for recuperation after prolonged irritation. Only a certain percentage of the workers develop industrial cancer, and those most prone are the ones who are fed on preserved foreign foods from which the oxygen has been driven out.

The blood of men of 55 years of age and upwards in whom a senile anaemia is present has its oxygen-carrying capacity reduced, and this reduction explains their complete immunity from the disease in "carcinogenic" factories from 15 until 55. This reduction of the oxygen-carrying capacity tends to move the pH of the blood towards the acid side, and as a result renders the blood more liable to flocculation by a chemical or bacterial catalyst. This flocculation in the skin areas interferes with the metabolic rate of these cells, and so gives rise to a modified form of their growth in, for example, the form of a "pitch wart." I dealt with this problem very thoroughly in the *Medical Press and Circular* for August 30th, September 6th, and September 20th, 1933.—I am, etc.,

Swansea, Feb. 25th.

G. ARBOUR STEPHENS.

Treatment of Compound Fracture

SIR,—Mr. Simpson-Smith's interesting article on the open reduction of compound fractures (*British Medical Journal*, 1933, ii, 1019) induces me to raise the question of open *versus* closed treatment of fractures once more.

In the early years of this century Arbuthnot Lane evolved a technique for the open reduction of fractures which was far in advance of anything at that time, and which produced correspondingly good results in his hands. Lane's methods dropped into disfavour owing to the occasional intervention of sepsis, but we have arrived at a period in the development of surgical technique when this can be excluded. If the open technique of fracture reduction gives quicker satisfactory results, then it should be used. Meanwhile the closed method has been making headway, and we claim at this hospital to have evolved a technique whereby limb fractures can be reduced and fixed in position on the day of admission. This is the very essence of successful fracture treatment, and no open operation can do more.

With regard to compound fractures of the tibia and fibula, the wound is excised and sewn up, and immediate extension applied with the leg on a frame. An unpadded plaster cast is applied, leaving a window over the wound, and the limb is then transferred to a splint with the extension still operating. This method has the advantage over Mr. Simpson-Smith's of avoiding an operation which, however carefully carried out, must to some extent interfere with the vascular supply of the tissues and thus delay healing. The acid test of fracture treatment is the time which elapses before the patient can return to work. We have found that for thirty-five consecutive fractures, whether simple or compound, the time taken was three and a half months. This is two weeks longer than Mr. Simpson-Smith's treatment, but I feel this is justified in view of the fact that, not only have we eliminated an operation which must further traumatize already damaged tissues, but also we have one technique which is equally applicable to simple or compound fractures.—I am, etc.,

Southend-on-Sea General
Hospital, Feb. 19th.

ALAN PHILIPS, F.R.C.S.,
Resident Medical Officer.

The Tuberculosis Problem

SIR,—Dr. Gordon Tippet, in the *Journal* of January 14th (p. 76), invites the attention of the medical profession to the prevention of tuberculosis; and "A. R. F." (February 3rd, p. 214) indicates some of the deficiencies of the tuberculosis service as it functions to-day, and as I described it in the *British Journal of Tuberculosis* in 1924 (October, p. 149).

There is a tuberculosis sanatorium of over 100 beds, situated some twenty miles from the city that maintains it (with which I was connected from its foundation), which has no x-ray plant and no modern laboratories or equipment for "collapse" therapy and other modern forms of treatment. Its waiting list is long and the period of treatment relatively short. There is a city tuberculosis dispensary where the radiographs are interpreted by a non-medical assistant (as the medical officer is not a radiologist), and where modern forms of treatment are neglected. Its sessions for diagnosis and treatment are very limited in number and duration, though it serves a population of well over 200,000.

There is no attempt made generally to offer facilities for the separation of "contacts" (even children) from the infective member of the household at the routine "contacts" examinations (throughout the country). Dr. G. Gregory Kayne (*Journal*, 1933, ii, 1231) quotes the Canadian and French (dating from 1904 onwards) evidence

of the value of separation of the infant and child from the source of contagion at home. (See also Bushnell, F. G., *British Medical Journal*, November 14th, 1925, and *The Medical Officer*, September 22nd, 1923, p. 142.) Only a few lucky patients obtain after-care in a "village settlement," and, whether "open" or "closed" cases, they return from sanatorium to former home and workshop conditions. An "after-care colony" which I helped to found is now reserved for ex-service patients, and the civilian is excluded because he has no "living" income.

In July, 1924, the Senior Medical Officer of the Ministry of Health wrote that these "after-care" schemes were "being carefully watched by the Ministry of Health," as there "was not yet sufficient experience to enable a sound or final decision to be taken." The great majority of patients with advanced disease die at home, despite the Minister's statement of policy. During sickness the patient, whether insured or not, is not given an adequate income to live on. The "extra nourishment" grants improved sanitary, housing conditions, employment, etc. are delegated too often to a voluntary care committee and to the helpless tuberculosis medical officer; in other words, these problems are most inadequately dealt with or are shelved.

If a consumptive woman becomes pregnant she is confined at home, or at the local infirmary, if lucky; but no special accommodation is provided or specific precautions taken, or, indeed, advice given, before, during, or after childbirth to help the mother or save the infant from infection, as in France.

Inspections of tuberculosis dispensaries and sanatoria etc., are perfunctory. Refresher courses for the medical officers and nurses are seldom afforded or availed of.—I am, etc.,

London, S.E.1, Feb. 16th.

F. G. BUSHNELL.

SIR,—The efficiency of the tuberculosis service cannot be much further improved as long as it is tied to its narrow specialism. When the young enthusiast for diseases of the chest enrolls in the tuberculosis service he soon finds that his interest in the patient must be strictly limited to tuberculosis, and in consequence his interest flags and his real use as a specialist in all chest diseases is not utilized. Is it not just as important to the State, for example, that a child or a man suffering from lobar pneumonia should be returned to the family without complications as to decide whether the case is one of tuberculosis or not?

At present many practitioners attempt to use the tuberculosis service for non-tuberculous cases by calling in the tuberculosis officer and saying: "I don't think this case is one of tuberculosis, but I should like your advice." In how many of these cases is the T.O. able to use his knowledge to the full? If the case is found not to be one of tuberculosis, but is one for hospital treatment, he sees no more of the case. The general practitioner has frequently to exercise considerable tact in introducing a T.O. to a patient. Patients hate the name tuberculosis, and in consequence they dread the T.O.'s visit. The result is that the practitioner often attempts a diagnosis of tuberculosis on his own without the T.O.'s specialist resources, and is compelled only at the last moment to call in the T.O. when the case has proved too difficult.

Efficiency in the service could be greatly improved by: (1) making the T.O. a consultant in, and available for help in, treatment of diseases of the chest generally; (2) adapting superfluous bed accommodation in sanatoria for diseases of the chest other than tuberculosis, due attention, of course, being paid to segregation from the tuberculous; and (3) eliminating the names tuberculosis

dispensary and tuberculosis officer. These methods could in many cases be accomplished if the T.O.'s services were utilized as those of a consultant at the county hospitals.—I am, etc.,

NORMAN J. ENGLAND,
Assistant Tuberculosis Officer.

Boston, Lincs, Feb. 19th.

SIR,—Early diagnosis is, of course, essential, and under an efficient anti-tuberculosis scheme one may take it for granted that the necessary ability and means are at hand for this purpose. But we know that under present economic conditions, the working man and woman do not come at an early stage of the disease, so that there remains the chronic invalidism from which arises the menace of infection to the rest of the community. Here is the crux of the problem, and it is in the control of the spread of infection that our tuberculosis schemes are inadequate. There is but little legislative control, one's hands are tied, and one has to watch the case infecting all those around him at home and in the factory. We are not even allowed to protect the babies, and in this connexion it is about time that a well-controlled B.C.G. campaign was considered, whatever the attitude of the Ministry. The tuberculosis problem can only be solved by stronger legislative measures, by the insistence on the removal of a positive case for treatment and isolation when in a chronic stage in State-controlled colonies, by control of contacts, and by a system of compensation for dependants and also for loss of work so as to eliminate factory infection. One cannot elaborate this in a short note, but if it sounds drastic or "expensive" then one can only point out that millions have been spent on schemes that are hopelessly inadequate for the purpose for which they have been inaugurated.—I am, etc.,

Birmingham, Feb. 16th.

J. S. D.

Sudden Circulatory Failure and Diabetic Coma

SIR,—Dr. Douthwaite's reply, in the *Journal* of February 24th (p. 353), to our letter appearing in the issue of February 17th, has, we think, missed the essential point of our communication. We did not seek to stress the platitude that "circulatory failure . . . precedes death in coma," but to call attention to a matter of direct clinical importance—namely, that particular precautions may be usefully taken to lessen the danger of sudden death from such failure. In our letter it was pointed out that this fatal collapse in our patients was precipitated by elevation to the sitting posture, and, further, that in two of our three cases the failure was effectively treated by laying the patient flat in bed.

In the first and second of our cases it was only by cross-examination of the sister in charge that the fact was established of the patient having been moved prior to the collapse. Unless we had previously noted this fact in our third case described, we might not have asked for information regarding movement, and we should have remained in ignorance of the essential cause of the sudden circulatory failure. We think anyone who has had hospital experience will agree that, unless nurses are specifically ordered not to move a patient, it will not occur to them that it may be harmful to move a patient on to a bed-pan or to raise him so as to adjust the pillows. We therefore suggest that it would be most helpful if Dr. Douthwaite inquired into the events preceding the deaths of his four patients in order to see if he can elicit any information regarding unauthorized movement shortly before the fatal termination.—We are, etc.,

C. J. FULLER,
Royal Devon and Exeter Hospital, Exeter.

H. P. HIMSWORTH,
February 26th. Medical Unit, University College Hospital.

Painless Injections

SIR,—With reference to the recent correspondence in the *Journal* on painless (hypodermic) injections, I take the liberty to draw your attention to "a useful hypodermic outfit" described by me in the *Indian Medical Gazette* of January, 1925.

The outfit consists of an all-glass hypodermic syringe provided with a platino-iridium needle. The syringe and needle are in the first instance sterilized by boiling, and only boiled or sterilized solutions are afterwards used in the syringe. To wash out the syringe after use, and at the same time to maintain it constantly in sterile condition, as well as to prevent the piston from sticking to the barrel, a mixture of equal parts of glycerin of carbolic acid and rectified spirit is carried in a small bottle, and five to six minims of this mixture are drawn into the barrel of the syringe on each occasion after use. The piston is then slowly withdrawn while the nozzle of the syringe is held upwards, in order that the fluid may escape and that the whole syringe may at the same time be washed out and lubricated before replacing the piston. An attenuated layer of the mixture is thus left in the syringe, from which the spirit rapidly disappears by evaporation.

Experience shows that the amount of glycerin and carbolic acid left in the syringe causes no irritation on injection, but the syringe may be washed out before use with a teaspoonful of water freshly boiled over a spirit lamp. Hypodermic tablets are in all cases dissolved by boiling over a spirit lamp in the requisite amount of water in a teaspoon. The platino-iridium needle is sterilized by heating in the flame of a spirit lamp immediately before and after use.

Experience over many years has proved that with this outfit, which is constantly ready, sterile and painless injections can be given in a minimum of time.—I am, etc.,

Cairo, Feb. 11th.

J. WALKER TOMB.

SIR,—In a sense I appreciate the point raised by Dr. Leak that even relatively septic hypodermic injections as a rule cause no trouble. I am not able to give him actual instances of the nature which he seeks, but I do know of one instance in which a syringe had been used for aspirating pus, subsequently found to contain *B. welchii*, which on later use for serum conveyed *welchii* infection to another patient. The danger of infection from organisms in the air may be remote. At the same time, he makes his query as a scientific man, and my answer to this is that the most scientific thing one can do, in the interests of one's patients, is to avoid all possible danger, and yet to give injections as painlessly as is practicable. Others may differ, but I have merely mentioned my own methods, as I believe them to be absolutely safe. It is better to be safe than sorry.—I am, etc.,

London, S.E.5, Feb. 26th. GUY BOUSFIELD, M.D. Lond.

* * This correspondence is now closed.—ED., B.M.J.

Gas and Oxygen Anaesthesia

SIR,—Dr. Chalmers, in your issue of February 17th, refers to the cost of gas and oxygen anaesthesia, and mentions that for teeth extraction ether or chloroform is still much employed.

I am using a small portable gas and oxygen outfit supplied by Messrs. King and Co., London, which I understand was built to the specification of Dr. de Caux of London. The flow of gas is intermittent, and is administered by a nosepiece. The oxygen is led direct to the nose. With the mouth packed by a pad of gamgee tissue to which a tape is attached, there is rarely any difficulty in getting the patient to breathe regularly through the nose. In many cases it is unnecessary to administer oxygen, occasional breaths of air being sufficient.

I have used the nasal method of gas administration in over one hundred cases, and find it an inexpensive anaesthetic. A 100-gallon cylinder of N_2O costs 9s., and it is sufficient for three or four average extractions. In many cases thirty-two teeth have been removed at one sitting, and the duration of anaesthesia has been up to fifteen minutes. The great advantage in dental work is that the mouth-pack prevents inhalation of blood or teeth. The absence of nausea or sickness, and the rapid recovery from the anaesthetic, are further advantages, which are appreciated by the patient and the dentist.—I am, etc.,

Edinburgh, Feb. 19th. A. G. CRUIKSHANK, M.R.C.P.Ed.

Treatment of Influenza

SIR,—I have read with great interest Dr. James Torrens's article on influenza in the *Journal* of February 17th, (p. 274). I am glad to say that during the last thirty years I have successfully treated a large number of cases of post-influenzal debility by a modification of Swedish treatment. The first chief object of this, in the condition mentioned, is to try to restore the diminution of sensation in the cerebro-spinal nerves, this being largely effected by means of the "nerve frictions" of Kellgren; and the second object is to remove hypotension or hypertension, so often found in the posterior cervical muscles. I can confidently recommend the method, details of which were published by me in the *British Journal of Physical Medicine* for 1932 (p. 65).—I am, etc.,

London, W.1, Feb. 20th.

EDGAR CYRIAX.

Tonsillectomy: Complete or Partial?

SIR,—Since removal, both partial and complete, of the tonsils is now so very frequently and widely practised, it may be opportune, and perhaps of some interest, to raise the question as to the relative value of these two methods of treatment. Given diseased tonsils and the necessity for surgical intervention, it would seem that the only rational procedure is complete removal by dissection, whereas partial removal by the guillotine only is wholly illogical, inadequate, and of questionable usefulness, calling, maybe, for further operative intervention later on. Is complete removal on all possible occasions the ideal to be aimed at? That is the question I would ask, and the opinions of other of your readers will be appreciated.—I am, etc.,

H. W. FREER, M.R.C.S., L.R.C.P.

Birmingham, Feb. 20th.

Left-sided Stance for Urethral Instrumentation

SIR,—In connexion with my memorandum in the *Journal* of December 30th, 1933 (p. 1211), and the letters of Lieut.-Colonel Novis and Mr. Alex. Roche in your issue of January 13th (p. 78), may I suggest that I mentioned that both the surgeon's forearms or elbows could be rested on the front of his thighs. A further advantage is that they and his hands are in a line with the shaft of the instrument instead of being at an angle. I can quite understand that simplification is unnecessary for a surgeon of the skill and experience of Colonel Novis.

The advantage of the left-sided stance for the passing of catheters or bougies is that, while the skilled right hand manipulates the instrument, the left hand, in cases of difficulty, is available for rectal examination and control—a safeguard which no careful surgeon will neglect. I may add that patients in whom prostatectomy might

be risky can be submitted to litholapaxy without danger to life. Should there be some enlargement of the prostate the method which I have indicated does simplify the picking up of pieces from the floor of the bladder in cases in which the method of depression and opening of the blades of the lithotrite has failed.—I am, etc.,

Srinagar, Kashmir, Feb. 19th.

ERNEST F. NEVE.

** This correspondence is now closed.—Ed., B.M.J.

Veiled Advertisement of Abortifacients

SIR,—I enclose a catalogue which I gather is sent by a "surgical stores" in Glasgow to all parents (and perhaps others) who announce a birth in the *Times*. Lord Dawson's Bill for the control of sale and advertisement of contraceptives will no doubt save unmarried people from receiving such aids to promiscuity; but what of the married folk who are unable, for one reason or another, to obtain reliable advice on "birth control"?

On page 27 of this catalogue we find advertised: "Special double strength occasional pills for ladies, recommended by eminent physicians, for anaemia, and all kindred ladies' ailments and irregularities. Prompt and safe in action. Relieve where others fail. Specially recommended for stubborn cases." At the side these pills are stated to be "prepared with apiol, steel, pennyroyal, and bitter apple. Harmless, but prompt in action where others fail." Thus these thinly disguised abortifacients are offered to the lay public. One can easily imagine a young wife, distracted to desperation by a day or two's delay in the onset of her menstruation, taking twice, three times, nay, even a hundred times, the advertised dose (for are they not "harmless"?), thereby seriously imperilling her life and future health. (1) Apiol has been reported as causing acute nephritis, dysenteric colitis, and sloughing endometritis; the B.P.C. describes it as an irritant to the genito-urinary tract. (2) Pennyroyal is a genito-urinary irritant (B.P.C.). (3) Bitter apple is a "powerful hydragogue cathartic; extremely irritant," and "partly absorbed and excreted by the kidneys" (B.P.C.).

I feel that the public is in need of protection from circularization with such dangerous and misleading advertisements. I shall be grateful if you will give such publicity to the matter as you may deem suitable to the end of bringing to light any similar "anaemia cures."—I am, etc.,

ALISTAIR R. FRENCH, M.R.C.S.

Greenford, Middlesex, Feb. 21st.

Medical Examination at the Police Station

SIR,—In Dr. Redmond Roche's letter in the *Journal* of February 24th (p. 358) with regard to the recent examples of judicial solicitude for persons charged with being under the influence of alcohol while in charge of mechanically propelled vehicles, no reference is made to the distinction between being "under the influence of drink" to such an extent that one is unfit to drive a car, and being "drunk" to such an extent that one is incapable of giving legal consent to medical examination. Sir E. Graham-Little, at a joint meeting of the Pedestrians' Association and the Cyclists' Touring Club, lately held to protest against the appalling increase in road accidents, emphasized the distinction between "drunkenness" and the less easily recognized effects of a small dose of alcohol; if this distinction is not yet recognized by the courts it ought to be.—I am, etc.,

London, N., Feb. 24th.

J. E. J. PALSER,
M.R.C.S., L.R.C.P.

Medico-Legal

THE DUTIES OF THE MEDICAL WITNESS.—I

We print below the first of a series of five articles on the giving of medical evidence in courts of law, contributed by a legal correspondent.

INTRODUCTION

A doctor's calling makes him more liable than any other professional man, except perhaps a policeman, to be called upon to give evidence in a court of law. Some medical men are completely at home in the witness-box; they have for years held official positions, such as those of pathologist or analyst to the Home Office, in which it has been a part of their work to appear as witnesses for the Crown against persons accused of crime. Others, in increasing numbers nowadays, are constantly asked by insurance companies to examine persons who are making a claim for personal injury received in road accidents or at work, and to give evidence of their findings if the claim is pressed in court. The great majority of medical men, however, do not realize that a subpoena is an accident which may happen to a doctor any day without warning, and do not prepare themselves for this difficult and delicate work.

The giving of evidence in judicial proceedings is part of the doctor's work, and likely to become an increasingly important part of it. An action, trial, or inquest is a piece of constructive work in which judge, counsel, and witnesses have definite parts to play, and the medical witness's part is as important as any. It is a definite job with its own rules, and demanding a particular attitude, aptitude, and technique, which must be understood and learnt like those of any other job. The necessity for attending to this potential part of his work becomes obvious when a medical man considers how many possibilities exist which may call him to the witness-box whether he likes it or not. He may be called in to a patient who dies in such circumstances that he cannot see his way to signing the death certificate (for example, where the patient is suffering from injuries which may be due to violence or to an attempt at criminal abortion); he may be called to testify to the mental state of one of his patients years before; he may be summoned to give evidence in divorce or nullity proceedings when he has attended one of the parties to the suit; or he may be called by a workman patient who is claiming compensation, or by the victim of a motor-car collision who is suing the driver for damages.

To one unaccustomed to it the witness-box is a terrifying and unpleasant place, and the ordeal is especially formidable to the medical witness, because he is nearly always asked to go beyond the bare facts and give his opinion and his deductions from the facts. Counsel on the other side, in the interests of his clients, will quite properly do his utmost to discredit the medical witness and to lead him into admissions that may be taken to prove that he is wrong or ignorant. Every doctor is keenly conscious of his dignity and responsibility as a medical man, and it is just these qualities which the opposing counsel is most anxious to assail. If he succeeds, and makes a medical witness look ignorant or ridiculous, the witness is hurt and humiliated, not only in his personal pride, but in his professional honour. The public estimate of the medical profession is influenced very largely by the demeanour of medical men as witnesses. The professional and private conduct of a doctor in the ordinary course of practice is not obvious to the public eye, but in court it is open to the inspection of perhaps a hundred people directly and—in particularly unlucky cases—to thousands of people through the Press. A medical man is therefore acting most unwisely if he neglects to train himself in that attitude of mind which will do him credit in court, and to study the rules which govern this difficult duty.

THE NEED FOR PREPARATION

Few persons other than those concerned in the administration of the law realize how much important work has

to be done behind the scenes on a case of any kind before it is tried in court. A law case is rather like an iceberg: the visible part is very small compared with the vast bulk below the surface. Often the solicitors send to counsel at an early stage a "brief," or statement of the facts, usually accompanied by a file of correspondence, and ask him to advise on what evidence they should call. They then invite to their office, or send a clerk to, the witnesses he specifies, and make a "proof," or written summary, of the evidence which these persons are prepared to give in court. The proof is not on oath. Sometimes they ask a doctor to write them a report instead of making a proof. One of the saddest, but at the same time one of the commonest, events in the life of a lawyer is that a witness fails to "come up to proof"—that is, declines to say in the witness-box what he has said in the solicitor's office and on which great hopes may have been founded. An ordinary witness, possibly of little intelligence and more concerned to further the interests of one side than those of justice, may with a certain difficulty be excused for this shortcoming: a medical witness cannot be so excused. Like the lawyer's, most of his work is done before he goes into court. So important is it that he should prepare his evidence in every detail that in these articles his mental attitude, the language he shall use, and everything to which he should pay attention long before the hearing are dealt with before his actual receipt of the subpoena.

THE EXPERT WITNESS

Legally there are two kinds of witnesses: the ordinary witness, who gives evidence only of fact and whose opinions are not admitted; and the expert witness, whose duty is chiefly to give his opinion. The general rule of evidence is that the court wants to hear facts and not opinions, but a wide exception to this rule is that the opinion of an expert is admitted on matters of science, art, or skill—matters, in short, where special study and experience are necessary. He must have devoted sufficient time and study to the subject to make his evidence trustworthy. The judge decides on the competency of a witness to give evidence: the jury decides how much his evidence is worth when he has given it. Since every medical man has had a scientific training which qualifies him to give opinions, at any rate on an appreciable range of medical subjects, the distinction between the ordinary and the expert witness is not very material for him. Most medical witnesses are called as experts, but even when a medical man is primarily called as a witness to fact, as he often is in the coroner's court, he is nearly always asked to give an opinion on the facts which have been given in evidence, and so is treated for the time as an expert witness.

An expert witness, in order to amplify his opinion, may quote from books of admitted authority. He may read a passage and say, "That represents my view." He may also quote from reports of other cases and transactions which throw light on the facts in issue. For instance, if the witnesses to fact prove that a person has suffered from certain symptoms, the experts may cite cases in which the symptoms were similar, so that the jury may draw the inference that the causes and the symptoms in those cases were probably the causes and the symptoms in the case before them.

In *Rex v. Palmer* (5 E. and B. 1024), the Rugeley murder case, the Crown said that Cook, the dead man, had been poisoned by Palmer, and called medical experts to give evidence that the circumstances of his death pointed to poisoning by strychnine. They were not present at the death and could find few traces of poison in the corpse, but they quoted three other cases of persons who had been undoubtedly poisoned by strychnine, and showed that the deaths of these persons resembled that of Cook in almost every particular. The court admitted this evidence and Palmer was convicted.

Nevertheless, a medical man cannot merely read a book in the witness-box simply as evidence that the subject-matter is as stated—that is, as a substitute for the direct evidence of the author. When the question to be decided is whether another medical man has treated a particular case in a negligent manner, a witness cannot read from a medical book to show what treatment would have been

proper, though he may read a description of treatment and say, "I consider that to be the proper treatment."

In order to avoid an undignified collapse, a medical man who is to be called as an expert should not only take all pains to make himself familiar with the matters on which he is to speak, but should also by an effort of mind put himself in the position of hostile counsel, who will be anxious to cast disbelief and ridicule upon his evidence. Sir William Willcox¹ suggests that the witness should seriously cross-examine himself on every aspect of the question, and some writers recommend that he should seek out an argumentative medical friend and invite him to pull his evidence to pieces. He ought not to find this advice very difficult to follow. When he has found the weak points in his evidence, he should at once make them clear to the solicitors who are calling him. Even if the medical man is being called merely as a witness to fact, he will probably be treated as an expert (unpaid), and plied with questions on the general significance of the facts, involving hypothesis and probability. He should aim at knowing as much as a man in his particular kind of practice ought to know, but he need not go outside it—and, indeed, he will be very unwise if he does.

MEDICAL REPORTS

In many cases an expert witness, a considerable time before the hearing, is asked to furnish a report of the matters with which he is concerned. He should send this report to the solicitors of the party calling him, and should be very careful to put nothing into it which he cannot substantiate in the witness-box. Sir William Willcox¹ tells of a famous murder trial in which the accused pleaded that he had been insane at the time of the murder. One of the medical witnesses, a mental expert, had given a very strong report saying that the prisoner was sane. When he saw an array of distinguished mental experts going into the witness-box and saying exactly the opposite, he felt weaker and weaker, and at last he said to the counsel for the Crown, "I am afraid I cannot say in the witness-box everything that I have said in my report." This put prosecuting counsel in rather an awkward position, and, needless to say, that expert was not called.

Sir John Collie,² a witness of vast experience in insurance cases, advises doctors to couch their reports in the most definite language, the simpler and less technical the better, any doubts being clearly stated. He adds a warning that, if the report is to contain anything very condemnatory—by which he probably means, for example, an expression of the doctor's opinion that a certain patient is malingering or behaving fraudulently—the doctor should write the report personally and not dictate it to a secretary. This precaution is advised to protect the doctor against a subsequent action for libel on the ground that the defamatory matter was "published" to a person in circumstances not protected by qualified privilege.³ Although the doctor may write anything he sees fit, so long as it is true and he writes it in good faith, to persons entitled by their interest in the matter to receive his report, the privilege does not cover the defamatory matter if it is published to some other person. If the doctor prepares the report with his own hand and writes the word "confidential" on the top and on the envelope, he is secure, and if the report is afterwards seen by some unauthorized person, the publication will be accidental and the doctor will not be open to an action.

When a coroner proposes to hold an inquest, and it appears to him that the deceased was attended by a qualified doctor, he can summon the doctor as a witness. If the deceased was not attended by a doctor, the coroner can summon any doctor in practice near by to give evidence how the deceased came to his death. He can also, either in his summons or at any later time until the inquest, direct the medical man to make a post-mortem examination. Similarly, if the coroner thinks that a post-mortem examination might make an inquest unnecessary,

he can direct any doctor whom he could summon as a medical witness to make such examination and report in writing. The doctor must obey the summons. Moreover, at any time after he has decided to hold an inquest, the coroner may request any qualified doctor to make a post-mortem examination, or do a special analysis or test, or make any other examination which the coroner thinks ought to be made. The doctor need not comply with the request, but if he does, and is summoned as a witness, he may be asked his opinion on any matter arising out of the examination and on the cause of death. If the coroner thinks that a necropsy will make an inquest unnecessary, he may request any doctor whom he could not summon as a witness to carry it out, and the doctor may consent or not as he pleases.

The general practitioner will do well not to forget that he may at any moment find himself called upon to perform a necropsy and make a report. If he is unaccustomed to the work he should read what Taylor and other well-known writers on medical jurisprudence have to say about it. He will, of course, use the greatest care in performing the examination and in writing his report, and bear in mind the possibility that he may have to undergo cross-examination at the inquest by a barrister instructed to support some contradictory view on the cause of death. He should use clear, simple language, and write nothing which he is not prepared to stand by in public.

(To be continued)

MURDER CHARGE AGAINST DOCTOR DISMISSED.

Dr. John Blakely was charged on February 12th at Sheffield with the murder of an unemployed waitress, who was found in a state of collapse near her home and died the same night from septicaemia following an abortion. After a speech for the defence at the adjourned hearing on February 21st the Sheffield magistrates dismissed the charges both of murder and of supplying a drug to the deceased girl knowing it to be intended for unlawful use. The presiding magistrate said that the evidence was so weak that no jury would convict.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Faculty Board of Medicine has appointed Dr. W. L. H. Duckworth, Dr. A. E. Barclay, Dr. E. D. Adrian, Dr. A. N. Drury, and Dr. Eric Holmes to be members of the Degree Committee of that Faculty until January 31st, 1936.

Under the will of Mr. A. Marmaduke Sheild, M.B., F.R.C.S., formerly of Downing College and surgeon to St. George's Hospital, who died in 1922, provision was made for the founding of a scholarship in human anatomy of the annual value of £100. Regulations for the establishment of this Marmaduke Sheild Scholarship have now been drawn up by the Faculty Board of Medicine and will in due course come before the Senate for approval, the Financial Board and General Board offering no objection.

A bequest of £7,166 for the advancement of biological research in the aetiology and treatment of disease has been made to the Master and Fellows of Gonville and Caius College, under the will of Dr. Charles Percy Handson of Bromley, Kent.

At a congregation held on February 22nd the following medical degrees were conferred:

M.B., B.Chir.—C. W. Walker, D. W. Smithers, L. T. Bond.
M.B.—A. R. R. Le Fleming.
B.Chir.—W. I. Bain.

UNIVERSITY OF LONDON

At the meeting of the Senate on February 21st, with the vice-chancellor, Professor L. N. G. Filon, F.R.S., in the chair, Dr. R. J. Lythgoe was appointed to the University Readership in the Physiology of the Sense Organs (University College, as from October 1st, 1933).

The William Julius Mickle Fellowship for 1934 was awarded to Miss Lucy Wills, M.B., B.S.

The title of "Fellow of University College, London" was conferred on Dr. A. S. Parkes, F.R.S., a member of the staff of the National Institute for Medical Research, Mount Vernon, Hampstead, formerly Sharpey Scholar and honorary lecturer in physiology at University College. The title of "Honorary Fellow of University College, London" was conferred on Emeritus Professor Karl Pearson, F.R.S.

¹ *Trans. Med.-Leg. Soc.*, 1931, xxiv, 102.

² *Workmen's Compensation*, 1931, Edward Arnold, p. 140.

³ *British Medical Journal*, 1933, i, 589.

Obituary

J. F. DOBSON, M.S., F.R.C.S.

Consulting Surgeon, General Infirmary, Leeds

Mr. J. F. Dobson, the well-known Leeds surgeon, died on February 19th at the age of 60, after an illness of fluctuating severity for the preceding twelve months. He came of medical stock, his father, the late Joseph Dobson, M.D.Lond., having been one of the oldest and most respected practitioners of Leeds, predeceasing his son by a few years only.

Joseph Faulkner Dobson was medically educated at the University of Leeds (the Yorkshire College), and after qualifying in 1897 held post-graduate resident posts at the Leeds General Infirmary.



He was appointed assistant surgeon in 1905, full surgeon in 1913, and consulting surgeon in 1933. He was also consulting surgeon to the Batley and Ilkley Hospitals. He obtained the M.S.Lond. degree and the F.R.C.S.Eng. diploma in 1901, and delivered the Arris and Gale Lectures before the Royal College of Surgeons in 1907 and again in 1922. On the retirement of Lord Moynihan Mr. Dobson was appointed to the chair of

surgery in Leeds, and was honoured by the University with an emeritus professorship on the completion of his tenure of office. As a lecturer and clinical teacher he was held in great esteem by both junior and post-graduate students. To the former he was always a sympathetic friend, and to the latter he was a rich source of inspiration, both in surgical practice and in research. As head of the department of surgery in the University he felt a compulsion to explore systematically and directly the general range of the surgical theory and practice of his time, and was constant in his study-visits to almost every great surgical centre. He had in this respect a great sense of values, and sought always to incorporate the really usefully new into his own practice and the teaching of his own school.

As surgeon to the Leeds General Infirmary Mr. Dobson performed great and valuable work. Though his main work was probably in abdominal surgery, he was fully and efficiently an "all-round" surgeon, and always progressive. In later years he became a leading exponent of genito-urinary surgery, and it had always been his ambition to create a special department in this branch in Leeds. His war service was interrupted by the prolonged and serious cardiac illness which was later responsible for his premature death. At the opening of the war he was in charge, as administrator, of the 2nd Northern General Hospital, and was most resourceful in the difficult task of organization of a service strained to its utmost in the early months of its activities. After his recovery he went abroad to take charge of the surgical division of the General Hospital at St. Omer.

Mr. Dobson made many contributions to medical literature, but, as might have been expected, he deprecated overmuch writing. When one comes to appraise his work it is difficult to decide where to lay the greatest emphasis—on the surgeon, the teacher, or the man. He was a great surgeon, and, as a pupil of great surgeons, carried on their work with a skill and quality which was no less than theirs. Indeed, as an all-round surgeon he was

probably unexcelled. As a diagnostician he was eminently sound, and he was never to be cajoled into operating if he did not feel that it was the only justifiable course. Usually he was right. His teaching influence probably found its greatest response among the junior surgeons of the Leeds school, all of whom would bear testimony to the value of his influence—in technical dexterity, in inspiration for research, and in surgical honesty. Honesty, indeed, was the outstanding quality of the man, combined with a fearless courage. This sometimes led to misunderstanding by those who did not know him well enough to see beyond an outspokenness, a brusquerie of manner, that were the defects—if defects they were—of his qualities. Vision, combined with unswerving rectitude, was the keynote of his practice, his teaching, and the man himself. It kept him in the van of progress; it compelled universal trust and confidence, and leaves colleagues and friends to mourn the loss of "Joe," as he was affectionately called by most of those with whom he worked. Behind his forcefulness lay a simple and most kindly disposition, as those who sought him in trouble learned to know so well.

He was chairman of the Faculty of the Leeds General Infirmary for some years, and his constructive and administrative work for that institution was of the greatest value, though not always finding immediate acceptance. His contribution to this service of the hospital has been much missed, even during this last year of illness. He was elected chairman of the Leeds Division of the British Medical Association in 1931, and in the same year was a vice-president of the Section of Surgery at the Eastbourne Annual Meeting.

He was a keen fisherman, and loved his gun. He was a Freemason of standing in the craft, having been W.M. of Zetland Lodge. His great sorrow was the loss of an only daughter in her school days. He leaves a widow.

[The photograph reproduced is by Brittenden, Leeds.]

PHILIP G. LEE, L.R.C.P. and S.I.

Surgeon, Victoria Hospital, Cork

Dr. Philip G. Lee died recently at his residence, 10, Patrick's Hill, Cork, after an illness which lasted over two months. He was a member of a very old Cork family which had many connexions with the Church; his grandfather, the Rev. Giles Lee, was principal of the old Diocesan School, Patrick's Hill. Dr. Lee was a student of Queen's College, Cork, when it was a constituent college of the late Queen's University and the Royal University, Ireland. He became a licentiate of the Royal Colleges of Surgeons and Physicians in 1888. For many years he was surgeon at the Victoria Hospital, Cork; previously he was clinical assistant at the Cork Eye, Ear, and Throat Hospital, visiting physician to the Cork Maternity Hospital, and physician to the Cork Sailors' Home and Lapps' Charity. He was a member of the Irish Committee of the British Medical Association, and from 1903 to 1923 was honorary secretary of the Munster Branch. In 1927, when Dr. Alfred Cox made a tour of the Branches in Ireland, Dr. Lee contributed to the success and pleasure of his visit, and among the many places of historical and antiquarian interest which Dr. Cox visited with him was Blarney Castle. Dr. Lee was a highly cultured man, and although he had a large practice he devoted considerable time to local historical and antiquarian research. He was one of the first members of the Cork Historical and Archaeological Society, and for several years was honorary secretary and editor of its journal. He was also a member of the Royal Irish Academy and a Fellow of the Royal Society of Antiquaries of Ireland. By the death of Dr. Lee the profession in

Ireland has lost a loyal member, whose character and standard of conduct were an example to the younger generation of medical men. His widow and family have the deepest sympathy of the profession in their bereavement.

We regret to announce the death, on February 8th, at the age of 81, of Dr. WALTER MERCER of Barnet, who had practised in the district for fifty years. After graduating M.B., C.M. at Edinburgh in 1881, he had further hospital experience in Vienna. He had been a member of the British Medical Association since 1890. He first went to Barnet in 1883 as an assistant to Dr. Charles Carter, was later taken into partnership, and shortly afterwards succeeded to the practice. A man of wide sympathies and of charming personality, Dr. Mercer was looked upon as a friend by all his patients. Always keenly interested in education, he was largely instrumental in bringing about the establishment, in 1889, of the Hyde Institute, of which he was chairman of the trustees, and which, through his co-operation and advice, was amalgamated a few years ago with the Barnet branch of the county library scheme. At the time of his death Dr. Mercer was chairman of the Library Committee. He was consulting surgeon to the Barnet Victoria Cottage Hospital, and to the Pawling Home-Hospital for Children at Hadley. When a young man he was well known as an Alpine climber, his holidays in Switzerland being spent in that way, or else in walking in the North of England. The funeral took place at Monken Hadley Church on February 12th.

It is with regret that we announce the sudden death, on February 13th, of Mr. ALBERT EDWARD TUNSTALL of Thornton, Bradford. He was working in his surgery when he had a sudden and unexpected attack of cardiac failure, which proved fatal in a few minutes. He received his medical education in Glasgow, and qualified L.R.C.P., L.R.C.S.Ed., L.F.P.S.Glas. in 1885. After acting for a period as an assistant he settled in practice in Thornton, Bradford, and for over forty years carried on a busy general practice there. He was at one time medical officer of health for Thornton, Clayton, and Denholme urban district councils. In recent years the two former areas were absorbed into Bradford, but he still held the post at Denholme at the time of his death. During the Great War he was on the emergency staff of the Bradford War Hospital and did valuable work there. He was always a very keen member of the British Medical Association, and was chairman of the Bradford Division during the period of the war; he also acted as one of the Representatives of the same Division at the Annual Representative Meeting for twelve years. He was for some years a member of the Local Medical and Panel Committee. Tunstall was universally loved, both by his patients and by his professional brethren. He was a very reliable man, with a genial smile, and possessed common sense and sound judgement. He will be greatly missed by all those who knew him, and also by Thornton Parish Church, of which he was a very active member. He leaves a widow, one son, and three daughters.

The following well-known foreign medical men have recently died: Dr. PIERRE BAZY, surgeon to the Paris hospitals, member of the Académie de Médecine and Académie des Sciences, and Commander of the Legion of Honour; Professor F. C. C. HENSEN, the eminent anatomist and palaeontologist of Copenhagen, aged 63; Professor RICHARD KOCKEL, director of the Institute for Forensic Medicine at Leipzig, aged 69; Dr. LEROY CRUMMER, clinical professor of medical history and bibliography, University of California Medical School, and author of *Clinical Features of Heart Disease*, aged 61; Dr. HENRYK HALBAN, professor of neurology and psychiatry, and rector of the University of Lwow, Poland, aged 63; and Professor ARTHUR ROUSSEAU, dean of the medical faculty of Quebec, and corresponding member of the Académie de Médecine.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week resumed the committee stage of the Unemployment Bill. This was amended to exempt the first 20s. of an ex-service man's wound or disability pension for the calculation of means, and in other ways. Debate also arose on the Russian Trade Agreement.

The House of Lords passed the Contraceptives Bill through committee.

The Birmingham United Hospitals Bill and the Bill relating to the South Devon and East Cornwall Hospital, the Plymouth Royal Albert Hospital, and the Devonport and Central Hospital, Plymouth, both await second reading in the House of Lords. The Standing Orders have been complied with in each case.

The North Buckinghamshire Joint Hospital District Bill was read a second time by the House of Lords on February 21st. The Wirral Joint Hospital District Bill passed the report stage in the House of Commons on February 22nd, and was read a third time and passed by the Commons on February 23rd.

The Diseases of Fish Bill was read a second time in the House of Lords on February 21st. Earl De La Warr explained that it dealt with furunculosis, a disease which first occurred among trout in England about 1907. It had occurred later among salmon in many Scottish and some English and Welsh rivers. The Bill was based on the recommendations of a committee set up in 1923 under Professor Mackie of Edinburgh. It took powers to prohibit the importation of live salmon and trout into Great Britain. The disease was endemic in many of the fish farms on the Continent. Live eggs and other live freshwater fish would be admitted under licence. The Bill also gave power to take samples of live fish and order the destruction of infected stocks. The powers could be extended by Order in Council to any other infectious diseases of fish which might damage the inland fisheries of Great Britain.

A Vote on Account issued as a Parliamentary paper on February 23rd shows that the total Estimate for the Ministry of Health in the year 1934-5 is £19,639,924. For the Board of Control the Estimate is £140,747, for the Scottish Department of Health £2,982,420, and for the Scottish Board of Control £16,177. For Universities and Colleges in Great Britain the vote is £1,920,000. These Estimates differ little from the net adjusted Estimates for 1933-4 in the same Departments. The Ministry of Health, Scottish Department of Health, and grants for Universities and Colleges show respectively increases approximating to £439,500, £150,200, and £30,000.

On February 26th Sir SAMUEL HOARE presented the Indian Pay (Temporary Abatements) Bill, which extends the period in respect of which abatements from pay may be made under the Indian Pay (Temporary Abatements) Act, 1931.

On February 26th Sir ROBERT GOWER presented the Coal Mines (Protection of Animals) Bill, which proposes to amend the provisions of the Coal Mines Act, 1911, relating to the care and protection of horses and other animals used in mines.

In the House of Lords, on February 27th, the Ministry of Health Provisional Order Wirral Joint Hospital District Bill was read a first time.

In the House of Lords, on February 27th, the Diseases of Fish Bill passed through committee, with amendments.

A meeting of the Parliamentary Medical Committee has been arranged for March 7th in order that Lord Moynihan shall speak on road accidents and Lord Dawson on the Contraceptives Bill.

Contraceptives Bill in Committee

In the House of Lords, on February 27th, the Contraceptives Bill was considered in committee. On Clause 1 (restriction of sale, display, and advertisement of contraceptives), Lord DAWSON of PENN moved an amendment lifting the restriction on the display of contraceptives in, on, or outside any shop. He said contraceptives themselves were extremely dull-looking things, and would not attract the attention of anybody. It was always undesirable to restrict, unless there was a good case for restricting, and he did not think the case for restriction here was adequate. It had, further, been pointed out to him that in the less populous districts many married women were shy of asking for contraceptives, but that if the articles were shown in the windows of shops they would go in and ask for "what was in the window." He wished to make it clear, as introducer of the Bill, that though the chief object was to protect immature youth by doing away with obtrusive sale and display, he was equally anxious to do nothing which would put any unreasonable, or, indeed, increased resistance in the way of contraceptives being made available to all sections of the married population.

Lord SNELL said there were possibilities of chemists engaged in legitimate business being harried by prosecution in borderline cases. There were instruments on sale in chemists' shops which were, in their nature, of a sanitary and necessary character, and which might also be contraceptives. The clause seemed ill defined, even with the amendment. Lord DAWSON, replying, said he had made it his business to find out the views of the pharmaceutical chemists. They were a very well organized body, and within the last six months they had had conferred on them powers which enabled them to take disciplinary action with regard to their members. The chemists' shops were well controlled now, and would be under still better control in future. He had had it from the organization of the pharmaceutical chemists that there was nothing in this amendment, or the others following it, of which they disapproved. It was the pictures and written descriptions which had a bad influence. The clause, as amended, would permit of nothing more than a label or simple notice.

The amendment was carried by 38 votes to 20.

Lord Dawson moved an amendment bringing illuminated signs advertising contraceptives under the restrictions of the paragraph, and this was agreed to. At a later stage he moved to add to paragraph (d) the following:

"Provided that nothing in the foregoing provisions shall render unlawful (i) the sale or offer for sale of any contraceptive by a qualified medical practitioner, registered nurse, or certified midwife, to a person or to the husband or wife of a person whom the practitioner, nurse, or midwife is attending professionally; (ii) the sending or delivery to any person of any book, newspaper, or magazine containing advertisements of contraceptives, unless the book, newspaper, or magazine is published wholly or mainly for the purpose of advertising contraceptives."

This amendment also was agreed to.

The EARL of IDDESLEIGH moved an amendment to increase the age from 18 to 21 years of any unmarried person in regard to whom it would be an offence to send or deliver any circular, advertisement, or any other document (for the purpose of any trade or business) containing information relating to contraceptives. The EARL of FEVERSHAM, on behalf of the Home Office, said it would not make much difference in the administration of the law whether the age was 18 or 21. Lord Dawson said that when he was trying to frame the Bill he found more difficulty over this subsection than any other. Masses of the people matured more quickly than in former days, and married early. One did not wish to keep propaganda from a youth or girl engaged to be married and wanting to marry. If anybody wished to put the age at 19, he did not mind, but he was sure that 21 would be wrong. The result would be to drive the whole thing underground, which they wanted to avoid.

The amendment was negatived.

Lord MERRIVALE moved a new clause making the supply of contraceptives to an unmarried person under 21 a misdemeanour punishable by fine or imprisonment. Lord BANNURRY asked how a shopkeeper was to know whether a young woman was married or what her age was. Lord Dawson said that he thought Lord Merrivale would defeat

his object by the amendment. They wanted on the one hand to remove the slur from contraception and get it into right channels, and on the other hand to prevent what was illicit. Some of these contraceptives were used not only for the control of conception but for the prevention of venereal disease. Did they want an increase in the illegitimate birth rate? They would certainly get it if this clause were inserted. No ecclesiastical authority had ever succeeded in crushing out contraception, and in this particular age they were less likely to be successful than before.

Lord MERRIVALE withdrew his amendment.

On Clause 2 (Interpretation) Lord DAWSON moved two amendments to strengthen the definition of contraceptives in order to prevent their being sold under a guise. As amended the definition read: "Any appliance, instrument, drug, preparation, or thing, designed, prepared, or intended to prevent pregnancy resulting from sexual intercourse between human beings." The amendment was agreed to.

The EARL of IDDESLEIGH moved an amendment to include among the meanings of a "public place" any garage and licensed premises to which the public have or are permitted to have access. Lord Dawson accepted the amendment which was altered to read: "a public garage and licensed premises," and it was agreed to. A further amendment by Lord BERTIE to insert among the "public places" a "place of entertainment" was agreed to.

The Bill as amended passed through committee and was reported to the House.

Osteopaths Bill

In the House of Commons, on February 21st, Mr. BOOTHBY asked leave to bring in the Registration and Regulation of Osteopaths Bill—"to regulate the practice of osteopathy and to prescribe the qualifications of osteopathic practitioners." He said the Bill was to set up a statutory board with the necessary powers and authority to compile a register of qualified osteopaths, and to provide for the admission to that register of persons who followed a prescribed course of study and acquired a prescribed standard of professional competence. It would give the qualified osteopath the right to employ a qualified anaesthetist without the latter falling under the ban of the General Medical Council. Under this Bill osteopaths did not seek inclusion in the medical profession. Many diseases had their origin in maladjustments of the framework of the body, and cures for those diseases could be effected by the skilled osteopath through manipulative therapeutics, which released certain natural forces in the body. These forces, without the aid of drugs or of surgery, brought about cures. He believed its failures to be due to quacks practising osteopathy under no form of regulation. The Bill was to eliminate these quacks. Osteopaths asked to be recognized for their own regulation and for the protection of the British public. The practice of osteopathy in this country had now reached such dimensions that the House of Commons ought either to prohibit it or to allow osteopaths to submit themselves to proper regulation in the interests of the public.

The Bill was read a first time without opposition, and the text has since been issued. It is identical with that of the Bill introduced in 1933.

Purer Milk Supply: A Government Policy

Replying to Mr. Lambert, on February 22nd, Dr. ELLIOT said that the Government would be prepared to contribute from the Exchequer on a pound for pound basis to a milk publicity fund for a period of two years, up to a limit of £500,000 in either year, according to the amount contributed by the Milk Marketing Boards. The grant would be contingent on the submission of an approved programme containing provision for the supply of milk to schools at reduced rates. Milk surplus to present liquid requirements was estimated to be little short of 20 per cent. of the total volume of milk sold by contract this winter, and was likely to be about 40 per cent. in the spring and summer. An expansion of the liquid milk consumption would be of the greatest benefit from the public health point of view and would alleviate the difficulty of "surplus milk." This increase in consumption must be based on public confidence

as to the security of the supply. To launch a campaign to secure a purer milk supply the Government would provide a sum not exceeding £750,000, spread over the next four years. The requisite legislation would be introduced at an early date. Dr. Elliot said it was common knowledge that the purity of the milk supply in the United Kingdom was not so great as all would desire. The £750,000 was to be devoted entirely to cleaning up the herds and securing a pure milk supply.

Durham University Royal Commission

Mr. CHAMBERLAIN announced, on February 22nd, that Lord Moyne had consented to be chairman of the Royal Commission to inquire into the organization of the University of Durham and its constituent colleges. He hoped soon to announce the names of the other Commissioners.

Water Supplies and the Drought

The second reading of the Rural Water Supplies Bill was moved in the House of Commons on February 22nd by Sir HILTON YOUNG, who said that the drought of 1933 was not so bad as that of 1921, but it had gone on longer. In the towns water reserves were half what they would normally be in February, but there had been no exceptional difficulty in getting regular supplies, and the position was secure for the immediate future. If there was a good rainfall during March the situation would be secure, apart from minor inconveniences. If not, the authorities must prepare for exceptional measures, such as the reduction of compensation water, the removal of restrictions on the amount of water taken from various sources, the emergency development of new sources, the restriction of the use of water, and measures to enable one authority to get water when another authority had a surplus. He had addressed a circular to all water undertakings enjoining immediate adoption of such emergency measures where necessary. The position of the rural authorities was more anxious and difficult. The most important measure which could be taken in rural areas was purification of supplies otherwise not available because they were impure. The modern process of purification was easily applied, and required little technical knowledge. By it a stream or a well hitherto not quite safe for use could be available in an emergency with safety to the public health. The last resort in rural areas was organized house-to-house distribution. He was asking all the rural district councils to report what emergency measures they had taken to relieve water shortage, and what further action could be taken. The engineering inspectors of the Ministry of Health would help rural areas to create emergency measures, and, if necessary, the expert staff of the Ministry would be increased. The Bill proposed to aid permanent measures for improving water supplies in rural areas. In some places supplies could be made available by tapping or linking up with neighbouring supplies. Practical men did not accept the idea of the distribution of water all over the country from central sources of supply. Water could often be got locally by driving a bore hole and by small expenditure on a reservoir and a pump. For encouraging such and similar rural works the Bill would provide the Ministry of Health with £1,000,000.

Mr. GREENWOOD moved the rejection of the Bill in a reasoned amendment, which called for a national co-ordinated scheme. He said the London area was never going to lack water because its supplies were in a local "grid," the area was large and was governed by an executive authority—the Metropolitan Water Board. Sir Hilton Young should sweep away all the obsolete Acts about compensation water, and give the regional water committees complete and final power. Sheffield had been able, in 1929, to provide Barnsley with 2,000,000 gallons a day, but it had to give away 5,000,000 gallons a day in compensation water. Mr. TURTON said that land drainage, water supply, and sewerage schemes should go together. To initiate a water supply scheme in an area with a faulty sewerage system was to risk a tragedy such as that associated two years ago with Malton. Sir HENRY CAUTLEY agreed that when a water supply was brought into a village a sewerage scheme must be provided within a year or two years. Consumption of water rose from two or three

gallons to twenty or twenty-five gallons, the cesspools were inadequate, and the village was likely to be attacked by disease. Mr. CHORLTON said the Minister had not taken account of the great increase in consumption. In Scotland some towns used over 100 gallons per head per day. In England the amount was considerably less. The Metropolitan Water Board supplied about thirty gallons per day. To remove the limitations on the amount of water taken from rivers would require legislation. Improvement of water supply was one of the best ways of improving milk supplies. Sir ARCHIBALD SINCLAIR said that in areas of the Highlands and other rural districts of Scotland ordinary supplies were inferior and became dangerously bad in an emergency like last summer. Lord SCONE spoke of the great and increasing strain thrown on rural water supplies by the provision of houses fitted with modern conveniences and by the conversion of older houses. Mr. SKELTON announced that in Scotland where assistance was needed in an area which was not a special water district such a district would be formed. Mr. EASTWOOD refuted allegations of a dangerous shortage in Kettering, and said that that town had supplies for eight or ten weeks.

Mr. SHAKESPEARE, replying to the debate, said that the Minister, in estimating the burden on a locality and its ability to pay for a water supply, would take into account the extra burden caused by the sewerage scheme necessitated by a water scheme. Of 102 large water undertakings, eighty-seven reported that "the supply was satisfactory." Glossop, Buxton, and Stowmarket denied press reports of acute shortage.

The Bill was read a second time by 188 to 36.

Sir HILTON YOUNG told Sir Gifford Fox, on February 22nd, that he had been informed of shortage of water supplies due to drought in parts of the rural districts of Banbury, Bullington, Chipping Norton, and Witney. Schemes for the permanent improvement of the water supplies in these areas were under the consideration of the four councils. A scheme for four parishes in the Ploughley Rural District had been approved.

Stone and Coal Dust in Mines.—Mr. ERNEST BROWN stated, on February 21st, that the measures taken to prevent the use on underground roadways in collieries of stone dust, which would be injurious to health, were based on the character of the dust itself rather than of the mixed dusts on the roadways. In 1932, 3,664 samples of dust on underground roadways were taken by colliery inspectors, and 87 per cent. proved to contain 50 per cent. or more of incombustible matter. The amount of coal dust necessary to propagate an explosion in a mine varied. The finest dusts of the most inflammable coals were the most explosive. The least quantity that would propagate a flame was less than one-tenth of an ounce per cubic foot of air. Explosions had been produced experimentally with as much as two ounces of such coal dust per cubic foot of air.

Housing.—Replying to Mr. Stourton, on February 22nd, Sir HILTON YOUNG said that it had never been possible to arrive at a trustworthy arithmetical estimate of the number of Class C houses required in urban and rural areas in order to provide every working-class family with reasonable housing accommodation, though some information of the kind was contained in the census forms. Replying to Mr. Levy, he said he was unaware that any of these houses were being built without provision for water supply and without adequate sanitary arrangements.

Police Surgeon's Examination of Accused Man.—Sir JOHN GILMOUR told Mr. Isaac Foot, on February 22nd, that he had seen press reports of the remarks of Mr. Justice Swift at the Liverpool Assizes, when, upon the trial of a man charged with manslaughter, who was alleged to have been under the influence of drink and unfit to drive a car, the judge questioned the right of the police to call in the police surgeon to examine the accused man. He could not say what action, if any, would be called for on his part until he had ascertained the precise circumstances and considered them carefully.

Notes in Brief

At Broadmoor Criminal Lunatic Asylum are 204 patients who have been detained there more than twenty years.

Medical News

The following special discussions have been arranged at the Royal Society of Medicine (1, Wimpole Street, W.): On Wednesday, March 7th, at 8.30 p.m., on haematemesis, by a joint meeting of the Sections of Surgery and Medicine; and on Thursday, March 15th, at 8.30 p.m., by the Sections of Neurology and Disease in Children, on the nervous complications of the acute fevers and exanthemata.

The twenty-fourth annual general meeting of the Ladies' Guild of the Royal Medical Benevolent Fund will be held at British Medical Association House, Tavistock Square, W.C., on Wednesday, March 7th, at 3 p.m., with Lady Cheatle in the chair. Speaker, Dame Madge Kendal, followed by a reception.

The annual meeting of members of the Cremation Society will be held at 23, Nottingham Place, W., on Thursday, March 8th, at 3.30 p.m.

An address entitled "Science, Philosophy, and Religion" will be given before the British Institute of Philosophy by the Dean of St. Paul's, at University College, Gower Street, W.C., on Tuesday, March 13th, at 8.15 p.m. Cards of admission can be obtained from the Director of Studies, at University Hall, 14, Gordon Square, W.C.1.

A lecture on the theory and practice of contraception will be given to medical students on Tuesday, March 13th, at 6 p.m., at the Walworth Women's Welfare Centre, 153a, East Street, S.E.17. Practical demonstrations will be given at 6 and 7 p.m. on March 20th and 27th. Students attending a demonstration are requested to bring rubber gloves with them. The lectures are open to all those who have completed their gynaecological course. Tickets (2s. 6d.) admitting to the lecture are to be applied for in advance.

Part II of the series of lectures and practical courses of instruction for the diploma in psychological medicine at the Maudsley Hospital commenced on February 26th and will be continued during March, April, and May. The fee for the whole of Part II is £10 10s. Inquiries as to lectures, fees, etc., should be addressed to Dr. F. Golla, honorary director of the medical school, Maudsley Hospital, Denmark Hill, S.E.5.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the eighth lecture-demonstration on anaemia, by Dr. Clark-Kennedy, at 11, Chandos Street, W., will be given on March 6th, at 2.30 p.m. The subject on March 13th will be iron and liver. A week-end course on clinical surgery will be given at the Royal Albert Dock Hospital on March 10th and 11th, occupying the whole of each day. A demonstration of neurological cases will be given by Dr. L. R. Yealland, at the National Temperance Hospital, Hampstead Road, on March 10th, at 3 p.m., and a whole-day course in orthopaedics, at the Royal National Orthopaedic Hospital, from March 12th to 24th. Other forthcoming courses include a week-end course in chest diseases at the Brompton Hospital, March 24th and 25th; infants' diseases at the Infants Hospital, April 9th to 21st; proctology at St. Mark's Hospital, April 9th to 14th; rheumatism at the British Red Cross Clinic, on Tuesday and Thursday evenings, April 10th to 26th. Detailed syllabuses of all courses may be obtained from the Fellowship.

The fifty-eighth congress of the German Society of Surgery will be held at the Langenbeck-Virchow House, Berlin, from April 4th to 7th, under the presidency of Kischner of Tübingen, when the subjects for discussion will be the treatment of pyogenic infections and their sequelae, introduced by Lexer, and the surgery of gastrointestinal cancer, introduced by Goetze.

The seventh congress of the German Society for Investigation of the Circulation will be held at Bad Kissingen on April 16th and 17th, when the subject for discussion will be thrombosis and embolism, introduced by Geh. Rat Professors L. Aschoff of Freiburg, P. Morawitz of

Leipzig, and L. Nurnberger of Halle. Further information can be obtained from the secretary, Professor E. Koch, Bad Nauheim.

The second conference of the Alliance Scientifique et Médicale Française was held at Bordeaux on February 3rd, and illustrated the closeness of the relation between medicine and biology. After showing some films, including two illustrating the laws of reflexes and the clinical evolution and treatment of syphilis, Dr. Clauoué urged the importance of attention being devoted to hospital accountancy in connexion with public assistance cases more particularly. The next conference has been fixed for April 7th at Bordeaux. Further information may be obtained from Dr. Clauoué, 39, rue Scheffer, Paris, XVIe.

The Royal Society of Medicine announces that the tenure of the William Gibson Research Scholarship has been extended to Dr. Audrey E. Russell, the present holder, for the third year; and that the fourth award of the Nichols Prize has been divided equally between the essays submitted by Dr. J. Smith of Aberdeen and Dr. Ronald Hare of Queen Charlotte's Maternity Hospital, London.

About 150 medical graduates accepted invitations from the University of London Medical Graduates Society for the At Home held at B.M.A. House, Tavistock Square, by courtesy of the British Medical Association. After tea the company was greatly entertained by the interesting film on antimalarial work in the Empire, demonstrated by Major Lockwood Stevens; thereafter parties were conducted over the building and found great interest, especially in the setting up of the *British Medical Journal*. Particulars as to membership of the society can be obtained from the honorary secretaries, 11, Chandos Street, W.1.

Geh. Med.-Rat Professor M. Borst has been nominated president of the German Committee of the Campaign against Cancer.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, *British Medical Journal*, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Treatment of Actinomycosis

Dr. P. B. PINKERTON (West Kirby, Cheshire) writes: I would be grateful for any information regarding any new developments in the treatment of actinomycosis. I have a severe case at present which is not going well. Deep x-ray therapy, iodine (Lugol's solution) by the mouth, and iodine intravenously have not proved of much benefit. Is there any truth in the statement, which I heard from French sources, that there are cases in which iodine is definitely harmful?

Chronic Gonococcal Infection

Dr. J. SANDISON CRABBE (Birmingham) writes in answer to "Perplexed": This is no doubt a case of chronic prostatic infection. I have cleared up more than a dozen cases with diathermy to the prostate, after Cumberbatch's method. Some of these have been of fifteen years' standing. "Perplexed" should read Cumberbatch and Robinson's book *Treatment of Gonococcal Infection by Diathermy*.

Pruritus Ani

"M. O." writes: The discussion in your columns prompts me to call attention to the fact that many people suffer from a minor form of this complaint, which is undoubtedly due to an incorrect diet, disappears on correction of this, and reappears on resumption of the causative foods. The latter is especially prone to occur during a temporary absence from home. I have not been able to satisfy myself fully whether this is merely an avoidance of a constipating diet or whether there is some other factor—for example, the relative acidity or alkalinity of the faeces or some change in their bacterial composition dependent on the diet. I strongly suspect that it is not merely a matter of constipation, but would like enlightenment on this point if any of your readers are in a position to give it. In my personal experience bread, and especially new bread, is the most potent cause of pruritus of this kind, and I have found that the substitution of potatoes and the inclusion of fresh fruit and vegetables brings about a complete disappearance of the discomfort. An excess of meat also seems to produce pruritus, but not to the same extent as bread and puddings, etc., made of flour. The substitution of wholemeal bread does not, I think, make any difference.

Calot's Solution Formula

"S. A. D. M." writes with reference to "G. B.'s" inquiry: The solution consists of the following: guaiacol, 1 gram; creosote, 5 grams; ether, 30 c.cm.; iodoform, 10 grams; olive oil, 70 c.cm. This formula is that published in the *Medical Journal and Record* (October 4th, 1933). Instructions should be given to the chemist that before adding ether the mixture should be gradually heated in olive oil until the iodoform is completely dissolved and the mixture clear. This is the same as in Martindale's *Extra Pharmacopoeia*, except that in it liquid paraffin is used instead of olive oil; most might prefer to use the former.

Income Tax**Deduction for Rental Value**

"J. L." inquires what small book can be recommended dealing with income tax, and what he should deduct for rental value of the house he owns.

** A useful little book is *Income Tax and the Professional Man*, published at 4s. 6d. by Crosby, Lockwood and Son, Stationer's Hall Court, Ludgate Hill, E.C.4. It is difficult to advise on the proportion of rent, or rental value, which should be deducted as a professional expense; so much depends on the ratio of professional to private use. As a rough guide we may perhaps say that where there are a waiting and a consulting room on the ground floor, and a garage used mainly for professional purposes, a common allowance would be one-half; where the professional use is less than normal possibly one-third would be fair. Deductions for rates (and, frequently, lighting and heating costs) would follow the same ratio.

Motor Expenses: Surgery away from Residence

"ROSARINA" uses a car (a) for travelling to his surgery—about a mile from his residence, (b) visiting hospitals as a visiting surgeon, and (c) to a slight extent for visiting patients. Do these count as professional purposes, and should he claim the depreciation allowance?

** Items (b) and (c) are undoubtedly "professional"; (a) is open to argument, and in strictness may be disallowable, but the authorities seldom seem to object where there is a reasonable amount of clear professional use. Depreciation should be claimed, and when the car is renewed a claim for "obsolescence" allowance should be made—that is, for the deduction of the loss on sale less the amount of depreciation allowance received.

New Proprietorship—Cash Basis

"S. W." took over his present practice on January 1st, 1933, but took over no book debts. On a cash basis—which was accepted for his previous practice—his profits for 1933 would be £470, but he is told that "for the first three years he must pay tax on every book debt at full value." The 1933 profits on that basis amount to £798.

** Tax is payable on profits whether they have been received in cash or are still outstanding as debts. "S. W." however, is entitled to value those debts individually, and can claim to deduct, as a "bad debts reserve," the excess of the nominal or gross amount of the debts over their fair value. This applies for three years, after which the Revenue authorities are usually prepared to assume that the cash receipts of the year will approximate close enough to the value of the year's bookings to serve as a reliable index of the gross income of the practice. It is presumed that he is not paying tax on delayed receipts from his former practice.

LETTERS, NOTES, ETC.**Greenstick Fracture in a Male aged 21**

Dr. R. SALISBURY WOODS, F.R.C.S. (Cambridge), writes: I think this case may be of some interest, and I should be glad to hear whether many of your readers have seen similar fractures in an adult. An undergraduate aged 21½ years fell heavily on the point of his right shoulder in tackling another man, who fell on top of him. There was an audible "crack" and he experienced severe pain in the region of the clavicle and went off the field. I saw him that evening, when the clavicle presented an exaggerated bowing and extreme tenderness about the middle, but no swelling of the soft parts. It seemed to me that he must have a greenstick fracture, but I must confess that when I sent him for x-ray examination I felt that my diagnosis might be corrected. However, the skiagram confirmed the diagnosis, there being a definite split in the upper surface, and no solution of continuity of the lower.

British Industries House

The proposal to establish a permanent medical exhibition at British Industries House, Marble Arch, W., referred to on February 17th (p. 294), has met with generous support from manufacturers throughout the kingdom. The whole of the third floor, comprising some 9,000 square feet, has been allocated to the medical section, and this space has been arranged to accommodate 150 exhibitors. Up to the present time inquiries from British manufacturers regarding the allocation of space have been received from eighty-four different firms. We are informed by the chairman of the Advisory Council, Dr. Alfred Cox, that the eighty-four firms comprise: manufacturing chemists, 21; dental, 5; hospital equipment, 7; medico-electric, 3; medicinal foods, 5; opticians, 12; surgical appliances, 9; surgical dressings, 3; surgical instruments, 6; toilet requisites, 4; x-ray apparatus, 2; printers and publishers, 7. The club premises will soon be open, and will be available for the use of visitors in advance of the formal opening of British Industries House. Any doctor, on presentation of his card, will have free access, both to the section and to the club, and the same facilities apply to authorized representatives of nursing homes and similar institutions in this country and overseas.

Broadcasting and Contraceptives

Dr. H. D. BISHOP (medical officer of health for Guernsey) writes under date February 19th: The B.B.C. last week broadcast a résumé of the discussion upon the Bill which Lord Dawson sponsored in the House of Lords, for regulating the sale of contraceptives. This broadcast must have been heard by many thousands of children and adolescents, whose natural curiosity was aroused, and who asked their grown-ups what contraceptives were. Unfortunately nowadays the days of innocence are short enough, and although agreeing that mere ignorance is not always innocence, even the most cynical of us must desire that children should be protected from a premature knowledge of sexual matters until it is necessary that they should be enlightened upon them. I cannot believe that such a broadcast would not be severely condemned by an overwhelming majority of the members of the British Medical Association, and if I be so I venture to hope that its leaders may see fit to inform the B.B.C. that in such matters we have the right to expect something better from it.

Vacancies

Notifications of offices vacant in universities, medical colleges and of vacant resident and other appointments at hospitals will be found at pages 49, 50, 51, 52, 53, and 56 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 84.

THE USES AND DANGERS OF HYPNOTIC DRUGS OTHER THAN ALKALOIDS

BY

SIR WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P.

PHYSICIAN TO ST. MARY'S HOSPITAL

In July, 1913, I had the privilege of opening a discussion at the Annual Meeting of the British Medical Association at Brighton, in the Section of 'Pharmacology and Therapeutics,' on "The Use and Abuse of Hypnotics." Sir Maurice Craig participated with me on that occasion, dealing with the subject from the aspect of psychiatry. It is appropriate that on the present occasion the same subject should be discussed by the Royal Society of Medicine by the Section of Therapeutics and Pharmacology and the Section of Psychiatry at a joint discussion.

Since 1913 the chief advances in our knowledge of hypnotic drugs have been: (1) the discovery and addition to the list of hypnotic drugs of very many new derivatives of the barbituric acid series; (2) the introduction of a number of drugs other than alkaloids for purposes of basal anaesthesia.

A hypnotic drug may be defined as a drug or combination of drugs which produce sleep resembling natural sleep. Insomnia is due to many causes, such as pain; nervous causes, such as psychical disturbances and organic diseases of the nervous system; toxic causes, such as microbic infections, auto-intoxication, drug addiction, and chemical poisons; disorders or diseases of the various systems, such as gastro-intestinal, cardiovascular, respiratory, genito-urinary, or endocrine systems.

In the treatment of insomnia the first step is to elucidate its cause, and it will be generally agreed that the use of hypnotic drugs should be resorted to only when other general methods of treatment have failed to bring about a satisfactory result or are likely to be of inadequate effect. The choice of the hypnotic for a particular case will largely depend on the cause of the insomnia—for example, after a severe abdominal operation one would probably select a drug not belonging to this series at all (such as a hypodermic injection of morphine) in order to induce sleep on the night after the operation. Drugs of vegetable origin will be excluded from consideration.

CLASSIFICATION OF HYPNOTICS

The classification of hypnotic drugs on a purely chemical or pharmacological basis is difficult and unsatisfactory, so that an attempt will be made to classify them on chemical and clinical lines.

Hypnotic drugs of low toxicity are: the inorganic bromides (for example, potassium, sodium, ammonium, calcium, and strontium)—they are mild hypnotics suitable for certain nervous cases, and may be given in full doses up to 30 grains at night; alcohol in certain cases in prescribed amount; phenazone and its derivatives, such as pyramidon; aceto-salicylic acid, and salicylate derivatives; phenacetin, etc. Combinations of these with other hypnotics, such as opium preparations or codeine, are often effective.

A number of hypnotic drugs of varying degree of toxicity belong to the alcohol-chloral group.

THE ALCOHOL-CHLORAL GROUP

Chloral (dose 10 to 20 grains) is an effective, rapidly acting, and safe hypnotic. In full doses it is depressant to the heart and respiratory functions. If used continuously it may have a toxic action on the liver and

cause toxic jaundice; also it may give rise to addiction. This hypnotic has undeservedly fallen into disuse.

Chloralamide (chloral formidum, *B.P.*—dose 15 to 45 grains) is a safe and mild hypnotic. Like chloral, it is incompatible with alkalis, which cause decomposition. When used on successive nights the hypnotic effect is apt to diminish, so that this drug is used much less than formerly.

Other chloral derivatives not commonly used at the present time are: Butyl chloral (dose 5 to 20 grains), useful in the insomnia of neuralgia. Chloralose (dose 3 to 10 grains), a compound of chloral and glucose; it is not free from toxic effects such as excitement, tremors, and cardiac depression, and is rarely used. Chlorbutol, also known as "chloretone" (dose 5 to 20 grains); more toxic and less effective as a hypnotic than chloral. Hypnal, a compound of chloral and antipyrine (dose 5 to 15 grains), is rarely used. Dormiol, a compound of chloral and amylene hydrate (dose 5 to 40 minims), is rarely used. Ural, a compound of chloral and urethane (dose 15 to 45 grains), a dangerous and uncertain hypnotic. Isopral is trichlor-isopropyl alcohol (dose 10 to 30 grains); it has fallen into disuse owing to its toxic effects in causing cardiac depression and gastric disturbance. Bromal (dose 2 to 5 grains) is more toxic and less certain in hypnotic action than chloral.

Paraldehyde (dose 1/2 to 2 drachms) is a useful and safe hypnotic, with an unpleasant taste; soluble in water 1 in 9; it is contraindicated in gastric and respiratory diseases; its repeated use may cause toxic liver effects and give rise to addiction. Amylene hydrate (dose 30 to 60 minims) acts like paraldehyde, but is less certain and more toxic. Aponal, a compound of amylene hydrate and urea (dose 10 to 20 grains), is said to be a safe hypnotic and less unpleasant to take than amylene hydrate; it is rarely used. Hedonal is isomeric with aponal (dose 10 to 20 grains); it is an uncertain hypnotic. Neuronal, diethyl bromide acetamide (dose 5 to 20 grains), is a powerful hypnotic, but has toxic effects on the heart and alimentary system, and causes skin rashes; it has fallen into disuse.

Avertin is tribromomethyl alcohol. It has been used extensively as a basal anaesthetic and is administered rectally. The dose recommended by the introducers is 1 1/4 to 1 1/2 grains (0.1 gram) per kilogram body weight of the patient, but there are many conditions which would demand a considerably smaller dose than this. Care and experience are required to decide on the suitable dosage for basal anaesthesia. It may cause prolonged coma, or toxic liver effects such as jaundice in susceptible patients.

THE URÆA GROUP

Urethane (ethyl carbamate—dose 15 to 30 grains) is a mild and safe hypnotic, suitable for children. Alendrin (dichlor-isopropyl carbamate—dose 10 to 30 grains) is little used. Uradal, or adalin, is brom-diethyl-acetyl urea (dose 5 to 15 grains), a sedative as well as a hypnotic; it is a useful and safe hypnotic; I have met with no cases of addiction or toxic effects from its use. Uvaleral or bromural or dormigene is a monobrom-isovaleryl urea (dose 5 to 10 grains); it is a useful and safe hypnotic. Somnosal is a proprietary preparation composed of a mixture of bromural and dimethyl-amido-phenyl-methyl-iso-pyrazolon (dose 5 to 10 grains); it is a mild and safe hypnotic.

* Opening paper in a discussion at the Royal Society of Medicine in the Sections of Therapeutics and Pharmacology and Psychiatry, December 12th, 1933. Published by permission of the Society.

SULPHONE GROUP

Sulphonal is dimethyl-methane-diethyl-sulphone (dose 10 to 30 grains). Trional is methyl-sulphonal (dose 10 to 20 grains). Tetronal is ethyl-sulphonal (dose 10 to 20 grains). These three hypnotics are only slightly soluble in water. They are very slowly absorbed, and their action thereby may be much delayed. They are powerful hypnotics, but owing to their delayed and uncertain action are less used than formerly. They have been much used in asylum practice.

Dangers from this group are a cumulative effect, owing to delayed absorption if the drug has been taken in repeated daily dose, when coma may develop unexpectedly. There are many recorded cases of drug addiction. Repeated use of the drugs may lead to troublesome skin rashes of urticarial or erythematous type, often associated with marked prurigo. Vesicular and bullous eruptions and purpura have been observed. Haemato-porphyrinuria is a common but not constant symptom. Mental depression leading to suicidal tendency and the taking of an overdose may occur. Subjective and objective toxic effects on the nervous system have been observed, such as hallucinations, slurred and thick speech, diplopia, squint, ataxia, drowsiness, and stupor. Overdosage may be followed by deep coma lasting over a prolonged period (several days), and during this period there is danger of the development of basal bronchopneumonia, which is usually fatal. In these cases the drug has been found in the cerebro-spinal fluid. An extensive plantar reflex is common during the stage of coma.

Death has occurred after one dose of 30 grains in a neurasthenic woman. Probably an average minimum fatal dose for an adult is about 75 grains, but recovery has occurred after very much larger doses. Several deaths have followed the daily use of from 10 to 20 grains over periods of from two to twelve months.

THE BARBITURIC ACID GROUP

Barbitone or veronal is diethyl barbituric acid. Sodium barbitone or medinal is the sodium salt of barbitone. Propenyl is dipropyl barbituric acid, and neonal or soneryl is *n*-butyl-ethyl barbituric acid. Dial is diallyl barbituric acid. Phenobarbitone, or luminal, is diphenyl barbituric acid, and sodium luminal is its sodium salt. Phandorm is cyclo-hexenyl-ethyl barbituric acid, evipan is *n*-methyl-C-cyclo-hexenyl-methyl barbituric acid, and sodium evipan is its sodium salt. Pentobarbitone is ethyl-methyl-butyl barbituric acid, and its sodium salt is nembutal. Ipral is calcium ethyl-isopropyl barbituric acid.

Allonal is a combination of allyl-isopropyl barbituric acid with amidopyrine (it gives a reddish-brown colour to the urine from the amidopyrine present). Veramon is a combination of veronal with amidopyrine (it gives a reddish-brown colour to urine). Gardenal is phenyl-ethyl barbituric acid. Cibalgin is a combination of dial and amidopyrine (it gives a reddish-brown colour to urine). Somnifaine is a combination of allyl-isopropyl barbituric acid and veronal. *Beotel* is a proprietary preparation, said to be a mixture of veronal with extracts of valerian and jusquiman. Quadronox is a proprietary preparation said to contain 80 per cent. veronal, with phenacetin, phenazone, etc. (urine may be coloured reddish brown from the phenazone present).

Sandoptal is isobutyl-allyl barbituric acid. Amytal is isoamyl-ethyl barbituric acid; the sodium salt is used for intravenous purposes. Pernocton is 2-butyl-bromethyl barbituric acid; the sodium salt is used intravenously.

Hebaral sodium is the sodium salt of hexyl-ethyl barbituric acid, and is given by the mouth for insomnia. A considerable number of other preparations containing barbituric acid derivatives are on the market. The addition of

alkyl or aryl radicals of higher molecular weight than ethyl adds to the toxicity of the substance; thus luminal dial, propenal, gardenal, soneryl, and nembutal are all more toxic than veronal. Launoy and Contière, taking veronal as unity, have found that the relative toxicity for dial is 3.1, for soneryl 4.7, for amytal 10.1, and for nembutal 10.1.

The combination of a barbituric acid compound with an analgesic drug (such as amidopyrine, phenacetin, etc., in veramon, allonal, cibalgin, and quadronox) appears to me to be dangerous, since the barbituric acid compound is much more toxic than the analgesic drug, and this may lead to an overdosage of the barbiturate when the preparation is taken in large doses to relieve pain.

The barbituric acid derivatives are perhaps the most commonly used hypnotics at the present day. When taken by the mouth they are quickly absorbed, and within an hour or so of taking a clinical dose sleep usually ensues. After a single therapeutic dose, a period of sleep, lasting from six to twelve hours, usually occurs without unpleasant after-effects. There is more certainty of action than with most of the other hypnotics. These are the reasons for the popularity of this group of hypnotics.

All of the above group of drugs have been used for hypnotic purposes. When one remembers that the toxicity of the derivative increases with the substitution of larger radicals than ethyl, it is probably safer to use, for hypnotic purposes, barbitone or its sodium salt than the more complex derivatives.

Many of the group mentioned have been used for basal anaesthesia. Those which are most commonly used at the present time for this purpose are nembutal, pernocton, amytal, and evipan.

DANGERS FROM THE BARBITONE GROUP

Like other poisons, if taken on an empty stomach and in solution, the effect is more rapid and intense. The taking of alcohol with the drug seems to increase the toxic effect.

Some persons have a natural increased susceptibility to all drugs; often there is present a highly strung nervous temperament, and there is a history of abnormally excessive reaction to medicinal preparations.

Allergic patients are often abnormally susceptible—for example, a history of asthma, urticarial attacks, angioneurotic oedema, etc., are an indication of this state. With defective renal function the usual symptoms of acute or chronic nephritis may be present, but a chronic cystitis, accompanied by a latent pyelitis, will greatly increase the susceptibility to barbiturates, even if the blood urea is little above the normal. With defective liver function a history of cirrhosis or tendency to jaundice or to attacks of acidosis may be present as an indication. Hyperthyroidism greatly increases the susceptibility to these drugs; for example, nembutal is dangerous as a basal anaesthetic. Myocardial disease also may heighten susceptibility. Glycosuria is evidence of defective pancreatic or hepatic function, and is an indication of likely idiosyncrasy. The prolonged toxic effects of some existing disease greatly enhance the susceptibility of the patient to this group of drugs, especially the basal anaesthetics.

TOXIC EFFECTS ON CENTRAL NERVOUS SYSTEM

Idiosyncrasy may lead to symptoms of acute or sub-acute poisoning from a normal full dose—for example, I have seen prolonged coma, suppression of urine, and bronchopneumonia follow a normal dose by mouth of 2 capsules (3 grains) of nembutal. The repeated use of therapeutic doses not uncommonly causes some symptoms,

such as mental depression, drowsiness, visual hallucinations, vertigo, ataxic gait, thick and indistinct speech (anarthric), diplopia, squint, nystagmus, difficulty in protruding the tongue, paralysis of a limb, facial paralysis, tremors of the hands, etc. Albuminuria sometimes occurs, and rarely haematoporphyria. A reddish-brown-coloured urine is present where a phenazone derivative is combined with the barbituric acid compound. Skin rashes of an urticarial, erythematous, or bullous type may occur.

The symptoms from chronic or subacute poisoning very closely resemble those of organic nervous diseases such as encephalitis lethargica, bulbar paralysis, cerebellar disease, general paralysis of the insane, alcoholism, peripheral neuritis, etc. In 1927 a paper was read before this Section by Dr. F. A. Pickworth, in which it was shown by animal experiments that actual degenerative changes occurred in the nerve cells after the prolonged administration of barbituric acid compounds. This work had been carried out by the late Sir Frederick Mott in conjunction with Dr. Pickworth, and I have no doubt as to its accuracy. There is therefore a pathological basis for the toxic nervous symptoms which are observed clinically.

In healthy persons barbituric acid compounds are fairly rapidly excreted, and accumulation does not readily occur. Where repeated doses are taken, there is an accumulation of the toxic effects as shown by the objective nervous symptoms mentioned. In these cases discontinuance of the drug for a few days leads to disappearance of the symptoms. I have seen toxic jaundice follow the daily taking of 1 grain of luminal for over a year.

Only a slight degree of tolerance to this group of drugs is established even after long use. It is for this reason that a moderate overdose is usually followed by severe symptoms.

I have seen a large number of cases where a definite craving for the drug has arisen after repeated daily administration, and the daily use of the drug has been continued in spite of strong medical advice to the contrary. Addiction to the barbituric acid group of drugs differs from morphine and heroin addiction in that sudden discontinuance is not followed by severe withdrawal symptoms.

I have been very greatly impressed by the risk of fatality from suicide. Persons who have been taking the barbituric acid derivatives daily for a long period very commonly take a large overdose when they are faced with mental stress and worry, and often death results thereby. I have met with such cases where suicide has been effected by taking an overdose of lysol or other poison. The danger of overdosage must always be borne in mind with persons taking barbituric acid drugs in repeated daily doses; it is a very real danger. A recent example of this occurred in the case of a physician whom I saw when a large overdose of veramon was taken with fatal result.

ILLUSTRATIVE CASES

1. F., aged 35, suffering from effects of domestic worry. Had been taking two tablets of veronal nightly for several weeks. Very depressed, tremors of facial muscles, very ataxic gait, visual hallucinations. Symptoms completely cleared up after five weeks.

2. M., aged 34, in an institution for treatment for chronic alcoholism. Had been given allonal, four tablets nightly for several weeks. No alcohol taken while in institution. He developed thick and indistinct speech, diplopia, and ataxic gait. Wassermann reaction negative. Symptoms cleared up on discontinuance of allonal.

3. M., aged 45, suffering from acute rheumatic fibrositis. Had been given 10 grains of medinal for six nights. On examination drowsy, with bilateral ptosis, speech indistinct and thick, diplopia on looking to left. Mental condition somewhat confused. Had been seeing objects which were

non-existent (visual hallucinations). No history of alcoholism or evidence of syphilis. The symptoms completely cleared up in a week after discontinuance of the medinal.

4. M., aged 60, with history of epilepsy. Had taken 14 grains luminal daily for eighteen months. On examination jaundice present for fourteen days, some abdominal pain in hepatic region. Drowsy for three days. Sick several times daily the last three days. Liver slightly enlarged. This patient was obviously in a condition of commencing acute yellow atrophy. On discontinuance of the luminal, and with intensive treatment with alkalis and glucose, the symptoms cleared up after a few days.

5. F., aged 60, doctor's wife, said to have taken a few (? six) tablets of dial. On examination four hours afterwards deep coma, loss of conjunctival reflexes. Stomach washed out, strong coffee given, and colon washed out. Consciousness recovered in fourteen hours, when delirium and restlessness occurred. Good recovery.

6. F., aged 65. Operation for gall-stones and intestinal obstruction. Nembutal given intravenously for anaesthesia. On the day after operation, defective articulation; two days after operation, confused defective articulation. Suppression of urine after operation. Death occurred four days after operation.

7. M., aged 55, suffering from chronic streptococcal toxæmia. On December 23rd, 1932, two capsules of nembutal were given. A deep sleep lasting twenty-eight hours occurred. On December 26th one capsule of nembutal was given at noon. On December 27th, at 4.30 a.m., one capsule of nembutal was given, and at 1 p.m. another capsule by mouth. Coma followed in two hours. At 6 p.m.: temperature, 101° F.; respirations, 40. 8 p.m.: temperature, 103°. 9.45 p.m.: temperature, 102°; respirations, 60. Dullness over right lower lobe, deficient air entry, and crepitation. 11.30 p.m.: lumbar puncture, 30 c.c.m. of fluid drawn off. December 28th: 6 p.m., recovery of consciousness. Temperature normal. Lung signs beginning to clear up. Retention of urine occurred for four days and some suppression (58 oz. of urine passed in four days by catheter). Good recovery occurred.

8. F., aged 39. Operation for vesico-vaginal fistula, which had been present for nine months. One capsule of nembutal given the night before operation. Two capsules of nembutal given an hour before operation the following morning. Gas and oxygen given also for anaesthesia. After operation deep coma supervened, with all the signs of acute barbituric acid poisoning. Typical pneumonia occurred. Death resulted fifty-one hours after the operation. Blood urea, 57 mg. per 100 c.c.m. eighteen hours before death. This was clearly a case of nembutal poisoning, the idiosyncrasy being due to the toxic effects of the genito-urinary infection on the heart and kidneys.

NEED FOR CARE IN USE OF HYPNOTICS

The need for exercising care in the use of hypnotics is obvious, particularly when there are any of the danger signs above mentioned. In psychical cases an obsession of insomnia sometimes occurs, and in such cases ordinary therapeutic doses seem to have little or no effect. It is probable that such cases would be better treated by psychotherapeutic measures than by drugs.

With the drugs used for basal anaesthesia the need for care in dosage cannot be too strongly emphasized. If a therapeutic dose (which in a susceptible person may be an overdose) be given, either intravenously or by mouth, it cannot be withdrawn, since absorption is rapid and one has to combat the full effect of the toxic symptoms. Where any of the dangers mentioned are present, if a basal anaesthetic is used at all, a minimum dose should be given and full anaesthesia obtained by a general anaesthetic such as gas and oxygen or ether.

In a recent case where avertin was desired by the patient, after consultation it was decided to give a half-dose since glycosuria and myocardial weakness were present. Some of the solution was returned after rectal administration, and probably only about one-third of the normal dose was absorbed. This patient was able to talk up to the time of the abdominal operation, which was performed under gas and

oxygen and ether. After recovery from the operation the patient stated that he had no recollection of the events preceding the operation, and a full amnesia was attained with the small dose.

In cases where there is a possibility of danger it appears to me that if a basal anaesthesia is used a reduced dose should be given which would effect amnesia without causing complete loss of consciousness.

CONCLUSIONS

In prescribing hypnotics it is wise to select one or a combination of the less toxic type of drugs whose action is well known. I have been so impressed by their toxic effects that I never prescribe any of the barbituric acid group of drugs or of the sulphonal group.

These drugs should only be obtained on the prescription from the medical adviser, and the prescription should be retained by the pharmacist and not repeated, except on medical authority and signature. The total quantity ordered on a prescription should be well under a possible fatal dose.

Legislation regarding the sale of poisons is under consideration as a result of the recent Pharmacy and Poisons Act, which was passed this year (1933).

A close co-operation between the medical profession and those practising pharmacy is essential if dangers from hypnotic drugs are to be avoided.

CARBON DIOXIDE THERAPY IN LOBAR PNEUMONIA

BY

REGINALD HILTON, M.D., F.R.C.P.

ASSISTANT PHYSICIAN AND ASSISTANT DIRECTOR OF THE MEDICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL

Of recent years increasing attention has been given to the use of carbon dioxide in respiratory conditions. In some ways it is the ideal respiratory stimulant; its chief action is to increase the depth of breathing without accelerating its rate excessively. This result is apparently achieved in two ways: first, by the changes it produces in the pH of the blood, secondly, by the specific effect of the HCO_3 ion itself. It is therefore to be expected that its value would be tested in many respiratory conditions, in some of which, indeed, its utility has already been fully demonstrated. These include atelectasis, certain forms of asphyxia, and post-operative bronchopneumonia. Its value, however, is still under dispute in lobar pneumonia. This paper is concerned with the latter condition.

Hanson and Calhoun,¹ in a series of early cases treated for short periods by 5 per cent. CO_2 and 95 per cent. O_2 , carefully controlled by repeated x-ray examinations, failed to abort the spread of consolidation. Alison² claimed that the disease could be arrested if treatment were begun in the first thirty-six hours. In his opinion the patients "were more comfortable and appeared to progress better" with CO_2 added than with oxygen only. On the experimental side Henderson³ and others assert that in pneumococcal pneumonia with bronchial obstruction CO_2 prevents the development of the disease. He considers that atelectasis plays an important part in lobar pneumonia. Since hitherto there has been a lack of blood-gas studies in man after CO_2 administration, the following observations attempt to supply some of the missing evidence.

As there is a considerable amount of information about the benefit of O_2 alone, it was considered advisable to study the effects of CO_2 unaided by oxygen. The procedure adopted has been to measure first the rate and depth of respiration. A sample of arterial blood was

then taken from the femoral artery. Approximately 3 per cent. carbon dioxide was administered with a loose face mask, and the examinations of the breathing and the blood were repeated fifteen minutes later. The blood gases were determined by the van Slyke method. There are obvious difficulties in the way of investigations of this sort; for instance, the accuracy of measurements of the tidal air cannot be strict. Any apparatus is apt to disturb a patient with pneumonia, and in particular any resistance to expiration is quickly resented. To obtain the measurements mentioned here a specially devised low resistance mask was employed, which has proved its value in collection of air in dyspnoea.⁴ Some results are shown in the accompanying table.

	Arterial Saturation (Vol. per cent.)		Respiratory Rate per Minute	Litres per Minute Ventilation	Tidal Air in c.cm.
	O_2	CO_2			
1. (a) before CO_2	87	35	41	11.47	250
(b) after (15 minutes later)	88	46	42	15.1	360
2. (a)	91	37.4	31	12.1	390
(b)	92.5	48.2	29	13.75	475
3. (a)	85	32	33	12	365
(b)	85.6	41.5	31	13	420
4. (a)	84	31.4	35	10.4	290
	83.2	43	33	12.05	365

These observations were made during the first five days of lobar pneumonia.

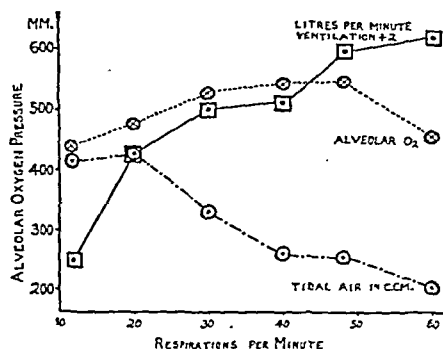
The first point to be noted in the table is that arterial anoxaemia is unrelieved after CO_2 administration in these quantities, in spite of the fact that the depth of the tidal air is considerably increased. This raises the question as to what part shallow breathing plays in the production of anoxaemia.

SHALLOW BREATHING

Haldane, Meakins, and Priestley⁵ have shown that the artificial limitation of the tidal air in normal subjects to about 200 c.cm. resulted in periodic breathing, which was removed by adding oxygen. They also demonstrated that the mixed alveolar air under such conditions may contain a higher pressure of O_2 than would be expected to cause anoxaemia. This they explained by uneven ventilation.

Meakins⁶ investigated the question further in pneumonia by correlating the ventilation with the cyanosis. He considered that the shallow restricted breathing in pneumonia was an important factor in causing the anoxaemia. Since anoxaemia in its turn gradually leads to failure of the respiratory centre and rapid shallow breathing, there is a vicious circle which has to be broken if recovery is to follow. The same observer and Davies⁷ published valuable studies of the tidal air and arterial oxygen in pneumonia. Consecutive examinations of the same patient revealed that, as the cyanosis deepened, the arterial oxygen fell and the breathing became more shallow. In that series of observations there were only two measurements of a tidal air below 200 c.cm.: they occurred on the ninth day, when the patient died. These measurements were associated with respiratory rates of over sixty per minute, which is rare in adults who recover. The lowest tidal air during the first five days in four patients was 220 c.cm. In my experience the breathing of patients with pneumonia during the first few days is often of normal depth or even greater, as the table shows. It must be remembered, also, that when a large part of a lung is solid a given tidal air represents a better ventilation for the remaining lung.

When air ventilation is adequate, CO_2 in the quantities here given evidently cannot raise the alveolar O_2 enough to be reflected in the arterial blood. Even with maximum ventilation with air in the normal subject (breathing 60 litres per minute and 1 litre per breath), it has not been found possible to raise the alveolar O_2 from its normal 100 mm. to above 120 mm. Even this rise would be quite inadequate in treating the anoxaemia of pneumonia. The actual increase of ventilation brought about by the use of CO_2 in pneumonia is far inferior to this. In severe cases of pneumonia with much anoxaemia, as the disease progresses the breathing becomes more shallow. It is not possible to measure the effect of this on the alveolar O_2 of a patient with pneumonia, but the effect of gradual



diminution of the tidal air on the normal alveolar oxygen pressure is shown in the figure. The subject was given an oxygen-rich mixture to breathe in order to avoid any oxygen lack. The breathing was timed at a given rate and the depth was left to regulate itself automatically.

It will be noted that the alveolar O_2 actually rises as the tidal air falls. When the tidal air is at about 230 c.c.m., the alveolar O_2 begins to return towards its original level. Even when the tidal air is 200 c.c.m. and the rate sixty per minute (which may well be termed rapid shallow breathing) the mixed alveolar O_2 is not below the figure at which it began during quiet breathing. On breathing air at the rate of seventy-two respirations per minute and at a depth of only 128 c.c.m. the average alveolar O_2 was 91 mm. Such breathing is far more rapid and shallow than ever occurs in lobar pneumonia in the adult, and yet the mixed alveolar O_2 is but little below the average normal 100 mm.

It is possible that uneven ventilation of alveoli may explain such high O_2 figures, in spite of such a low tidal air, as was shown in the experiments of Haldane on normal subjects; but in the anoxaemia of pneumonia, when there is some alveolar obstruction to the passage of O_2 , there is more chance of compensatory oxygenation in some of the overventilated areas than there is in the anoxaemia of artificially limited breathing. Uneven ventilation is quite inadequate to explain the experiments of Uyeno.* This observer, by heating from 35° to 39° , increased a cat's respiration from sixteen per minute to 240: the depth was reduced from 16.7 c.c.m. to 2.7 c.c.m. The minute-volume of the heart stayed at the same level, and the arterial O_2 saturation changed only from 99 per cent. saturation to 92 per cent. These observations tend to minimize the importance usually attributed to shallow breathing in the causation of anoxaemia, and help to explain why CO_2 as given here fails to relieve the condition.

Before leaving the question of the effect of CO_2 on arterial O_2 saturation, there is one more point to be made. If areas of lung collapse played an important part in the causation of anoxaemia in lobar pneumonia, it would be expected that an increase in the tidal air would improve

the oxygenation of the blood by preventing venous short circuits. These observations appear to show that this is not the case.

ACTION OF CO_2 ON THE O_2 DISSOCIATION CURVE

It is well known that CO_2 alters the shape of the O_2 dissociation curve of haemoglobin, but it is difficult to assess the practical importance of this shift to the right. Theoretically it means that the tissues obtain their O_2 more readily. It also means that O_2 is picked up less readily in the lungs. This latter factor would tend to prevent a rise in alveolar O_2 pressure from having the expected result on the arterial O_2 saturation. But on the whole it is probable that changes in CO_2 tension of the order here considered play a part of minor importance in pneumonia with regard to the carriage of O_2 by haemoglobin.

ARTERIAL CO_2

It will have been noted from the table that the arterial CO_2 is low in pneumonia. This provides confirmation of Meakins's original observations. The explanation would seem to be that the increased ventilation has "washed out" the gas, as is well known to occur with overbreathing. This might be due to central or peripheral causes, but we have still much to learn in this connexion about lung reflexes, such as the Hering-Breuer reflex, in pathological states.

Whatever the mode of production there is some evidence that a reduction of arterial CO_2 may have in itself serious effects and its removal therefore bring benefit. Thus Yandell Henderson¹⁰ has dealt in a series of papers with the circulatory failure which results from acapnia or acarbica, as he now terms it. Dale and Evans¹¹ have shown that the fall of arterial pressure after severe overventilation is due to depression of the vasomotor centres of the bulb and the spinal cord brought about by removal of free CO_2 , and not to changes in the hydrogen-ion concentration in the blood ("alkalosis"). On the other hand, CO_2 has a direct vaso-dilator action on capillaries. In lobar pneumonia, however, there are other factors influencing the blood pressure, so that the part played by CO_2 lack of itself cannot be analysed at present except by measuring the effect of its administration. One thing is clear: whatever ill effects may be demonstrated as due to acapnia, this state can be removed very rapidly by the addition of small quantities of CO_2 .

CLINICAL EFFECTS

Pain

The increased respiratory effort brought about by CO_2 is apt to distress a patient unless it is kept within narrow limits. Reference to the table shows that CO_2 in sufficient quantity to augment the tidal air by 100 c.c.m. or less will raise the arterial CO_2 by 10 volumes per cent. in a few minutes. Such an increase in depth does not apparently cause much discomfort. In cases of thoracic pain the use of CO_2 would, of course, be contraindicated unless opiates were given at the same time. The use of CO_2 after morphine is helpful in avoiding excessive depression of the respiratory centre.

Blood Pressure

Clinically, the effect of CO_2 on the blood pressure in some cases is very noticeable. A rise of about 20 mm. Hg in systolic pressure was observed. The pulse became fuller. The explanation of this is probably a mechanical one from an increased venous return rather than from any action on the vasomotor centre, for the following reasons: signs of vasomotor failure as shown in experimental acapnia are uncommon in lobar

pneumonia at this stage. Also, a similar rise may be demonstrated in a normal person whose arterial CO_2 is not diminished.

Cyanosis

There is usually little or no change in the cyanosis. What there is cannot be due to increased arterial oxygenation (see table), but might be explained by an increase in the minute-volume of the heart or by a local vasomotor change. Otherwise it is difficult by the bedside to point to any immediate change in a patient as a result of small quantities of CO_2 at all comparable to the effect of O_2 in lobar pneumonia.

CONCLUSION

The practical conclusion of this paper is that in the absence of respiratory failure, as evinced by shallow

breathing, the clinical benefits of CO_2 administration in air are not sufficiently demonstrated by these observations to warrant its routine use in lobar pneumonia.

REFERENCES

- ¹ Hanson, J. F., and Calhoun, A. W.: *Arch. Int. Med.*, 1932, 1, 269.
- ² Alison, J. F.: *South. Med. Journ.*, 1932, xxv, 386.
- ³ Henderson, Vandell: *Arch. Int. Med.*, 1930, xiv, 72.
- ⁴ Hilton, R.: *Journ. Physiol.*, 1933, lxxvii, Proceedings, February 18th.
- ⁵ Haldane, J. S., Meakins, J. C., and Priestley: *Ibid.*, 1919, lii, 420.
- ⁶ Meakins, J. C.: *Arch. Int. Med.*, 1920, xxv, 1.
- ⁷ Meakins, J. C., and Davies, H. W.: *Journ. Path. and Bact.*, 1920, xxiii, 435.
- ⁸ Uyeno: *Journ. Physiol.*, 1923, lvii, 203.
- ⁹ Binger, C. A. L., Brow, C. R., and Branch, A.: *Journ. Clin. Invest.*, 1924, i, 127.
- ¹⁰ Henderson, Vandell: *Journ. Amer. Med. Assoc.*, 1933, ci, 261.
- ¹¹ Dale, H. H., and Evans, C. L.: *Journ. Physiol.*, 1922, lvi, 125.

RENAL TUBERCULOSIS WITH A SURVEY OF SEVENTY CASES

BY

ARTHUR JACOBS, F.R.F.P.S.

UROLOGIST, GLASGOW ROYAL INFIRMARY; UROLOGICAL SURGEON,
GLASGOW ROYAL CANCER HOSPITAL

Renal tuberculosis is an insidious disease, for the focus in the kidney is usually well established before its presence gives rise to symptoms. In the majority of cases the outstanding symptoms are referred to the bladder, and consist of increased frequency in urination, with pain before and after the act. The frequency may be variable, but tends to increase, and, as the disease progresses, the patient may require to urinate as often as every twenty minutes, night and day. The urine is acid or neutral, contains albumin and pus, and, frequently, blood. Pain in the renal area is often absent altogether, or is insignificant in degree. Usually a diagnosis of "cystitis" is at first made, but the symptoms fail to respond to the medical treatment commonly prescribed for this complaint. All such cases of persistent frequency, particularly when occurring in adults between 20 and 40, should be suspect.

It is the present consensus of opinion that a normal kidney cannot filter tubercle bacilli from the blood stream into the urine. If, therefore, tubercle bacilli are found in the urine, and a genital tuberculosis can be ruled out, a renal focus must be present, because there is no such thing as a primary tuberculosis of the bladder. Recognition of a genital tuberculosis in the male is usually easy, but it should not be forgotten that this condition is frequently accompanied by a coincident renal infection. In the female the diagnosis of a genital tuberculous lesion may not be so obvious. In the following case a tuberculous cystitis was found to be secondary to infection of a Fallopian tube.

A woman, aged 24, a school teacher, was referred for consultation because of a persistent frequency and dysuria of one year's duration; she required to urinate several times in an hour. She had had a period of sanatorium treatment in Switzerland four years previously for pulmonary tuberculosis, but it was considered that this lesion had healed. The urine contained a heavy deposit of pus. Examination of numerous smears failed to reveal the tubercle bacilli, but a guinea-pig inoculation was positive. Cystoscopy showed a generalized cystitis, and, in places, superficial ulceration. There was considerable adherent purulent lymph on the right side. The base of the bladder to the right of the left ureteric orifice was markedly elevated. The ureteral orifices looked normal, and both ureters were catheterized to the renal pelves. An abundant flow of clear urine came from either side, and both specimens were found to be free from pus, and sterile. Bilateral ascending pyelograms were normal. The x-ray films, however, showed a large, rounded, calcareous shadow in the left side of

the pelvis, above the level of the ischial spine. It was obvious that the tuberculous cystitis was not of renal origin. The diagnosis was settled by a vaginal examination, which revealed an extensive pelvic mass, due to a tuberculous pyosalpinx.

The discovery of the tubercle bacillus is not essential in order to establish a diagnosis. The presence of pus in the urine, but no organisms, is strongly suggestive of a tuberculous infection, and a guinea-pig inoculation should be made. I cannot, however, agree with Wade, who states that "if, on examining the cellular deposit, no organisms are found in it, it is safe to assume that the infection is tuberculous and that you have failed to detect the causal virus." This infers that every case of aseptic pyuria is tuberculous; contrary to this, I have had under observation several such cases, in which an investigation of the complete urinary tract, including guinea-pig inoculation, failed to reveal evidence of a tuberculous lesion.

Since January, 1928, I have seen in hospital and private practice seventy cases of tuberculosis of the kidney. Forty of the patients were males and thirty females; forty-eight were between 20 and 40 years of age, ten were under 20 (the youngest being 7), nine were in the fifth decade, and three in the sixth. Renal pain was a symptom in twenty-two, and in four of these bladder symptoms were absent. The tubercle bacillus was found by examination of direct smears of the centrifugized urine in forty-five, and by guinea-pig inoculation in another ten. The only specimen submitted to the bacteriologist in many instances was the urine taken from the bladder at cystoscopy. The proportion of positives would undoubtedly have been higher if further specimens, taken from twenty-four-hour collections of urine, had been examined. Thirteen patients out of forty-six who were subjected to nephrectomy had the operation performed in the absence of positive urine findings. In two of these a pre-operative diagnosis of hydronephrosis had been made, and the tuberculous nature of the lesion recognized only at operation. In the other eleven a correct pre-operative diagnosis was made in the absence of the positive urine smears, and without waiting for confirmation by animal inoculation.

INVESTIGATION OF A CASE OF RENAL TUBERCULOSIS

(A) *Cystoscopy*.—The appearances of the bladder in cases of renal tuberculosis often make a diagnosis possible in the absence of the causal organism. The evidence thus obtained is frequently characteristic and of immediate diagnostic significance. The first point usually noticed is the reduced capacity of the bladder, which normally is eight to twelve ounces. In addition, the viscus is easily irritated, so that, if too quickly filled with the distending lotion, spasm is induced and completion of the cystoscopy may be prevented. Generally speaking, if the capacity is

less than two ounces cystoscopy is impossible. Where renal pain rather than urinary frequency is an outstanding symptom it is common to find little or no impairment in the bladder capacity. This may be due to the bladder having successfully resisted the infection, or to occlusion of the ureteric orifice on the diseased side. There may then be no appreciable bladder manifestations of the condition. The appearance of the ureteral orifice on the involved side is usually altered. At first it is swollen, reddened, and congested. Tubercles may infrequently be observed near or on the margin. As a result of ulceration the latter becomes irregular, and the meatus gapes; the meatus may, however, become almost closed by oedema of the surrounding mucosa. Finally, the orifice becomes dragged upwards as a result of contraction occurring in the affected ureter, and an appearance aptly described as "golf-hole ureter" obtains. The changes in the bladder itself are not usually of a specific nature. Thus it is only occasionally that tubercles are actually observed. Ulceration following rupture of the tubercles is more frequently seen either in the vicinity of the ureteric orifice or on the fundus. The margins of the ulcers are undermined, the edges irregular, and a slough may occupy the base. Bullous oedema is very common, and may cause the ureteric orifice to be entirely hidden from view. Later, if secondary infection occurs, exuberant polypoid excrescences may form, and may render the ureteric orifices unrecognizable. The whole of the vesical mucosa will then become involved in the inflammatory process, and will look reddened, swollen, and lustreless. This is the stage at which a large percentage of the cases are sent for investigation. The impaired capacity and irritability of such bladders present the cystoscopist with one of his most difficult tasks.

(B) *The Indigo-carmin Test.*—This is of little value in making a diagnosis. It may be useful in helping to locate the diseased side, when the data to be had from the appearance of the orifices are not sufficient, or when the inflammation is so generalized that both sides appear to be affected. I do not consider that a normal dye secretion proves that the corresponding kidney is free from infection. Conversely, a delayed and weakened secretion does not necessarily mean that the kidney is infected. The function of the non-tuberculous kidney may, for example, become impaired from a secondary nephritis, or from dilatation due to back pressure resulting from contracture of the inflamed bladder, and these conditions can be responsible for impairment in the elimination of the dye.

(C) *Catheterization of the Ureters.*—This is the most important step in the whole examination. It is done in order to obtain specimens of the secretion from the separate kidneys for bacteriological and cytological examination, as well as for the urea concentration test. The catheters should be passed up the ureters to the renal pelves, and the urines collected in the second hour after a urea meal (15 grams of urea and 100 c.cm. of water). If leucocytes and tubercle bacilli are absent from one side the disease may be regarded as unilateral. Suspicion must be entertained if leucocytes alone are present, and a guinea-pig inoculation should be carried out. When cystoscopy and intravenous pyelography (see below) reveal a definite involvement of one side, I consider that it is only necessary to catheterize and obtain specimens from the supposedly healthy kidney. If 2 per cent. or more of urea is discovered in the urine the function of the kidney may be regarded as satisfactory.

(D) *Pyelography.*—I do not carry out ascending pyelography as a routine in tuberculous cases, because of the supposed possibility of disseminating the causal virus from the diseased kidney into the circulatory system. Moreover, the examination in many instances is superfluous.

I have no hesitation in using it on suspected cases, however, when there is failure to demonstrate the tubercle bacillus, and I am unaware of any harmful sequelae resulting. The pathognomonic pictures usually obtained frequently allow of an immediate and definite diagnosis. Since the advent of intravenous pyelography I have employed this method, either as a first step in the investigation of cases known to be tuberculous or as an additional check-up after cystoscopy and ureteral catheterization. The radioscopic appearances obtained in this way vary greatly with the phase of the disease. Experience teaches one to recognize as characteristic certain features, such as thinning and lack of definition in the calyces, knobbing and woolliness in their terminal ends, irregular dilatation and fuzzy outline in the renal pelvis, and areas of dilatation and constriction in the ureter. Minor defects which would be observed with the ascending method may not, however, be apparent. The indefiniteness of the shadow frequently makes it impossible to form an opinion as to the nature of the lesion without the help of cystoscopic data. In certain unilateral cases the dilatation in the ureter and pelvis that can occur in the other kidney as a result of back pressure from a contracted bladder may, with an intravenous pyelogram, give an erroneous pictorial impression of bilateral disease. If there is very advanced renal destruction, then, of course, no picture at all is obtained by the intravenous method.

Diagnosis.—The object of the urological examination is to confirm the diagnosis of renal tuberculosis, and to ascertain whether the disease is unilateral or bilateral. It is desirable that this information be obtained with the minimum possible instrumentation. In cases in which the tubercle bacillus is known to be present in the urine it may, as I have indicated, be sufficient to make an intravenous pyelographic examination, followed by a cystoscopy and catheterization of the ureter from the apparently healthy kidney. If the secretion from that side be uninfected, a diagnosis of unilateral tuberculosis can be made. In the event of an intravenous pyelogram giving conclusive evidence of a bilateral involvement, instrumental examination may not be required at all.

Illustrative Cases

Case 1.—Female, married, aged 34, was referred from the out-patient department, where she had been sent because of frequency and dysuria of seven months' duration. The nocturnal frequency was five to six times, the diurnal hourly. A bacteriological examination of the urine had already been made and tubercle bacilli found. Intravenous pyelographic studies showed extensive dilatation in all the calyces of the left kidney; the right side looked normal. At cystoscopy, carried out in the second hour after a urea meal, the bladder capacity was found to be reduced to 50 c.cm. There was a generalized inflammation, but both orifices looked normal. A catheter was passed up to the right renal pelvis, and specimens of clear-looking urine collected. Subsequent examination of the specimens was negative for pus cells or for tubercle bacilli, and the urea concentration was 4.3 mg. per cent. The diagnosis was therefore a left renal tuberculosis. The absence of infection in the right kidney was further confirmed by a guinea-pig inoculation with some of the urine taken from that side, which proved negative for tubercle.

Case 2.—Male, labourer aged 34, complained of frequency of micturition and dysuria of twelve months' duration. The nocturnal frequency was two-hourly, the diurnal hourly. He had had excision of tuberculous cervical glands in childhood. The urine contained albumin, pus, and blood. The bladder capacity was 175 c.cm. There was a mild generalized cystitis. A deposit of mucus-pus lay on the base behind the inter-ureteric bar. The left orifice looked dilated, the right normal. A mediumly concentrated secretion appeared at the right ureteric orifice five minutes after an intravenous indigo-carmin injection; no dye appeared from the left orifice after ten minutes' observation. The specimen

of urine collected at the examination was found to contain tubercle bacilli. At a subsequent cystoscopy a specimen was collected from the right kidney. This had a urea concentration of 2.4 mg. per cent., and contained pus cells and tubercle bacilli. A diagnosis of bilateral renal tuberculosis was therefore made.

Case 3.—Male, aged 7, referred from the sanatorium, where he had been under treatment for the previous eight months. He was complaining of generalized abdominal pain, and frequency of two years' duration. He was considerably emaciated. A guinea-pig inoculation had proved positive for tuberculosis. A series of intravenous pyelographic studies was made. Films were exposed after 5, 10, 20, 40, 60, 90, and 105 minute intervals. The left kidney pelvis and ureter were visible onwards from the first film. The pelvis and calyces were grossly dilated, and the ureter was about the calibre of the small intestine. The right shadow was not apparent until the forty-minute film was taken. The dilatation on that side proved to be even greater than on the left. This was deemed to be sufficient evidence of extensive bilateral involvement, and further investigation considered unnecessary.

Case 4.—Female, aged 28, complained of attacks of right renal pain of five weeks' duration. For the previous nine months she had been suffering from intermittent bouts of frequency, which would clear up spontaneously. The urine contained albumin and pus, but was sterile. The bladder capacity was 250 c.cm. The right ureteric orifice was dilated and its margin injected, otherwise the bladder appearances were normal. Catheters were passed up both ureters, and specimens collected from each kidney. The secretion from the right kidney was definitely cloudy, that from the left clear. A bilateral ascending pyelographic examination was made. On the right side the pelvis was slightly dilated, the calyces were all clubbed, and the upper group had a "moth-eaten" appearance. The appearances on the left side were normal. The urine from the right kidney was found to contain a considerable amount of pus, but no tubercle bacilli. Some diphtheroids grew on culture. The left kidney urine contained no cells or organisms, and no growth on culture. A diagnosis of right renal tuberculosis was made because of the pathognomonic appearances of the pyelogram.

TREATMENT

The important clinical fact in the treatment of renal tuberculosis is that, with the exception of cases of the miliary type, only one kidney is involved in an appreciable percentage of sufferers. In making this statement I am not unmindful of the evidence which has been brought forward in recent years to show that, pathologically speaking, the disease is frequently, if not always, bilateral, and that small lesions in the apparently normal kidney can often be found when the opportunity arises to examine it.² But a caseo-cavernous renal tuberculosis is usually unilateral in its early stages, and although it may be possible for a small incipient tuberculous lesion in a kidney to heal, it has never been shown that this can occur with a clinical demonstrable caseous focus. In the majority of cases, if the condition is not successfully combated, there is a progressive spread of the disease throughout the genito-urinary tract. When the bladder becomes seriously involved the patient may be reduced to a state of misery and discomfort seen in few other conditions. If, however, nephrectomy is carried out, a cure can be obtained, and the secondary bladder lesions, if not too far advanced, often heal spontaneously.

As it is considered that renal tuberculosis is always part of a general tuberculous infection,* and that the disease is at least latent in other organs, such as the lungs or mediastinal glands, every patient after operation should have a prolonged period of treatment by means of rest, open air, and nutritious diet. Confinement to bed for

from one to six months is advisable, the period varying with the response of a patient to the operation. A course of tuberculin treatment, given over a period of from eighteen months to two years, may have a beneficial effect on the bladder.

Advanced bilateral renal tuberculosis is not usually a surgical condition, though occasionally a nephrectomy may be justified when there is severe pain, haemorrhage, or obstruction on one side. Such a patient should have sanatorium treatment in the hope that, by building up the defence mechanism, the lesions may be controlled. If this is successful, bilateral disease may be compatible with life, and even with useful work, for a number of years.

Of the seventy cases that I have investigated forty-seven were found to have a unilateral infection and twenty-one were bilateral. The data in the other two cases were incomplete, as the patients refused the necessary examination. Thus the percentage of unilateral infections (69 per cent.) was considerably lower than the figure commonly quoted, which is 80 to 90 per cent.² This question of the relative frequency of bilateral involvement is of the utmost importance, and will be referred to again under prognosis.

RESULTS AND SEQUELAE OF NEPHRECTOMY

Of the forty-seven patients suffering from a unilateral infection, I operated on forty-five and removed the affected kidney. Surgical intervention was not advised in one case because of multiple calculi in the other kidney, and in the other it was refused by the patient. There was one death after operation, and this occurred on the fourth day from duodenal ileus (necropsy). Only one case of advanced bilateral disease was subjected to operation. This was in a woman of 41, who suffered from constant severe left renal pain and begged for relief. It was thought that the right kidney was capable of carrying on the total renal function, as it concentrated a medium-blue dye within ten minutes of an intravenous indigo-carmin injection. The patient, however, never secreted more than two ounces of urine in twenty-four hours after operation, and, in spite of a nephrostomy on the remaining kidney, died on the tenth day.

Healing of the Lumbar Wound

A frequent cause of disappointment after nephrectomy for renal tuberculosis is the breaking down of the wound and the development of slow-healing sinuses. Even when the wound heals per primam a breaking-down may occur several weeks or even months later. This is a universal experience, though scantily referred to by many authors. The complication has apparently little effect on the end-results, but is serious in that it may cause a very protracted incapacity in a patient who would otherwise be well. Crabtree and Cabot³ reported only 25 per cent. out of seventy cases as healing by first intention, and Scholfield⁶ reported 40 per cent. out of fifty-seven cases. Twenty-nine of my cases healed by first intention, but ten of these developed sinuses in periods varying from two weeks to two months after operation. Thus the percentage healing by first intention and remaining healed was 42. Post-operative drainage was carried out in ten cases, and six of these developed sinuses; thirty-five were closed without drainage, and out of that number sinus formation occurred in twenty. Neither the presence nor the absence of drainage would therefore appear to be more favourable to sound healing.

Scholfield considers that persistent sinuses are not due to the continuation of the infection from the ureter or from the perinephritic fat, but rather to the development of a new tuberculous process in the traumatized tissues

* Coexisting tuberculous lesions in other parts were noted as follows: pulmonary, seven cases; testicular, five cases; knee-joint, three cases; hip-joint, two cases; sacro-iliac, one case; cervical glands, one case; tibia, one case; foot, one case; cutaneous, one case.

of a patient with a lowered resistance. Removal of the complete ureter, as sometimes advocated, will certainly not ensure healing. One of my patients still has discharging sinuses four years after ureterectomy performed twelve months after removal of the kidney. In most cases, however, with persistent antiseptic treatment, the wound will heal within the year. This has occurred in all but three of my cases: one of these was the patient referred to above, whose wound has been discharging for four years; one other remained unhealed for two years; and another for twenty months.

Effect on the Bladder

Most patients suffering from renal tuberculosis seek relief because of bladder symptoms, and they naturally expect that, after operation, the frequency and dysuria from which they have suffered will be alleviated. After nephrectomy the secondary bladder lesions often heal spontaneously, and the symptoms for which they have been responsible progressively abate. Sometimes this occurs almost immediately, but usually it is a gradual process. It has been stated by Wildbolz⁷ that the bladder may take two to five years to heal. Cystoscopy may show areas of persistent localized ulceration to be responsible for the continuation of the bladder symptoms, and their healing may be brought about by light fulguration. When no such localized lesion can be found, instillations into the bladder of an antiseptic sedative, such as gomenol oil, may be helpful.

In some cases, because of the diffuse inflammatory involvement of the bladder walls, the viscus becomes so contracted that a normal frequency can never be obtained. The pain on urination usually disappears, however. This state of chronic contraction in the bladder renders the remaining kidney liable to a progressive back-pressure destruction. This sequela is well illustrated in the following case.

A girl of 20, who had had a left kidney removed for tuberculosis four years previously, was referred because of total urinary incontinence. This condition had gradually replaced the frequency which had been present prior to her operation. She never at any time passed a proper stream of urine from the bladder, but was constantly wet from dribbling. There was no pain. The urine contained pus and *B. coli*, but no tubercle bacilli, and a guinea-pig inoculation was negative. A cystoscopy was found to be impossible, as the bladder could not be made to retain a drop of fluid. An intravenous pyelographic examination showed an enormous distension of the right renal pelvis and of the complete ureter.

In one case of this series, where there was no appreciable amelioration in the bladder symptoms after the removal of a kidney which was the seat of an extensive caseous destruction, I carried out the operation of resecting the presacral nerve. The result has been most satisfactory.

The patient, a woman of 42, lived in the country and, after the nephrectomy (which was performed in January, 1932), was treated most assiduously by her doctor with tuberculin and instillations into the bladder. She continued to have an hourly frequency night and day, and suffered from a constant irritable feeling in the urethra and severe pain on urination. Tubercle bacilli were still being secreted in the urine, and there was a generalized hyperaemia of the bladder mucosa, which bled easily. There were two localized ulcerated areas present, and I treated these with diathermy without giving any relief. Two months later I carried out the presacral resection. The dysuria disappeared immediately and the frequency became a three-to-four-hourly one. This complete cessation of symptoms has continued since the operation.

PROGNOSIS

How many patients are permanently cured of their urinary tuberculosis by removal of the diseased kidney? In a paper by Wildbolz⁷ of Bern, in 1929, details were given

of 270 cases, all of which had been operated on at least ten years previously, and many dated back to over twenty years. It was claimed that 59 per cent. of these 270 patients were alive, and, with the exception of three, were free from any evidence of urinary tuberculosis. As against this the mortality of unoperated unilateral cases is, according to Person,⁸ 82.5 per cent. within five years.

None of the cases in my series goes back further than six years, but the follow-up which has been carried out has elicited some interesting data. Out of the forty-five unilateral cases that were nephrectomized four have died. Death occurred in two months, nine months, thirteen months, and two years respectively after operation. By a curious coincidence these four cases all belong to the 1931 group. A necropsy was performed on only one of these—namely, on the patient who succumbed two years after operation. He had continued to have bladder symptoms, and a positive tubercle bacilli urine. He refused to go to a sanatorium, and carried on with his work as a road labourer. Three weeks after last reporting he was admitted to Duke Street Hospital suffering from tuberculous meningitis. The necropsy confirmed this diagnosis. The remaining kidney was reported to be macroscopically studded with tubercles. The patient who died two months after operation had active pulmonary tuberculosis, and had been resident in a sanatorium until immediately before the operation. This was carried out under spinal anaesthesia, and, following a rapid recovery, he was transferred back to the sanatorium on the tenth post-operative day. Death was reported to be due to generalized tuberculosis. Information about the cause of death in the patient who died nine months after operation was not available. The patient who died in the thirteenth post-operative month was a boy of 12, and he also appears to have succumbed to a generalized tuberculous infection, though definite details were not obtained.

Taking into account the one post-operative death, there are left forty survivors out of forty-five cases. All have been traced except a girl of 18, operated on in 1929, and last seen in May, 1931, when she was in excellent health, had a four-hourly frequency, and a tubercle-free urine. One patient, operated on four years ago, has developed a faecal fistula in the lumbar wound, and is considered to be dying; in her case also the urine is tubercle-free. Of the remaining thirty-eight cases, twenty-one were operated on before the end of 1932, and twenty of these have had the urine examined within the past few months. In four the organism was found in examination of direct smears, and in five others by guinea-pig inoculation. Thus nine out of twenty cases which were considered to be unilateral are still secreting tubercle bacilli, although the offending organ has been removed. The general condition of eight of these patients is very good: they have, on an average, a two-hourly frequency, and no dysuria. This group includes the patient upon whom a resection of the presacral nerve was carried out. The ninth case has a frequency which varies intermittently from half- to two-hourly, and he also suffers from dysuria.

If the percentage of cases with post-operative positive urines is added to the percentage seen in the same period which were found to be suffering from a clinically bilateral infection, then the relative frequency of the latter would appear to be in the neighbourhood of 57 per cent. If my interpretation is correct, the conception held, until recently at any rate, by most urologists, that renal tuberculosis is, as a rule, a unilateral disease, is erroneous. This, however, does not, in my opinion, infer that a nephrectomy is indicated in only some 43 per cent. of cases, for I consider that a kidney which is the seat of a well-established destructive lesion should be removed,

even if the other side is secreting an occasional bacillus of tuberculosis. If such a kidney has a normal anatomical outline on pyelography, exhibits a good renal function, and is secreting little or no pus, the case can be regarded, clinically, as a unilateral one, and a nephrectomy should be carried out. The marked improvement in most of the nephrectomized patients, even though they still have the organism present in the urine, supports this contention. Further support is to be had, I think, from a follow-up of unoperated cases, which were considered, clinically, to be bilateral. An endeavour was made to trace fourteen such cases which had been seen in the years 1928 to 1931 inclusive. It is significant that it was possible to ascertain the fate only of eight, and of these five had died. Of the remaining three, one was in poor health and had a discharging lumbar sinus, following on the rupture of a perirenal abscess. The two others, although still in fairly good general condition, had a half-hourly frequency night and day.

CONCLUSIONS

1. Renal tuberculosis is clinically bilateral in at least 30 per cent. of cases.

2. A case should be regarded as unilateral, and be nephrectomized if the kidney secretion from one side does not contain pus or tubercle bacilli, and if the pyelographic appearances of that side are normal.

3. The presence of tubercle bacilli without pus in the urine of a kidney which has a normal pyelographic outline should not negative removal of the other kidney if it is the seat of an established destructive lesion. The kidney which exhibits occasional bacilli of tuberculosis in its secretion as the sole evidence of its involvement has probably only an initial tuberculous lesion, and it has been demonstrated that these frequently heal.

4. All patients after operation should undergo a sanatorium regime. This is particularly necessary if sinus formation occurs in the wound and if bladder symptoms persist.

My thanks are due to Dr. Robert Cruickshank, bacteriologist, Glasgow Royal Infirmary, under whose supervision all the bacteriological work has been done. I also wish to thank Mr. Mack, assistant in the urological department and McCunn Research Scholar (in bacteriology). He has, during the past year, undertaken a considerable share in the bacteriological investigations, assisted at the examinations and operations, and enthusiastically helped in the follow-up of cases.

REFERENCES

- ¹ Wade, Henry: *Edinburgh Med. Journ.*, 1933, xi, No. 3.
- ² Medlar, E. M.: "Renal Infection in Pulmonary Tuberculosis: Evidence of Healed Tuberculous Lesions," *Amer. Journ. Path.*, 1926, ii, 401.
- ³ Eisendrath and Rolnick: *Urology*, p. 704.
- ⁴ Thomson-Walker, Sir John: *British Medical Journal*, 1927, ii, 625.
- ⁵ Crabtree and Cabot: *Surg., Gynecol. and Obstet.*, 1915, xxi, 669.
- ⁶ Scholfield, B. C.: *Journ. Urol.*, 1928, xx, No. 3.
- ⁷ Wildbolz, Hans: *Ibid.*, 1929, xxi, No. 2.
- ⁸ Person, M.: *Ann. of Surg.*, 1925, lxxxi, No. 4.

A new edition of the well-known handbook of the American Medical Association of Vienna has been issued to cover the academic year 1934-5. It is based on the June, 1931, edition, revisions, corrections, and additions having been effected to bring it up to date. Written in English, it affords a detailed and comprehensive guide to the medical and cultural opportunities for training in that University, special attention being devoted to courses of instruction given in English. For German-speaking visitors details are given of the university courses which are open to them, as also of the many facilities for private tuition and study. Various items of general information reveal the magnitude of the help rendered by this society, membership of which carries various privileges as regards study in Vienna. Copies of the handbook may be obtained from the headquarters of the American Medical Association of Vienna, Alserstrasse 9, Vienna VIII.

THE EFFECTS OF SUBCUTANEOUS AND INTRAVENOUS INJECTION OF TOXINS COMBINED WITH FINE EMULSIONS OF OILS

BY

V. G. WALSH, M.B., B.Ch., B.Sc.

AND

A. C. FRAZER, M.B., B.S.

(From the Department of Physiology, St. Mary's Hospital Medical School)

Experimental work has been carried out by many investigators on the adsorption of toxic substances by colloidal suspensions, and finely divided charcoal and kaolin have been used with considerable success for the adsorption of toxins in the intestinal tract. Particles of kaolin carry a negative charge, and cholera toxin, acting like a positively charged colloid, is adsorbed by the kaolin, and is consequently not absorbed by the intestinal mucosa. Finely divided charcoal will adsorb both tetanus and diphtheria toxins *in vitro*.

AIM OF INVESTIGATION

In order to investigate the properties of finely divided fat particles with regard to the adsorption of toxins and at the same time to overcome the difficulties attendant on the use of solid particles for injection purposes, experiments were conducted with very finely divided emulsions of cod-liver oil, arachis oil, and olive oil. Toxins, such as diphtheria and tetanus toxins, adsorbed on to these fat particles were found to be non-toxic when injected subcutaneously in large doses. The emulsions used in the following experiments consisted in all cases of 3.5 per cent. oil in water, using sodium carbonate as the emulsifying agent, the finished emulsions being adjusted to pH 8 (using the indicator method). Emulsions were prepared with the apparatus previously described by the authors,¹ the oil being very finely dispersed, the size of the particles averaging $1/2$ to 1μ . These emulsions are extremely stable, and will withstand sterilization by boiling.

First Series

Eight rabbits were selected and divided into two groups, A and B. Group A consisted of two rabbits; Group B of six rabbits. Group A—The animals in this group were given a subcutaneous injection of 5 minimum lethal doses of diphtheria toxin mixed with 0.5 c.cm. normal saline. Group B—The animals in this group were injected subcutaneously with 5 minimum lethal doses of diphtheria toxin mixed with 0.5 c.cm. cod-liver oil emulsion. Results: Group A—Death of both animals within thirty-six hours; Group B—No toxic symptoms shown by any of the animals, and all survived.

Conclusion 1.—The toxin-emulsion mixture was non-toxic when injected subcutaneously.

The experiment was now repeated, the animals being divided into Groups A and B as before, but on this occasion the injections were given intravenously. Group A animals were given 5 minimum lethal doses diphtheria toxin with 0.5 c.cm. normal saline injected into ear vein. Group B animals were given 5 minimum lethal doses diphtheria toxin with 0.5 c.cm. cod-liver oil emulsion injected into ear vein. Results: Group A—Death of both animals within twenty-six hours; Group B—Death of all animals within about the same period.

Conclusion 2.—The addition of emulsion to the toxin afforded no protection when the mixture was given intravenously.

This experiment was again repeated. Group A and Group B received the same dose as before, but on this occasion the injections were given into the peritoneal cavity. Results: Group A—Death of both animals in about thirty hours; Group B—Death of all animals in about the same time.

Conclusion 3.—As in the case of the intravenous injection no protection was afforded by the emulsion when given intraperitoneally.

A series of guinea-pigs was now injected, using olive oil and arachis oil emulsions. The dose of toxin was increased up to 20 minimum lethal doses. The results were similar to those of the previous experiments. When the injection was given subcutaneously the guinea-pigs survived; when given intraperitoneally they died in every case.

Second Series

These experiments were now repeated using tetanus toxin. The animals were divided into Groups A and B as before, Group A being the controls injected with the toxin and saline, and Group B injected with toxin and emulsion. Results when the injections were given subcutaneously: Group A—Both animals died; Group B—No toxic symptoms, and all the animals survived. Results when the injections were given intravenously or intraperitoneally: All the animals in both groups died.

Third Series

Experiments were carried out using the toxins as before, but on this occasion a coarse emulsion, prepared by shaking, was used. The dose of toxin was the same as in the previous experiment. When the toxin and coarse emulsion were injected subcutaneously the animals died after a slightly longer period than the controls.

Conclusion 4.—Emulsions consisting of very large globules of fat do not appear to afford any protection.

DISCUSSION

These experiments show that large doses of toxin, which would normally cause death, can be given subcutaneously in conjunction with finely divided oil in water emulsions without producing any toxic symptoms. This power of emulsions to diminish the toxicity of toxins might be due either to the destruction of the toxin or to the adsorption of the toxin on to the surface of the oil globules, only allowing a gradual liberation of the toxin from the site of inoculation. That the toxin is not destroyed by the emulsion is shown by the fact that if the toxin-emulsion mixture is injected intravenously or intraperitoneally the animals die almost as rapidly as when the toxin alone is given. If the emulsion alone is injected intravenously there are no ill effects. The degree of dispersion of the oil in the emulsion is of importance with regard to the adsorption of the toxin. When emulsions consisting of large globules, such as those prepared by shaking, are used and injected with toxin subcutaneously, adsorption does not occur, and the usual toxic effects are evidenced. Since for these experiments the animals used were mainly rabbits, which are not suitable for the investigation of the formation of anti-toxin, the question of active immunization cannot be discussed at this stage. Experiments are now in progress with suitable animals in order to investigate this point.

This action of emulsions upon toxins suggests their use with vaccines. Experiments were carried out on rabbits, using a typhoid vaccine, consisting of typhoid bacilli brought into solution by the hydrotropic action of sulphonated lauryl alcohol and mixed with 5 per cent. olive oil emulsion. The agglutination antigen was in no case impaired, as evidenced by a positive agglutination

reaction in high titres in all cases. Preliminary injections of tuberculin B.E. with emulsions showed that large doses could be administered without causing a severe reaction. Clinical investigations are now in progress, using tuberculin (bacillary emulsion) and 5 per cent. olive oil in water emulsion. The report of the following case serves to illustrate the effect produced.

CASE REPORT

G. T., aged 37 years, female (Dr. A. B. Porteous's case), was a long-standing case of pulmonary tuberculosis. She was first treated in 1928 and sent to a sanatorium for nine months. The patient discharged herself and returned to work for one year. There was hæmoptysis in May, 1930, and she was admitted to hospital, where she has been ever since with pyrexia for over three years. Tubercle bacilli were found in sputum. There is evidence of other tuberculous lesions in the kidneys and elsewhere. She has been treated with: (1) emulsion injected intravenously; (2) tuberculin; (3) large doses of tuberculin with olive oil emulsion.

1. *Intravenous Emulsion.*—On several occasions 5 per cent. cod-liver oil and olive oil emulsions were injected intravenously. The temperature fell after the injection, but the effect was not prolonged.

2. *Tuberculin Injections.*—Prolonged treatment with tuberculin B.E. gave no beneficial result. The dose was brought up to 1/750 mg. B.E., when a reaction occurred. The dose was reduced and treatment carried on intensively for five months, injections being given every other day. The patient showed very little improvement. A further series of small doses of tuberculin were given at weekly intervals, but without any apparent benefit. At this stage it was decided to increase the dose of tuberculin mixed with emulsion, assuming, on the evidence quoted earlier in this paper, that the toxic effects might thus be eliminated.

3. *Large Doses of Bacillary Emulsion with Olive Oil Emulsion.*—The first injection of 1/50 mg. B.E. mixed with 2 c.cm. olive oil in water emulsion was increased in subsequent injections to 1/13 mg. B.E. In no instance did a reaction occur, but, on the other hand, the temperature invariably fell 2° to 3° F. within a few hours of injection and remained at a lower level for a period of about four days, when pyrexia gradually increased.

We cannot too strongly emphasize that this case is reported merely to point out that large doses of tuberculin B.E. can be administered with emulsion without causing the general reaction which would occur even with smaller doses of tuberculin injected without emulsion. The use of emulsions for intravenous injection in toxæmia is mentioned in the case reported. The toxin would appear to be adsorbed on to the fine oil particles, but the effect is of a temporary nature. The use of emulsions in certain toxic conditions is under investigation.

SUMMARY

1. Upon subcutaneous injection of large doses of toxin with emulsion no toxic symptoms developed; when given intravenously or intraperitoneally the usual toxic symptoms were evident.

2. In order to afford protection on subcutaneous injection the oil used must be highly dispersed in the emulsion.

3. Large doses of tuberculin B.E., when administered mixed with olive oil emulsion, do not give the general reaction which much smaller doses of B.E. cause when the tuberculin is given alone.

We wish to express our thanks to the Glaxo Research Laboratory for its helpful assistance in providing the emulsifying apparatus and to Professor Collingwood for the facilities provided in his department.

REFERENCE

- ¹ Walsh, A. G., and Foster, A. C. *Journ. Hyg.*, 1933, XXXI, No. 4, 457.

TABLE III.—Percentage of Cases showing Positive Results

	Before Malaria	Years after Malaria										
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11
Number of cases	370	116	71	40	32	20	16	18	10	11	5	1
Spinal fluid:												
Cells increased	92.0	43.3	42.3	30.0	21.9	15.0	6.3	5.6	10.0	9.1	Too few for percentages	Too few for percentages
Globulin positive	96.0	75.9	53.5	62.5	68.8	60.0	43.7	33.3	10.0	9.1		
Range reaching up to 5 or 4	92.9	79.3	67.6	50.0	31.2	30.0	12.5	0	0	0		
" " " 3 or 2	6.0	18.1	26.8	42.5	62.5	50.0	56.3	50.0	30.0	27.3		
" " " 1 or 0	1.1	2.6	5.6	7.5	6.3	20.0	31.2	50.0	70.0	72.7		
Wassermann positive	97.5	91.7	85.0	91.1	50.0	50.0	20.0	11.3	37.5	18.2		
Flocculation tests positive	97.5	96.7	90.0	91.1	75.0	75.0	80.0	76.4	50.0	54.5		
Blood:												
Wassermann positive	93.2	76.3	95.0	70.6	62.5	50.0	50.0	64.7	37.5	45.5		
Flocculation tests positive	99.2	93.3	100	94.1	100	75.0	80.0	88.2	100	100		

Too few for percentages

Too few for percentages

to good results. The average number of rigors for the 245 first attacks was 7.5, and all but thirteen of these attacks were terminated by quinine. On the other hand, thirty-three of the forty-nine second attacks, and six out the nine third attacks ceased spontaneously, and consequently the average number of rigors fell to 5.1 and 4.3 respectively.

In addition to inoculation with malaria, ultra-violet light, either alone or combined with auto-haemo-injections, was given to thirty-four patients, while forty-three had tryparsamide. To seventy-two cases one or more of the following were also given: bismostab, bivitol, bisglucol, iodo-bismuthate of quinine, stovarsol, sodium stovarsol, and acetyl-arsan.

CLINICAL RESULTS

Except for one patient with tabes, two with meningo-vascular syphilis who were discharged after intensive antisyphilitic treatment, and five recent admissions, all the non-malarialized patients are now dead, the majority having died within two years of admission. A large number of the malaria cases, however, are still in hospital; 30 per cent. have been discharged or transferred improved (some of these relapsing after a variable number of years), and of the 112 patients who died nineteen lived over three years. From a recent follow-up of old discharges these facts emerge. Of the 1923 admissions alone, thirty-six patients were treated by malaria; in 1933, ten years later, six were known to be at home (five being in very fair health) and five were still alive here. Of the 1924-7 group eighty-three had malaria; in 1933 twelve were known to be at home and fourteen were still alive in hospital (here or elsewhere), while seven more had been discharged but lost sight of. In the 1928-30 group forty-seven had malaria; twelve of these are now at home, eleven more are alive here, and six are untraced.

GENERAL OBSERVATIONS

That these results are not entirely due to malaria having been given only to early and hopeful cases is shown by the fact that of the 120 patients admitted in a bed-ridden condition no fewer than fifty-six had malaria, six being subsequently discharged, and eight more being still alive here, some after many years. With regard to habits as an indication of the stage of the disease, it may be mentioned that of the 207 patients who were admitted wet and dirty, malaria was given to 119, and as a result fifty-four became clean.

A renewal of malarial treatment in unimproved cases seems justified, for we have had seven patients who showed no benefit from the first attack and yet were discharged after the second. With regard to the addition of arsenical and bismuth preparations to malarial therapy the tables will show that we have had excellent results from malaria alone, but it would appear that these adjuvants rather hasten the clinical improvement as well as the serological amelioration. There are now sixty-four patients remaining in hospital (fifty-eight having had malaria), but only three are bed-ridden, five only are wet and dirty, and three have good prospects of an early discharge. The others are, for the most part, bodily fit and able to do physical work.

SEROLOGICAL CHANGES

As the majority of our long-treated cases examined serologically have naturally been drawn from those remaining in hospital—and therefore unimproved—a glance at the tables will show once more how little serological changes and clinical improvement go hand in hand. It will also be apparent that great improvement is often found in the fluid and blood reactions, but that this is most marked many years after the conclusion of the malarial treatment. Completely negative fluids, moreover, have been obtained by means of malaria alone. The specific tests for syphilis change more readily in the fluid than in the blood (sometimes relapsing later), the flocculation tests being more sensitive, and therefore more refractory after treatment, than the Wassermann. After the sixth year there is little likelihood of a Lange of 4 or 5 being found; while few cases show any abnormal cell count; the globulin also is negative by this time in the majority of cases.

CONCLUSIONS

Malarial therapy undoubtedly improves the bodily health. It prolongs life to a marked degree in some 35 per cent. of cases, and it has a beneficial effect upon the patient's habits and cleanliness. In about 18 to 20 per cent. of the patients it produces a clinical improvement that, as far as can be said at present, is likely to last many years, and often allows of a resumption of healthy and useful home life.

We are indebted to the medical superintendent, Dr. F. M. Rodgers, for permission to publish these results.

Clinical Memoranda

ACUTE THYROIDITIS FOLLOWING TEETH EXTRACTION

Acute thyroiditis is a sufficiently rare and interesting condition for this case to be worth reporting. It occurred in the practice of Dr. Andrew Simpson, Hawick, for whom I was acting as a locumtenent.

The patient, a woman aged 24, was a strong and, previously, healthy domestic servant. On August 26th, 1933, under local anaesthesia, Mr. G. Wallace Dunlop extracted seven teeth, involving the upper and lower jaws on each side. Two days later she stated that she felt discomfort in both sides of her neck, and on August 31st she first noticed pain and swelling in the region of the left lobe of the thyroid. I saw her for the first time on September 2nd. She had kept at her work, but was feeling very weak. Her temperature was 101° F. and her pulse 126; respirations were normal in rate and unembarrassed. The appearance of the gums was satisfactory. There was a hard, tense, and very tender swelling, which moved on swallowing, and was confined to, and conformed to the shape and relations of, the left lobe of the thyroid gland. The right lobe and isthmus, and the cervical lymphatic glands, were unaffected. She was confined to bed, kept on light diet, and given an aperient; ichthyol and glycerin dressings were applied. On September 3rd the temperature was 98.4° F. and pulse 78; she felt better, but the local condition appeared unaltered. The following day the temperature was 99° F., pulse 84; the local condition was still unaltered. By September 6th the morning and evening temperatures were keeping normal; the swelling was confined to the left lobe of the thyroid, but was less tense, and much less tender. Thereafter the patient made steady progress, and when last seen on October 12th, after a holiday, there was a little generalized enlargement of the whole thyroid gland, but no relative hardness or other abnormality of the left lobe.

The onset of acute thyroiditis so soon after teeth extraction can scarcely be dismissed as a coincidence, and I suggest that the infection was blood-borne from the gums, the patient's general resistance being lowered by continuing at work when she should have rested. The absence of any glandular swelling seems to rule out the possibility of the infection being by the lymph stream. The fact that the inflammation settled without any surgical intervention is surely another tribute to the very rich vascular supply to the thyroid gland.

IAN B. THORBURN, M.B., Ch.B.,
F.R.C.S.Ed.

Glasgow.

INTESTINAL OBSTRUCTION: PELVIC HAEMATOCELE

I have asked two gynaecologists whether they have ever come across a case of intestinal obstruction caused by a pelvic haematocele. As their answers have been in the negative the following case may be worthy of publication.

The patient was an Indian Tamil, aged about 35, and an estate labourer. Previous history revealed that her first pregnancy had terminated in premature labour. She had two children, however, aged 10 and 8 years respectively, and since their births the menses had been regular though scanty. She had had no fainting fits.

History of the Attack.—Menstrual period began on May 13th and lasted one day, the fluid being slightly darker than usual. On May 14th the patient vomited three times, and on the following day she was constipated, had pain in the umbilical and hypogastric regions, and vomited again. On May 16th the morning temperature was 99.2°, pulse 110, with tympanites, tenderness, and slight rigidity; the evening temperature was 99.4°, pulse 118, with increased rigidity and

severe pain on the right of the umbilicus. The patient vomited once—gastric contents only.

She was seen at 6 p.m. on May 16th, when the pulse was 134, and outlines of distended intestine were visible. No flatus had been passed since the onset of the attack. Her condition appeared too low for operation, which, however, she declined. She was placed in Fowler's position and given glucose-sodium bicarbonate in sips, and morphine 1/4 grain. On May 17th the morning temperature was 99° and pulse 120; the tongue was moist, and there had been no vomiting during the night. The patient consented to an operation, the chances of recovery from which seemed more hopeful. Six ounces of hypertonic saline (10 per cent.) were given intravenously, the patient complaining of substernal oppression, a general burning sensation, and severe colicky pains without relief.

Operation.—A right rectus subumbilical incision was made. The omentum, which was thickened and adherent to the peritoneum, was incised and a cystic swelling exposed, which was emptied of a pint of dark clots and drained, there being no bleeding. As the ileum was friable and adherent to the cyst wall, no attempt was made to tackle the obstruction; no foetus was found on cursory examination of the contents. Within an hour flatus and faeces were passed. On the twenty-fifth day the placenta, an ovoid flattened mass (size 2 in. x 1 in. x 3/4 in.), was expelled through the wound.

C. A. VAN ROOYEN, L.R.C.P.,
M.R.C.S.

Haputale, Ceylon.

A CASE OF PARALDEHYDE POISONING

Paraldehyde is a sedative and hypnotic drug used most often in mental cases and in the insomnia of alcoholic patients. The therapeutic dose is 30 to 120 minims, and the drug is not a scheduled poison, although fatal cases have been recorded after doses of one, two,¹ three,² and four³ ounces.

The patient, a man aged 71, was admitted to the Stepping Hill Hospital on November 28th, 1933, at 11 a.m., in a state of profound unconsciousness. The temperature was subnormal, and the pulse rate 130. The conjunctival and pharyngeal reflexes were absent, and the odour of paraldehyde could be detected in the breath and at a considerable distance from the patient's bedside. The patient's own doctor informed me that he had prescribed a mixture containing four drachms of paraldehyde in four ounces of water, with instructions that the patient should take half of the contents of the bottle at bedtime on November 27th as a sleeping draught. Unfortunately the chemist made the error of filling the bottle with pure paraldehyde, so that two ounces of the drug were taken. The stomach was washed out by means of a weak solution of sodium bicarbonate, but there was no trace of paraldehyde in the wash-out. Strychnine, coramine, and pituitrin were administered. One pint of saline was given intravenously. As the breathing was very shallow, artificial respiration was applied at intervals, and pure oxygen and a mixture of oxygen and CO₂ were administered alternately. A gag was inserted into the mouth to aid the excretion of the paraldehyde; three ounces of black coffee were given per rectum. There was retention of urine, and twenty-four ounces were withdrawn from the bladder. The pharyngeal and conjunctival reflexes did not return until 7 p.m. the same day, and complete consciousness was not regained until 7 a.m. the following day.

The above case again demonstrates the commonly observed fact that poisoning by this drug is usually the result of an accident; its nauseating odour and taste inhibit its use as a suicidal agent. The notes are also interesting because of the recovery of the patient after a dose of two ounces.

REFERENCES

- ¹ Smith: *Forensic Medicine*, 1925, p. 373.
- ² MacFall: *British Medical Journal*, 1925, ii, 255.
- ³ McDougall and Wyllie: *Journ. Ment. Sci.*, 1932, lxxviii, 574.

WILLIAM MORE, M.D.Ed.,
Assistant Medical Officer, Stepping Hill
Hospital, near Stockport.

Reviews

PUBLIC HEALTH TEACHING

The Heath Clark Lectures given last year in the London School of Hygiene and Tropical Medicine by Professor PRAUSNITZ of Breslau have now appeared in book form.¹ The subject dealt with is the teaching of preventive medicine in Europe. In an introductory chapter the view is put forward that the State, having an interest in developing preventive medicine, should do all in its power to advance that object by founding and maintaining adequate institutes of hygiene. The author states that such institutes were at first attached to the universities, but that these educational bodies proved to be too engrossed in research and the instruction of undergraduates to be able to deal in a competent manner with certain newer problems arising, such, for example, as post-graduate teaching and the training of subordinate lay personnel for public health work. It should, however, we think, be noted, so far as this country is concerned, that a number of our universities are now carrying on post-graduate teaching, and that those which have not opened their doors for the training of lay subordinates may possibly have refrained from doing so, not on account of any inability to cope with the task, but because the standard appropriate to such instruction did not appear to them to be compatible with the higher learning. In any event, as the author says, a new type of institute of hygiene has lately come into being, usually under State control, and in many cases erected with the aid of funds supplied by the Rockefeller Foundation. One such has been established in this country, the London School of Hygiene and Tropical Medicine, which, although on the new model, retains the academic connexion, being happily affiliated to the University of London.

The author classes practical work in prevention in two divisions. One of these comprises the environmental services, such as water supply and food control, which from the outset have provided a field for central and local government activity. The second embraces the social services, which, among other objects, safeguard the mother and child, and have brought the health visitor upon the scene. With regard to the last-named official, medical officers will learn with mingled feelings that "in preventive medicine work she is just as necessary as the chief and his medically trained assistants, whose work she supplements." The introduction concludes with a survey of the development of schools of social service, in the course of which the significant fact emerges that as the quantity of trained social workers increases their quality falls off.

In the body of the work accounts are presented of the teaching of preventive medicine in France, Germany, Great Britain, Poland, Hungary, Czechoslovakia, Yugoslavia, Spain, Greece, and Russia. In the chapter on Great Britain the author gives a summary of English sanitary administration, describes the move of the Society of Medical Officers of Health to interest teaching bodies in prevention, and quotes in full the rules of the General Medical Council for degrees and diplomas in sanitary science. Proceeding next, however, to deal with the teaching of medical graduates for these qualifications he centres his attention on the London School of Hygiene and Tropical Medicine, dismissing with a casual reference "a certain number of universities and other institutions in the United Kingdom" which are also giving training. While the London School more than merits every title of praise which the author bestows, we cannot but think

that the exclusive reference to it gives a quite inadequate portrayal of what is being done throughout Britain generally for post-graduate public health teaching.

The chapters dealing with the remaining countries present a variety of health institutions, whose equipment and service reflect the stage of sanitary progress in each community. The activities described range from the control of sera in several State institutes to the sewing class for women students in the peasants' university at Zagreb. It appears that in France health visitors who have received a general training are styled "polyvalent." In his closing chapter, which is devoted to the work of the League of Nations, the author quotes the conclusions of the Dresden conference on schools of hygiene. It may be noted that the second of these conclusions favours the closest possible link between the universities and the schools of hygiene. The book in general may be commended to the perusal of public health teachers. It will provide them with a stimulus, challenge, or warning, according to their point of view.

FRENCH PAEDIATRICS

Under the general editorship of Professor P. NOBÉCOURT and Dr. LÉON BABONNEIX a group of about eighty paediatricians and specialists dealing with related subjects have planned a large treatise on *Diseases of Children* in five volumes, the first three² of which have now appeared. Magnificently bound, printed on good paper, with copious illustrations, and with a table of contents for the whole five parts amounting to nearly sixty pages, this work would seem to be a very worthy achievement by that school of paediatrics of which so many of the founders look down from their photographs at the top of the pages of the Introduction. This, consisting of over forty pages, from the able pen of Dr. Babonneix, is in effect a statement of the paediatrician's creed with an historic background, an exposition of the methods employed, and a summary of the preventive measures now available. The main body of the first volume opens with a section on growth and its disorders, leading on to a block of two hundred pages on "disorders of nutrition," which is taken to include such diverse subjects as marasmus and chronic articular rheumatism, both of which are more commonly regarded in this country as having an infectious origin. The bulk of the rest of this volume is concerned with deficiency diseases and with diseases of the endocrine glands. The former, besides containing a surprising section on disorders associated with deficiency of cellulose in the diet, is mostly written by Dr. C. Lesné with the collaboration of Dr. R. Clément and Mlle G. Dreyfus-Sée, and is of the high standard to be expected from this author, whose wide outlook is particularly valuable in view of the international nature of vitamin research. Dr. H. Janet has been responsible for most of the chapter on the endocrine glands, a subject giving full scope for that power of clinical exposition so essentially associated with French medicine. The second volume is largely devoted to a consideration of the infectious diseases, and rheumatism again crops up in its acute forms. Syphilis is well covered, as might be expected, by a series of articles mostly by Dr. M. Pehu of Lyons, while Professor R. Debré and Dr. M. Lelong contribute a well-balanced section on the general aspects of tuberculosis in childhood. A comparatively short section (in contrast to the space devoted to other subjects) on disorders of the blood and blood-forming organs concludes this volume, and in view of the advances of the last few years this

¹ *The Teaching of Preventive Medicine in Europe*. By C. Prausnitz, M.D. London: H. Milford, Oxford University Press. (Pp. 180; 37 figures. 10s. 6d. net.)

² *Traité de Médecine des Enfants*. Publiée sous la direction de P. Nobécourt et L. Babonneix. Secrétaires de la rédaction: J. Cathala et J. Hutinel. Tomes 1, 2, et 3. Paris: Masson et Cie. 1934. (Pp. 998, 958, and 1,086; illustrated. Broché 150 fr., relié 170 fr. each.)

part of the book is somewhat disappointing. Volume iii is concerned with disorders of the circulatory system, the respiratory system, and the alimentary system. A disappointing opening section on congenital heart lesions, in which congenital syphilis is considered as an important indirect aetiological factor, is more than compensated for by a stimulating section on intrathoracic tuberculosis in children, a subject which of late has been brilliantly studied in Paris. The radiographic illustrations are well chosen and excellently reproduced. Throughout all three volumes there runs a clarity of expression and a note of dogmatism which makes for clear teaching. Anyone wishing to discover exactly what is thought in France on diseases of children will easily find it, even if sometimes it is in disagreement with views held elsewhere.

This same Gallic spirit is exhibited in a small book on *Infantilism*, by Dr. E. APERT (another of the contributors to the new treatise), which Dr. R. W. B. Ellis has recently translated and adapted.³ This is a simple, well-written monograph, dealing with the principal types of infantilism, a term apparently introduced more than sixty years ago by Laségue. The illustrations are well chosen, and Dr. Ellis has added a brief but useful summary of recent work on renal infantilism and coeliac disease, which enhances the value of the book.

EVOLUTION OF THE VERTEBRAL COLUMN

The Evolution of the Vertebral Column,⁴ a contribution to the study of vertebrate phylogeny, by the late H. F. GADOW, F.R.S., has been edited by Dr. J. F. Gaskell and Mr. H. L. H. H. Green. The frontispiece of this work will recall to many graduates of the University of Cambridge and to members of the Anatomical Society the features of a pleasant and witty gentleman who spoke English fluently but with a pronounced German accent. His accent was not the only thing Dr. Gadow brought with him from Germany: he brought with him the traditions, aims, and ideals of the great German school of morphologists. He was a pupil of that prince of morphologists, Carl Gegenbaur, a potent force in the seventies of last century, when Gadow was his pupil, but now little more than a name to the rising school of zoologists. Gegenbaur's impress on Gadow was deep and permanent: he devoted his life to the elucidation of morphological problems taken over by him from his master. A sentence from the present work will illustrate how Gegenbaur's influence permeated his outlook:

"In 1879 we, Gegenbaur's staff and special pupils, approved of the master's sneering remark that, according to Claus, the pelvis of the cel-shaped Perennibranchiates was so 'rudimentär' and placed so far back 'because it had got out of control.' Intercalation of vertebrae was not allowed, and tailward migration of the pelvis was at least disapproved for obvious reasons."

Gadow absorbed the enthusiasms of the morphological school in which he was trained, and in these pages mentions lovingly such names as Fries, Van Wijhe, and Fürbringer—familiar names half a century ago, now, alas! rarely mentioned. How elaborately research was done in these halcyon days is illustrated by another remark made in this book:

"He [Fürbringer] crowned his researches by his contribution to Gegenbaur's *Festschrift* under the title 'Ueber die Spino-occipitalen Nerven der Selachier und Holocephalen und ihre vergleichende Anatomie.' This monumental work of 440 quarto pages and eight double plates contains a well-nigh exhaustive morphology of the whole post-vagal and cervical regions from lampreys to the mammalia."

³ *Infantilism*. By E. Apert. Translated by R. W. B. Ellis, M.D. London: Martin Hopkinson Ltd. 1933. (Pp. 117; 25 figures. 7s. 6d. net.)

⁴ *The Evolution of the Vertebral Column*. By H. F. Gadow, M.A., Ph.D., F.R.S. Edited by J. F. Gaskell and H. L. H. H. Green. Cambridge: The University Press. 1933. (Pp. xiv + 356; 123 figures. 25s. net.)

This sentence illustrates the enthusiasm of the school in which Gadow was trained. Steeped in the traditions of the German morphologists, Gadow was given opportunities to develop his ideas in the University of Cambridge. He died in Cambridge on May 16th, 1928, aged 73. During his lifetime he read contributions to learned societies on many anatomical problems. The subject to which he devoted his chief attention—namely, the various forms assumed by the backbone, not only in all living vertebrate animals, but in extinct species of fish, amphibia, and reptiles—he said little about. After his death were found the materials he had collected to permit him to write a full history of the vertebral column. Seeing that the vertebral column has been in process of evolution for hundreds of millions of years and is the chief structure of a kingdom of animals, and that it was the main subject of his investigation for forty years, we cannot grudge the 356 pages needed for his printed text. Fürbringer required 440 quarto pages to do justice to the morphology of the atlas and axis!

In the course of evolution some structures have become more complicated, others have become simpler. A human vertebra in its adult state is a single bone; in certain early fishes a vertebra is represented by ten separate pieces. It would take us too far afield to attempt to outline the contributions Dr. Gadow has made to our knowledge of the evolutionary history of the vertebral column. Suffice it to say that anatomists who are seeking to unravel the history of all lines of vertebrate animals will be indebted to the editors for the labour spent in preparing Dr. Gadow's manuscript for publication, and particularly to Mrs. Gadow for the assistance she has rendered them. Especially are we glad to note the gracious and true things Dr. Gadow wrote concerning the zoological discoveries of his gifted colleague the late W. H. Gaskell. We find only one serious omission: there is no biographical introduction. Dr. Gadow richly deserved one.

EXTRACTION OF TEETH

The third edition of Mr. FRANK COLEMAN's *Extraction of Teeth*⁵ comes opportunely at a time when the "surgical extraction of teeth" is being widely advocated. Turning at once to the chapter on "Surgical Removal of Teeth," one reads: "The more skilled a practitioner has become in the use of tooth forceps, the less need will he have for resorting to other methods for the removal of teeth"; and one finds no mention of curetting the sockets, or of trimming off alveolar bone to expedite healing. The chisel and mallet, and "surgical" instruments other than forceps, find their chief use in the removal of impacted teeth and buried roots. This chapter ("Technique of Surgical Removal of Teeth") is an excellent, though short, summary of a much debated subject.

The main body of the book deals, in three well-balanced chapters, with the technique of extraction; the difficulties, complications, and sequels of extraction; and extraction under anaesthesia. The last of these chapters calls for special mention, particularly the part devoted to injection anaesthesia; Mr. Coleman's wide knowledge of pharmacology has enabled him to write with authority, and no detail that makes for success is too trivial for mention. Reading of the dangers of extraction, one feels almost a sense of disappointment that he has no hope for the haemophilic: "the rule that the extraction of teeth must never be undertaken in haemophilic patients is one that can rarely have any exceptions." (Bowdler Henry records a case in which coagulation of the periodontal tissues by

⁵ *Extraction of Teeth*. By F. Coleman, M.C., L.R.C.P., M.R.C.S., L.D.S. Third edition. London: H. K. Lewis and Co. Ltd. 1933. (Pp. vii + 232; 131 figures. 12s. 6d. net.)

diathermy was followed by successful extraction.) The first chapter—on technique of extraction—leaves no doubt in the reader's mind of the value of forceps and elevators (or of the more refined instruments known as exolevers) in the routine extraction of teeth. One may, perhaps, criticize the author for his rather cryptic reference to the status lymphaticus—is it in his opinion a clinical entity? The illustrations are numerous, well chosen, and very clearly explain the text. It is a book that will find a wide welcome.

SEX DIFFICULTIES IN THE MALE

The book by Mr. KENNETH WALKER now published under the title *Sex Difficulties in the Male*⁶ is really a second edition of *Male Disorders of Sex*, which appeared in 1930. The new title is obviously the more appropriate, because a large portion of the book is given up to discussion of minor derangements of sexual function which are better described as "difficulties" than as "disorders." All that need be said in recommendation of the work in its present form is that it is even more readable, and likely to be even more useful, than the first edition. It contains a new chapter on the subject of difficulties encountered in marriage, written in language that is as little technical as possible for the sake of non-medical readers. Mr. Walker knows how to make a book interesting. He knows also how to give advice without moralizing, and without being pontifical. Generally the advice seems excellent, and even when it does not fit in with our preconceived ideas, we must admit that it is generous and full of common sense.

Notes on Books

The art of "dressing" for an ophthalmic surgeon, whether that be done by a nurse, student, house-surgeon, or a general practitioner, requires certain specialized knowledge which is not ordinarily acquired during the regular training. Mr. HUGH JONES has sought to assist in filling this lacuna by the preparation of a little book giving *Practical Points in Eye Surgery and Dressing*.⁷ He believes that the study of this book and the instructions given therein will prevent harmful first aid, and ensure helpful preparation for operations. Wrong preliminary treatment of urgent cases in the absence of the surgeon (for example, the use of atropine instead of eserine) may have disastrous results, while a *laissez faire* policy may sacrifice the only chance of saving an eye. The book is complete in a couple of dozen pages, with an envelope in the cover with charts setting out the salient points to be observed. Notes are given on the methodical examination of the eye, on the instruments and drugs needed in an out-patient department, and on the sterilization of eyedrops; the handling of urgent cases, and of injuries; and finally, there is a chapter on preparation for operation, the examination of the general condition of the patient, and in particular search for foci of possible infection, the preparation of the lids and conjunctiva, and of the instrument, and finally on after-care. The writing is terse, the instructions clear and practical. The book should be of value to students on the threshold of eye work. Even in places where there are variations from the practice adopted by Mr. Hugh Jones, his notes will be of interest, for these differences will be sure to stimulate inquiry and thought.

The *Transactions of the Third International Paediatric Congress*, which was held in London last July, have now been published as a special number of the *Acta Paediatrica*.⁸ The main discussions, on allergy and on

the prophylaxis of milk-borne diseases, have already been reported in these columns. The full reports account for nearly half of the total pages devoted to the scientific proceedings, the remainder being occupied by the independent communications, which have a very wide range, and, with the subsequent discussions, are printed in one of the four official languages of the congress—English, French, German, and Italian. The printers and publishers of the *Acta Paediatrica* are used to such polyglot work, and the general production is very good for this type of publication. A short subject index—all that has been possible in view of the complicated nature of the volume—has been provided, and should enable those interested in a particular malady to find what was said about it. The editors responsible for the compilation of this special number are Dr. Robert Hutchison and Dr. Alan Moncrieff.

The *Pharmaceutical Pocket Book* first appeared under the editorship of Mr. John Humphrey in 1906. After passing through several editions the task of revision was entrusted by the Council of the Pharmacological Society to its Science Committee in 1923, and the eleventh edition, which appeared two years later, was noticed in these columns on June 13th, 1925. A new edition has now been produced under the supervision of the Codex Committee, edited by Mr. C. W. MAPLETHORPE. The contents show evidence of thorough revision, and the work in its new form should prove invaluable as a reference book for practising pharmacists. It also contains a great deal of information of practical use to general practitioners, medical officers of health, analytical chemists, and veterinary surgeons. Copies may be obtained from the publications manager, Pharmaceutical Press, 23, Bloomsbury Square, W.1 (5s. 6d. post free).

Preparations and Appliances

A PROTECTIVE MASK FOR USE AFTER OPERATIONS ON THE EYE

Lieut.-Colonel H. KIRKPATRICK, M.B., I.M.S. (ret.), London, W., writes:

Accidental injury of an eye whilst convalescing from an intraocular operation is an unfortunate complication which is sometimes met with. A protective shield should be (1) light and strong, (2) comfortable to wear, and (3) so constructed that it cannot be displaced by any movement of the patient's head on the pillow. Until recently, in my experience, no available device entirely fulfilled these requirements; but Messrs. Clement Clarke, 16, Wigmore Street, have now made for me a mask which appears to be wholly satisfactory. The



material is a composition resembling celluloid, and the mask is shaped to fit closely the orbital margins and superciliary ridges. The material is sufficiently rigid to afford protection and is yet sufficiently elastic to allow the mask to fit nearly every case. If necessary, however, it can be remoulded for an exceptional patient by softening it in hot water.

There is a bulging prominence in the shield over each eye, and the centres of these prominences are removed to allow proper ventilation. The mask can be used over a dressing instead of a bandage and is tied in position by two tapes which pass round the head, one above the ears and the other below. The shield will serve as a comfortable protective shade after the dressings have been removed. A separate shield for each eye can be used if desired, but a mask which covers both eyes is usually to be preferred.

⁶ *Sex Difficulties in the Male*. By K. M. Walker, F.R.C.S. Second edition. London: Jonathan Cape Ltd. 1934. (Pp. 254. 5s. net.)

⁷ *Practical Points in Eye Surgery and Dressing*. By Hugh E. Jones, M.R.C.S. London: John Bale, Sons and Danielsson, Ltd. 1933. (Pp. 27. 2s. 6d.)

⁸ *Acta Paediatrica*, Vol. xvi. Upsala: Almqvist and Wiksells. 1933. (Pp. xlv + 621.)

HOUSING AND RESPIRATORY DISEASE

A GLASGOW INQUIRY

Dr. C. M. Smith in a recent admirable report¹ discusses his study of the comparative incidence of respiratory disease in a slum and in a rehousing area of the city of Glasgow. The weight of major respiratory disease as a cause of death is often sufficient to affect the total death rates of communities, while minor respiratory diseases, together with influenza, may prove an outstanding cause of morbidity, having been responsible, as was shown lately in connexion with national insurance, for nearly 40 per cent. of incapacity leading to claims for sickness benefit. Information, therefore, such as this study supplies, on the incidence of respiratory disease, serves a most useful purpose, in so far as it may throw light on the manner in which transmission of such disease occurs and so point to measures fitted to obstruct or bar the path of infection.

The report indicates that the inhabitants of the slum and the rehousing area in question numbered about 1,000 in each case, making 2,000 in all. They were observed by means of a weekly house-to-house visitation over a period of one year, beginning in mid-September, 1928. In the two areas combined there were fifty-five cases of pneumonia, of which twelve proved fatal. These figures represent an incidence rate of 27.3 per thousand, a case mortality rate of 21.82 per cent., and a death rate of 5.96 per thousand. Compared with Glasgow as a whole this death rate is high, but the case mortality rate is not, and the figures suggest to the author's mind the general implication that, in poor areas a high pneumonia death rate may simply mean a high incidence of the disease, and not (as might otherwise be surmised) a high case mortality rate resulting from neglect, malnutrition, or similar causes.

SLUM AND REHOUSING AREAS COMPARED

Comparing now the two areas, the slum and the rehousing area, with one another as regards the respective incidence upon them of all acute respiratory diseases, from conditions so mild that the sick person did not take to bed up to pleurisy and pneumonia, and employing the average number of days in bed per head as the measure of severity, the author works out for the slum area 2.104 days in bed per head, and for the superior rehousing area 2.425 days. That is to say, the slum people had less illness than their betters, reckoned by days in bed. This is a distinct inversion of what might naturally have been expected, and the author modestly suggests three reasons 'why his figures' should be accepted with caution.

First, the slum population included a considerable foreign element, consisting of Jews and Lithuanians, who were not only more in employment but also fed themselves on more hygienic lines than the native Scot. When these aliens, whose record of respiratory disease was for the reasons suggested low, are deducted from the total, the days in bed for the slum inhabitants rise to 2.229, higher than the previous figure but still below that for the rehousing area.

Secondly, the slum people, through rooted suspicion or owing to unfamiliarity with procedure, were often reluctant to co-operate with the officials who made the weekly visits, and, therefore, apt to suppress data which should have come to light. The rehoused people, on the other hand, accustomed to periodical supervision by health visitors and others, were ready to tell everything. As

a result, the figure for the slum does not quite represent the facts, stating fewer days in bed than should have been recorded.

EFFECTIVE OVERCROWDING

The author's final reason for discounting, to some extent, the figures under discussion relates to the question of formal as distinguished from effective overcrowding, formal overcrowding being determined by the number of persons per apartment in the house and effective overcrowding by the number of persons per room used for sleeping. On the formal standard that three persons per apartment, each child being counted as one person, constitutes overcrowding, 43.4 per cent. of the slum dwellers were overcrowded and only 8.5 per cent. of the rehoused people. But on the effective standard of more than three persons per room used for sleeping, 42.8 per cent. of the slum dwellers were overcrowded and 35.3 per cent. of the rehoused. The slum dwellers on the effective standard show up rather better than on the formal standard, the rehoused population perceptibly worse. The people still in the slums, presumably having no option, used all the rooms in the house for sleeping: the former slum dwellers, now rehoused, although they had several rooms at disposal, left one or more unoccupied. Owing to these ill-advised arrangements, they were, as regards effective overcrowding, little better off than the slum dwellers, and since in crowded sleeping quarters respiratory infection is quickly spread, their experience of respiratory disease instead of being relatively light was heavy, and by the test of number of days in bed actually the worse of the two.

It is, of course, a regrettable circumstance that rehoused slum dwellers in Glasgow or anywhere else should fail to turn their more spacious dwellings to better account in this particular. It need not, however, cause surprise or be unduly reprobated. *Caelum non animam mutant*, when transported to the fresh environment. They carry with them to their new quarters the outlook and the habit of life to which they were previously accustomed, and, crowding together into one room at night as in the days of old, seek warmth, which they probably find, but at the same time expose themselves and their children to certain risks.

SUMMATION OF RESIDUES

In the case of respiratory infection or any disease the virus of which is located in the respiratory tract the spray repeatedly launched in speaking, coughing, or sneezing from the mouth or nose of sick persons or carriers is charged with the specific contagium, which thus hangs in the air and may ultimately lodge in the respiratory tract of another person. Whether or not the other person actually becomes infected depends upon the speculative factor which S. F. Dudley has called the velocity of infection. If the first charge of virus which lodges fails to infect, a second or third or fourth may succeed. The summation of residues tells in the end. But if the individual charge is weak it is only by a succession of charges that infection can ever occur, and a succession of charges can only lodge if the person at risk remains within range. The range of the virus in the air is short, probably only a few feet, and a person at risk, moving about by day in rooms or offices or elsewhere, may often enough unwittingly receive a single charge from an unrecognized source—namely, a sick person or carrier—but move away out of range before a second charge can reach him. At night, however, when in bed, he is immobilized for a matter of hours, and if by chance he is sleeping in a room with other persons who include in their number a sick person or a carrier of a respiratory infection he

¹ Medical Research Council, Special Report Series No. 192. H.M. Stationery Office. 1934. (9d.)

remains continuously within range all night and may so receive that summation of charges which culminates in his infection followed by an attack of illness.

NUMBER OF ROOMS

The range of the air-borne virus is short, as already noted, and a measure so apparently trivial as the spacing-out of soldiers in barracks or boys in dormitories has been found useful for its control. The corresponding method of spacing-out in a working-class dwelling would be to employ all the rooms for sleeping, so reducing to the minimum the number of sleepers per room. For such an arrangement, or rearrangement, a certain number of rooms is necessary, and it is probably not too much to say that for the control of respiratory infection the number of rooms matters more than cubic space or even floor area. The family house of three rooms which allows of the separation of the sexes at night will, if all the rooms are utilized—which local authorities in their rehousing areas are usually in a position to enforce—provide also a valuable security against the air-borne respiratory viruses. It is thus worthy to be commended alike on social and hygienic grounds. While the social evil is the graver and calls more urgently for remedy, it is, nevertheless, satisfactory to reflect that progress towards its amelioration will almost inevitably confer a coincidental degree of protection against the spread of respiratory disease.

STERILIZATION IN GERMANY

In view of the findings of the Brock report,¹ the opinion of a leading German psychiatrist² on the German Statute for the Prevention of Hereditary Disease is particularly interesting. The Act, which came into force at the beginning of this year, provides that a person may be sterilized when it is highly probable (*mit grosser Wahrscheinlichkeit*) on scientific grounds that his progeny will suffer from severe hereditary physical or mental illness.

The legislator, says Professor Gaupp, has placed an implicit and perhaps not an entirely deserved faith in the ability of medical men to determine this question of probability. Moreover, the phrase is a very ambiguous one. An event can hardly be called highly probable unless statistics show that it happens, on an average, in 50 per cent. of cases, and there can be few cases in which the most experienced medical geneticist will declare that the chances are even that if a certain person has a child it will be tainted. Much work is being done to define the probability of transmission of defects. Ernst Rüdin, in his work on the empirical prognosis of heredity, published last year, states that if a parent has hereditary chorea 50 per cent. of the offspring will be diseased. If one parent is a manic-depressive one-third of the children are likely to be affected and another third to show signs of constitutional disease, but if both parents suffer then 62.5 per cent. on an average are likely to inherit the specific psychosis, and all the remainder will probably be mentally abnormal. Unfortunately this is just the condition which is most difficult to deal with from a eugenic point of view. Manic-depressives are often very gifted and creative people, who in their sane periods contribute notably to the culture of the world; and to go too far in sterilizing parents of this class might seriously impoverish society. Bumke once said that it would have the effect of blotting all the feeling, warmth, and beauty out of existence, and of leaving nothing but a couple of miserable bureaucrats and a few schizoids. Professor Gaupp suggests that sufferers from mild and infrequent attacks, and those who first show the disease at an

advanced age, ought not to be sterilized if their spouses come from quite healthy stock. For violent patients, on the other hand, who have undergone severe and repeated attacks since puberty, he considers sterilization advisable if there are indications that the spouse has a hereditary taint. The decision, he says emphatically, should only be taken by experienced mental specialists after the most careful investigation.

The naïve expectation is often expressed in Germany that its new and determined Government will succeed in eradicating schizophrenia in two generations. The trouble is, he explains, that it is not the parents of schizophrenes who are afflicted with schizophrenia, but their uncles, aunts, and cousins, and under the new law it is only possible to sterilize the patient, not his relations. When one parent is schizophrenic the chances of any particular child inheriting the psychosis are only between 7 and 10 per cent.; when both parents are afflicted they are about even. It may be true that the offspring of schizophrenes often show definite psychic abnormalities of other kinds, but an inheritance probability of 2 to 7 per cent., the figures given by Rüdin, will hardly satisfy the terms of the Act. Professor Gaupp thinks that the law will best be applied if the parents of young schizophrenes will acquiesce in their sterilization before they are sent home improved from the mental hospital. As these patients usually make bad parents, the sociological and the eugenic considerations are in harmony.

Although it may be possible in theory to distinguish true hereditary epilepsy from the numerous acquired conditions that closely imitate it, certainly is, he says, very difficult in clinical practice, and can only be attained by a full history since birth and a thorough examination by a skilled and experienced neurologist. According to Rüdin, about 10 per cent. of the children of an epileptic are affected, but the disease is much rarer in the grandchildren. Mental deficiency is a different matter from mental disorder, for it is fairly well established that hereditary mental defectives hardly ever produce ordinarily healthy offspring. Moreover, they tend to mate together, so that the influence of a sound partner is absent. This is the class which has always seemed most fitted for sterilization. Here again, however, says Professor Gaupp, it is difficult to distinguish the true inherited condition from one produced by intrauterine or early trauma, but he suggests that if here and there, in the course of a nation-wide campaign, a mental defective is misdiagnosed as hereditary, it is a small price to pay, especially in view of the well-known incompetence of mental defectives as parents.

The author is wholeheartedly in favour of sterilizing the morally insane and defective, for he is convinced that they never produce socially valuable offspring. Inveterate alcoholics, he says, seem to come under the Act, as they often have a psychopathic heredity and are shockingly bad parents; but alcoholism as such has not been demonstrated with any certainty to be hereditary. Research may, suggests Professor Gaupp, succeed in proving that it is one symptom of a transmissible "*Verlustmutation*," or general tendency to addiction, the particular manifestation of which will be determined by factors affecting the individual. It is a grave responsibility to condemn patients to sterilization on a knowledge which is admittedly in its infancy. The medical profession must, Professor Gaupp concludes, sterilize only on the fullest and most cautious investigation, and in the meanwhile push on with the utmost energy their research into hereditary pathology.

A conference on *B. coli* infections will be held at Châtel-Guyon on September 23rd and 24th. It had been announced originally as arranged for May 20th and 21st, but this date was considered to be too near that of the congress on lymphatism, and so postponement was deemed advisable. The discussions will include the various infections and intoxications of intestinal origin. The general secretary of the conference is Dr. P. Balme, and inquiries should be addressed to him at the Société des Eaux Minérales, Châtel-Guyon, Puy-de-Dôme.

¹ *British Medical Journal*, January 27th, pp. 156 and 161.

² *Klin. Woch.*, January 6th, 1934, p. 1.

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SATURDAY, MARCH 10th, 1934

MEDICAL RESEARCH COUNCIL

The death of Sir Walter Fletcher in June last year came as a profound shock to the medical profession. Sir Walter *was*, it was felt, the Medical Research Council, and his sudden severance from it has led his successor, Dr. Edward Mellanby, in presenting the annual report of the Council for 1932-3,¹ to reflect upon the organization of State assistance to medical science during the past thirty years. "The history of these developments," it is stated in the introduction, "lies largely within the period when Sir Walter Fletcher was taking the leading part in the initiation and guidance of policy to this end. The constitutional freedom, administrative effectiveness, and general good will which have been secured are in great measure the reward of his vision and the fruit of his labour." No more fitting tribute could be paid.

One of the terms of the National Health Insurance Act of 1911 was the establishment of a committee to administer a fund for medical research which was to be paid from the Exchequer at the rate of 1d. a year for every insured person in the United Kingdom. This yielded approximately £53,000 in the first year. In July, 1914, Walter Fletcher was appointed the first secretary to the Medical Research Committee, which came into being in 1913 as a result of the Act of 1911. Under the Ministry of Health Act of 1919 the general administrative control of this work was transferred from the Insurance Commissioners to the Privy Council, and the committee was succeeded by the Medical Research Council, incorporated by Royal Charter in 1920. At the same time its finances were put on an independent basis and the Treasury provision was raised to £125,000 a year, an amount which has since been increased. Within twenty years an effective monetary liaison has been established between Medicine and the State, while freedom to pursue an independent policy has been preserved. With the Department of Scientific and Industrial Research and the Agricultural Research Council the Medical Research Council constitutes a triad whose services cover the whole ground of science in its practical applications to the needs of the community.

It would be ungracious to belittle the financial aid given by the State, but we must remember that the politician does not usually see in the promotion of scientific research an effective remedy for a dwindling popularity with the electorate. He has therefore

often shown reluctance to divert to that end money which might appear to yield a quicker return of profits if applied to other spheres of activity. On the supposition that the concern of a democratic Government is for the greatest good of the greatest number, few would question that health of body and mind is as great a good as any. To secure and promote this health more money is needed for research, and there is no room for complacency with things as they are, notwithstanding the fact that they are considerably better than they were thirty years ago. In the report of the Medical Research Council for 1931-2 the need for clinical research was strongly urged, but, as we said at the time,² "there is a dearth of posts which could be filled by the many men who cannot, for economic reasons, fulfil their early promise in this line of work." The Council returns to this matter again in its present report, and notes with approval the increase in whole-time professorships in clinical medicine and surgery—a vindication of its "strong belief that a primary necessity in the situation is the establishment of a greater number of senior posts for whole-time work in research and higher teaching, such as will give a possibility of a satisfactory career in later life to young men who devote themselves to the scientific study of clinical problems." The permanent endowment last year by the Rockefeller Foundation of the post held by Sir Thomas Lewis, and the recent decision of the Beit trustees to release funds for the appointment of a senior research worker in clinical science, are welcome and generous moves in support of the Council's policy, a policy that needs all the financial endorsement it can get, whether from the State or from private benefactors. As another reflection of this policy we have greeted the appearance of the new journal, *Clinical Science*—new only in title and scope, for it is the direct successor of *Heart*, and continues under the able editorship of Sir Thomas Lewis.

In the twenty years since the formation of the original Medical Research Committee there have been widespread changes in the problems of disease. As a result of some unassignable cause certain diseases, formerly common, have become textbook curiosities. One of these is chlorosis; another is epidemic diarrhoea and vomiting of children, which played such havoc among infants in the summer of 1911 and in many earlier hot seasons. The incidence of other maladies has fallen as a consequence of the action of public health authorities and of better education, increased cleanliness, and the "conversion of the populace from drunkenness to sobriety," with a resulting diminution of cirrhosis of the liver and of mortality due to the overlaying of children. "There remains an important group in which the change is the direct result of new knowledge acquired by recent research: to this advance it may be confidently claimed that workers in this country—very many of them aided by the Council—have largely contributed." To illustrate this advance the report refers to certain of the diseases

¹ Report of the Medical Research Council for the Year 1932-3. H.M. Stationery Office. (2s. 6d. net.)

² *British Medical Journal*, 1933, i, 421.

chosen for investigation by the Committee in its first annual report published in 1915: tuberculosis, rickets, chronic arthritis, epidemic diarrhoea and vomiting, diabetes, oral sepsis, and status lymphaticus. Of these, rickets can now be controlled and cured (it is hardly necessary to remind readers of the *British Medical Journal* of the part played in this by Edward Mellanby); the major terrors of diabetes have been removed; the causes of dental and periodontal diseases are now better understood, and the practical application of May Mellanby's work may prove another cornerstone in preventive medicine; the prevention and treatment of tuberculosis, especially in the collapse therapy of pulmonary tuberculosis, has greatly advanced; status lymphaticus "has been shown to have no existence as a definite morbid state"; but chronic arthritis, unfortunately, still remains a problem.

Since 1915 medicine, aided as it has been by physiologists, biochemists, and bacteriologists, has advanced along such a wide front, consolidating its position with each advance, that to catalogue its achievements would exhaust the reader, and particularities tend to obscure the general issues. The Council makes a bold and interesting generalization when it says that just as the last century was distinguished for the discoveries which led to the germ theory of disease, so will the present century come to be known as the "age of development of knowledge of metabolic disease." The rapid extension of knowledge of the endocrine glands and of vitamins, with the identification and isolation of insulin, adrenaline, thyroxine, pituitrin, parathormone, suprarenal cortical extract, calciferol, ascorbic acid, etc., and the increased information concerning the effects of excess or deficiency of these particular chemical substances, have provided the physician with therapeutic weapons that can be directed at the cause of the disease rather than at symptoms. The elaboration and perfection of diagnostic methods; the discovery of new remedies; the facilitation of modern surgery by such measures as blood transfusion, the use of carbon dioxide and the barbitone derivatives and avertin in anaesthesia, and the employment of x rays and radium in the treatment of cancer; the treatment of virus diseases, such as measles and anterior poliomyelitis with serum—all these, to mention but a few, have enormously extended the control of the physician and the surgeon over disease. "It can indeed be claimed," the report states, "without fear of serious contradiction, that the total amount of disability and the extent of human suffering have been immeasurably reduced by the combined efforts of investigators in all parts of the world during the period of existence of the Council." While the interest of the practising doctor lies mainly in the new therapeutic weapons these investigators have placed in his hands, he should remember that what is perhaps more important is the great strides medical research has made in the study of the basic problems of health and disease of the human body. Medicine is consolidating her claim to be a science as well as an art.

FOOD AND THE CHILD

Much has been heard about nutrition during the past few months, and since the report of the B.M.A. Committee on this subject the public has shown a wide interest in the two questions of how much and what sort of food the growing child requires. To these questions Dr. Robert Hutchison has given eminently sane and practical answers in his Hastings Popular Lecture, the text of which will be found in this week's *Journal* (p. 439).

Confining his attention to the problem of diet for the pre-school and the school child in this country, he emphasized at the outset how difficult it was to find an exact answer to the question of how much food the growing child needs. That the standards of nutrition commonly used in this country are unreliable, often being based on statistics collected in other lands, and none of them up to date, is an unfortunate fact, and the report now due of the special committee appointed some time ago to deal with the matter is awaited with interest. Even modern and exact data on height and weight for age standards, however, will not solve the problem, for, as Dr. Hutchison points out, malnutrition, when all is said and done, is essentially a clinical conception. The personal factor weighs so heavily that one group of experts can assert that economic conditions have barely affected the children of these islands, while another group, with equal conviction, assures us that the younger generation are certainly not so well nourished as they should be. The amount of energy required daily can be calculated along the lines Dr. Hutchison lays down of "the overhead charge" of basal metabolism, plus the requirement for activity plus the requirement for growth; and it is important to remember that children in their teens may consume and need more than full-grown adults. Nevertheless, even if the exact calorie intake of the child at any age, of any special bodily configuration, could be accurately calculated, this would still not ensure perfect nutrition. Too little time spent in sleep—a common and increasing fault among the present-day child population—means that more food is necessary, while, although physiologists assert for the cold comfort of the intelligentsia that brain work needs no fuel, there will be widespread agreement with the analysis put forward by Dr. Hutchison of the way in which modern educational methods in many instances interfere grossly with the physical well-being of the child. Granted a normal and healthy boy or girl the quantity of food necessary will be measured accurately by the appetite. The second question—as to what kind of food is required—can be more scientifically approached. The emphasis laid by Dr. Hutchison upon animal protein, and more especially upon the value of milk for its growth-promoting properties, echoes the statements made in the B.M.A. Committee's report, and it is satisfactory to note in passing that the "Children's Minimum Organizing Committee" now acknowledges the ambiguity of the term

"fresh" in the designation of the milk ration for all children attending State-aided schools and for younger children. As to the purity of the milk supplied we should here like to quote from a letter which appeared in the *Times* of March 5th under the signature of Lords Dawson, Moynihan, and Horder, Dr. J. A. Arkwright, and Sir Frederick Hobday: "The supply of milk to growing children will receive strong support from the medical profession, but until purity at the source and during subsequent distribution can be guaranteed it is imperative in the public interest that all milk should by adequate pasteurization be rendered safe from the risk of causing disease."

With the other elements of diet Dr. Hutchison deals in a broad-minded manner. This epithet is chosen deliberately, because there seems to be a tendency nowadays for so-called experts in dietetic matters to condemn or extol certain articles of food in a bewildering fashion. The one will anathematize sugar, a second condemn all cereals, a third attack the fat, and a fourth praise some special form of bread, until the public gives up what little faith it may have had in such pundits. The simple conclusion of one unit of protein, one of fat, and five of carbohydrate for the basis of the diet of the growing child is a thoroughly practical one. Dr. Hutchison wisely says that the importance of making special provision for the supply of vitamins is being over-estimated at the present time. There is no risk that this supply will fail if a pint of milk daily, animal fat, and green vegetables are included in the diet. If a deficiency is suspected the natural form of vitamins is advised in preference to the many artificial preparations now flooding the market. Dr. Hutchison's conclusion is the meal-time greeting in many lands and among many peoples, "Good appetite." Given this, the child can very well look after itself, provided there is food available.

CARBOHYDRATE METABOLISM IN GRAVES'S DISEASE

The association of disturbances in carbohydrate metabolism with Graves's disease is well known, but the mechanism of this association is not as yet understood, nor is there any agreement on the question as to whether the exophthalmic subject is more liable to diabetes than is the "normal." Before such matters can be decided the criteria by which abnormal carbohydrate metabolism is to be recognized must be more clearly defined. The time is now past when manifestations of abnormal carbohydrate metabolism could be referred simply to insufficiency of the pancreatic islets, and when faced with a glycosuria we have to consider the whole endocrine system before venturing a diagnosis. It is probable that this is true even in cases of the so-called "renal glycosuria" and "lag" types, and that there is too great a tendency to be content to place a case in one or other of these classes and leave the matter at that. From our knowledge of the metabolic effects of the thyroid hormone it is clear that manifestations of carbohydrate imbalance in such conditions as Graves's disease and myxoedema must be

expected. Recent work by W. T. Andersen¹ demonstrates that spontaneous glycosuria occurs in practically all cases of Graves's disease, and that this is due, not to a raised fasting blood sugar, but to an abnormally high and prolonged blood sugar curve after alimentation and a tendency to a somewhat lowered threshold. In explanation of this the author is inclined to accept Falta's hypothesis of a physiological antagonism between the thyroid and the pancreas, in that the former tends to diminish the formation of hepatic glycogen, whilst the latter promotes it. Persistent strain of the insulin mechanism in such cases might produce functional fatigue of the islets, and pancreatic diabetes might ensue. Andersen found that thyroidectomy was followed by an improvement in carbohydrate metabolism in pure Graves's disease, and by an improvement when this was complicated by diabetes (diminished insulin requirement, etc.). The recent demonstration by Houssay of the importance of the pituitary in the aetiology of diabetes, and the known relation between the thyroid and the pituitary, makes it more than probable that the thyroid is involved in so-called pancreatic diabetes. To support such a view it is not necessary to seek the extreme forms of Graves's disease among a series of diabetics. Indeed, the incidence of Graves's disease in a large series of diabetics was found long ago by van Noorden to be only about 0.6 per cent. Evidence is accumulating that hyperthyroidism is often demonstrably associated with excessive anterior pituitary function (excessive amounts of anterior pituitary and female sex hormones in the blood and urine of non-pregnant exophthalmic patients), and it seems not unreasonable to assume that in such cases there is an excessive production of the pituitary diabetogenic factor. The problem is, however, complicated by such considerations as that myxoedematous subjects frequently show marked intolerance to carbohydrate; but this might be explained rather by the general depression of all the metabolic functions than by a selective hyperfunction of one of them.

HYPOGLYCAEMIA IN IDIOPATHIC EPILEPSY

In a previous reference to research in mental hospitals² we mentioned a series of studies then in progress in the pathological laboratory of the Gloucestershire county mental hospitals. The objective of this work seemed to be of particular interest in that it was related to the possibility of a metabolic disturbance being concerned in the production of idiopathic epilepsy—a condition of obscure aetiology in which some elucidation of this kind might well have a bearing upon practical therapeutics. The work has now been completed, and the investigator, Lieutenant R. L. Haviland Minchin, I.M.S., has reported conclusions³ which deserve serious thought. In view of the known facts that an anaemia of the brain results in a deprivation of glucose as well as of oxygen, and that lack of a sufficient glucose supply to the brain can of itself originate epileptiform symptoms, it was decided to investigate the blood sugar values of a series of epileptics, irrespective of the number, the severity, or the duration of their fits. It was thereby shown that epilepsy was associated with

¹ *Acta Med. Scand.*, 1934, Supp. liv.

² *British Medical Journal*, 1932, ii, 722.

³ *Journ. Ment. Sci.*, October, 1933.

a low fasting blood sugar content, and that the glucose tolerance curve in this disease revealed over-activity of the islets of Langerhans. Apart from the bromides, which damp the irritability of the cerebral cortex, those drugs which have been found useful in epilepsy raise the blood sugar level. The obvious preventive of epilepsy would thus appear at first-sight to be a high carbohydrate diet, but, unfortunately, the problem is complicated by the fact that such an excess stimulates the formation of insulin. It has also been borne in mind that marked hypoglycaemia has been successfully treated by a low carbohydrate diet, and child epileptics often do well on a ketogenic diet. The explanation may be that, just as a high carbohydrate diet stimulates the islets, so a low carbohydrate diet tends to diminish their activity. The cause of the hypoglycaemia in epilepsy remained to be worked out. No evidence suggesting hypothyroidism was obtained, and none of the cases in the present series showed any of the classical symptoms of hypopituitarism. The blood pressures and pulse rates of the patients excluded any notable abnormality of the suprarenal function, and no signs of liver deficiency were observed. The author comes, therefore, to the conclusion that hyperinsulinism is probably the cause of the low blood sugar figures found in epileptic patients. He points out that hyperinsulinism, with symptoms indistinguishable from those of clinical epilepsy, has been recorded lately in a number of cases; that the glucose tolerance test figures point to islet activity; that female epileptics have more fits at the menstrual periods, at which time it has been shown that there is an increased sensitivity to insulin (the high folliculin content of the blood activating the insulin present); and that the value of such drugs as the barbitones, chloral, and caffeine can be explained on these lines. In the Gloucestershire investigations it was shown also that in the period of post-epileptic confusion the glucose tolerance was much reduced, and that far higher blood sugar levels were present. Variation in the balance of the autonomic nervous system had only a very limited influence on the blood sugar concentration and the incidence of fits. Natural recovery from epilepsy was found to be associated with the onset of hyperinsulinism. A final suggestion is that in cases of epilepsy which do not respond satisfactorily to medical treatment the pancreas should be partially removed.

POST-VACCINIAL ENCEPHALITIS IN 1933

The permanent committee of the International Office of Public Health has recently drawn up statistics of the incidence of post-vaccinial encephalitis in different countries during 1933.¹ In England four cases were notified between April, 1932, and May, 1933, with one death, which occurred in a girl aged 17, in whom the symptoms developed on the eleventh day after vaccination. The other cases were in two young adults and a boy aged 7, who all made a rapid recovery. The lymph used in these cases came from different sources. Since April, 1933, the Ministry of Health has received reports of four cases without any deaths. In the first case, which occurred in a boy aged 13, the condition appeared to be one of poliomyelitis developing eleven

days after vaccination. The other patients, aged 15, 17, and 19, recovered rapidly without any sequelae. In three of these cases the lymph came from the State institute, and in one case from an authorized private establishment. In Holland five cases were notified, two of which were fatal, but as neither was examined by a neurologist the diagnosis was not absolutely certain. The other three cases were mild attacks in children aged 3 years. The annual number of vaccinations in Holland, which was formerly as high as 150,000, has of recent years considerably diminished, being 30,000 in 1932 and only 25,000 in 1933, so that the proportion of encephalitis is about one for every 5,000 vaccinations, as it was in previous years. In Sweden, where thirty-six cases with eight deaths occurred between 1924 and 1933, the number of cases is about one to every 20,000 vaccinations. In Germany fourteen cases occurred among the primary vaccinations with one death, and five cases with two deaths among the revaccinations during 1933. Every case notified was examined by a committee of specialists. During the period 1927-33 there were 134 cases with thirty-nine deaths among a total of about fourteen million vaccinations or revaccinations.

PARALYSIS AFTER ANTI-SCARLET-FEVER SERUM

From time to time cases have been recorded in which paralysis has occurred after the use of antisera. I. M. Allen² reported the case of a man, aged 22, who developed brachial neuritis and amyotrophy after a prophylactic injection of 10 c.cm. of antiscarlatinal serum. He classifies the neurological complications of serum sickness into four types: (1) radicular, resembling Erb-Duchenne paralysis of acute onset; (2) neuritic, in which single nerve trunks are affected; (3) polyneuritic, with symptoms of toxic polyneuritis; (4) cerebral, in which the signs and symptoms are probably due to cerebral oedema. The prognosis is considered to be good. Three cases of musculospiral paralysis and one of facial paralysis after the prophylactic injection of scarlatinal antitoxin have been reported by A. Gordon,³ who states that the prognosis is invariably favourable, and considers that, in view of the rarity and transient nature of the paralyses, this complication of serum therapy is no contraindication to its use. A further account of paralysis after anti-scarlatinal therapy is given by J. Cathala, R. Garcin, P. Gabriel, and R. Laplane.³ Their patient, an unmarried woman aged 25, had, in 1928, received injections of antidiphtheritic serum without any misadventure. On April 3rd, 1932, she was admitted to hospital with scarlet fever and was given an injection of 60 c.cm. of antiscarlatinal serum on the same day. A fortnight later a typical serum reaction occurred, with generalized urticaria and Quincke's oedema of the face. During the following night severe pain developed in the shoulders, nape of the neck, and right leg. The right arm, the left arm, and right leg became paralysed, the one after the other, in the course of a quarter of an hour. Partial recovery followed four days later, but on May 27th, fifty-four days after the injection of the serum, a second attack of urticaria developed while

¹ *Lancet*, 1931, ii, 1128.

² *Journ. Amer. Med. Assoc.*, 1932, xcvi, 1625.

³ *Presse Médicale*, January 13th, 1934.

¹ *Bull. Off. Internat. d'Hyg. Publ.*, 1934, xxvi, 75.

the patient was menstruating; it lasted a few days. On May 30th severe pain was suddenly felt in the left arm, which within an hour became paralysed. On June 18th a third outbreak of urticaria, lasting only a few hours, was again the signal for a recurrence of the cervico-brachial pain. As late as September, 1933, both arms were still very weak, though their range of movement was beginning to return to normal. Discussing possible explanations of this case, the authors refer to Sicard's hypothesis; according to this there is an internal urticarial condition which exerts pressure on branches of nerves, which become strangled in their sheaths.

TEMPERAMENT AND TOFFEE-MAKING

A report of the Industrial Health Research Board, by S. Wyatt (assisted by L. Frost and F. G. L. Stock), on "Incentives in Repetitive Work"¹ gives a detailed account of a practical experiment in a toffee-making factory. The object of the experiment was to discover the chief factors controlling the output of a group of girls engaged on the monotonous tasks of wrapping, packing, and weighing pieces of toffee. The investigators kept a group of ten girls under close observation for a period of fifteen months, and, as girls of widely differing temperament and intelligence had purposely been chosen, study of their reactions to the work yielded results of great practical importance, as well as being of psychological interest. The girls worked in pairs for a day at a time on each of five tasks, and they all worked through the same programme. As their occupations contained little that was inherently interesting the most important incentive to good work proved to be the weekly wage. When the girls were on a time rate they all worked comparatively slowly, and only constant supervision and the fear of dismissal kept them up to the mark. They found the routine extremely boring, and wasted a good deal of time in voluntary rests; but the system tended to promote friendly relations, and instances of envy and jealousy because one worker did more than another were comparatively rare. When the girls were put on to a piece rate their output improved about 40 per cent., and they found their tasks distinctly less boring. Unfortunately they became more quarrelsome, envious, and jealous of one another. The more capable found their work satisfying, but the slower ones got discouraged and depressed at seeing their neighbours earning a substantially higher wage than themselves. The remedy seems to lie in the selection of workers, so that each group consists of individuals who are approximately equal in capacity. This capacity did not appear to depend on the manual dexterity of the girls—which was estimated by getting them to work for short periods at high speed—but on their possession of a quiet and placid temperament, and immunity from distracting influences and from a disposition to quarrel and complain. The talkative, dominating, and quarrelsome members of the group, though possessing considerable manual dexterity, had the worst output, because their rate of work was so erratic. They had a disturbing effect on the others, and the temporary absence of one of them caused an increase of 13 per

cent. in the output of the remainder. It was found that the temperamental tendencies shown by the girls were well known to their school teachers, so it seems probable that school records kept by observant teachers are likely to provide the most trustworthy evidence of general suitability for repetition work in industry.

CREMATION IN GREAT BRITAIN

A comparative table of cremations, issued the other day by the Cremation Society, reveals that this method of disposal of the dead is steadily winning favour in this country, and not least in industrial areas. Comparing the figures for the years 1929 and 1933, it appears that the percentage increase has been: 200 for Pontypridd, 140 for Liverpool, 128 for Darlington, 98 for Bristol, 95 for Birmingham, and 87 for Bradford. Moreover, the new crematoria start with much higher figures than was the case formerly. For example, the first year's totals for Reading and Southampton are equivalent to those at Birmingham and Manchester after sixteen and twenty-six years respectively. In 1933 there were 7,480 cremations at the existing twenty-four crematoria, in comparison with 6,315 in 1932, and 5,195 in 1931. The pioneer crematorium, at Woking, was opened in 1885, and has now cremated 8,934 bodies, and the Golders Green establishment, on the outskirts of London, which opened in 1902, has cremated 28,884. Those at Reading and Southampton started operating in 1932, and drew away a number of cases which would otherwise for the most part have been dealt with at Woking. There are four kinds of controlling authorities—namely, burial boards with three crematoria, municipal with ten, proprietary with ten, and in one instance the State, operating in Guernsey. In addition to new crematoria nearing completion at Newcastle-on-Tyne and Stockport, others are already authorized or are contemplated by the local authorities at Birkenhead, Blackpool, Croydon, Maidstone, Plymouth, and Stoke-on-Trent. The regional increases suggest that some of the wage-earning classes are now tending to adopt cremation, notwithstanding their traditional preference for the slow corruption of the grave. How anyone with the least spark of imagination can hesitate between earth burial and the quick furnace passes our comprehension. But racial habits die hard, and we know of many confirmed believers in cremation for its hygienic and aesthetic advantages who have failed to leave directions for the disposal of their own bodies by this means, or have let members of their families be buried when the day came for putting a principle into practice. "Another time, another time," they say.

THE ROYAL SOCIETY

Among the seventeen candidates recommended by the council of the Royal Society for election as F.R.S. are: Paul Fildes, M.B., B.Ch., research bacteriologist at the London Hospital; R. T. Grant, M.D., M.R.C.P., lecturer in cardiac pathology to University College Hospital Medical School; E. L. Kennaway, M.D., director of the research laboratory at the Cancer Hospital; and H. Raistrick, D.Sc., professor of biochemistry in London University.

¹ H.M. Stationery Office. (Is. 2d. net)

The Hastings Popular Lecture

ON

THE FOOD OF THE GROWING CHILD

Delivered in the Great Hall of the British Medical Association on March 7th

BY

ROBERT HUTCHISON, M.D., F.R.C.P.

The lecture which I have the honour to deliver this evening is in memory of Sir Charles Hastings, the founder of the British Medical Association; and it is right that his name should be kept in remembrance, for in founding the general interest. Now there is no subject bearing on the medical profession, but, indirectly, on the public whom that profession exists to serve. By the condition of its foundation the lecture is intended to be a popular one, and to deal with some aspect of the public health of general interest. Now there is no subject bearing on the public health which is at present more in the minds of the laity than that of nutrition, for there is a widespread apprehension that, owing to the present economic stress, certain sections of the community may suffer from imperfect nutrition, with all the consequences to health which such a condition involves. Further, if malnutrition exists, it is always on the youngest members of the community that its evil effects chiefly fall, and I propose, therefore, to consider the amount and kind of food necessary for the proper nutrition of children of the pre-school and school age—say, from 3 years upwards. I shall not touch upon nutrition during infancy, as that presents special problems of its own. Further, what I have to say applies only to children in this country, for it is of these alone that I have any personal experience.

WHAT IS OPTIMUM NUTRITION?

At the outset we are met by the question, What is proper nutrition, and how do we know whether a child is well nourished or not? Various criteria have been proposed, of which "weight for height" and "weight for age" are most generally employed; but unfortunately these do not apply to the individual child, but only to the average child of a group. When all is said and done, "malnutrition" is mainly a clinical conception, and although an experienced doctor can say with fair certainty that such-and-such a child is suffering from it, yet it must be remembered that there is a large personal factor in his judgement; and this must always be borne in mind when you read that so many children in, say, a school are reported to be "ill nourished."

There is another question equally difficult: At what standard of nutrition are we to aim in our feeding of the growing child? At a maximum deposition of fat? Surely not. Or at a maximum of muscle or height? It is very doubtful. Is the most muscular child necessarily the healthiest or the most likely to live long? Is height really an advantage? There is some evidence that town-bred children are smaller and lighter for their age than country children; but is that a bad thing? May it not be that Nature, if left alone, is evolving a type of individual best suited to stand the conditions of town life? I raise these questions at the outset, not to discuss, still less to try to settle them, but in order to bring home to you the fact that the problem of adequate nutrition in childhood is not so simple as might be supposed, and that we have still much to learn about it.

AMOUNT OF ENERGY REQUIRED

Notwithstanding these uncertainties science has taught us a good deal, especially in recent years, as to the essentials of healthy nutrition in childhood. We may

consider (1) the amount and (2) the kind of food required by the growing child, for the subject has both a quantitative and—equally important—a qualitative aspect. By the amount of food required one means, scientifically, the amount of energy which has to be consumed in the form of food in order to make good the outgoings of the body. These outgoings are in three directions: (1) the energy required to "run the machine" (what is called by physiologists the basal metabolism); (2) the energy used up in bodily activity; and, at the time of life of which we are speaking, (3) the energy required for growth. We must consider each of these separately.

The Overhead Charge

Even when the child is asleep in bed energy is being used up in the work of breathing, of circulating the blood, of keeping the body warm, and in other ways. This is an unescapable "overhead charge" which must always be provided for first if life is to go on at all, and about one-half of the total amount of food taken may be consumed in this way. The amount of energy required to run the machine is fairly constant for children of the same weight; but not absolutely so, for there is some reason to believe that certain individuals are more economical machines than others, whilst children who are under weight seem to have a higher "overhead charge" to meet than normal. On the other hand, prolonged malnutrition appears to bring about a more economical running of the machine, though this may perhaps be at the expense of health. The overhead charge is raised if more heat has to be produced, and this must be borne in mind in connexion with the question of open-air schools, for if children are to serve as radiators for warming the circumambient air they must be provided with enough food to enable them to do it. Parents and others who believe in "hardening" children by making them wear a minimum of clothing should also remember it.

Activity Requirement

That energy is required for growth is not so easily understood, and it is hardly necessary to point out that the amount of this item on the debit side of the balance sheet will vary greatly with the temperament of the child—active, restless children spending much more than the lethargic and placid. It is this factor, indeed, which chiefly accounts for the very different quantities of food required by different children of the same weight and age. I shall have something to say about some of its other implications in a moment. On the other hand, there is no reason to suppose that brain work involves any large expenditure of energy, and therefore of food intake. It is play and games that count, not lessons. Excessive brain work may, indeed, interfere with the nutrition of the growing child, but it does so indirectly in a way to be spoken of later.

Growth Requirement

That energy is required for growth is not so easily understood. It is simple enough to see that building material is required for that purpose, but it would appear that energy is also employed in, so to speak, "putting the bricks in place," and during the periods of most active growth this may come to quite a considerable amount—say about one-seventh of the total food consumption. Hence it is that a growing boy of 13 to 18 may consume (and need) more food than a full-grown man, and a girl of 11 to 16 more than an active woman.

ACTIVITY VERSUS GROWTH

When the overhead charge has been met there is a struggle between the demands of muscular activity and those of growth for what is left of the energy contained

in the food. If the diet is ample both activity and growth will go on to their full extent; if, however, food is insufficient, then one or other has to go short. If the demands of growth, under the urge of endocrine secretions, are imperious, there may not be enough food energy left over to admit of full muscular activity, and in the common phrase the child is said to have "outgrown his strength." If, on the other hand, muscular activity is forced and excessive, growth may suffer. This should be remembered by the advocates of compulsory games, and has to be considered in connexion with the question of adolescent labour. The competition between the demands of activity and those of growth also explain the well-known fact that children often grow rapidly when they are confined to bed through illness, and it emphasizes the importance of ample hours of sleep to the growing child, for during sleep all demands on the food energy, except those of growth, are reduced to a minimum.

CAUSES OF MALNUTRITION

It will be obvious from what has been said that malnutrition in the child may result not only from an insufficient income of energy in the form of food, but also from excessive expenditure, the result of overactivity and too little sleep. But it may also come about in another way. The food supply may be abundant, and yet, owing to impaired appetite or enfeebled digestion, the child may not be able to avail himself of it. I believe these disorders to be fairly common causes of malnutrition among children of all classes to-day. They are brought about by two circumstances—on the one hand by town life, with all that it implies in the way of overcrowding and want of fresh air and exercise, and, on the other, by educational overstrain. Both of these factors are at work, and often together, to lessen the child's desire for food and power of making use of it, apart altogether from the question of whether enough food is available or not. The amount of physical pabulum a child can take in is, as it were, in inverse ratio to the amount of mental pabulum you try to put into him, so that the activities of the Ministry of Health and those of the Board of Education often run counter to one another.

AMOUNT OF FOOD NEEDED

Having summed up the debit side of the balance sheet of energy, you may now ask, What does it all amount to, and how much food must the growing child take in order to meet it? Unfortunately, as far as the *individual child* is concerned, no one can tell you. Physiologists, it is true, have calculated with a fair degree of accuracy the amount of energy in the form of calories (the unit employed in measuring the energy value of foods) required by the average child at different ages; but as regards the individual child we have only its appetite to guide us, which, after all, is Nature's index of food requirements, and a fairly trustworthy one. We can only trust it, however, if the appetite is normal and healthy, and that, as I have already said, is by no means always the case. If, then, we wish to promote optimum nutrition in the growing child, we must see to it that the appetite is normal, and that may mean changing the child's whole mode of life. Once the appetite is normal the amount of food required may safely be left to the child itself to determine.

PROTEIN REQUIREMENT

We now turn to the qualitative side of our problem. What *kind* of food does the growing child require? The energy of which we have been speaking may be derived from any of the nutritive constituents of the food—protein, carbohydrates, or fats—but it is by no means a matter of indifference what proportion of the total

energy is derived from each. As regards proteins we have no choice, for they alone of the nutritive constituents are able, not only to supply energy, but to provide the raw material necessary for growth and repair. The kind of protein supplied is, however, of importance, for some proteins go farther than others as growth material. Broadly speaking, the animal proteins are more valuable in this respect than those of vegetable origin, and a considerable part—say one-half—of the total protein supplied to the growing child should be derived from animal sources. This means in practice that milk, eggs, cheese, meat, and fish must be adequately represented in the diet, milk particularly seeming to have a special power of promoting growth.

FATS IN NUTRITION

The remainder of the total energy required must be taken in the form of fats or carbohydrates, and it might be thought that it did not matter which was chosen, always bearing in mind that a given weight of fat supplies more than twice as much energy and heat as a given weight of carbohydrate. There is some reason, however, to suppose that fats play a part in nutrition which carbohydrates cannot fill. For one thing, most animal fats are the vehicle of important vitamins—of which more later—but, apart from this, fats seem to have the power of increasing the resistance of the body to certain diseases—especially tuberculosis. Lastly, it has been claimed for them that they are a "nerve food," and that children who take fat well are not so subject to functional nervous disorders as others. It must also be remembered that the digestive organs are less likely to be strained if a mixture of fats and carbohydrates is taken rather than either alone, or disproportionately. Unfortunately, the capacity of children to take and digest fats varies greatly; and there is some reason to believe that the modern child shows an increasing disability in this respect; but whether this be so or not, every effort should be made to educate the growing child—for it is to some extent a matter of education—to digest a reasonable amount of this important constituent of the diet.

STARCH AND SUGAR

With the carbohydrates there is no difficulty. All children like them, and the only danger is that, partly on this account and partly because of their relative cheapness, an undue proportion of the total energy of the diet may be supplied in carbohydrate form. This danger especially applies to sugar, which is now so cheap, which is presented in such seductive shapes, and which children take so readily. To some extent, of course, the craving of the young for sugar is a natural one, but if indulged too much both appetite and digestion suffer. Furthermore, an excess of sugar in the diet may even predispose to disease. There are some doctors who believe that it favours catarrhs, though this cannot yet be regarded as proven, and there are strong grounds for supposing that it may sometimes lead to the development of diabetes. In these days, when the indiscriminate administration of glucose to children is so common, it may be worth while to bear these possibilities in mind.

To sum up, and in order to give some practical exactitude to the above considerations, it may be said that the food of the growing child should contain for every unit of protein one unit of fat and five of carbohydrate, and that in the latter starch should largely preponderate. The exact figures, of course, will vary with the age, temperament, and digestive peculiarities of the individual child.

But in considering the qualitative aspects of the child's diet we have to reckon not only with the kind of nutritive constituents from which the energy is obtained (proteins, fats, and carbohydrates), and in what proportion from

each, but also with substances which, although not supplying energy, are yet absolutely essential for healthy nutrition—namely, the mineral matters and the "accessory food substances," popularly known as vitamins. The discovery of the importance of these, and especially of the vitamins, has been the chief contribution of the present century to the science of nutrition.

MINERAL MATTERS

The mineral matters we may dismiss briefly, for whilst it is true that several mineral substances are required for proper nutrition, there are only two—calcium and iron—which are ever in the least likely to be deficient in the diet. Calcium is especially important for the growing child, seeing that it enters so largely into the composition of the bones. It is contained in abundance in milk, cheese, eggs, and green vegetables, and so long as these are well represented in the diet no shortage of it need be feared. It is, indeed, impossible to name any disease of childhood which is due to too little calcium being supplied in the food, although conditions of ill-health may result from failure to utilize it when it is supplied. Deficiency of iron also does not arise unless the diet is very faulty in other respects as well. Iron is most abundant in red meat and in yolk of egg, and in oatmeal, spinach, and some other vegetable foods, but if there is any reason to suppose that the growing child is not getting enough iron it is easier to supply the metal in the shape of medicine rather than in that of food.

VITAMINS

The vitamins cannot be dealt with so shortly, but as Professor Mellanby discussed them fully in his Sir Charles Hastings Lecture three years ago, and with all the authority of one to whose experimental work much of our knowledge of them is due, I need only refer to them in so far as they affect the growing child.

There are, as most of you know, four vitamins which are of importance in nutrition—A, B, C, and D. The first and the last of these are "fat-soluble"; B and C are "water-soluble." Vitamin A is contained largely in milk-fat, yolk of egg, liver, and green vegetables, but is particularly abundant in fish oil. If a child is starved of it a curious disease of the eyes may develop (keratomalacia), and night-blindness may also occur. These conditions are both extremely rare, but outbreaks of them have been observed recently among children in some of the distressed areas in this country. It has also been claimed for this vitamin that it has the power of increasing resistance to infection, and it has therefore been called the "anti-infective" vitamin. There is no evidence, however, that it possesses this power in human beings, except as regards some minor infections of the skin, so that the term "anti-infective" is not justified.

The water-soluble vitamin B complex is the accessory factor which prevents the development of beri-beri, a disease, however, which never arises in this country. There is some experimental evidence that, apart from this disease, certain disorders of health may arise if the vitamin is supplied in insufficient amount, but such disorders, if indeed they arise at all, cannot be recognized in man. In any case vitamin B is so widely present in all sorts of foods that any deficiency of it in a reasonably varied diet is almost out of the question.

The other water-soluble vitamin, C, prevents scurvy, and is present in fresh fruits and vegetables and, in lesser amounts, in several other foods, such as potatoes. As scurvy almost never affects children beyond the age of infancy in this country there seems no reason to fear that vitamin C is often deficient in the diet, nor can we, in this case also, recognize any disturbances in health

short of actual scurvy which are due to a comparative though not absolute shortage of it. There is therefore no reason to give growing children large quantities of orange juice, as is so often done now, in order to supply "vitamins."

The other fat-soluble vitamin, D, is the one which prevents rickets. It is present in yolk of egg, butter, and milk, and in fish oils, and is highly important in the diet of infancy; but there is no recognizable disease of childhood due to a deficiency of it unless—as the recent work of Mrs. Mellanby suggests—caries of the teeth is an indirect consequence of such a defect.

As regards the question of the vitamins in general, I am of opinion that their importance is being over-estimated by the public at the present time; or perhaps it would be better to say that the importance of making *special provision* for them is over-estimated. If the diet is right in other respects, and especially if it contains a reasonable amount of milk (say a pint a day), animal fat, and green vegetables, then the vitamins may be left to look after themselves. Should you, however, fear that a child's diet may be deficient in the most important of the vitamins—the fat-soluble—I should advise you to supply them in a natural form, such as fish oil, rather than as one of the many artificial preparations with which the market is now flooded.

CONCLUSION

In conclusion, I would say for your comfort that the choice of food for the growing child is not really a very abstruse or difficult matter after all. If the diet is abundant, mixed, and varied, and in accordance with the essentials sketched out above, all will be well, provided always that the child has a good appetite. But that "provided" is the crux of the whole matter, for I hope I have said enough to convince you that proper nutrition is not a matter of food alone, but of the child's whole nurture.

INDUSTRIAL HEALTH EDUCATION SOCIETY

The annual meeting of the Industrial Health Education Society was held on February 28th at the house of Lord Luke in Portman Square. Lord LUKE, who is chairman of the executive council, said that the society, in the ninth year of its history, had been very active. Its work consisted in arranging health talks and exhibitions of health films to workers' organizations throughout the country, and during 1933 the total of lectures given had amounted to 395. The society was much indebted to miners' lodges, trade unions, and other bodies, which arranged for the rooms, and brought together the audiences, while the society itself supplied the speakers. In the report which was presented it was mentioned that the society hoped to do more for women workers; the reason why addresses to women had been less frequent than to men was because women workers were not so well organized. The society had been able to carry out so much work on an expenditure of £1,500 simply because of the arrangements made locally and the willingness of the doctor-lecturers to give their services for a modified fee of one guinea.

Lord HORDER said how proud he was to be president of the society. He thought it was all to the good that industrial health education should do its best to keep pace with the lessening of unemployment. He noted that the subjects dealt with in the talks given nine years ago, when the society was first formed, were rather different from the topics now more generally selected, and this was quite right, because it showed that the efforts of the society were keeping pace with the needs of the worker. Of late years the incidence of serious occupational diseases had diminished to a very large extent. He had in mind such diseases as lead poisoning,

anthrax, and silicosis. On the other hand, the question of nutrition had come more and more into the picture, also minor illnesses, constipation, the common cold, troubles of the skin and of the teeth, and the care of the hands and feet. Even vague ill-health, described as "nerves" or "fatigue," had been the subject of various talks. It was evident that the tendency was away from the acute and violent and mortal organic diseases, but in place of these the people were becoming a prey to subtle chronic functional disabilities, and he was glad to see that these conditions were being dealt with in the right way by medical men, of the desired status and qualification, in their talks to the workers in different parts of the country. The society linked up with the Institute of Industrial Psychology, and, of course, with the Ministry of Health in its activities in regard to preventive medicine. For his own part he would like to see it linked up with another series of activities—namely, those having to do with eugenics, but that, perhaps, would be considered a little premature at the present moment.

Sir THOMAS OLIVER, in a very few remarks, sketched the history of industrial medicine during the last hundred years, and mentioned how much had been done within his own experience to lessen the mortality from occupational diseases. By attention to industrial hygiene and the substitution in many cases of harmless for harmful agents some occupational diseases had been entirely eliminated, and the liability to others had been greatly lessened. It was to the credit of employers and employed that in the main the visits of those concerned in factory inspection had been received in a friendly and co-operative manner. Again and again workers had said to him that if they had only known of the dangers to which they had been exposed they would have taken greater precautions. It was to supplement the information given by official sources and to bring it home to the worker and also to his family that the Industrial Health Education Society existed, and he wished it every success.

The necessary business of the annual meeting was transacted, and a few remarks were made by Sir W. S. Haldane, Dr. E. G. Annis, Dr. G. Clark Trotter, and Dr. D. A. Coles in proposing the adoption of the reports and the re-election of the officers and council.

THE "MEDICAL SICKNESS" JUBILEE DINNER

The Medical, Sickness Annuity and Life Assurance Society, Limited, founded in 1884, held a dinner on March 1st, at the Dorchester Hotel, Park Lane, to celebrate its jubilee. The chairman of the board of directors, Dr. F. C. MARTLEY, presided over a large company.

The toast of the evening was proposed by Sir HUMPHRY ROLLESTON, Bart., who described Mr. Ernest Hart, the originator of the society, as a "live wire." He was Editor of the *British Medical Journal*, and in that and in other capacities he certainly made enemies, but he had qualities which enabled him to do much for the British Medical Association, as well as to plan out the mutual provident association whose fiftieth anniversary was now being celebrated. Hart was the society's first chairman; Sir Spencer Wel's also shared a good deal of the responsibility. The personnel of the society had changed very much with time, but the present directors were a very robust body, and the society was especially fortunate in having at its head Dr. Martley, who had been a principal factor in the continuing success of this enterprise, and in addition to being a good doctor was a good man of business and statistician. He hoped that the society might long flourish, and Dr. Martley for many years preside over its affairs.

Dr. MARTLEY, who was received with enthusiasm, said that at the commencement of the society Ernest Hart got a number of men together and said, "Let us all consider ourselves insured, but agree not to claim anything for a year, until we get some money together." A couple of hundred people, with no great amount of money, but with benevolent intentions, were got together, and the society had never looked

back. Some of those founders still lived; one of them, Dr. Moses Biggs, who was in his eighty-fifth year, would have been present that evening but for the inclemency of the weather. Hart and his associates realized that the profession wanted an insurance society on business lines. For twenty-five years it was on the lines of a friendly society, and expanded slowly. Restricted in some respects by the Acts regulating friendly societies, the society was registered after the war as a limited company, and this had proved to be an unqualified success. The membership had more than doubled, and the assets had risen from £300,000 to over £1,000,000. The money was under the management of doctors; nobody else had any hold over it, and there were no shareholders to absorb the profits. During the past ten or twelve years the society had been advancing money for the purchase of practices and of houses, and notwithstanding the difficulties of the times, not one penny had been lost.

Sir WILLIAM WILLCOX, in proposing the health of the guests, said that he and the others on the board felt it a privilege to be able to encourage thrift among members of the profession, and, particularly, among the newly qualified. Many of the older men had been through the mill, and knew how difficult it was to make a start; they sympathized with the young doctor who wanted to buy a practice, or get married, or take a larger house. He expressed the pleasure of the directors in seeing so many distinguished friends present on that occasion. In a special welcome to the representatives of the British Medical Association—namely, Dr. E. K. Le Fleming, Dr. G. C. Anderson, Dr. N. G. Horner, and Mr. L. Ferris-Scott—he pointed out that the society was really the child of the British Medical Association, and he hoped that that fact would not be forgotten in Tavistock Square.

Sir ARTHUR ROBINSON, Permanent Secretary of the Ministry of Health, who responded to the toast, said that he noticed that the income of the society had suddenly bounded up from small beginnings to about £30,000. The great increase had begun about the year 1912, a year of some importance, because it was then that the national health insurance scheme was launched. He wondered whether there was any relation between this bounding up of income and the institution of insurance practice!

Lord HORDER, who also responded, said that he doubted whether he should be regarded as a guest, for he was really a member of the society, having years ago joined a body which the society had absorbed. He congratulated the "Medical Sickness" on its phenomenal success, a success, moreover, achieved by doctors, although the fallacy was still current that doctors lacked the business instinct. He had had distinguished students through his hands in whom he had recognized business abilities of a high order, and the experience of the society confirmed him in rejecting the idea that doctors were not good men of business.

Among others present, in addition to those already mentioned, were: Sir Holburt Waring (President, Royal College of Surgeons), Professor W. Langdon Brown (Regius Professor, Cambridge), Mr. V. Warren Low (President, Royal Society of Medicine), Sir Francis Fremantle, M.P., Sir Walter Kinnear (Ministry of Health), Sir Milsom Rees, Dr. Robert Hutchison, Dr. David Forsyth, Dr. G. Roche Lynch (Home Office), Mr. H. A. T. Fairbank, Professor C. G. Lowry (Queen's University, Belfast), Mr. A. E. Webb-Johnson, Dr. J. Murray Bhgh, Dr. E. D. Macnamara, the deans of Leeds and Bristol Universities, the deans of King's College, London, St. Mary's Royal Free, University College, and Westminster Hospital Medical Schools, representatives of the Medical Defence Union, Royal Medical Benevolent Fund, Epsom College, and the principal insurance companies, and the directors and officers of the society.

J. de Sauvage Nolting (*Nederl. Tijdschr. v. Geneesk.*, February 3rd, 1934) maintains that there is a remarkable relation between dementia praecox and allied schizophrenic psychoses and the season of birth. Investigation of 2,589 such cases showed that the majority of patients who subsequently develop schizophrenia are born during the winter months. It is stated, however, that further investigations are needed in order to establish conclusive evidence.

Ireland

Milk and Tuberculosis

Professor Boyle, of the Agricultural School of University College, Cork, in a broadcast on "Milk and Public Health," stated there was no convincing evidence of any loss of nutriment in milk as the result of pasteurization. The most important disease conveyed through cows, he said, was tuberculosis, but the danger was comparatively slight, the proportion of cows giving tuberculous milk being one in four hundred. Professor J. W. Bigger, School of Pathology, Trinity College, Dublin, in a letter to the *Irish Times*, stated he was not in a position to know if Professor Boyle had been correctly reported, but in any case it was undesirable to encourage the present Government of the Saorstát to follow the example of its predecessors in shelving the Milk Bill, the introduction of which had been promised, at frequent intervals, for the past five years, and which was urgently required. The estimate of one in four hundred as the proportion of cows giving tuberculous milk was much lower than that usually accepted. It was apparently derived from the report of the Interdepartmental Committee on the Milk Supply (1928), and was arrived at from the finding that six (2.66 per cent.) of the milks of 225 herds, comprising 2,343 cows, contained tubercle bacilli, by assuming that there was, in each of the positive herds, only one animal giving tuberculous milk—an improbable assumption, made, obviously, to minimize the prevalence of the condition among cows in this country. In England the proportion was recently stated by a medical officer of the Ministry of Health as 1 to 2 per cent. Dr. Bigger stated he was not aware of any evidence suggesting that Irish cows were notably less affected with tuberculosis than those in England. The fact that 32 per cent. of the cows slaughtered in Dublin were tuberculous showed how prevalent was the disease. Professor Boyle, as quoted, neglected to point out that, whatever might be the proportion of cows yielding milk containing tubercle bacilli, the proportion of samples of milk as sold containing the organism would be much greater because the milk of a single tuberculous cow could contaminate a whole churn. This explained why 14 per cent. of churn samples in Manchester, 10 per cent. in Aberdeen, Dundee, Edinburgh, and Glasgow, and 9.3 per cent. in London had been found within the past four years to contain living tubercle bacilli. With the exception of the improvements effected in Dublin as a result of the exertions of the medical officer and of the chief veterinary officer, Dr. Bigger did not know of any great improvements which would tend to reduce the proportion of Irish milks containing tubercle bacilli below the figure, 8 per cent., which he found in 1920. In 1932 there were, in the Saorstát, 818 deaths from non-pulmonary tuberculosis. At a very conservative estimate 25 per cent. of these were due to the bovine type of tubercle bacillus, infection being caused by the consumption of tuberculous milk. He was quite unable to regard as "comparatively slight" any danger causing the death each year of 204 persons, many of whom were children. Professor Boyle recommended that "where there was any doubt the milk should be pasteurized." Pasteurization would enormously reduce the risk of contracting tuberculosis by the consumption of milk from tuberculous cows. It would not, however, entirely eliminate the danger, since the process required the bulking of large quantities of milk, ensuring in this way the almost constant presence of tubercle bacilli in the milk entering the apparatus. Moreover, in pasteurization the safety factor afforded by the temperature and time was such a narrow one that any error,

human or mechanical, might allow tubercle bacilli to survive the exposure of heat. In a recent report issued by the Department of Health for Scotland it was stated that 2.8 per cent. of 1,243 milks pasteurized by the "holding" method, which was undoubtedly the safest one, were found to contain living tubercle bacilli. Dr. Bigger regretted that the head of an agricultural department should advocate pasteurization instead of the elimination of tuberculosis from herds. Pasteurization was a very useful and, at present, necessary process, but it was not a substitute for healthy cows. In the investigation of the Scottish Board of Health out of 714 samples of Certified and Grade A (T.T.) milk examined only one was found to contain tubercle bacilli, a percentage of 0.14, as against the 2.8 per cent. of pasteurized milk.

Suggested Drastic Reduction in Fees for Anaesthetics

In a recent circular letter the following scale of fees for the administration of anaesthetics was "suggested" to the Minister for Local Government and Public Health. For comparison a scale of fees sanctioned in 1926 by the then Minister for Local Government and Public Health is also given.

Suggested Scale in 1934

	1 Case	2 Cases	3 Cases	4 Cases	Each Additional Case Over 4
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Major operations ...	1 1 0	1 10 0	2 2 0	2 10 0	—
Minor operations ...	10 6	1 1 0	1 10 0	2 2 0	5 0
Tonsils and adenoids	5 0	10 0	15 0	1 0 0	5 0

This refers to one case per day, or two cases per day, as may arise. The fees may be increased by 100 per cent. where the operations are performed at night—that is, from 9 p.m. to 8 a.m.

Scale Sanctioned in 1926

- £1 1s. For administering anaesthetic.
- £2 2s. For administering anaesthetic and assisting at operation.
- £2 2s. For difficult maternity case in day (8 a.m. to 10 p.m.).
- £3 3s. For difficult maternity case at night (10 p.m. to 8 a.m.).

Enniscorthy Mental Hospital

Dr. D. L. Kelly, inspector of mental hospitals, in his recent report concerning the Enniscorthy Mental Hospital, stated that there were 508 patients in residence at this institution when he made his annual inspection. During the year seventy-three patients were admitted, fifty were discharged, and thirty died. The discharge rate was very satisfactory, and indicated that the treatment afforded was progressive. All deaths were due to natural causes, seven being attributed to tuberculosis. One necropsy was performed, but no inquest was held during the year. There were no cases of infectious disease among the patients or staff. Restraint was not practised with any patient, but seclusion in single rooms was necessary with fifteen patients, who were restless and excitable. The patients were afforded a great deal of liberty, and it was gratifying to record that, although they worked in the gardens without any attendants in charge, the escapes were very few. They attended the local cinema once a fortnight, while concerts, dances, and variety entertainments were also arranged. A piano and some table games had been purchased and a wireless set installed. A number of patients attended a circus on three occasions, and some coursing meetings.

Scotland

Ayr County Hospital

The report presented to the annual meeting of Ayr County Hospital on February 26th showed that the number of patients admitted to the institution during the year had been 1,764, including 1,533 surgical and 231 medical cases. The total ordinary income for the year had been £11,648 and the ordinary expenditure £12,773. A sum of £120 had been received in respect of treatment of cases under the Road Traffic Act. The deficit on the year's working after legacies had been included under income amounted to £333, and had been carried to the maintenance reserve account, which now stood at £3,861.

Control of Cancer

A meeting was held in the City Chambers, Edinburgh, on March 2nd to form a Cancer Control Organization for Edinburgh and the south-eastern area of Scotland. Lord Provost W. J. Thomson, who presided, said everyone was agreed that something might be done to facilitate the early diagnosis and treatment of cancer, as well as to encourage and co-ordinate clinic and laboratory research. The work of the proposed organization would be preventive and educative, and would not interfere with the activities of any existing organization. Mr. J. J. M. Shaw, in outlining the scheme, said that the south-eastern area of Scotland, with Edinburgh and its medical resources as a central point, formed an ideal region for a scheme of co-ordination. Approximately 1,000 cases of cancer in one form or another entered the Royal Infirmary for treatment every year. Any addition to our knowledge, or any improved methods of treatment of this disease, could only secure a reduction of the incidence and mortality gradually and steadily as facilities for diagnosis, treatment, and research were co-ordinated. The early stages of cancer were often painless, and this was responsible for the fact that so many patients failed to seek medical advice until the disease was in an advanced state. Team work and adjustment of ideas were essential in the work which they were now trying to encourage. The elimination of delay was the practical issue. It was proposed that there should be judicious dissemination of knowledge as to when the doctor's advice should be sought, through the medium of nurses, welfare workers, health visitors, and meetings of those who desired information. Much of the fear of cancer arose from ignorance. It was important to obtain full information concerning the results of all forms of treatment, and in this way to assist the National Radium Centre in so far as its services were common to all hospitals in the area. Mr. W. J. Stuart said it was obvious that one worker with a group of cases might take years to settle a single point, whereas the combined investigations of many workers might settle the question in a short time. It was desirable, therefore, to have some central body where the reports of all workers would converge, and from which any worker could obtain the most up-to-date statements. Dr. John Guy, medical officer of health, Edinburgh, stated that in 1898 there were some 265 deaths from cancer in Edinburgh, while last year there had been 785, facts which showed the necessity for action. Lady Findlay moved that a general council and executive committee should be elected to draft a constitution and to elect subcommittees. The following were elected as an Executive Committee: Sir Thomas Whitson (chairman of managers of the Royal Infirmary); hon. treasurer: Professor Annan; Dr. R. W. Craig (British Medical Association); Dr. Guy (medical officer of health, City of Edinburgh); Lieut.-Colonel Harvey (resident consulting

physician, Research Laboratory); Professor Murray Lyon (Royal College of Physicians); Dr. Scott, Broxburn; Mr. J. J. M. Shaw (Royal College of Surgeons); and Dr. Duncan White. It was intimated that subscriptions had already been promised amounting to approximately £500.

Edinburgh Mental Hospital

The 121st annual report of the Royal Edinburgh Hospital for Mental and Nervous Disorders, which was submitted at a meeting on February 26th by the physician-superintendent, Professor D. K. Henderson, shows that during the year 1933 1,035 patients were treated in Craighouse and West House, of whom 306 were voluntary and 729 certified. This figure included 822 patients on the register at January 1st, 1933, and 213 admissions in the course of the year. Ninety-eight patients were discharged recovered or relieved, twenty-five unimproved, and fifty-six died. The number of patients with slighter mental or nervous illness admitted to the nursing homes connected with the institution was 127, and 202 were admitted to the Jordanburn Nerve Hospital. There were 493 out-patients in attendance at the various out-patient departments. The report draws special attention to the out-patient departments, where advice is given. A clinic is held at the Royal Infirmary on Tuesday afternoons at 2 o'clock, and another at the Jordanburn Hospital every afternoon, also at 2 o'clock. The clinic at the Royal Infirmary is considered particularly valuable, because it establishes a relationship between psychiatry and general medicine, and helps to elucidate the personality of the patient and the emotional drives which, even in the presence of physical illness, are often important factors in the cause of the illness and the cure of the patient. The work of the clinic is facilitated by the services of a social worker, who investigates environmental conditions and economic circumstances contributing to the patient's breakdown. A psychological clinic is also held every afternoon under the direction of Professor Drever for the purpose of studying behaviour disorders in children, and giving advice on education and vocational guidance. These out-patient clinics are regarded as of special benefit, because they present an opportunity of seeing incipient cases and of familiarizing medical practitioners and the public with the fact that many forms of nervous and mental illness are remediable provided proper treatment is applied at the right time. While the standard of care in mental hospitals is higher now than it used to be, the report states, great benefit is also being derived from occupational therapy. Every patient, irrespective of his condition, can be employed and interested, provided he has a certain degree of co-operation. Attention is drawn in the report to the various agencies in the prevention of mental disorder, and to the necessity for reducing the large number of patients who constantly require admission to mental hospitals on account of so profound a degree of mental defect as to necessitate segregation for the greater part of their lives. In the past, heredity was accepted as something hard and fixed; now it was regarded as something which might be modified and helped. The misery that might be entailed by a defective stock was not sufficiently recognized. Laws governing the compulsory sterilization of those who were socially inefficient and who were likely to transmit similar defects to their progeny were drastic and of doubtful practicability. The recent report of the Departmental Committee on Sterilization stated that a case for compulsory legislation could not be established, but had suggested that a policy of voluntary sterilization might be justified. This would apply to mentally defective and disordered persons who were likely to procreate unhealthy, unstable, and defective children; the same principle might be extended to those suffering from certain specified grave

physical disabilities. It was well known, however, that a great proportion of the mentally defective occurred as variants in families which were otherwise quite healthy, while mental illness was more an acquired than a hereditary condition.

England and Wales

L.C.C. Hospital Staffs

At the last meeting of the London County Council before the election of the new Council, which took place on March 8th, several matters relating to hospital appointments came forward. No special fee has hitherto been approved for the service of anaesthetists employed in connexion with thoracic surgery; they have received the normal fee of 34s. a session. It is now proposed that in view of the highly specialized knowledge required of anaesthetists when employed in connexion with thoracic surgery, they should be paid, as and from March 1st, the same fee as is paid to anaesthetists at the plastic surgery unit at Hammersmith Hospital—namely, two guineas a session. When the enlargement of the deep x-ray and radium therapy unit at Lambeth is completed (which it is expected will be at the end of the present month) the radium unit at the North-Western Hospital will be absorbed into that at Lambeth Hospital. The staff in connexion with the unit at the North-Western Hospital consists of an honorary medical director and an assistant to the director, both part-time, with a woman clerk and ward sister, all of whom will be transferred to Lambeth. The positions of honorary medical director and assistant will be reviewed with the general consultants' scheme before June 30th next. The titles of the positions will be "consultant (uterine cancer) to the radium unit" and "assistant consultant." An ante-natal clinic at Dulwich Hospital will be ready at the end of March, and an additional house-physician is to be appointed there, in view of the considerable increase in the work of the hospital, especially in connexion with the maternity department.

The Cancer Campaign in Wiltshire

A large number of Wiltshire medical practitioners and representatives of public health authorities in that county attended a meeting convened at Bradford-on-Avon on February 21st, when an address on the work of the British Empire Cancer Campaign was delivered by Mr. Comyns Berkeley, F.R.C.S., a member of the Grand Council of the Campaign, and vice-chairman of the National Radium Commission. The lecturer opened with an account of the pathology of cancer, emphasizing the point that, while the disease always started as a local growth, invasion soon ensued, and the possibilities of successful treatment were very seriously diminished. Despite the work of large numbers of research workers in all parts of the world, the cause of cancer still remained unknown, but an immense amount of valuable information had been collected which indirectly, by the elimination of certain previously presumed causes, was narrowing the field of inquiry, and bringing nearer the time when definite knowledge about the causation of cancer would be obtained. It was agreed that chronic inflammation due to prolonged irritation of the body tissues was a constant factor in the production of some varieties of the disease. No evidence had been obtained that the disease was hereditary, and the personal risk was not increased because a parent or grandparent had had it. There was no known instance of one person contracting the disease from another, and it was extremely rare for both husband and wife to be infected. In seven out of

every 100 deaths of persons over the age of 40 the cause was cancer, so that there was scarcely a family of three generations without a record of the death of one member from this cause. The present increased general length of life accounted in some measure for the rise in the cancer death rate, as also did the greater accuracy of diagnosis in the last twenty years, but nevertheless the increase by 41 per cent. of the cancer mortality rate in this period was serious. Fear did not cause cancer, but it might prevent persons from applying for treatment until it was too late. Surgery and radium were both effective in many cases, and everything possible should be done to spread knowledge so that all suitable cases should be dealt with without delay. The primary objective of the British Empire Cancer Campaign was to ascertain the cause and promote the cure of this scourge. After the lecture Dr. Ronald Canti demonstrated his film of normal and abnormal cellular growth.

Work of a Child Guidance Clinic

Under the auspices of the Jewish Health Organization of Great Britain the East London Child Guidance Clinic was inaugurated in 1927, and Dr. Emanuel Miller, its honorary director since then, has now compiled a report of the work achieved during the first five years. As early as 1925 the organization had recognized an increase of psychological maladjustment among the children of Bishopsgate, and a simple beginning was made in three rooms with a staff of two psychiatrists trained in child pathology, a psychologist to perform mental tests, and the services of a special worker loaned by the Child Guidance Council. From the start there was a rapid flow of cases, and cordial co-operation was established between the new institution and school doctors and care committees as well as with social and philanthropic bodies in the neighbourhood. The report contains a survey of the lines on which the testing and treatment of children are conducted. Each child is submitted to an English adaptation of the Binet-Simon test, and a variety of performance tests are also employed. Tests of temperament and personality have been found to be of little value. The equipment has been extended to deal with children of pre-school age; the Merrill-Palmer scale has been found to be very useful in this connexion, bringing out such traits as over-dependence, distractibility, and negativism. Evidence has accumulated to show that mental retardation, or special linguistic or arithmetical disability, may engender a severe feeling of inadequacy with consequent emotional disturbance. On the other hand, intensive clinical work has revealed that emotional difficulties have the widest repercussions on all phases of the child's mental development, including scholastic achievement. It is significant that over 30 per cent. of the cases referred for treatment on account of general backwardness have been found to be normal or above normal in intelligence. Psychotherapy, coupled with remedial tuition, can do much to alleviate such maladjustments. Of the total number of cases referred to the clinic 288 were Jewish, 278 non-Jewish, and six the offspring of mixed marriages. Of these 572 cases 364 were boys and 208 girls. The excess of boys over girls has been a constant feature during each of the five years. There were 238 cases of psychoneurosis (nearly half of which were referred by school doctors), 158 described as unmanageable, uncontrollable, and cases of temper, fifty-nine of theft, sixty-five of backwardness at school, twenty-seven of sex difficulties, fourteen of failure at work, and eleven referred for wandering. In an appendix on cases followed up for one and a half to two years after discharge it is noteworthy that in many instances one or other parent required psychotherapy or had been an inmate of a mental hospital.

Reports of Societies

POST-MENOPAUSAL HAEMORRHAGE

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine held on February 16th, with the president, Professor W. BLAIR-BELL, in the chair, Mr. V. B. GREEN-ARMYTAGE read a paper on post-menopausal uterine bleeding.

He stated that the clinical material upon which his paper was based consisted of 304 cases seen by him since 1924, both in Calcutta and in London. He defined the menopause as that period of a woman's existence six full months after the cessation of the normal catamenia. For the purpose of an analysis of the cause of the bleeding he divided his cases into: (a) visible, of which there were 140 instances; and (b) invisible, of which there were 164. The percentage of malignant causes in the first group was 31.4, and in the second 39.6. Dealing with the latter group, in which the cause was not external, Mr. Green-Armytage discussed those cases in which the bleeding had not resulted from obvious neoplasms, and was separate from disturbances in the endocrine system. He speculated upon the nature of the changes in the co-ordinated system of internal secretions which occasionally resulted in a resumption of ovarian activity after complete cessation at the climacteric. In connexion with a series of cases of "metropathia haemorrhagica," he insisted upon the necessity for close co-operation between the clinician and the biochemist with his laboratory facilities. Passing to the cases of bleeding associated with neoplasms of the ovary, Mr. Green-Armytage observed that in only a small proportion of the cases was the neoplasm innocent. He recalled that in a personal record of 547 ovarian tumours published in 1931 sixty-three occurred in patients past the menopause, and of these four innocent and twenty-six malignant cases had symptoms of uterine haemorrhage. The hypothesis was advanced that an ovarian tumour in a woman after the menopause may take on the function of the original ovarian tissue, just as after thyroidectomy for cancer metastatic tumours have been known to function like the original thyroid gland. Experimental evidence in support of this theory was advanced. Mr. Green-Armytage presented several specimens, and showed on the screen a number of photographs of uteri which he had removed. Discussing treatment, he emphasized the necessity of laparotomy in cases of uterine bleeding associated with ovarian tumours, but asserted his preference for removal of the uterus by the vaginal route in cases not complicated in this manner.

Professor MILES PHILLIPS said that in preparing such an analysis it was necessary to decide exactly when the post-menopausal era began. Whereas Mr. Green-Armytage had allowed six months to elapse, Dr. Fahmy, in a similar analysis, had allowed the more satisfactory period of twelve months to elapse since the last regular menstrual loss. This might explain the surprisingly large proportion of cases in this series in which bleeding was due to uterine fibroids. In his experience bleeding from this cause might occur in the intramenstrual epoch, but seldom after the menopause was established; on the other hand, cancer of the corpus uteri, though most commonly menopausal, was also intramenopausal, and never antemenopausal in its incidence. Professor Phillips considered this a useful distinction in reminding the medical attendant of the possible causes of bleeding at this dangerous epoch of a woman's life. Professor BECKWITH WHITEHOUSE quoted clinical evidence to prove that some of the cases of post-menopausal bleeding were related to delayed ovulation. He also discussed the formation of simple adenomatous polypi in the uterus.

Mr. GREEN-ARMYTAGE, in reply, said that he laid particular emphasis on a period of six months' amenorrhoea. Although twelve months was perhaps the best physiological limit, he considered it advisable, from the point of view of the practitioner, to adhere to a six months limit. With regard to the criticism that the number of

cases of fibroids in his series was abnormal, he pointed out that Howard Kelly, himself, and others had observed the greater frequency of these tumours in hot countries and in coloured races.

Vaginal Hysterectomy

Mr. M. DATNOW read a paper on vaginal hysterectomy, and illustrated the technique by means of lantern slides and a cinematograph film.

He referred to the history and the development of the operation, and went on to describe the advantages of vaginal hysterectomy when there was a choice between this and abdominal hysterectomy. There was less shock and a more rapid convalescence, while drainage was better. The absence of an abdominal scar had a good psychological effect upon the patient, and obviated the risk of incisional hernia. Prolapse operations could be combined with the hysterectomy, and the post-operation care of vaginal hysterectomy patients was simple. The only contraindications were: (1) a uterus that was too large to be delivered through the vagina, and (2) fixity of the uterus. In carcinoma of the body of the uterus Mr. Datnow considered it a better surgical procedure to remove the uterus by the abdomen. Among the reasons for employing vaginal hysterectomy were: (1) bleeding uterus, especially where there was prolapse as well, with (a) multiple small fibromyomata, (b) chronic subinvolution with cystic ovaries, and (c) polypi after the menopause; (2) obesity of the patient; (3) the presence of skin disease of the abdominal wall, and burns, or of a colostomy wound; (4) inversion of the uterus; (5) septic uterus after criminal abortion; (6) carcinoma of the body of the uterus only in certain special cases; and (7) advanced age—old people stood vaginal better than abdominal hysterectomy. Twelve stages in vaginal hysterectomy were described, and Mr. Datnow illustrated the procedures which facilitated each stage. He concluded by giving a composite table of cases that had been operated upon by Professor Blair-Bell and himself.

In the discussion, Mr. A. C. PALMER agreed generally with Mr. Datnow with regard to the indications for vaginal hysterectomy. He did not consider nulliparity a contraindication, and demonstrated by a diagram how it was possible to increase the dimensions of a narrow vagina by means of a posterior incision. He proclaimed himself a firm believer in vaginal hysterectomy for genital prolapse, because he had found that a large proportion of women suffering from "prolapse" complained of excessive or irregular bleeding. There were forty-seven such cases in his series. He also emphasized the satisfactory manner in which associated hernial protrusions, such as cystocele, rectocele, or enterocele in the pouch of Douglas, could be cured by appropriate plastic measures combined with vaginal hysterectomy. The steps of the operation which he was accustomed to perform were demonstrated on the screen by means of a series of drawings. Mr. Palmer maintained that any uteri not larger than a foetal head and not adherent to ovarian tumours or to bowel were suitable for vaginal hysterectomy.

Professor PHILLIPS said that he had been brought up to use the vaginal route for the removal of the uterus whenever practicable. He had performed 660 vaginal hysterectomies with thirteen deaths, and he considered that with the improved technique of recent years mortality had been further reduced. All his last 102 private cases had been successful. The obese and the "poor subjects for operation" were best dealt with by vaginal hysterectomy. There was less shock, less pain, and easier after-nursing than after abdominal operation. He had for many years advocated the operation for the cure of genital prolapse in certain conditions, of which he mentioned the following: associated early carcinoma of the corpus, and certain conditions of the cervix which rendered it unsuitable for amputation, such as deep lacerations and stenosis with pyometra. Additional advantages gained were the cure of accompanying hernia into Douglas's pouch and the cure of varicoceles in the broad ligament, which were the cause of disappointment after otherwise

successful double colporrhaphy. Professor Phillips gave a detailed description of his method of operating. Points upon which he laid particular stress were that he usually made his first opening into the peritoneum through the posterior fornix; he used catgut of the unhardened variety; he usually removed the uterus first and dealt with the appendages afterwards. He occasionally found it advantageous to split the uterus vertically, and he often used the Trendelenburg position to keep bowel away from the field of operation.

Professor BECKWITH WHITEHOUSE felt that the method under discussion had been too generally supplanted by abdominal hysterectomy in Great Britain and America. Fraenkl of Vienna still regarded it as the method of choice. Radium therapy had largely taken the place of hysterectomy in the treatment of uterine haemorrhage, but there still were an appreciable number of hard fibrotic and painful uteri which bled from an atrophic endometrium for which radium was unsuitable. In this type of case he found vaginal hysterectomy entirely satisfactory. The speaker made special reference to Werner's method of bisecting the uterus before the removal of each half separately. Mr. GREEN-ARMYTAGE said that he had performed 329 vaginal hysterectomies with only four deaths, and he preferred it for the majority of those cases of benign haemorrhage which were in many clinics treated by radium. Radium sometimes failed, was often followed by discharge and pruritus, and was liable to produce cancerphobia. As regards technique, he had gained considerable benefit from diminished oozing by adopting Danforth's procedure of injecting pituitary extract into each paracervical plane before making an incision. Mr. W. W. KING regarded vaginal hysterectomy as the operation of election. His cases at the Jessop Hospital for Women had numbered 539 with twelve deaths. He saw no necessity for removing the Fallopian tubes in every case.

DIAGNOSIS AND TREATMENT OF BRAIN ABSCESS

At a meeting of the Section of Otology of the Royal Society of Medicine on March 2nd, with Dr. W. J. HARRISON in the chair, a discussion took place on the diagnosis and treatment of brain abscess.

Mr. HUGH CAIRNS (with whose remarks Mr. C. DONALD was associated) said that a chronic abscess of very long duration almost invariably had a wall of hyaline fibrous tissue 1/2 cm. or more in thickness. This group included abscesses which had been imperfectly drained on a previous occasion, and also abscesses which had been clinically latent for long periods. Abscesses of this type could not be treated successfully by drainage, because the thick wall of hyaline fibrous tissue would never collapse completely or be entirely absorbed, and abscesses of such chronicity had a strong tendency to loculation.

He recalled a case he saw when working with Harvey Cushing in Boston, of a girl with abscess following frontal sinus infection. The abscess had been drained, but continued to discharge intermittently. The patient had a bulging hernia covered by skin (it was called "hernia" when covered by skin, and "fungus" when not so covered). Cushing opened the site of the sinus and gradually enlarged the incision, then got hold of the capsule of the abscess and pulled it out. On dissecting out the abscess, which was about 5 cm. in diameter, he found two more abscess cavities behind, lined with rather thicker walls, going back 9 to 10 cm. into the brain from the site of the old sinus. The speaker described the magnificent operation whereby Cushing, finding it dangerous to work at such depths through a small opening, was able to pull the capsules forward and "marsupialize" the abscesses.

It was doubtful, Mr. Cairns continued, whether abscesses should be operated on in the acute stage, but occasionally this might have to be done. The treatment of chronic abscess was to leave the wall of the abscess alone and drain the cavity. One must be prepared to explore over a wide field. If the patient was a male the whole of the skull should be shaved if there was time for it,

because it facilitated dressing afterwards. On getting into the abscess its depth was measured, the brain needle being graduated, and by gentle manœuvres its extent was estimated. If the needle went in very obliquely it was much better to withdraw it and make another hole at a place where the abscess might be nearer the surface. After the abscess had been encountered at a favourable site and its depth was known, a rubber catheter was taken and silk tied round it 1 cm. below the depth to which it was desired the catheter should go, otherwise the sense of distance was apt to be lost. While the catheter was being got ready the needle was withdrawn, and the bony opening enlarged to 2 or 2.5 cm. The dura was then opened more widely and the catheter gently passed into the brain. It would go easily into the soft brain tissue which always surrounded the abscess. After the catheter entered the abscess, as shown by pus in the lumen, it was left *in situ*, cut off 2 cm. above the level of the scalp, and dressing applied. Gauze sterilized in paraffin or vaseline was the best dressing, and this was piled up above the level of the catheter. Sometimes the catheter would not go through the abscess wall. If the condition of the patient was not extremely urgent it was best to leave the tip lying against the wall of the abscess for a few days, doing nothing more. Then, when the next dressing was done, the catheter would be found to have produced some erosion on the abscess wall, and it was possible to get in. If the patient's condition was urgent, so that immediate drainage was necessary and the catheter could not get in, a firmer catheter was tried, strengthened perhaps by a stylet. If the abscess was very deep-seated and the catheter would not enter it, the next best thing to do was to leave the brain needle in place. With regard to drainage by direct vision, as opposed to "blind" drainage, this might be through a limited opening or through an osteoplastic flap. For the former it was necessary to have an opening in the skull at least 3 to 4 cm. in diameter. After the pus was found with the needle the cortex was excised and some special form of retractor passed down into the abscess. Stress was laid on the importance of the passing of the drain down into the depths of the abscess cavity. The speaker's own feeling about this type of operation was that it was satisfactory when the abscess was superficial, but there were serious objections to it when the abscess was deep-seated. The opportunity for inspecting the abscess cavity might be very fleeting, and everything had to be done so rapidly that there was no room for any hitch. Just at the moment of exposure of the abscess the field might be obscured by fresh bleeding from the cortical vessels by the deeper and stronger retraction which was necessarily, though unconsciously, made at that moment. With regard to drainage through an osteoplastic flap, he had done four cases in that way, and three of them had recovered. He did not advocate it as a routine method, but experience showed that it could be employed in certain difficult cases with remarkably little risk of meningitis.

The after-treatment of acute or chronic abscess was the same whatever method was employed in draining the abscess. Dressing should be done only at long intervals. The first dressing was left undisturbed for as long as possible, usually a week, sometimes ten days. The dressings were done in the operating theatre, and by the surgeon who had drained the abscess, and usually from half to three-quarters of an hour was allowed for them. The tube was not removed, except when intracranial pressure suddenly pushed it out when the dressings were taken off, and this they endeavoured to avoid. The next important factor was prolonged rest in bed. As to complications during after-treatment, rise of temperature was almost invariable. A large number of brain abscess cases had a normal or subnormal temperature before operation, and after the release of the pus the temperature went up. The really important complication after operation was post-operative oedema—this had occurred in several of his cases, both those drained by the open method and by catheter. In one of his flap cases it was necessary to re-elevate the flap within twenty-four hours, and the whole brain could be seen to be very much swollen.

although the abscess had not recurred. It was not known why the oedema was present, but if the tube had gone well into the abscess cavity the right thing was to leave the patient alone and not interfere. Squints seemed quite common after abscess, but apparently they were not of serious import; the patient appeared to have a little basal meningitis. In three of his cases there were fits during the first weeks of convalescence, and one patient still had them. Undoubtedly epilepsy might be a disappointing complication of brain abscess otherwise successfully treated. It had nothing to do with the treatment, he thought, but was connected probably with the previous disposition of the patient.

Mistakes in diagnosis were much more frequent causes of failure than mistakes in surgical procedure. He emphasized the frequent slightness of the headache in brain abscess. It might be common at the onset, but superseded by lethargy and drowsiness, a condition which tended to make doctors and nurses less anxious. Another mistake arose out of the notion that absence of papilloedema excluded a diagnosis of abscess; it could not be too widely known that some cases had no swelling of the disks at all. He also emphasized that in lumbar puncture only a minimal amount of fluid must be taken. Other cases in which the diagnosis was interfered with were those in which extradural and subdural abscesses occurred, and these were thought to be sufficient to account for the symptoms, so that the brain was not explored. It ought to be possible to say before operation whether the case was one of intracerebral disturbance or extradural abscess. In 109 cases of brain abscess at the London Hospital secondary to otitis media and mastoiditis there were six in which the abscess was not temporal, but occipital, parietal, or frontal; seven out of the 109 cases were multiple temporal and cerebellar on the same side. Many of the difficulties of diagnosis could be overcome by careful history-taking and neurological examination. He specially stressed the importance of examination of the visual field. That was an examination which could not be done after the patient became lethargic. When intracranial complications were suspected neurological examinations should take precedence over mastoidectomy, because these would reveal more as to what was happening inside the dura.

Mr. SYDNEY SCOTT said that all had witnessed gratifying results in the treatment of brain abscess, but even given the resources of modern surgery, the prognosis must be extremely grave. Recovery depended not only on the skill of the operation, but on the mysterious production of antibodies, and, though the infective agent could be isolated and identified, knowledge of how to control its activities was far from precise. The essential treatment, however, at present was surgical. It was possible occasionally, and sometimes necessary, to enucleate the abscess in its entirety, without liberating its contents. When this was impracticable, resort must be had to evacuation and drainage. In chronic middle-ear disease the so-called radical mastoid operation should be performed in every case. The fact that middle-ear disease might have cleared up completely was very misleading, especially to physicians who might be called in because the patient had headache or vomiting weeks afterwards. He had seen many cases left unrecognized on that account until very late. With regard to exploration, someone had called the finger a clumsy tool, but digital exploration, he thought, was justified, and without it many abscesses would have been missed. A curious feature of brain abscess was its variety, not only in respect of pathology, but in the character of the walls, the size, and the symptoms and signs. Of special value were transient signs, such as wrist-drop lasting a day or two, a little lower facial palsy on the opposite side, or a transient ocular paresis. Optic neuritis, he thought, was rare in brain abscess, but one of the most marked cases of extradural abscess he had seen had haemorrhages and optic neuritis. As for after-treatment, a week should certainly be allowed to elapse before another dressing was done, and the less interference after the evacuation of the abscess the better.

Sir CHARLES BALLANCE said that he had no recent experience, and therefore no right to take part in the discussion, but he had attended in order to learn how much progress had been made in treatment, and he had been greatly impressed by the remarks of the two previous speakers. They would all agree that a brain abscess was a tumour, and that the ideal treatment was excision. He remembered in the distant past a brain abscess which he had excised and which had a wall so thick that the abscess could be rolled about on the floor like a billiard ball. There was no treatment for such a tumour except excision. As for the finger being a clumsy instrument for the discovery of brain abscess by palpation, he claimed that his own finger was the best probe ever invented. Brain abscesses had been missed because careful, complete, and repeated neurological examinations had not been made. Diagnosis and treatment would be much better if the need for such examinations were constantly borne in mind. A case of brain abscess secondary to temporal bone disease was not two separate processes of disease, but one continuous process in almost all cases. That being so, the surgeon ought to be able to follow the disease from the temporal bone through the meninges into the brain, and he himself had done this on many occasions. If that were done, and the abscess drained, the patient would be cured and exposed to no risk of meningitis. He would not imply that this could always be done, but he had done it many times in the temporal region, and also when there had been an abscess in the frontal bone. He agreed with Mr. Cairns that all subsequent dressings should be done by the surgeon himself.

Mr. F. C. ORMEROD spoke against the use of theallet in operation. He thought that injury was done by the hammering of theallet on the mastoid process within an inch or two of the wall of the abscess cavity. In a case of temporo-sphenoidal lobe abscess which he brought before the Section a large area of bone had been removed from the temporo-parietal area by means of bone forceps, theallet not being used at all. A large abscess was discovered by means of a Record syringe and needle, and was opened by an incision through its lateral wall. Convalescence had been uneventful.

Mr. MILES ATKINSON stressed the fact that in many of these cases localizing signs were not obtained until very late in the history of the disease. There were general signs of brain abscess, particularly headache, but no localizing signs; this applied even to the cerebellum. The localizing signs depended, he believed, upon the oedema. If the abscess was of a fairly chronic type, with not a very thick wall, there was not a great amount of surrounding oedema, and therefore localizing signs were not forthcoming. It was a mistake to wait for localizing signs before exploring the brain. Transience of signs was almost a diagnostic point: a sign "here to-day and gone to-morrow" was of very great help. Once a brain abscess had been drained it should be left severely alone. That was partly why Macewen got his high percentage of successes. Meddlesome surgery, too frequent dressings, washing out with antiseptics, and packing with gauze, all tended to produce the very thing it was desired to avoid. Dr. W. J. HARRISON mentioned the value of finger exploration; he had found secondary abscesses by using the finger to explore the temporo-sphenoidal lobe. Mr. J. A. GIBB asked whether Mr. Cairns would propose a larger opening with free incision of the dura mater, in view of the possibility that the abscess, if it had been missed, would tend to come towards the opening. Mr. HUGH CAIRNS, in reply, said that the making of a larger opening all depended on what was found with the needle. Deep-seated abscesses were best treated by close drainage, but with a surface abscess a larger opening could be made. The main reason why the scalpel had been given up was because one counted so much on finding the resistance of the capsule, but once the abscess had been reached a fine scalpel used gently might be of service. On the whole question he considered that, providing the surgeon had a clear idea of what he wanted to do, and handled the brain gently, the battle was won or lost at the bedside.

FUNGUS INFECTIONS OF THE SKIN

At a joint meeting of the North London Medical and Chirurgical Society and the City Division of the British Medical Association, held at the Royal Northern Hospital on February 28th, with Dr. P. O. ELLISON in the chair, an address was given by Dr. HENRY C. SEMON, physician for diseases of the skin at the hospital, on "The Alarming Increase of Fungus Infections of the Skin and a New Outlook on their Treatment." Dr. Semon said that he was not responsible for the title announced for his address, but the CHAIRMAN claimed, after Dr. Semon had spoken, that it was thoroughly justified by the facts he brought forward.

Dr. Semon began by demonstrating illustrative cultures of the three main groups of pathogenic fungi responsible in this country for most cutaneous mycelial infections in man—namely, the microsporon, the trichophyton, and the epidermophyton. The *Microsporon audouinii* was the chief cause of ringworm of the scalp in children, and was pathogenic to man only. Another microsporon was derived from animals, mostly cats, and might also infect the scalp. He was concerned, however, with the other two groups, and more especially with the symptoms due to the epidermophyton, which, so far as was known, was peculiar to man and not found in animals. This fungus might infect the skin and the nails, but never the hair, whereas the trichophyton, which was frequently derived from animals, could infect all three. The total number of probable epidermophyton cases seen in three out-patient clinics and in private practice during a recent six months was much greater than had been observed in previous years, and exceeded for that period of six months the infections due to scabies, pediculosis, and impetigo taken together. The symptoms in these cases were maceration and peeling of the skin between the toes—especially the fourth and fifth—development of fissures and painful cracks, spreading of erythematous and scaly conditions on the soles, and the local development on the insteps and legs of associated follicular irritation and scaly and eczematous patches. The toe-nails not infrequently shared in the infection. The infection might spread by contiguity, or might be conveyed to a distance by bath towels—as, for example, to the groins (dubie itch) or to the internatal cleft and crutch, where it might give rise to an intractable form of pruritus ani or pruritus vulvae. There was conclusive evidence to show that once the susceptibility of the skin to the fungus had developed, various symmetrical eruptions could occur at a distance, and the infection itself might be conveyed by the blood stream. The commonest of these eruptions was the so-called "dysidrosis," in which great discomfort, irritation, and peeling between the fingers and on the palms was produced. A form of palmar exfoliation noted during the summer months of the last two or three years, without any vesiculation, might conceivably be caused in this way. While the foot infection usually preceded the hand infection, the reverse might occur, and a circular or circinate tinea patch, usually on the thenar eminence, might prove the herald of constantly recurring eczematoid trouble in that situation and on the feet. It was important to differentiate the primary foci of infection from the secondary, as the former must be attacked vigorously in treatment, while the latter seemed to obey the same laws as eczema due to other causes. The principal means of differentiation was by culture. Primary untreated foci always contained mycelium. Secondary infections very rarely. While a member of the epidermophyton group was usually responsible for this infection, certain of the trichophyton group could produce similar manifestations.

Dr. Semon went on to mention a classical experiment by Peck, who infected a patient (who had volunteered for the experiment) with the mycelium of the epidermophyton between the toes of both feet. Itching and irritation with local vesicles developed four days later, on the thirteenth day the specific trichophytin reaction previously negative was found to be positive, and on the twenty-fourth day a typical dysidrosis or cheirpompophlyx eruption, with itching, developed in the clefts between the fingers of both hands. Dr. Semon thought that the significance

of that complication ought to be realized, for the aetiology of dysidrosis of the fingers—one of the most common affections of the skin in the summer months—was seldom ascertained, and once in his experience had been ruled by a medical assessor in a court of law, who was not a dermatologist, to be due to nervous influences. Peck's suggestion that the term "epidermophytid" should be used for the interdigital vesicles and other eczematous manifestations which might develop in the course of the foot infection deserved general support. Another point of great interest in Peck's experiment was that, after a complete clinical and bacteriological cure of his artificially infected patient, he reinfected her and obtained a more violent response in exactly the same areas, with pronounced accentuation of the trichophytin reaction, thus showing that, unlike what occurred in certain trichophytin infections, immunity had not been achieved. He had dwelt upon Peck's experiment because it was an artificially produced replica of the common case of eczematoid ringworm of the extremities met with in general practice, and illustrated most of the reactions and complications that could occur in the course of the infection. To these must now be added yet another—namely, the eczematoid—by which was meant the occurrence of vesicular or scaly, usually circular, patches of dry or weeping dermatitis, which might or might not itch, and from which the fungus could seldom be recovered. This manifestation was by no means uncommon, and its recognition would further diminish the category of eczematoid of doubtful causation. Of very great interest also was the "eczema marginatum" of Hebra, now termed "tinea cruris" or "dubie itch," which was due to the conveyance of this fungus from between the toes to the toe-nails, and, by means of towels, to other parts of the body. It was a true secondary infection, containing mycelium, and was not to be placed in the same category as the allergically produced dysidrosis or eczematoid patch, which might be termed "epidermophytids."

PREVENTIVE AND CURATIVE MEASURES

The realization of these facts (Dr. Semon continued) should stimulate prophylaxis, and he welcomed this opportunity of drawing attention to what he regarded as the most important and almost universal factor in the production of a pedal mycosis—namely, the standard boot or shoe. Rationally considered, the boot was nothing more or less than a leather incubator. All the necessary conditions—heat (at 39° C.), moisture, and darkness—were provided, and the culture medium was the human epidermis. Too much stress, in his opinion, had been laid upon the external sources of the infecting agent, such as bath mats, towels, and the bathing boxes of swimming pools, which might, of course, harbour the fungus from previous users or occupants, but could never operate if the footwear conditions were not so favourable. An ideal measure would be the adoption of the Roman sandal, which would permit the free passage of air and light between the toe clefts, and thus create an unfavourable soil for the spread of mycelium. He had seen a complete clearance of the condition after three weeks by this simple procedure alone in a case of many years' involvement of the outer clefts and the soles of both feet.

The local applications recommended for the elimination of this pest were many. The best known was that devised by Whitfield—an ointment of 3 per cent. salicylic and benzoic acids—which bore his name. This was exceedingly useful in the chronic peeling types, and should be rubbed in at least once daily, on a finger-stall, to avoid infection of the fingers and finger-nails. Some American workers aimed at thorough decortication by salicylic acid or other peeling agent, but even by this radical procedure a permanent cure could never be guaranteed once the mycelium and its associated allergy had become established. Castellani's carbolfuchsin and resorcin paint was of special value for the pruritus ani and vulvae due to secondary infection in the groins and crutch, and some cases of eczematoid type did well on

a paint of 1 per cent. gentian violet in 25 per cent. spirit, applied daily with a brush and protected with an indifferent dusting powder or Lassar's paste. Silver nitrate in from 0.5 to 2 per cent. solution with spirits of nitrous ether was also found useful in the eczema group, but the important point was to eradicate the primary infecting focus, when this could be recognized, between the toes. The treatment of the acutely inflamed case must be on general lines. Frequent applications of lead or 1 per cent. aluminium acetate solution, weak resorcin in boric lotion, calamine or 1 per cent. ichthylol lotions, and, in very purulent states, the potassium permanganate foot- or hand-bath, were well recognized and proved remedies. The inflamed skin should not be allowed to dry up, yet the heat of oiled silk protectors against evaporation inhibited their use. Butter muslin soaked in the prescribed lotion must be constantly renewed until, with the subsidence of the acute stage, oily liniments or pastes could be substituted. The epidermophytid of the fingers needed a drying treatment with weak salicylic (1 to 2 per cent.) spirit and calamine to encourage desiccation and the peeling stage, and the bullous types called for the evacuation under sterile conditions of serum and pus and the application of dressings similar to those already described for the acute condition. The tendency in all the acute cases was towards spontaneous involution and cure, and it was the chronic types and the frequent subacute and acute complications to which they were liable that caused so much disability during hot weather.

DISCUSSION

The ensuing discussion took the form mostly of questions addressed to the lecturer.

The CHAIRMAN (Dr. Ellison) said that after hearing Dr. Semon speak he did not think any apology was needed for the title given to his address, because he had painted rather an alarming picture. Even if it was known that ringworm of the foot was common, it had not been realized what great mischief it could bring about. Anyone who had seen the nails on the hands and feet of people who had this infection were aware how very disagreeable it could be. It was possible that more was heard of it nowadays, but it seemed as if the cases had been greatly exalted in virulence. With regard to cultures, it was absolutely essential, if one was to identify the particular varieties of fungi, to have a standard culture medium, and one of the great disadvantages of Sabouraud's medium was that it was not always possible to get two successive batches of medium which would produce identical cultures of the organisms grown. Some years ago W. N. Goldsmith took that point up and brought out a new medium, but he had told the speaker that even then he was not satisfied, and he recommended a medium containing crude commercial glucose as being preferable to maltose. With regard to remedies proved useful in the infection which Dr. Semon had illustrated, he himself had found iodox ointment useful, but it left a disagreeable stain.

Dr. W. E. SNELL said that when he was medical officer at Colindale the so-called dhobie itch was seen to be very common among the male adult patients, so that it was made a rule that every patient must be inspected on admission, and he thought that about 50 per cent. of them were found to be infected. Dr. SEMON said that that seemed to him a heavy percentage, and it was probable that some of the patients were suffering from erythrasma. This was a disease which copied dhobie itch but produced no symptoms, whereas dhobie itch, true to its name, always itched very severely.

In reply to Dr. KATHLEEN MATTHEWS, Dr. Semon said that he thought the large majority of dysidrosis cases were fungus infections, but it was extremely rare to recover the fungus. Even in Peck's case, which he had mentioned, the fungus was not recovered from the dysidrotic vesicles. These were reactions produced by the fungus at a distance, and they might be eczematous in character, taking the form of small discoid patches, or they might be vesicles. He added, in reply to other questions, that in an eczema due to the fungus it was necessary first to eradicate the primary focus and use strong salicylic

acid ointment. With regard to silver nitrate, which was mentioned by one member, he would not like to use the caustic stick, but a 1 per cent. solution was a very valuable remedy for the cracks and fissures. As to the treatment of nail infections, he thought a great deal of good could be done by taking an orange stick and dipping it in a strong salicylic ointment, and introducing it every day under the nail. The ointment should be applied well under the nail fold as far as it could be got.

In reply to a question on the hygiene of swimming baths, Dr. Semon said that, of course, it was a necessary hygienic precaution for each person to take his own towel, also to avoid standing on bath mats which were used by many people, and perhaps a little spirit might be taken and the feet treated on each occasion after bathing. He did not believe in water infection at all, certainly not infection in which fungus was concerned. Finally, he said that the infection of which he had spoken was a disease not of dirty people, but of clean people. Excessive use of soap and water, as was seen in laundry women, brought about a maceration of the skin, which gave the fungus its opportunity.

BLOOD REGENERATION IN TROPICAL AND NON-TROPICAL ANAEMIAS

A meeting of the Royal Society of Tropical Medicine and Hygiene was held at Mansion House on February 15th, the president, Sir LEONARD ROGERS, being in the chair.

Professor A. E. BOYCOTT dealt with the regeneration of red corpuscles, especially from the experimental aspect, pointing out that after a serious haemorrhage leucocytes were restored in a few hours, platelets in two or three days, and red cells in several weeks. When a normal rabbit was bled about one-third it replaced its lost haemoglobin in about three weeks, the response being conditioned by the amount of erythropoietic tissue in the marrow rather than by the strength of the stimulus. The marrow was working to its utmost, and the time taken to regenerate a haemorrhage was proportional to the amount lost. When graphed the course of regeneration was seen to be a straight line; this was in contrast to the hyperbolic curve of restoration in pernicious anaemia, in which the supply of P.A. factor fired off an enormously hypertrophied bone marrow and enabled it to do effectively what it had been failing to do previously; here the marrow was quantitatively adequate if only it could get over the biochemical impediment to its proper activity. In normal animals, and with all the necessary materials for making new red cells at hand, the rate of regeneration depended a great deal on the species. Thus the rat regenerated blood three times as fast as the rabbit, which again probably regenerated it at a rate two or three times as fast as man. Calculating from the relative metabolic rates, man would take six to nine weeks to regenerate a blood loss of a quart, and six months if one-third of the original blood was lost. Age made a difference, as did also practice. Professor Boycott showed that if a rabbit regenerated a first haemorrhage in nineteen days it restored a second of the same size in seven days, and if frequent small losses recurred it soon acquired the facility for keeping its blood near a normal level. Hypertrophy of the erythropoietic tissue of the bone marrow occurred under such conditions, and the stimulus which roused the marrow to activity was actual shortage of red cells in the circulating blood. In rabbits a fall in the percentage of haemoglobin was at once followed by reticulocytosis, while transfusion of compatible blood reduced but never completely eliminated the reticulocytes, even though an artificial polycythaemia had been temporarily induced.

Dr. JANET VAUGHAN next reviewed the haemopoietic response to therapy in non-tropical anaemias, emphasizing that blood regeneration in anaemia due to haemorrhage, as well as in the dyshaemopoietic anaemias,

followed certain principles, provided adequate supplies of haemopoietic factors were present and inhibitory factors were absent. The character of this response was to a large extent supplied by the cause of the anaemia, and it could be analysed by a study of the response of the reticulocytes to therapy, and later by an estimation of the haemoglobin and red cells gained. In the megalocytic hyperchromic anaemias, due to lack of the P.A. factor, the peak of the reticulocytic response was inversely proportional to the red cell count before treatment. The figures for parenteral treatment might prove higher than those obtained in oral treatment, and it was also probable that the rate of red cell increase would prove greater in response to parenteral treatment. In the case of hypochromic anaemias responding to iron the number of reticulocytes at the peak of the rise appeared related to the initial haemoglobin level rather than to the initial red cell level. In estimating the expected reticulocyte rise, however, both red cell level and haemoglobin level before treatment had to be taken into account. The difference in the response to iron and liver was probably due to the fact that in the anaemias responding to iron haemoglobin was primarily at fault, while in anaemias responding to the P.A. factor cell stroma was deficient. The anaemia due to scurvy also responded to appropriate therapy, including pure ascorbic acid, by the outpouring of reticulocytes and subsequent increase in red cells and haemoglobin. The anaemia following acute haemorrhage responded in exactly the same way, provided adequate stores of haemopoietic factors were present in the body. Factors inhibiting the maximum and classical response to therapy were: (1) the presence of multiple deficiencies which were not at first recognized; (2) the presence of achlorhydria; (3) failure of intestinal absorption; (4) a raised blood pressure; (5) sepsis. Though much was known of the factors necessary for normal haemopoiesis and of the principles governing normal blood regeneration, the part played by inhibitory influences was still very little understood.

Dr. HAMILTON FAIRLEY confined his remarks to observations made on anaemias met with during the past four years at the Hospital for Tropical Diseases, London. Anaemias of megalocytic type were encountered regularly in sprue, occasionally in kala-azar, and rarely in malaria; in all cases the underlying cause appeared to be derangement of gastric function, to which defective HCl secretion not infrequently afforded an index. In sprue moderate reticulocytosis might follow the cessation of diarrhoea induced by adequate rest and high protein dietary; the response, however, was submaximal and blood regeneration correspondingly slow unless augmented by liver extract or some similar preparation in adequate dosage. The response then resembled that seen in pernicious anaemia, the reticulocytosis being inversely proportional to the red cell count. Marmite was only occasionally effective in sprue, and ventriculin proved less satisfactory owing to the tendency sometimes to prolong the diarrhoea. Little, if any, attention had been paid to the effects of specific drugs on blood regeneration. Charts from syphilitics artificially infected with *Plasmodium vivax* and from naturally infected cases of benign and malignant tertian malaria showed that the administration in adequate dosage of quinine and atabrin was followed in six to nine days by reticulocytosis and blood regeneration proportional to the degree of anaemia. Chronic malarial anaemia led to considerable hypertrophy of red marrow, which extended into the long bones, and once the parasites were eliminated the large amount of erythroblastic tissue which had been laid down responded by reticulocytosis and rapid blood regeneration. In monkeys experimentally inoculated with *P. knowlesi* massive infection resulted, and a rapid haemolytic anaemia developed in from six to ten days, which soon terminated fatally with or without haemoglobinuria. If life were prolonged by specific therapy intense reticulocytosis and rapid blood regeneration followed, a result partly due to anaemia resulting from the critical loss of corpuscles and partly to the destruction of parasites. Passing on to blackwater fever in man, a reticulocytosis of 20 to 30 per cent.

followed the initial intravascular haemolysis within eight or nine days; an important factor permitting haemopoiesis was the destruction of malarial parasites which almost invariably accompanied the haemoglobinuria. In the anaemia associated with amoebic liver abscess reticulocytosis and blood regeneration followed the injection of emetine, but if there was a secondary coccal infection the reticulocyte count might remain elevated until surgical drainage resulted in healing of the abscess cavity. The data contained in these haematological charts indicated that parasites exerted an inhibitory influence on the bone marrow, and that once the cause of the anaemia had been dealt with proliferation of the erythroblastic tissue followed, resulting in a temporary reticulocytosis and rapid blood regeneration. Persistent submaximal reticulocytosis in anaemia implied a persistence of inhibitory factors or of the cause giving rise to the anaemia, whether the cause was a bacterium, a parasite, or a deficiency factor.

Dr. L. J. WITTS referred to a remarkable case of blackwater fever recovering after multiple transfusions, and inquired why, in aplastic anaemia, transfusion with compatible blood had so little effect. Such a patient might receive three pints of blood weekly—an amount out of proportion to the amount of blood destroyed—yet the anaemia progressed. The bone marrow was a complicated organ on which many factors played. Of the most important they had heard that night, but there were others, and the polycythaemia occurring in basophil adenoma of the pituitary gland suggested that nervous or endocrine factors might affect regeneration. Arsenic and x rays also stimulated bone marrow to produce red cells and reticulocytes.

Dr. G. W. GOODHART said there was evidence that after blood loss women were more efficient at blood regeneration than men, and this might be because menstruation made them practise blood regeneration. After abortion, if sepsis were not present, women regenerated blood with extraordinary rapidity when left alone and treated with ordinary doses of iron, whereas in males with a similar degree of anaemia transfusion would certainly be indicated. Dr. Goodhart cited a case of pernicious anaemia with a high colour index which changed to a low one on intramuscular injections of liver though megalocytes persisted. He asked whether this was a common experience, and whether iron should be administered, also how often intramuscular injections failed where intravenous ones succeeded. In reply, Dr. VAUGHAN said there was nothing in favour of intravenous as opposed to intramuscular therapy with modern preparations. She had not seen a case of megalocytic hyperchromic anaemia become hypochromic with large cells persisting, and thought it might be an instance of idiopathic steatorrhoea. Iron should be given alone if the response was to be correctly interpreted.

Sir RICKARD CHRISTOPHERS asked Professor Boycott whether the time factor in the regeneration of the protein constituents of the blood had been worked out, and Professor LEDINGHAM inquired what was the basis of the increased rapidity of blood regeneration after a second bleeding, and whether there was any factor other than a response to lack of oxygen.

Professor Boycott replied that the blood proteins regenerated in five to six days. To Professor Ledingham's question he did not know the answer. If, however, one asked an animal to do anything which it had not done before, it would always do it better a second time, and blood regeneration after haemorrhage was no exception to the rule; the marrow itself was probably also more active. In epitomizing the whole subject Professor Boycott said there were two main groups of cases to consider: one in which the response was limited by the quantity of marrow, as after sudden haemorrhage, and the other group in which the quantity of marrow had hypertrophied owing to lack of oxygen, and was adequate up to a certain point, but could go no further. Here two factors were involved: one, the materials necessary for the manufacture of blood, and the other, the extraordinary thing Dr. Fairley had told them about—namely, parasitic inhibition of marrow activity.

CORRESPONDENCE

Silicosis and South Wales Colliers

SIR,—I should like to add a few words in connexion with your accounts of the discussion on silicosis at the two recent meetings of the Institution of Mining and Metallurgy.

A matter which was not discussed at the meetings was why it is that so large a number of certified cases of silicosis occur among South Wales colliers. If these cases are real some explanation of their great frequency is needed, and Dr. W. R. Jones maintains that his sericite theory fills the gap. I need not repeat the reasons which to me personally seem conclusive for rejecting the sericite theory, but I should like to add here that after careful inquiry into working histories and clinical symptoms of a large number of the certified cases I find myself unable to accept the great majority of the diagnoses of the medical boards. Cases of silicosis in the sense commonly accepted end nearly always in death from phthisis, and if there were actually a large number of cases of real silicosis in this sense among South Wales colliers their phthisis death rate would be considerably increased above a normal figure. Actually, as shown by the Registrar-General's occupational mortality figures, the phthisis death rate of South Wales colliers is, like that of colliers elsewhere, considerably lower than that for the average occupied males. This seems to me inconsistent with the diagnoses of the medical boards, and whatever these diagnoses may mean they consequently cannot be accepted as of real silicosis, except in the comparatively few cases where serious exposure to dust from highly siliceous rock has actually occurred.

There seems to be no sound reason for believing that many more cases of real silicosis occur among South Wales colliers than among other colliers, and I think that the widespread alarm produced in the South Wales colliery district by the numerous certified cases of silicosis has no substantial basis so far as silicosis is concerned, though I hope it may have the effect of hastening a carrying-out of the precautions which are essential whenever it is necessary to drive underground roads in highly siliceous rock. The cases of silicosis from neglect of these precautions are so few that they do not affect appreciably the low phthisis death rate of the miners; but they are undoubted cases of real silicosis, and every effort should be made to prevent them.—I am, etc.,

Oxford, March 3rd.

J. S. HALDANE.

Pathogenesis of Cancer

SIR,—I have read with much interest the letter on the above subject in your issue of February 24th, by my friend Mr. Frank T. Paul. As corresponding colleagues at the Liverpool Royal Infirmary I saw many of his cancer cases, and was well acquainted with his views on the subject, which were of a very practical nature, but, unlike the present-day practice, did not lead to much lucrative work. This readily met with the approval of one who was more devoted to prevention than to cure. On one occasion Mr. Paul scraped out a small sebaceous gland from my neck, which he said was better removed lest it should develop into cancer. I said that I had no more dread of cancer than I had of the plague, and as the latter was non-existent in England the risk was negligible; however, it was interfering with my razor—not Occam's razor—each morning. I wished it removed, and the cure has been permanent.

Long before Mr. Paul had lessened the number of his operations for cancer of the breast I had formed the opinion that at least 75 per cent. of the operations on

the breast for supposed cancer, or a tumour which, if left alone, would or might become cancer, were simple cases of mastitis which, if treated with tincture of iodine and thyroid, would disappear. As practically all cases of cancer, wherever situated, are deficient in calcium the iodide of calcium was, and is, a favourite remedy with me.

Many years ago I asked the late Dr. Ernest Glynn for a specimen of cancer about which he had no doubt, though I did not care from which organ it came, and he sent me a whole breast which had just been removed. A few days afterwards I called to tell him that I could find no evidence of malignancy, and he told me that he had discovered the fact, but he had been let down by the surgeon, as, he regretted to say, often happened.

Some years ago I saw the wife of a medical man, in one of my periodic visits to this island, who had a small lump in her left breast, which I told him was, in my opinion, a simple case of mastitis that under a prolonged course of treatment would get quite well, but if he had any anxiety in the matter I would recommend him to consult an eminent surgeon in London, whom I specified, as I felt confident he would not operate unless he considered it absolutely necessary. They took the latter part of my advice, but unfortunately the eminent surgeon sent her to a radium expert, who applied a few radium needles and the lump melted away, which, in my opinion, was proof that the lump was non-malignant, and if the expert had then held his hand all would have been well; but not content with well-enough he apparently wished to do his job thoroughly and gave such a dose of radium that the whole breast swelled up to such an extent that it had to be completely removed. The lady was so exhausted that further treatment was deemed inadvisable for a time, but after a prolonged rest she began to recuperate, and then a course of deep x-ray therapy was prescribed for an imaginary secondary deposit in the right lung; but why the cancer should have jumped from the left breast to the right lung was not explained. This was simply a recurrence of a bronchial attack with slight pulmonary collapse, from which she had more or less suffered for a long time, due to excessive cigarette smoking. However, the deep x-ray therapy was carried out so successfully as to prove the finishing touch to an impaired life, but the operator sent her home before he was required to sign the death certificate. The husband of the lady thought that the wife of a medical man was not sufficiently profitable to interest my eminent surgeon.

I have not altered my opinion as to the nature of the affection—I will not call it disease—but I have often quoted the case to those who contemplated radium and deep x-ray treatment. I have also given my opinion as well as that of the husband, to my eminent surgeon which, I hope, will teach him that early and frequent operations, either with the knife, radium, or deep x-ray are not the only and best way of preventing the evolution of cancer.

I have no doubt that Mr. Paul will recollect my plan of preventing pneumonia after operations on the tongue and mouth for cancer. For about a week before any such operation is undertaken the patient receives, thrice daily, 15 grains of chloride of calcium, the mouth is frequently rinsed with a good antiseptic or pure alcohol, as recommended by the late Jonathan Hutchinson, but the patient is cautioned against swallowing the mouth-wash. For three days before the operation the patient receives each day a hypodermic injection of 10 c.cm. of anti streptococcus serum.

When vaccines came into vogue I wished Mr. Paul to try an autogenous vaccine, but he replied that he had never had a death from pneumonia since he adopted my preventive treatment, and he was quite content with a success of 100 per cent. I quite agree with Mr. Paul that although operations may be a very profitable method of treatment for the surgeon, from the patient's point of view we could eliminate many operations, and practise more preventive medicine.—I am, etc.,

St. Helier, Jersey, March 1st.

JAMES BARR.

SIR.—Mr. Frank Paul's letter on the above subject in your issue of February 24th contains nothing new, but it serves the very valuable purpose of inducing us to retrace our steps, and making us wonder whether, in our haste, we have missed one or two fundamental points. Suppose we go back to the very beginning and "think in protoplasm." Evolution may, and does, bring about differentiations in the protoplasm, but it cannot alter its organic constituents, which, through countless ages, remain the same. Growth is just a constant breaking down and building up of the protoplasm, which owes its instability to the contained nitrogen. All bodies into the composition of which nitrogen enters are most unstable—one has only to think of high explosives.

I think we all agree that growth depends on the amount of chemical change—that is, on the degree of instability of the protoplasm, which, in its turn, is regulated by the amount of nitrogen it contains. It is a fact that cancer appears more frequently in tissues formed of highly compounded nitrogenous molecules, where changes are most active, while tissues like fat, which consist of relatively simple molecules, and are thus the seat of little change, are passed by. There is thus something to be said for the belief of Mr. Paul and others, that the too free use of stimulating meat food may predispose to cancer. On the other hand, a healthy gastro-intestinal apparatus may be trusted to look after an excessive intake of proteins, which are broken down into amino-acids. From these cleavage products the cells take the necessary protein peculiar to themselves, the remainder being changed by the liver cells into harmless urea.

Now the nitrogenous body which is concerned in endogenous tissue metabolism is creatinine ($\kappa\rho\iota\sigma$ —meat), a substance which is known to stimulate growth. Its amount may vary in different animals and individuals, but is remarkably constant. But one may ask, Why is it, when cancer develops, that it is only the cells of a particular organ, say the mamma, that respond to the nitrogenous whip? It is because the cells of the tissue affected have been kept young and more active by repeated irritation, and it is only young cells that are stimulated to greater effort by an excess of nitrogen. The farmer never gives sulphate of ammonia to mature plants, but to those which are young and growing. I sometimes indeed wonder whether the occurrence of cancer is a ghastly attempt on the part of the organism to reproduce itself asexually, after the functions of the true sexual cells are in abeyance.

The "instability of tissue" mentioned by Mr. Paul might be controverted by (1) limiting the protein intake, (2) keeping the gastro-intestinal organs healthy, and (3) guarding against prolonged local irritation. As regards treatment, advantage might be taken of the knowledge that creatinuria occurs in hyperthyroidism, and that throughout the greater part of the growth period, during pregnancy, and in the puerperium the excretion of creatine is an occurrence so regular that it might be regarded as entirely physiological.—I am, etc.,

Upholland, Lanes, Feb. 28th.

J. THOMSON SHIRLAW.

SIR.—The letter of Mr. Frank T. Paul, in your issue of February 24th, and that of Mr. E. G. Fenton, on March 3rd, raise points in regard to the genesis of cancer of great interest. That tumours are the result of the excessive growth of ordinary tissue cells will be agreed by most pathologists. The problem is to explain the factor which causes this excessive growth. Most of the body tissues are actively growing, but their growth activity is controlled, so that although excessive growth

may occur occasionally, as when a damaged area requires to be repaired, the process is arrested once the damaged area has been restored. In tumours, on the other hand, the excessive growth is continuous, and persists during the life history of the tissue cells concerned, even if they are transplanted into another animal. Clearly a genetic change has taken place in certain cells for excessive growth.

I have attempted to explain how this change takes place, and its nature, in a paper published in this *Journal* on April 30th, 1932, and more recently in a book called *The Origin of Cancer*. The problem resolves itself into two questions. What is the change that has taken place which results in the tumour cell growing at an excessive rate? And secondly, What is it that causes this change? As I have pointed out, I believe we can answer the first question, but the second is more difficult.

There seems to be a very general desire on the part of your correspondents to attribute the cause of the change to factors in the environment, such as diet, manner of living, etc., but there are good reasons for believing that environmental factors have very little to do with the incidence of tumours. The susceptibility of the tissues to undergo the change which results in tumour appears to be an inherited genetic factor. This unstable character of the tissues has been handed down through many generations, and like any other inherited defect tends to increase in an unchecked population.

This view is supported by experimental work on mice, and by the observed fact that when tumours are found in uniovular twins both twins have the same type of tumour in the same situation at approximately the same time, and that no examples have been found of one uniovular twin with a tumour which was not present also in the other twin. As tumours usually occur late in life the twins cannot be subject to the same environment, and the only common factor would appear to be their genetic identity. This view is not likely to be very popular, as it does not open any very obvious path towards the control of tumours, but our object is to arrive, if possible, at the truth, however unpalatable, as it is only by so doing that we can hope to make progress towards the solution of this problem, which far too long has eluded us.—I am, etc.,

London, W.I, March 3rd. J. P. LOCKHART-MUMMERY.

SIR.—Before the days of substitution therapy Richard Cabot pointed out that pernicious anaemia was essentially a disease of the cancer age. Now that it has been demonstrated that pernicious anaemia is a deficiency disease it might not be illogical to consider cancer as a disease of the pernicious anaemia age, and to inquire as to the possibility of the cause of cancer being found in the lack of some essential substance in a susceptible subject.

Most of the so-called cures of individual cancer cases which one has observed have been the result (or apparently so) of mixed treatments by various substances, plus dietary restrictions of various sorts, but chiefly by a reduction of the protein element and an increase in the vitamin-containing vegetables and fruit. The common factor in most of the cases noted has been that of diet. Might not research along these lines, as suggested by Dr. W. Mitchell Stevens in your issue of February 24th (p. 352), lead to something simple in the way of cancer cure, which, as Sir William Willcox (*British Homoeopathic Journal*, xxiii, No. 2, 133) recently said, may have been there, just round the corner, awaiting recognition?—I am, etc.,

London, N.7, March 4th.

W. LEES TEMPLETON.

¹ Creatin and Creatinin. Andrew Hunter (Monographs on Biochemistry).

Ovulation and Menstruation

SIR,—I was very pleased to read Dr. Novak's letter in your issue of March 3rd (p. 401), for my article, written in reply to the paper he published in the *Journal* of September 23rd, 1933, showed that our differences of opinion call for correspondence. Just as Dr. Novak now takes exception to some of my views, so did I disagree with some which he expressed.

We disagree, in the first place, on the use of the word "menstruation." I prefer to restrict the word to periodic uterine bleeding in cycles which are ovular in type, mainly because students have difficulty in discriminating between normal uterine bleeding and pathological haemorrhage, and also because I believe that anovular bleeding in women should be regarded as pathological. My feeling is that there will be great confusion if anovular uterine haemorrhage is regarded as physiological. For example, in Dr. Novak's letter he refers to the post-menopausal haemorrhage caused by granulosa cell tumours as "menstrual" bleeding, a description which few will accept, and which would, if widely used, add further to the existing confusion in the nomenclature. The second point upon which we differ is the frequency of anovular cyclical haemorrhage. If Dr. Novak will refer to his article of September 23rd, I think he will agree that it creates an impression that anovular cyclical bleeding is not infrequent in apparently normal women. I am not prepared to accept this opinion, but regard anovular bleeding as relatively rare and of a pathological nature.

I have always admired the wonderful animal work of Corner, Hartman, Hisaw, and Allen, but I do not agree that the interpretation of the physiology of the human menstrual cycle must necessarily be dominated by the results they have obtained with lower animals. Perhaps I have in mind the fact that menstruation in the human subject was for many years regarded as being homologous with the pre-oestrous bleeding of the bitch—a view which is still retained in some English textbooks of gynaecology. Again, it is not yet established that the female sex hormones, which have such well-marked effect in lower animals, are of comparable importance in the human subject.

I agree absolutely with Dr. Novak in his view that reproductive endocrinology is in an unsettled state, and I also realize how difficult it is to obtain reliable human material from which information can be obtained of the physiology of menstruation. Although I disagree with Dr. Novak's views on the incidence of anovular bleeding in normal women, I have every respect for his own admirable work, nor did I intend that any of his other publications or those of Corner, Hartman, or Hisaw should be included among those criticized in my article.—I am, etc.,

London, W.1, March 5th.

WILFRED SHAW.

SIR,—I wish I could think that Dr. Wilfred Shaw will be wise enough to take Dr. Novak's well-merited rebuke to heart. Judging, however, from his recent papers, I am afraid that Dr. Shaw imagines that he is nearing the summit of Mount Olympus, and, therefore, is beyond approach or reproach. In these circumstances, and as one of the oldest of those who in this country have attempted to solve the problems associated with the reproductive functions, I deem it my duty to endorse every word of Dr. Novak's letter.

With regard to the scientific point at issue, I will content myself by recalling that so long ago as 1910 I stated in the first edition of my *Principles of Gynaecology* (p. 76) that menstruation can occur without ovulation (and ovulation without menstruation); and this, as Dr.

Novak says, is generally accepted to-day by those who interpret properly the word "menstruation" and understand its significance. When I read Dr. Shaw's paper in the *Journal* of January 6th I was seriously disturbed, not only on scientific grounds, but even more because of the contemptuous way in which he referred to the "American school," whose distinguished investigators have done so much to throw light on the reproductive functions; and because he assumed an "oracular position" which, as Dr. Novak justly implies, is quite unwarranted by anything Dr. Shaw has done. I do not know of whom Dr. Shaw's "school" consists. He himself appears to be a disciple of a certain German investigator.

I fear that Dr. Shaw has been spoiled by the absence of criticism—he will find plenty in regard to his views on different subjects in the new (fourth) edition of *The Principles of Gynaecology* (1934), although his name is not mentioned—and he has assumed that everyone has "swallowed wholesale" all that he has written, as, indeed, may be the case in not very well informed quarters. It so happens that Dr. Shaw has been immune from criticism for several reasons: no one has wished to impede or discourage one of the few clinical gynaecologists in London who are attempting to do research work; secondly, most of his communications have been published in journals in which no criticism is possible. I should not like our American colleagues to imagine that in this country Dr. Shaw's views are those of all of us who are interested in the subjects about which he has written. Yet even in regard to his last paper, unfortunate though it was, I should have refrained from public comment had not Dr. Novak shown how deeply Dr. Shaw has wounded the brilliant band of workers in America who have really scientifically and effectively advanced our knowledge. I did, it is true, at the time of publication, express to friends in this country, both verbally and in letters, my disapproval of Dr. Shaw's pontifical attitude.

I would observe once more, as I have often done before, that such subjects as menstruation cannot be usefully studied by histological methods only. All Dr. Shaw's statements come to us by way of the microscope lubricated with "midnight oil," and perhaps of a few clinical reports. He has, I believe, entirely ignored comparative physiology, biochemistry, and experimental methods. Without these, and the power to appreciate work based on them, Dr. Shaw is wasting his time and making himself ludicrous by an assumption of superior knowledge, to which those of us who are less confident of the final truth, but have sought it more scientifically than he, have been exposed.—I am, etc.,

Liverpool, March 3rd.

W. BLAIR-BELL.

Ovulation and the Human Sex Cycle

SIR,—Following upon a leading article on the above topic in the *British Medical Journal* of January 16th, 1932 (p. 108), correspondence appeared in the issues of January 23rd and February 6th of the same year over the names of Dr. Wilfred Shaw and Dr. J. M. Robson, of whom the former adduced evidence in favour of restricting ovulation in the human subject to a narrow margin round the fourteenth day of the cycle, whereas Dr. Robson was of the opinion that the existing evidence did not justify so strict a limitation.

The question as to the time at which ovulation occurs has been approached from different angles, and data relevant thereto have been derived from:

1. Histological studies of the endometrium and of the changes which it undergoes under the influence of corpus luteum hormone after ovulation.

2. Direct observation of the ovary at the various stages of the cycle.
3. Recovery of ova from the tubes.
4. Determination of a cycle in the activity of the uterine muscle, and deduction of ovulation from changes therein dependent upon the inhibitory properties of corpus luteum hormone.
5. The probable age of young embryos.
6. Records of restricted periods of copulation in the human subject and in monkeys.

In a recent review of the literature Robson¹ concludes that, although ovulation most frequently occurs about the middle of the intermenstrual period, a considerable mass of statistical data indicates that ovulation may take place at any time of the cycle. In this view he supports that expressed by Dickinson² after a review of the literature up to 1927, and by Evans and Swezy³ at a later date.

To the evidence which has been accumulated from the various sources specified it may be pertinent to make a contribution. The occurrence of faint bleeding on a single day during the intermenstruum has been reported by many gynaecologists, and is generally considered to be an indication of the ovulatory process. In an isolated case recorded by Simpson and Evans,⁴ its occurrence over a period of twenty months was observed to vary in different cycles between the fifteenth and nineteenth days of the period. Papanicolaou,⁵ who made a study of the correlation between vaginal smears and ovarian cyclic changes in seventeen women, observed erythrocytes as early as the seventh day in some and as late as the seventeenth day in other cases. In fifteen cycles of twenty-four to twenty-six days' duration in a single subject erythrocytes were found at varying dates between the ninth and fourteenth days, the highest frequency of ovulation lying between the twelfth and thirteenth days. As the figures are based on an indirect method and not on direct observations of the ovaries, their value depends largely on the extent to which they are supported by other similar cases. It is for this reason that the following particulars are given of the occurrences of the ovulatory sign (so-called) over a period of two years in one and the same subject, aged 40, in whom the number of cycles was 29, the average length of cycles was 28.25 days, the number of appearances of "ovulatory sign" were sixteen (see below), and the average duration of menstruation was five days.

Occurrences of Slight Intermenstrual Bleeding

		Length of Cycle in Days.	Slight Bleeding, Day.*
1932	January	26	12
	February	29	15
	March	26	12
	April	27	13
	May	30	—
	June	25	20
	July	29	—
	August	30	—
	September	26	—
	October	30	—
	November	29	13
	November to December	30	15
1933	December to January	38	14
	January to February	26	29
	February	28	12
	March	26	20
	April	28	—
	May	26	11
	June	28	—
	July	29	22
	July to August	29	11
	August to September	29	—
	September	28	—
	October	28	—
1934	November	25	—
	December	28	—
	December to January	29	20
1934	January to February	28	—
	February to March	?	13

* Counted from first day of last menstrual period.

It is possible that erythrocytes were present at intermenstrual stages in the cycles which are left blank, but no microscopical examination was made, and the data refer to a manifest sign.

Hartman⁶ has reported finding interval bleeding in 75 per cent. of 105 cycles in monkeys at a favourable time of the year. There is, at present, no conclusive evidence that this phenomenon of slight bleeding is, in reality, an infallible sign of ovulation, but, on the assumption that it is, the data given above would provide evidence (a) that ovulation can occur as late as, and after, the twentieth day, and (b) that there may be more than one ovulation in a cycle. The distribution also suggests that the onset of menstruation is not determined by the ovulatory process. If reliable data could be accumulated from many such cases, it would then be possible to determine the significance and the value of the phenomenon.—I am, etc.,

Edinburgh, March 3rd. ANNIE M. HAIN, M.A., Ph.D.

P.S.—Professor Novak's letter, which we observe in to-day's issue, plays a just tribute to the investigations of the "American school" in this matter.

A. M. H.

REFERENCES

- ¹ Robson, J. M.: *Recent Advances in Sex and Reproductive Physiology*, London, J. and A. Churchill, Ltd., 1934.
- ² Dickinson, R. L.: *Amer. Journ. Obstet. and Gynecol.*, 1927, xiv, 718.
- ³ Evans, H. M., and Swezy, O.: *Amer. Journ. Physiol.*, 1931, xcvi, 628.
- ⁴ Simpson, M. E., and Evans, H. M.: *Science*, 1928, lxxviii, 453.
- ⁵ Papanicolaou, G. N.: *Amer. Journ. Anat.*, 1933, lii, 519.
- ⁶ Hartman, C. G.: *Science*, 1928, lxxviii, 452.
- ⁷ Idem: *Journ. Amer. Med. Assoc.*, 1929, xcii, 1992.

Basal Narcosis in Anaesthesia

SIR,—Our experience with avertin as the routine method of induction in over 2,000 gynaecological operations has proved it to be a procedure which is of great value and, with some simple safeguards, which is eminently safe. The letters of Sir Francis Shipway and others (*Journal*, March 3rd, p. 400) have directed attention anew to the supreme importance of these safeguards. There would seem to be no doubt that in the past deaths from respiratory failure following the use of avertin have been caused (a) by the employment of an excessively large dose in an ill-advised attempt to produce complete anaesthesia, or (b) by associating with it an unduly large amount of such respiratory depressants as morphine. In our own experience we early found that the reduction of the pre-anaesthetic morphine from 1/4 to 1/8 grain resulted in an immediate lessening of respiratory depression following the administration of avertin (*Lancet*, May 31st, 1930, p. 1177). On these matters Sir Francis Shipway and others had previously issued a warning to the profession.

In view of the current interest in the various classes of pre-operative medication it would seem opportune for us to state that our further experience with avertin has confirmed us in the views previously expressed in this *Journal* (December 5th, 1931), after a study of its use in our first 1,000 cases. We have convinced ourselves:

1. That in a dosage of 0.08 to 0.1 gram per kilo of body weight avertin is a safe drug. *In 2,000 cases there has been no mortality or morbidity traceable to its use. The total mortality from all causes was ten.*

2. That it possesses outstanding advantages in the ease, comfort, and certainty of its induction.

3. That it largely eliminates post-operative complications, such as sickness, bronchitis, and bronchopneumonia. In these respects it has created a virtual revolution in the conditions obtaining in our wards from the standpoint both of the patients and of the nursing and medical staffs.—We are, etc.,

Royal Infirmary, Edinburgh,
March 3rd.

JAMES YOUNG.
N. STUART FRASER.

Carbon Dioxide in Barbiturate Poisoning

SIR,—Mr. R. J. McNeill Love, in your issue of February 24th, makes some shrewd comments on the danger of basal narcosis, and offers valuable hints as to the procedure in cases of poisoning. He has, however, completely omitted from his article all mention of carbon dioxide—to my mind the most valuable agent of all, especially in cases of respiratory depression with avertin. I have never had a case of respiratory failure and cardiac embarrassment with this narcotic that failed at once to respond to the administration of carbon dioxide, with or without oxygen.

It would seem, too, that carbon dioxide hastens the return to consciousness in these cases. This seems difficult to explain, since avertin is almost entirely excreted in the urine. Possibly the raised blood pressure causes more blood to flow through the kidneys and better elimination, and certainly the increased ventilation of the lungs will get rid of any ether vapour from the alveolar air, if this has been used in addition to the avertin.

In my opinion, during operations such as thyroidectomy, where one is faced with the probability of a severely damaged myocardium, the indiscriminate use of cardiac stimulants is rather like flogging a tired horse.—I am, etc.,

Guildford, March 2nd.

A. BARNESLEY.

Sudden Circulatory Failure and Diabetic Coma

SIR,—I read with interest the letter of Drs. Fuller and Himsforth (March 3rd, p. 405), and also that of Dr. Douthwaite (February 24th, p. 353). As the latter says, there is much to support the conclusions arrived at by Dodds and Robertson in their article on the cause of death in diabetes (*Lancet*, 1930, i, 852).

Two additional factors which support their view that death results from circulatory failure are:

First, that in many severe diabetics there is electrocardiographic evidence of myocardial change, as shown by considerable flattening of the T wave in all leads. The supposition that the imperfect metabolism of the diabetic leads to malnutrition of the myocardium is, I think, reasonable; but in cases in which I have found this change to be present it is of interest to note that the appearance of the curve has remained unaltered after treatment which has controlled the diabetes.

Secondly, in older patients at any rate, the common association of diabetes and the big-vessel type of vascular sclerosis (affecting the coronaries) must be borne in mind.—I am, etc.,

JOHN R. H. TOWERS.

Leeds, March 2nd.

Dermatitis Due to Sodium Evipan

SIR,—In your issue of February 24th there were three most interesting articles on basal narcotics. Dr. H. W. Featherstone, at the end of his paper, included some remarks on these drugs from the anaesthetist's point of view, but did not mention that some of them occasionally cause a severe dermatitis on the hands of those employing them, totally different to those transient erythemas sometimes seen affecting patients after their use. In 1932, in the *Journal of the American Medical Association*, Kulchar reported a case of contact dermatitis due to avertin in an anaesthetist, characterized by an erythematous-squamous eruption aggravated by each exposure. Now I wish to report a case due to the use of sodium evipan.

An anaesthetist consulted me concerning a rash on the back of his hands; this had troubled him for almost two

weeks, and was a very discrete, papulo-vesicular eruption, which showed exacerbations several times a week, and which tended to indicate a contact dermatitis. As he had been handling procaine, ephedrine, and sodium evipan, patch tests were performed with these three substances. The tests to procaine and ephedrine were negative, but the evipan patch showed a marked vesicular eruption, which lasted for almost four days. Similar patches applied to controls gave negative results.

It is interesting to note that the patient gave a history of having cut his finger about three weeks before, when filing off the top of an ampoule of sodium evipan.—I am, etc.,

G. A. GRANT PETERKIN.

Skin Department, Edinburgh Royal
Infirmary, Feb. 27th.

Post-vaccinal Encephalitis

SIR,—I note that in your summary of the discussion on vaccination, which took place before the Epidemiological Section of the Royal Society of Medicine on February 23rd (*Journal*, March 3rd, p. 397), I am made to say that post-vaccinal encephalitis was not a rare disease and that about 1,000 cases had been reported from all countries. The second statement represents, of course, only a rough estimate, but it is probably not far from the truth. The first statement, that post-vaccinal encephalitis is not a rare disease, may quite likely have emanated from me while replying to many questions, but what I really intended to convey was that post-vaccinal encephalitis was rare, but not extremely rare, and, further, that its importance was not to be measured simply by its rarity when determining the choice between voluntary and compulsory vaccination during a period of variola minor.—I am, etc.,

Lister Institute, S.W., March 3rd.

J. C. G. LEDINGHAM.

"Fourth Disease" and Glandular Fever

SIR,—With regard to the existence of a "fourth disease" in addition to the common exanthemata—measles, scarlet fever, and German measles—may I point out that glandular fever may be accompanied by an eruption indistinguishable from German measles, and the occipital (and other) glands may be enlarged. In other cases it may produce eruptions resembling measles or scarlet fever, or eruptions not typical of any of these. A single case may have more than one type of eruption during its course.

As there is reason to believe that glandular fever has again become prevalent during the last few months, it would be advisable to keep it in mind, both in sporadic cases with eruptions and in infectious diseases hospitals.—I am, etc.,

London, W., March 3rd.

H. LETHEBY TIDY.

Inheritance of Mental Deficiency

SIR,—In your issue of February 24th (p. 355) Dr. Ian D. Suttie occupies a good deal of space, in which he succeeds in showing how little he knows about the principles of heredity. Anything more than the crudest elements of modern genetics appears to be beyond him, and of any understanding of the broader principles of biology there is not a trace. This is perhaps not surprising, as Dr. Suttie's activities have evidently been exerted in other directions. His outlook is a rather narrowly psychological and medical one. Yet he considers himself capable of instructing a biologist and geneticist in the interpretation of a particular pedigree.

In pursuance of this narrow point of view he tells us that a hereditary interpretation is "unverifiable in regard

to indefinite characters such as mental illness and defect, particularly when we take into account the smallness of human families and the length of 'generations' and impossibility of experiment." As the sentence quoted contains all the special pleadings which one generally hears from those of Dr. Suttie's outlook, it may be worth while dealing with them, especially as the rest of his letter contains nothing of any value.

I presume that even Dr. Suttie would not deny the fact that innumerable physical defects and abnormalities in man are inherited as perfectly definite and fixed entities from generation to generation. If he is inclined to do so, perhaps he will consult my book, *Heredity in Man*, or any other work he can find on the subject. At any rate, no one of normal mentality who has considered the evidence for the inheritance of physical defects has any doubts on the subject, so far as I am aware. The evidence is too formidable, too extensive, too conclusive, to leave any room for doubt. Now these facts of inheritance as fixed units apply equally to abnormalities which wholly or partly involve the nervous system. Peroneal atrophy is a case in point. In one published pedigree, 101 descendants from a single affected individual included twenty-one who were affected, and the particular method of inheritance was clear from the pedigree. A Swedish pedigree of myoclonic epilepsy, including over 2,000 individuals in seven generations of descent, shows that this rare condition is inherited, but by different rules from the last. Both these conditions involve the muscular system as well as the nervous system, but the effect on both systems is equally specific. Huntington's chorea is another nervous condition, ending in dementia, the inheritance of which cannot be disputed by anyone who examines the published pedigrees. In a juvenile form of amaurotic idiocy, recently investigated by Sjögren in Sweden, the progressive neurological and ophthalmoscopic symptoms were strikingly constant, and of the inheritance there is again no doubt. The same author has made an investigation of a marked form of feeble-mindedness, with interrelated pedigrees including some 1,500 persons. The affected individuals showed remarkably uniform symptoms, and although the inheritance is recessive, there can be no question that heredity and not environment is responsible for the condition.

It is therefore clear that anyone who admits the facts of physical inheritance must also admit that many abnormal conditions of the nervous system, and mental defects as well, are inherited. I have not, of course, mentioned a tithe of the evidence for mental inheritance. Some of the recent evidence on the inheritance of mental defect has been summarized and discussed in the *British Journal of Medical Psychology* (vol. xiii, page 254). I would ask Dr. Suttie to do me the honour of reading and digesting that paper, and the original works to which it refers, before he again puts pen to paper under the illusion that the difficulties to which he refers prevent any proof of the inheritance of mental defect.—I am, etc.,

London, W.C.2, March 1st.

R. RUGGLES GATES.

* This correspondence is now closed.—ED., B.M.J.

The Tuberculosis Problem

SIR.—Your correspondent "A. R. F." has disturbed a hornets' nest, and I would fain hope that out of evil good may come. Speaking with some authority on this problem, which I have been studying for more than half a century, and with an intimate knowledge of the difficulties that beset all of us who have tried to shed light upon the darkness that envelops the solution of the greatest problem in medical science, I sadly fear that politicians and bureaucrats have made confusion worse confounded.

The correspondence so far shows the muddle of the bureaucratic experts. One writer, Dr. J. D. Macfie, tells us there are "far too few beds in most counties and cities," and another, "E. N. R.," tells us that "during the past few months we have been unable to keep our sanatorium beds filled owing to the lack of new cases of tuberculosis." The problem of the prevention and treatment of this widespread scourge must be attacked anew with new methods and new weapons, and (as "A. R. F." suggests) the medical profession as a whole should rise to put an end "to such a parody of scientific organization against this scourge." The solution of this problem needs the co-ordination and education of the whole profession, and since clinical skill and knowledge are essential for the detection, treatment, and even prevention of tuberculosis it was a grave political blunder to place in the hands of medical officers of health—a political bureaucracy—duties and responsibilities which must be borne mainly by the medical practitioners, who are the first to make contact with this disease and should be the first to deal with the victims in the home before tubercle bacilli have appeared in the phlegm, and thus the disease has become a danger to the family and to society. In the daily round physicians, surgeons, and general practitioners alike have to deal with tuberculosis, and should be able to recognize the disease and apply scientific methods of diagnosis and treatment to the commonest form of tuberculosis—best called phthisis—which is the essential source of infection long before—maybe many years before—the disease has actually become infectious. Thereby we shall find the secret of success which has so far eluded us.

In 1909 I began my tuberculosis campaign in London, and in 1913 I had established thirteen tuberculin dispensaries (clinics) in various centres in Great Britain, chiefly in London, thus inaugurating a plan of attack by means of early diagnosis and prompt treatment on the scientific lines suggested by Robert Koch in 1891. I think I can prove by concrete evidence, and figures that we must return to some such system of attack with the weapons of science if we wish to succeed on a large scale. Medical opinion is already showing a trend in this direction, and the L.C.C. results seem to prove clearly that the bureaucratic system has been a ghastly failure. It is time that public opinion should not only know but realize that the annual expenditure of more than £3,000,000 on this Government system has hardly touched the fringe of the problem.

Now is the time for the medical profession to "take arms against a sea of troubles" caused by this widespread and cruel disease. Let us realize the fact of failure in the past and make a patriotic effort to help the helpless, distracted, and poverty-stricken multitude to obtain satisfactory treatment for their otherwise unrelenting disease before it is too late—before the disease has sapped their health and strength and destroyed their industrial capacity and efficiency. Mere discussion in the *British Medical Journal* cannot help the victims. I would ask "A. R. F." and other correspondents to visit the only tuberculin clinic in London, and see for themselves how such an organization might help them and many other medical men to deal with the disease at once and on the spot, before it has become notifiable, by means of scientific rather than haphazard methods. Later we might organize a crusade and win support by holding meetings in London with the object of establishing other clinics for dealing with this disease by the methods of science on a well-organized plan, in which physicians, surgeons, and general practitioners trained in new methods could and would play a dominant part in combating tuberculosis in all its forms and stages among the poorer members of society.—I am, etc.,

London, W.1, Feb. 21st.

W. CAMAC WILKINSON.

SIR,—In view of the interest which is at present being taken in the diagnosis of pulmonary tuberculosis and the at present apparently impossible task of obtaining medical men who will and can diagnose this condition, at a stage when it can be cured, I am somewhat reluctantly making the following remarks.

It is now generally admitted that a physical examination of the patient will not carry us very far, and I, among others, have suggested the abolition of the stethoscope as a means of more early diagnosis. It will, I think, be sufficiently obvious that examining the sputum for tubercle bacilli, if relied on for early diagnosis, will usually end in fatal delay. Having got rid of two methods which have in the past been regarded as essentials, I now come to another method which is at present thought to be of great help in these cases. I refer to x-ray examination, and for the diagnosing of early cases I think this method is also of very little practical value. If we remember that the x-ray film only shows shadows, and these must be very considerable in order to be visible, we must not be surprised at this. What, then, is left for us to do? I would suggest that a careful history of the patient's previous illnesses and a careful study of his symptoms would carry us a long way.

With regard to tuberculosis officers I would suggest that they should frequently visit the sanatorium to which their cases are sent and try to find out in these, usually obvious, cases where they have gone astray, and learn, by an intensive study of them, how others can be prevented from joining the dolorous company. In conclusion, I would observe that if early cases are to be treated efficiently a sanatorium suitably constructed must be provided.—I am, etc.,

Ayrshire Sanatorium, New
Cumnock, Feb. 27th.

EDWARD E. PREST.

A Falling Birth Rate

SIR,—I find it difficult to regard the falling birth rate with anything else than equanimity. Those in whom it inspires such dark forebodings seem to me to be moved almost entirely by sentiments of political expediency. They appear to be afraid that the proud position this country has won in the past by the not wholly admirable qualities of pugnacity, business acumen, and acquisitiveness may not be maintained by a dwindling population. Those like myself who hold that the most desirable qualities are not the exclusive possession of the dominant races, and who have felt more of the painful duties than the pleasant privileges of nationality, are not likely to share their views.

My blood remains quite uncurdled by Sir James Barr and his school, who for want of selective breeding apparently envisage a world of the future peopled by paupers, moral degenerates, and criminal lunatics. I cannot imagine why he assumes that the seventeenth century had a "small but intellectual population." Surely every age since the dawn of history has had its weaklings, its wastrels, and its simpletons; and I don't see that we have any more than our fair share now. It seems to me that Nature never did weed out the unfit. They have always managed to survive and propagate their species, and their lineal descendants are not the denizens of the asylum, the gaol, and the workhouse, as we should like to think, but our noble and intellectual selves. The waxing and waning of stocks is a matter of common observation. The countryside is strewn with the wrecks of noble families. Village clods with Norman names elbow us in the market-place, and the family trees of some of the brightest names of the present day have their roots in Bedlam.

I fancy possessive instincts unconsciously cloud the scientific outlook of those who are most severe on our

poor relations. They feel that for themselves and their likes the world should be a garden in which no weeds must grow. With little show of meekness they feel that they should inherit the earth, and all who do not attain their level are vermin fit only for extermination. I should like to plead for a wider charity. Not only of our superior selves, but of every living thing is the earth the rightful heritage. Only an immediate threat to our existence, not merely a distant fear for the future, can justify our stealing their birthright. The rat in my pantry I may kill. The lion in the desert I should leave alone. I cannot see that the human family is more dangerously threatened by its poor relations now than it has ever been. To meet the problem of the criminal, the lunatic, and the shiftless with demands for their extermination seems to me rather like greeting a hungry beggar with a shot-gun.

If the argument is to be carried to its logical end, why should not practical eugenics be applied to the enfeebled creatures who cumber our hospitals with their gall-stones, gangrenous appendices, and perforated gastric ulcers? Why should a sickly sentimentality offer them the relief of surgery when it is obvious their tainted stock would be better extinguished? Why not let Nature pursue her proper destiny and weed them out? For all we know they may be the bearers of recessive genes for their several ailments. It must be a very misguided benevolence to preserve them to propagate their antisocial taints. And as for those degraded wretches suffering from tuberculosis, notorious transmitters of their polluted strain, squandering the wealth of the world in hospitals and sanatoria, how much more economical and prudent to knock them on the head and spare ourselves an intolerable burden in the future!

I cannot help thinking that man must be more than the product of his genes, and that Nature, so far from weeding out the unfit, always meant some to have ten talents and some only one, with the tendency always towards enrichment. Cannot the same power that made a man from an ape breed a Shakespeare from a sot? If it were a matter of the body alone, man might hope to master his future. But the qualities we call fitness and unfitness are not wholly of the flesh, and to seek perfection along the path of selective breeding is only to bark our shins in the dark searching for what is not there.

There once was a man who determined to make the most beautiful music in the world—but he spent his life buying better and better pianos.—I am, etc.,

Upwell, Feb. 24th

A. J. HAWES.

Medical Examination at the Police Station

SIR,—Regarding certain statements reported in the Press as having been made by Mr. Justice Rigby Swift in two recent cases, I have been expecting to see, in the medical journals, a deluge of letters of protest. For some reason this is not the case, and it appears to me that one particular remark—if correctly reported—needs comment and a protest of the strongest kind on the part of the medical profession. I refer to the case where, in a charge of "being under the influence of drink while in charge of a motor vehicle," a doctor, who had been called by the accused man on his own behalf to examine him and received a fee of 10s. 6d. for so doing, gave evidence adverse to the accused and was rebuked by the judge for accepting a fee in the circumstances as not being "quite nice."

The suggestion here is that a medical man is only entitled to his fee if he is willing to give evidence satisfactory to the accused, instead of doing that which is one of the recognized duties of any reputable man—medical

or otherwise—namely, speaking the truth, the whole truth, and nothing but the truth. I consider that such a remark from a judge is unwarranted, and official attention ought to be called to it. Of the right of a medical man to be paid for his services to a patient there surely can be no question. Whether the patient likes the doctor's opinion has nothing to do with it. One might as well say that a patient who visits a consultant, and after examination is told that he is suffering from a grave and incurable disease, should not pay the consultant's fee, but should only do so if the professional verdict is a favourable one. Such a position cannot logically be accepted.

An idea of this kind is especially to be deprecated when given utterance to by one who, from his great experience and high public position, might be supposed to understand the ethical code of a sister profession. Our sympathy should go out to the medical man concerned, whose attitude was absolutely correct and who was fully entitled to his fee—though for some reason he is said to have refused it.—I am, etc.,

London, W.1, March 5th.

PERCY B. SPURGIN.

Colonic Irrigation

SIR,—Dr. M. B. Ray, in your issue of February 10th, asks what amount of training is required of those persons who are to carry out colonic irrigation. He asks if they are to be State-registered nurses, members of the Chartered Society of Massage and Medical Gymnastics, or bath assistants. The Education Committee of the College of Nursing feels very strongly that treatment of such a nature demands the services of the trained nurse, working under the direction of a doctor. It would view with grave concern any suggestion that colonic lavage should be carried out by those who had not a full nurse's training, and had therefore little knowledge of the dangers they might encounter in administering the treatment. Mr. Elmslie, in his reply to Dr. Ray in your issue of February 24th, says that "it is really a question of the convenience of organization and of the patient." In the eyes of the nursing profession it is a question rather of the welfare of the patient than his or her mere convenience, and any question of organization must be a secondary consideration. Surely no medical man will lose sight of this point of view when deciding by whom the specialized treatment of colonic irrigation should be given.—I am, etc.,

EMILY E. P. MACMANUS,

Chairman of the Education Committee,
College of Nursing.

London, W.1, Feb. 27th.

Legal Ownership of X-Ray Films

SIR,—The article under this heading in your columns on January 13th is very interesting, but the author does not seem to have borne in mind that x-ray films are taken not only as a matter of diagnosis and treatment, but often with at any rate one other motive. It is difficult to conceive of two or more medical practitioners, be they general practitioner or specialist, arguing between themselves as to who should retain ownership of x-ray films of a case that they as a team may have been treating, so we will look at this matter from the point of view of a general practitioner.

A case of suspected bone or joint injury comes before him. How is he to deal with it? Presumably he will examine it clinically and render any treatment, such as correction of malposition or applying splints, etc., that he may consider necessary. By this time he may or may not feel sure that all is well. In either case, if he is wise, his next move will be the same: he will arrange to have an x-ray picture taken, either by himself or by a radio-

logist. And here the vital question arises. He will not only want the x-ray photograph to confirm his previous actions, and possibly to guide him in his future conduct of the case, but still more will he want it if an action for negligence or malpraxis is brought against him in connexion with the case. I remember at an early stage in my forensic medicine course the lecturer impressing upon his audience the utmost importance of obtaining x-ray pictures of cases of bone or joint injuries attended by them: furthermore, all medical defence associations reiterate this point in their circulars and annual reports. Surely, then, for this reason the general practitioner, even if he is not legally entitled to claim ownership of the x-ray films, would be wise to reach an agreement on the point beforehand, when arranging for the films to be taken.

Under the subheading "Other Suggested Owners" it is stated, "It is fairly certain in law . . . he [the G.P.] is not one of the parties to the contract." This reasoning is difficult to follow, for surely in this connexion there are two separate contracts—namely, (1) as to fee between patient and radiologist, and (2) between the general practitioner and radiologist as to the nature of the x-ray photograph to be taken. If this view is incorrect then it does not seem to matter much how or what the radiologist photographs, and the patient would have no redress if the x-ray examination was done unsatisfactorily.

Surely the general practitioner's answer to the lawyer's question, "What valuable consideration have you given for it?" is that he has used his experience and superior knowledge to direct the patient to a reliable and competent radiologist with precise instructions as to the nature of the x-ray photograph to be taken. In this light the situation is reversed, the radiologist being the agent of the general practitioner and clearly instructed by him as to the duty to be performed. The view that it is difficult to see how the general practitioner can claim of his own right to see the film appears to me to stretch the argument to absurdity. I should imagine that, from the point of view of custom only, most if not all patients would be very disappointed with a doctor who arranged for them to be x-rayed and did not see the film, and would regard him as showing an utter lack of interest in their case; nor can I suppose that any other parties to the x-ray examination would desire otherwise than that the general practitioner concerned should see the films. So much, if general custom is of any validity in law.—I am, etc.,

Johannesburg, South Africa,
Feb. 7th.

ALLAN B. SWARBRECK.

Medical Contributions to Lay Journals

SIR,—An article with the dramatic title "Motherhood is Safer—if You are Poor," was published in the *Scottish Daily Express* of February 21st. It calls for some comment. Dealing with maternal mortality, "A Famous Gynaecologist" states:

"The first most important cause is puerperal sepsis or infection. By that is meant the introducing of bacteria into the mother during or shortly after the birth of her child, and the giving rise to localized or general disease. The tragedy is that the medical attendant may carry the germ on his hands or clothes; or that, as has been shown comparatively recently, the germ may be present in the attendant's throat without causing any personal inconvenience. Without any symptoms to reveal its presence, a doctor may be his patient's most deadly menace. All women, at such a time, are vulnerable to infection, but Nature renders assistance in the fight."

Such a statement appearing in the lay press serves no useful purpose to the public, and might only bring a highly conscientious colleague, the victim of circumstance, into professional disrepute. The "Famous Gynaecologist"—I am certain he or she is not an obstetrician—by telling only half of the truth, and indeed the lesser half,

indicates that sensational effect has been his main object ; or, to be more charitable, he may be a young writer of limited experience, with little penchant for reflection and *savoir-faire*. The contributor has been content to pillory the medical attendant. He has failed to mention the well-recognized possibilities of intrinsic and auto-infection. (See article in *Edin. Med. Journ.*, 1932, xxxix, No. 2, by the present writer.)

From the lay reader's point of view, also, the article in question is undesirable and harmful. Where is the encouragement for the expectant and potential mother in a contribution the reading of which would inculcate only a dread and fear of pregnancy and parturition into the mind of any woman? Consider the effect of mental anguish and worry during pregnancy on the subsequent labour and puerperium, and their total effects on maternal mortality figures. Some five years ago I wrote in a medical newspaper: "Expectant mothers should, if at all nervous, be told that the vast majority of confinements are easy, natural, and safe. They should not be frightened by articles on maternal mortality in the public press, as such are apt to prove a harmful policy." This should, I think, indicate to the "Famous Gynaecologist" the type of message of hope, comfort, and encouragement which does so much to fortify the expectant mother and render her pregnancy and parturition less morbid.

In conclusion, I would express my extreme disappointment at the increasing number of tactless professional contributions to the lay press by colleagues, and would suggest that "the code" be readjusted to obviate the menace—for so it is. I would appreciate the opinions of other colleagues.—I am, etc.,

Ballachulish, Feb. 27th.

LACHLAN GRANT.

"Cheap Anaesthesia"

SIR,—Dr. Graeme Benthif may congratulate himself on the fact that he lives in the sunny South instead of the frozen North. If he had his wages calculated by Scotsmen, and they were paid by the same people who calculated them, he would realize what value is put on an anaesthetist's services. There have been articles on fee-splitting in the *Journal* recently ; but the payment of anaesthetists is not a splitting of fees, it is getting a tiny chip off—which is a difficult matter.

A great deal of the trouble is due to the farming-out of the anaesthetic work. It is the same in all trades in this district. A few years ago the colliers had what they called the "butty" system, whereby one or two men in a stall got about £20 a week and the remaining eighteen—who did all the work—got practically starvation wages. This has been put an end to, and each man gets his money according to the tonnage he gets out. So long as the account for the anaesthetist's work is sent to the patient by the surgeon there will be dissatisfaction. I have met many patients who thought that I got half the surgeon's fee for giving the anaesthetic! The result of this low-fee farming-out business is that in the whole of Yorkshire, I believe, there is only one man who attempts to make a living as an anaesthetist. The others are just in general practice and give anaesthetics as a side-line because they find it impossible to live on the fees which they would obtain as anaesthetists. This has retarded the advance of anaesthetics, because, on the fees obtained, anaesthetists cannot be expected to afford either to travel and really see what is happening in other places, or to pay for expensive apparatus which, though it may give safer anaesthesia for the patients, is not a business proposition to buy and maintain.

Little attention is paid to anaesthetics in the curriculum. We recently had at one of the hospitals to which I am attached a house-surgeon appointed who had given six anaesthetics only before he came on duty and was liable

to be called upon to give anaesthetics in the most grave emergency cases. The public will never get the best anaesthetic service until they pay the anaesthetist direct, and pay a proper fee.—I am, etc.,

Doncaster, Feb. 21st.

E. J. CHAMBERS.

Lung Disease after "Gassing"

SIR,—May I be permitted to thank Dr. G. Basil Price for drawing attention to a misquotation and an error in my recent article on gas sequelae (*British Medical Journal*, November 11th, 1933). As he surmises, the decimal point was misplaced in my original manuscript. I regret that I am unable to give the source of the quotation with any certainty. I believe that it came from the Continental literature, which is hard to come by in New Zealand, and I have not got the original article by me.

The War Pensions Appeal Board in Auckland has not made a special study of the incidence of pulmonary tuberculosis following chest injuries. We have records of twenty-two cases in which it was reasonable to believe that the parietal pleura had been penetrated. In eight cases tuberculosis had supervened, and in two others it could not be excluded with certainty at the time of examination. No inference as to the incidence of tuberculosis can be drawn from these figures, as the Board has no access to the files of men with penetrating chest wounds as a whole. Dr. Price's article in *Tubercle* of December, 1929, had escaped my notice, and I wish to express my gratitude to him for drawing my attention to it.—I am, etc.,

Auckland, New Zealand, Jan. 15th.

W. N. ABBOTT.

Pruritus Ani

SIR,—The interesting letters on this subject cover most of the ground. My experience is that the majority of the cases are due to a fold of mucous membrane acting as a wick and allowing the succus entericus to keep the skin in this region moist. The second most common cause is *Enterobius vermicularis*, whilst a not uncommon cause is dietetic. In connexion with the latter cause I have recently had an interesting case of a woman, aged 62, complaining of constant pruritus ani. She was thoroughly examined, but no cause for the pruritus could be found. X-ray treatment "cured" for two months. Ultimately the patient found out that by refraining from eating apples she was free from irritation. Everyone appreciates the fact that alcohol and such beverages as coffee, etc., often cause this form of "idiopathic" irritation, but this was the only case I have seen of apples being incriminated.—I am, etc.,

Bath, Feb. 27th.

A. GORDON WATSON, M.D.

* * This correspondence is now closed.—ED., B.M.J.

The Services

HONORARY PHYSICIAN TO THE KING

Air Commodore A. W. Iredell has been appointed Honorary Physician to His Majesty the King, vice Air Commodore H. V. Wells, C.B.E., who has vacated the appointment on retirement from the Royal Air Force.

The King has conferred the Efficiency Decoration of the Territorial Army on Colonel A. R. Moodie, A.D.M.S., 51st (Highland) Division ; Major and Brevet Lieut.-Colonel R. A. Lennie, R.A.M.C.(T.A.), and Majors W. Leslie, M.C., and L. McI. Weeks, M.C., R.A.M.C.(T.A.).

The War Office announces the promotion of Major-General J. A. Hartigan, C.B., C.M.G., D.S.O., M.B., the new Director-General, Army Medical Services, to Lieutenant-General.

Obituary

PROFESSOR F. C. PURSER, M.D.

President of the Royal College of Physicians, Ireland

It was with deep regret the medical profession in Ireland heard of the unexpected and sudden death of Professor Francis Carmichael Purser, which occurred at his residence, 32, Fitzwilliam Place, Dublin, on February 28th.

Dr. Purser was born in India, the son of a high official in the I.C.S., and received his early education in the Grammar School, Galway. He entered Dublin University, where he had a distinguished career in arts, and subsequently in medicine, and received his medical degrees in 1899, graduating M.D. Dublin in 1901. Amongst his earliest appointments was that of physician to the Richmond, Whitworth, and Hardwicke Hospitals, a post which he held until his death. He was elected a Fellow of the Royal College of Physicians, Ireland, in 1904, and was also a Fellow of the Royal Academy of Medicine, and an ex-president of the Dublin University Biological Association. On the expiration this year of the term of office of Dr.

T. G. Moorhead as president of the Royal College of Physicians, Dr. Purser was elected as his successor. He was a member of the British Medical Association, and a past-president of the Irish Medical Association. In 1933 Dr. Purser was appointed King's professor of medicine at Dublin University, and was also honorary professor of neurology. Dr. Purser belonged to a very distinguished Irish family. He was a nephew of the late Professor John Mallet Purser,



medical school, Trinity College, Dublin, and the late Dr. Louis C. Purser, who was senior Fellow and vice-Provost, Trinity College, Dublin. Miss Sarah Purser, the Irish artist, was his aunt. Dr. Purser is survived by his wife, who is a daughter of the late Dean O'Brien of Limerick, and by a son and three daughters. One of the daughters is a member of the medical profession, and his son is an assistant professor of English literature in Glasgow University.

The following are extracts from an appreciation by a medical colleague and intimate friend of Dr. Purser, which has already appeared in the *Irish Times*:

Dr. Purser's death is more than the passing of the official head of one of the branches of the medical profession of this country, of a lucid teacher, of a distinguished physician. It is the disappearance of a great personality. The positions he held were honourable and important, and his professional accomplishments also were great. His teaching was not only sound, but logical, well arranged, convincing. Students knew where they got good teaching, and they crowded to his lectures. He had the gifts of common sense and good judgement. His critical mind separated the seed from the chaff with ease and little loss of time. For many years past he had taken a special interest in diseases of the nervous system, and without abandoning his work as a general physician, he won for himself the position of specialist in neurology. There were few difficult neurological cases in the country in which his aid was not sought. This is perhaps the most complicated and difficult branch of medical practice, but Purser made crooked paths plain, not only to medical students, but to the practitioners who

called him in consultation. His examination of a case was in itself an education. The position he had attained in neurological medicine was unique, and there is no one to fill the vacancy.

It is generally misleading to mention any one quality as the keynote of a man's character, for even the simplest character has many notes. If forced to name the dominant quality in Purser's character, one would probably say "honesty." It was his honesty—given his courage—which made him so indomitable a Rugby player in his youth. It was his honesty which—given his native abilities—made him so thorough and competent a physician. His honesty compelled him, not infrequently, to hold opinions very different from those of his associates, but at the same time it held their respect. To meet him was to realize his essential goodness. His modesty was surprising. He held various important appointments, but he sought none of them. Unwillingly, he became president of the Royal College of Physicians, and only when he was persuaded that his duty demanded of him to accept the burden of the office. He had to be persuaded more recently to accept the chair of medicine in Trinity College. He disliked publicity, and some of the necessary duties of his position were positively distasteful to him.

His friends, however, do not think mainly of the professor and the president. They think of Frank Purser, the companion of the fireside and the countryside, the wise adviser, the never-failing friend, cultured in art and literature, interested in public affairs. Above all, he loved the countryside in Ireland. Few knew the country as well. He was equally at home on the hills of Kerry, on the bogs of Achill, and in the glens of Donegal, and he was equally at home with the fishermen and peasants in Connemara and with his colleagues in learned societies in Dublin. He loved his holidays in the country, and odd days stolen for country walks. Mountains fascinated him, and there was no high mountain in Ireland that he had not climbed time and time again. A few years ago he bought a farmstead in County Wicklow, where he spent most of his leisure, and where he looked forward to spending a quiet old age. He came of a long-lived family, with the gift of retaining their activity to extreme old age, and he had always been of robust physique. His passing was quick and easy. The grief for his friends and for the public is that it occurred twenty years too soon; for he had not yet approached his sixtieth year.

Dr. Purser served in the European War, and was a member of the Order of the British Empire. While a student, and after taking his medical degrees, Dr. Purser was an active supporter of Rugby football. He played in international games for Ireland.

[The photograph reproduced is by Werner and Son, Dublin.]

ALFRED GEORGE BARRS, M.D., F.R.C.P.

Hon. LL.D.

Consulting Physician, Leeds General Infirmary, and late Professor of Clinical Medicine in the University of Leeds

We regret to record the death, on February 28th, of Dr. A. G. Barrs, an outstanding personality for more than half a century in the medical and social life of Leeds.

Born in Leicester in 1853, Alfred George Barrs received his medical training at Guy's Hospital and the University of Edinburgh. In 1875 he graduated M.B.Ed., and in the following year obtained the diploma M.R.C.S. In 1882 he proceeded M.D., became M.R.C.P. in 1884, and F.R.C.P. in 1893. After holding appointments at Guy's Hospital he went to Leeds in 1879, built up a large practice, and attained eminence as a consultant, particularly in cardiac disorders. A paper by him on the use of digitalis in aortic valve disease was published in the

British Medical Journal in 1892, and five years later, in these columns again, he inveighed against the excessive restriction of diet in enteric fever. He was for some time honorary physician to the Leeds Public Dispensary. In 1884 he was appointed assistant physician to the Leeds General Infirmary, and physician about eight years later. For twenty years he served it in this capacity, and was then elected a member of the consultant staff. After holding a demonstratorship in physiology, Dr. Barrs succeeded to the chair of medicine in the University of Leeds, then the Yorkshire College, in 1899, and held that appointment until 1910, when he became professor of clinical medicine. When the University obtained its charter in 1904 he was its first representative on the General Medical Council. In 1921 he was elected emeritus professor of medicine, and his services to medicine generally and to the University were recognized in 1931 by the conferment upon him of the LL.D. *honoris causa*, the occasion being the centenary celebrations of the Leeds medical school. He was a member of the council of, and examiner for, the Royal College of Physicians of London. In 1880 he joined the British Medical Association, was secretary of the Section of Medicine when the Association met at Leeds in 1889, and was vice-president of the Section of Therapeutics at the Bournemouth meeting in 1891. At the outbreak of war in 1914 he received the commission of lieutenant-colonel, and took charge of the medical division of the 2nd Northern General Hospital at Leeds. Dr. Barrs combined a great gift for friendship with a staunch loyalty to causes in which he believed. His wide and profound knowledge, a stern devotion to essentials, and a caustic humour rendered him a most able teacher and a trusted consultant. Broadminded in outlook, he was conservative as regards new departures, and strongly criticized certain developments of State medicine. For many years he edited *Braithwaite's Retrospect of Medicine*, and critically examined all new advances in therapeutics, selecting the practical from the visionary with a keen eye for truth and error. Yet each new contribution received his careful consideration, and he delighted in that form of controversy which stripped a subject of false trappings and casuistry. Similarly, in his private and social life generosity was allied with healthy cynicism, and his friendships were many, vigorous, and long-lasting. He was a popular and genial chairman of the Leeds Club. Dr. Barrs had been a widower for many years, and leaves no children.

R. A. V. writes:

With the passing of Dr. Barrs a great figure has disappeared from the University and the General Infirmary at Leeds. As one who had the privilege of acting as one of his clerks and later as his house-physician, and in 1931 the honour of presenting him for the degree of doctor of laws *honoris causa* in the University of Leeds, I have especial reason to revere his memory. Dr. Barrs was a great teacher. He taught us the value of observing the minutest details in the histories we took of our patients and in our descriptions of the physical signs. He could be severe, and often was in his criticism, but his strictures never left a sting behind. Indeed, I think it would be true to say that the more he criticized the more we loved him. He was affectionately known by us all as "Dickie." His one desire was always to do the best for his patients. His sympathy and his solicitude for them never failed. To those in trouble he was an ever-constant friend. Many there are who have reason to be grateful for a kindly generosity which was none the less bountiful because it was practised in secret. His ideals were high, and he had a profound distaste for the passing fancies that sometimes cloud the horizon of medical progress. His outlook was distinguished by a robust common sense, which could strip the false from the true with a few terse

phrases that impressed themselves on his hearers and served as a powerful stimulus to their mental processes. His friendship was valued by all those who were privileged to enjoy it. His sense of humour and his gift of adaptation to the company in which he found himself made him everywhere a welcome visitor. The familiar pipe that was his constant companion in his hours of relaxation at the club or on the links seemed typical of the genial good-fellowship by which he was distinguished. The world is poorer for his passing; it is richer for his memory.

T. H. HAYDON, M.B., B.Ch.

Marlborough

By the death, after a short illness, of Thomas Horatio Haydon on February 24th, at the age of 68, Marlborough and a large part of Wiltshire are deprived of the services of a very able practitioner and an old friend.

Dr. Haydon graduated M.B., B.Ch. Cambridge in 1891, and obtained his M.R.C.S., L.R.C.P. Lond. the same year. He was a student at Cambridge and St. Thomas's, and afterwards held the posts of house-surgeon and obstetric house-physician at St. Thomas's, assistant medical officer to the South-Western Fever Hospital, and clinical assistant to the Evelina Hospital for Sick Children. He settled in Marlborough nearly forty years ago, where he built up a large practice, and his services were much in request both by his patients and by his medical confreres. A first-class general practitioner and a successful surgeon, he took a great interest in the Savernake Hospital, and largely assisted in its development from a cottage hospital to, what it now practically is, a general hospital of eighty beds. He contributed various articles to the medical journals, and took an active interest in the work of the British Medical Association, being chairman of the Swindon Division in 1931 and president of the Wiltshire Branch in 1932; he was also chairman of the Wiltshire Medical Advisory Committee, set up by the B.M.A., where his advice was always sound. He was highly esteemed by all medical men in the county, and his skill and kindly manner endeared him in an unusual degree to all his numerous friends and patients. He took an active interest in local affairs—church, Angling Association, British Legion, and golf and tennis clubs. He was also a member of the Territorial Force, served throughout the war, and then retired with the rank of brevet colonel. He leaves a widow.

H. G. T. writes:

Though engaged in general practice, Haydon's post as honorary surgeon to the Savernake Hospital gave him opportunities of surgery of which he availed himself to the full, and in course of time he thus established a reputation as an operating surgeon throughout the county. He was particularly well known in connexion with diseases of the ear. As regards recreations, he rowed while at Cambridge and represented his college on the river. He was also one of the leading spirits at St. Thomas's in putting a boat on the river in the name of the hospital. But his lifelong passion in the direction of sport was fishing. His summer holidays were, of course, devoted to it, and during the rest of the year he loved now and then to snatch an odd day on the Kennet. A recital of the bald facts of Haydon's life, however, can give no idea of the man's extraordinary charm. Children took to him at once, and he was "Uncle Tom" in an honorary capacity to many from the day of their first introduction, while his small patients at the hospital were devoted to him and he to them. But this mention of the hospital makes it almost necessary to say a few words about that institution which he loved so much.

The Savernake Hospital is a good illustration of the fact that greatness does not depend upon size, for it has only eighty beds. It is beautifully situated, just at the edge of the forest, and the spirit of its management is worthy of its surroundings, for not only does the work done there reach a high degree of efficiency, but the medical staff carry it on as a band of brothers, and the matron is, as it were, a sister in the family. To show that the spirit in which the hospital life is carried on is shared by every grade a little incident may be mentioned. The present writer was going round accompanied by the matron when he noticed a man engaged in painting the ward. He expressed surprise at this, considering that the time was Saturday afternoon. The matron's answer was: "Oh, that's the hall porter: he always comes and does jobs like that in his off hours." That is the community of which Dr. Haydon was an honoured and loved member.

Dr. C. E. S. FLEMING writes:

When a famous Justice said that he would rather be a good judge than a great judge, he was expressing a thought that must have been in the minds of many of those assembled in the Church of St. Peter, in Marlborough, to mourn the loss and honour the memory of the beloved physician Thomas Horatio Haydon.

That great congregation of all classes of people from town and country was drawn there, not by the power and prestige of fame, or wealth, or title, or great estate, but by gratitude and affection. Haydon was a man of justly high repute as a medical practitioner, with an extensive practice throughout a large part of Wiltshire. He had worked there for forty years, and was one of the makers of the fame of Savernake Hospital, one of the oldest of cottage hospitals. What made him great was the good quality of everything about him. Quiet in manner, simple in tastes, kind in action, a man of few words who never put himself forward, his one aim in life seemed to be to do good wherever he was, without thought of himself. He must have realized that to do good he must do well and do thoroughly whatever he did, and he thought well—obviously with care and deliberation—so that in all matters his opinion, when he expressed it, was good. Practically interested in everything that was for the individual or communal well-being of the people among whom he lived, his help was always available, and his advice, because it was sound, disinterested, and kindly, was always sought and respected not only in relation to his patients but in all the problems of life—his profession, hospital or private practice, medical science or politics, church, education, local affairs of all sorts. What a position to hold in the community! Not the dominance of money or social position or political prejudice, but the influence of a very real beneficence was carried into the homes of every class and creed—the power of untold worth. Such was the sway of Haydon, one of the splendid examples that make men proud to belong to his profession. He has received the greatest honour he would have desired—the affectionate memory of all men. He has achieved the greatness of goodness.

Dr. WILLIAM PLAYER KENNEDY of Bath, who died suddenly on February 3rd, was born in 1866. He received his medical education at Trinity College, Dublin, where he graduated M.B., B.Ch., B.A.O. in 1889, and obtained the diploma L.M. of the Rotunda Hospital. He proceeded M.D. two years later. His previous appointments before going to Bath included those of resident medical officer to the City Hospital, Liverpool, and assistant house-surgeon to the West Bromwich District Hospital. He had also been medical director of the Lydney and Aylburton Cottage Hospital. In Bath itself he had built up an extensive practice and linked to himself a large circle of friends. He particularly associated himself with

the work of the Eastern Dispensary, of which he was honorary medical officer, the clinical society, and the Bath and County Club. As a medical referee under the Workmen's Compensation Act he was a well-known figure at the Bath County Court during the last thirty years, and in this sphere of work his wide experience and tact enabled him to contribute successfully to the solution of problems which were often of great intricacy. He became a member of the British Medical Association in 1893, and served as a Representative at the Belfast meeting in 1909.

Universities and Colleges

UNIVERSITY OF OXFORD

Election to Faculty of Medicine Board

An election of two members of the Board of the Faculty of Medicine, vice Dr. C. F. T. East and Dr. C. P. Symonds, who are both eligible for reappointment, will be held on June 1st; the members elected will come into office on the first day of Michaelmas Term, 1934, and will hold office for two years from that day. The General Medical Electorate consists of all Oxford graduates in medicine who are members of Convocation. The Board of the Faculty of Medicine includes four members elected by the General Medical Electorate who must be members of that body, and of whom three at least must be persons engaged in teaching one or more of the clinical subjects of the Faculty. Nominations of duly qualified candidates for election will be received by the Secretary of Faculties at the University Registry, Oxford, up to 10 a.m. on May 11th. Each nomination must be signed by six members of the General Medical Electorate, and no candidate will be eligible whose nomination has not been received before that date.

At a congregation held on March 3rd the following medical degrees were conferred:

M.D.—R. E. Havarril.

M.B.—F. E. Buckland, M. S. Good.

UNIVERSITY OF BIRMINGHAM

A course of five William Withering Memorial Lectures will be given in the large theatre of the Medical Faculty Buildings, Edmund Street, on Wednesdays, April 25th, May 2nd, 9th, 16th, and 23rd, at 4 p.m. The first two lectures will be given by Professor E. D. Adrian, F.R.S., on "The Activity of Nerve Cells," and the last three lectures by Professor J. B. S. Haldane, F.R.S., on "Contributions of Genetics to Medical Science." Members of the medical profession are invited to attend.

The Ingleby Lectures, 1934, on "The Toxaemias of Pregnancy," will be given on Thursdays, April 26th and May 3rd, at 4 p.m., in the medical lecture theatre, by Dame Louise McIlroy. Lecture I will deal with the clinical and biochemical investigation of the toxaemias of pregnancy, and Lecture II with treatment.

A course of post-graduate demonstrations arranged by the university clinical board will be given at the General Hospital, the Queen's Hospital, and the Children's Hospital, Birmingham, on Tuesdays and Fridays, from 3.30 to 5 p.m., commencing on March 20th and terminating on July 20th. The course will be given by members of the medical and surgical staffs of the hospitals and will include demonstrations on cases. The fee is £2 2s.

FACULTY OF MEDICINE

The Faculty of Medicine has arranged for two lectures dealing with the regulations appertaining to national health insurance practice, to be given by Dr. H. Guy Dain, chairman of the Birmingham Panel Committee, in the medical theatre on Thursdays, May 17th and 24th, at 4 p.m. The lectures are primarily intended for senior medical students, but members of the medical profession are also invited to attend.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Committee on Chronic Rheumatism

At the last meeting of the Comitia of the Royal College of Physicians of London the President nominated the following persons to form the National Committee on Chronic Rheumatic Diseases: F. J. Bach, C. W. Buckley, V. M. Coates, W. S. C. Copeman (honorary secretary), A. G. Timbrell Fisher, R. Fortescue Fox, J. Alison Glover, Mervyn H. Gordon, G. Holmes, Lord Horder, A. A. Moncrieff, G. H. Oriel, E. P. Poulton, Sir Humphry Rolleston (chairman), E. C. Warner, Sir William Willcox.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Demonstrations

The spring course of demonstrations of specimens in the museum opened on March 9th, when Mr. Cecil P. G. Wakeley gave the first of three demonstrations on recent additions to the museum. On March 12th, 19th, and 26th Mr. C. E. Shattock will give demonstrations on specimens illustrating surgical diseases of liver and bile-ducts, diseases of joints, and diseases of the large intestine. The demonstrations will be given in the theatre of the College, Lincoln's Inn Fields, at 5 p.m.; they are open to advanced students and medical practitioners.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—P. C. Alexander, A. H. L. Baker, E. C. Dax, B. Dayal, G. F. Metcalf, J. R. Owen, J. H. Playne, H. D. Robinson, J. P. Walsh Conway.

MEDICINE.—B. Anderson, J. L. Freer, A. E. Ginn, H. R. Kasday, D. P. King, G. Wilson.

FORENSIC MEDICINE.—A. H. E. S. El Mahallawy, J. L. Freer, A. E. Ginn, H. G. Howitt, D. P. King, L. A. Lewis, A. G. Manley, J. Mason, P. H. Willcox.

MIDWIFERY.—H. M. El Magidi, A. H. E. S. El Mahallawy, J. L. Freer, B. T. Jones.

The diploma of the Society has been granted to A. H. L. Baker, E. C. Dax, H. R. Kasday, D. P. King, H. M. El Magidi, H. D. Robinson, and G. Wilson.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week passed Supplementary Estimates and discussed the Air Estimates for 1934-5. It is hoped next week to debate the Navy and the Army Estimates. The Rural Water Supplies Bill and other Bills were down for consideration on March 7th. The constitution and terms of reference of the Royal Commission on Durham University were announced.

Accounts of the income and expenditure during 1933 of the General Medical Council and of the Branch Councils, as also of the Dental Board of the United Kingdom, were presented for the House of Commons on March 2nd.

A Protection of Animals Bill, presented by Sir Robert Gower on March 5th, is concerned with the employment of horses and steers at rodeo displays.

On March 5th a report by the Attorney-General on the Birmingham United Hospitals Bill was laid on the table of the House of Commons, and referred to the committee on the Bill.

The Dyestuffs (Import Regulation) Bill was read a third time in the House of Commons on March 5th, and the Workmen's Compensation Act (1925) Amendment Bill a second time on March 2nd. The Registration of Births, Deaths, and Marriages (Scotland) Amendment Bill was reported to the House from the Scottish Standing Committee, with amendments, on March 6th. On the same day the Indian Pay (Temporary Abatements) Bill was read a second time in the House of Commons.

Temperature for Deep Coal Mining

Mr. TINKER, in the House of Commons on February 21st, drew attention to the temperature and conditions in the Parsonage Colliery, Lancs. The Secretary of Mines had said the depth of this pit was 3,850 feet. Mr. Tinker contended that the depth at the coal face was over 4,000 feet. A Royal Commission on Mines had said 4,000 feet was the limit of practical working. At that depth, without ventilation, the temperature was 115° F. At Parsonage Colliery the best possible was done, but in October, when the pit was not as deep as now, the temperature was 100° or 103° F. There was a brisk current of air, but men were working naked, covered with sweat and dirt. A complaint was made from the mine that lads were working at the face. In Spain, if the temperature exceeded 91°, the men were not allowed to

work more than six hours. In Holland persons under 20 years must not work at all in a temperature exceeding 86°, nor adults more than six hours. In Germany they must not work more than six hours if the temperature exceeded 82°, nor in France if it exceeded 95°. Mr. ERNEST BROWN said the temperature which mattered was wet bulb temperature. There were 679 workers in the Parsonage mine, and the wet bulb temperature on the date Mr. Tinker cited was not 103° but 82°. A special committee under Dr. J. S. Haldane had issued seventeen reports dealing with high temperatures. Report No. 6, by Professor K. Neville Moss, dealt with the effect of high temperatures on the miner. Dr. Haldane, in a letter to Mr. Brown, had said that European miners always stopped work before their temperatures rose to any injurious extent. Dr. Haldane also wrote: "On the whole we do not think that any good object would be served by prescribing a limit of wet bulb temperature for the carrying on of work in the mines." Mr. Brown added that the 4,000 foot level had only been taken as a datum line in estimating coal reserves.

Maternity Benefit and Unemployment Allowance

In the House of Commons on February 26th the Unemployment Bill was considered in committee. On Clause 37 (persons to whom and circumstances in which allowances may be granted) Sir H. BETTERTON moved an amendment providing that the whole of any maternity benefit under the National Health Insurance Acts, 1924 to 1932, exclusive of any increase of such benefit by way of additional benefits and of any second maternity benefit, should be disregarded in determining the need of an applicant under Part II of the Bill. He said that, as the Bill stood now, it might be argued that among the resources of the family the £2 maternity benefit which came in by reason of the Health Insurance Acts should be taken into account. It was clear that the needs of the family increased at the same time, because this sum was earmarked for a specific purpose—namely, to help the woman. Mr. BUCHANAN said the amendment was of no value, because the first £2 was merely a book-keeping transaction from the approved society through the person concerned to the doctor and the nurse. What was important was the second sum, which was given to meet the additional human needs of the mother and child, and he trusted that the second £2 would also be left out of account. Mr. HUDSON said that wherever the Board's officer was shown by a young married couple that they had in fact spent the additional money on their needs, the sum would be regarded as being available for those needs, and though the amount would not be disregarded, the needs would be allowed for. The Assistance Board was prohibited from taking medical need into account. It was to make sure that the Board should say that the £2 was definitely for the woman's medical needs that the amendment was moved. Any needs other than medical needs would be part of the needs of the man which the Board would have to take into consideration. The committee agreed to the amendment.

Poor Law Medical Officers in County Durham

On February 27th Mr. BATEY asked the Minister of Health if he was aware that twenty-four district Poor Law medical officers in the county of Durham were complaining of financial loss, owing to 15,000 unemployed people having had their right to medical benefit stopped. Mr. SHAKESPEARE said that a number of insured persons in the administrative county of Durham had recently lost their title to medical benefit under the health insurance scheme. The Minister of Health had seen reports in the Press that a number of district medical officers in Durham had made representations to the local authority for an increase of remuneration. This was a matter for the local authority, with whom he was getting into touch. The district medical service was available for those who were no longer within the insurance scheme. Mr. BATEY asserted that his figures were taken from the Medical Union. Mr. MAXTON asked if Mr. Shakespeare realized that these medical officials were already overworked before this additional work was put upon their shoulders. No answer was given.

Wrongful Removal to Asylum

In the House of Lords on February 27th the EARL OF KINNOSULL drew attention to the case of a Mrs. Broad, and moved "That in the opinion of this House the removal of persons whose sanity is in question should not be dependent on a telephone message nor carried out in the absence of a responsible person." He recalled the circumstances in which Mrs. Broad, owing to a telephone error in an address, was wrongfully removed from her home to an asylum. He urged that only in urgent cases should the telephone be used. In other cases there should be confirmation in writing. Arrangements should always be made with the relatives, and mental nurses should be employed. Viscount GAGE (Lord in Waiting) said that there was no dispute that a most unfortunate mistake was made, and the Government was quite prepared to accept the words of the motion. They agreed with the facts Lord Kinnosull gave. The relieving officer to whose attention the case was first drawn did not himself proceed to remove, he reported on the telephone to the relieving officer whom the Middlesex County Council had appointed to deal with cases of this sort under the Act of 1891. It was clear that the first relieving officer transferred all responsibility to the second official. One of the objects of the procedure was to enable experienced officers to deal with actual removals of this kind of case. The Government felt that a mistake about an address could not be excused on any ground. As for the future, the whole object of this procedure, which was to enable action to be taken quickly and to prevent mishap to the patient, would be lost if they fettered the responsible official's discretion too much. In the whole experience of the Board of Control this was the only case they could recollect of this particular kind. Their lordships could rest assured that it was very unlikely that it would occur again.

The EARL OF KINNOSULL asked the Minister to urge in the Ministry of Health the very great advantage which would accrue if trained mental nurses were used instead of ordinary male nurses.

The resolution was agreed to.

The Sterilization Report

In the House of Commons, on February 28th, Mr. HUGH MOLSON moved a resolution declaring that the facts in the report of the Departmental Committee on Sterilization indicated a state of affairs calling for action. The resolution requested the Government immediately to consider the unanimous recommendation of the committee in favour of legislation permitting voluntary sterilization in certain cases. Mr. Molson congratulated the Minister of Health on setting up the committee and securing distinguished men and women to serve on it. The committee had presented a unanimous report on a controversial subject, though unanimity among medical persons was not common. The report recommended the legalizing of voluntary sterilization of mental defectives or persons who had suffered from mental disorder; secondly, of those suffering from some grave physical disability which had been proved to be transmissible; and thirdly, of persons where there was evidence that they were likely to transmit mental defect or disorder. Mr. Molson pointed out that all the witnesses before the committee held that heredity was an important factor in bringing about these disorders. Investigation at Rostock in Mecklenburg had shown that 67.6 per cent. of the inmates of an institution had one or two parents mentally defective. At Renton in the U.S.A., out of 1,000 mental defectives only 350 had both parents normal. Research was made for the committee through local authorities in England on a group of 3,733 parents, who had 8,841 children. Of these children 2,001, or 22.5 per cent., died. Of survivors 40.4 per cent. of those between the age of 7 and 13 were subnormal and 45.4 per cent. of those over 13. The child was born with predisposition to mental deficiency, and the sordid, squalid environment of a house kept by a mentally deficient woman or man resulted in a child stunted in life as well as in body. Even if mental deficiency were not hereditary it would still be undesirable for mentally defective persons to have children. On that point the report of the Board of Control for 1928 was almost conclusive. From these mentally defective stocks came a large number

of those who composed the "social problem groups" and the criminal element of the population. A separate question was raised where the mind had developed to a certain point and then had become disordered. Evidence in Bavaria showed that half the offspring of a person suffering from schizophrenia were affected, and liable to transmit the taint to another generation. Sixty per cent. of the children were liable to be affected if one parent suffered from manic-depressive insanity, and probably all if both parents were affected. In manic-depressive insanity a lucid interval occurred in which valid consent could be given to sterilization. In schizophrenia voluntary sterilization could only take place when the patient could be safely released from an institution. The strongest case for sterilization was presented by the carriers, who, in the words of the report, were "persons whose family history gives reasonable grounds for belief that they may transmit mental disorder or defect." In their case there could be no question of the reality of consent. As a safeguard the certificate of two medical practitioners would be needed. Most members knew of people, perfectly normal and perfectly sane, who refrained from marriage because some relative had suffered from insanity. There was also the question of physical infirmities, such as those of deaf mutes and blind persons. He had been told by those who had given their lives to serving such unfortunates that the danger of transmitting the disabilities was great, and that they favoured the legalization of sterilization.

Mr. Molson remarked that Dr. O'Donovan had on the Order Paper an amendment suggesting a further Departmental Committee to investigate the legal position with regard to sterilization. Mr. Molson contended that there was no decided case to show whether voluntary sterilization was legal. Whether members were for or against eugenic sterilization, let them legislate and make the law certain. The operation was now legal, and not uncommon if the purpose was to protect the life of the mother.

Wing Commander JAMES seconded the motion. [The debate was interrupted for consideration of the Manchester Extension Bill.] Wing Commander James, on resuming his speech, said public opinion and leading articles in the Press, lay and medical, favoured the passage of a permissive Bill on voluntary sterilization.

The hour for the rising of the House was then reached and the debate ended without an opportunity for Dr. O'Donovan to move his amendment.

Shop Assistants' Hours

In the House of Lords on March 1st the EARL OF FEVERSHAM moved the second reading of the Shops Bill. He said it was based on unanimous recommendations of the Select Committee on Shop Assistants, 1931. The Bill would cover 400,000 young persons under 18 in the distributive trades. The Government would consider other "unregulated" occupations when circumstances permitted. The Bill proposed that for young persons in shops the normal maximum working week should be forty-eight hours, exclusive of meal intervals. For a period of two years from the passage of the Bill the normal maximum hours would be fifty-two. With a forty-eight-hour week, fifty hours' overtime might be worked in a year, and with a fifty-two-hour week twenty-four hours a year, and eight hours in any one week. Catering trades and garages would be allowed to average the hours worked. Existing restrictions on night employment of young persons would be extended to the distributive trades. With certain exceptions young persons were to have eleven hours' rest in every twenty-four, the period including the hours from 10 p.m. to 6 a.m. The second part of the Bill required the owner or the occupier of every shop to provide suitable and sufficient ventilation, heating, sanitary conveniences, washing facilities, and facilities for meals, having regard to the nature and circumstances of the shop. Provisions relating to sanitary conveniences, ventilation, and heating would be dealt with through the medical officers of health and the trained sanitary inspectors. The EARL OF IDDESLEIGH said the Pharmaceutical Society of Great Britain was anxious about the effects of the Bill upon their trade, which deserved every possible protection the House could give. He suggested that pharmacists should receive the protection given by Clause 6 to those who supplied accessories for aircraft, motor

vehicles, or cycles. The EARL OF FEVERSHAM said those engaged as chemists would have to prove to the Home Office that they were under such pressure that averaging should be applied to them.

The Bill was read a second time.

Durham University Royal Commission

Personnel and Terms of Reference

Mr. MARTIN asked, on March 6th, what were the composition and terms of reference of the Royal Commission to inquire into the affairs of Durham University and of its constituent colleges. Mr. RAMSAY MACDONALD said that, as already announced, the chairman of the Royal Commission would be Lord Moyne. The other members would be: The Countess Grey, Sir Ross Barker, Major A. G. Church, Professor H. R. Dean, the Rev. F. Homes Dudden, Dr. T. F. Sibly, and Mr. W. Spens. The terms of reference were: "To inquire into the organization and work of the University and its three constituent colleges and into the relation of the University to these colleges, and to report in what respects the present organization can be improved and what changes, if any, are desirable in the constitutions, functions, and powers of the University and its three constituent colleges."

Death from Aplastic Anaemia at Spondon.—Sir JOHN GILMOUR told Mr. Emrys-Evans, on March 1st, that the Factory Department of the Home Office had found no evidence that the death from aplastic anaemia of a man who had been employed in the celanese factory at Spondon, Derbyshire, was attributable to his employment. He was engaged on a different process to the employees of the same factory who died last year.

Conditions in the Hop-fields.—Replying to Mr. Alan Todd, on March 1st, Sir HILTON YOUNG said he had received from the Staffordshire County Council information enabling him to identify farms in Herefordshire and Worcestershire complained of in the recent report of the South Staffordshire County Council Educational Committee on hop-picking. He had sent this information to the Herefordshire and Worcestershire County Councils with the request that they would transmit it to the local authorities of the districts concerned, so that the matter might be investigated and steps taken to remedy any defects.

Disablement Compensation to Miners.—Replying, on March 1st, to Mr. David Davies, Mr. ERNEST BROWN said statistics of workmen's compensation published by the Home Office showed that the numbers of cases of disablement among miners in which payment of compensation started during 1932 included: nystagmus, 1,962; beat-hand, 1,266; beat-knee, 3,076; and dermatitis, 30. These figures did not include cases continued from previous years. During the same year the number of persons engaged in the coal-mining industry who were certified by the medical board to be wholly or partially disabled from silicosis, or from silicosis accompanied by tuberculosis, was 122.

Housing.—Sir HILTON YOUNG told Captain Heilgers, on March 1st, that the numbers of houses reconditioned in England and Wales under the Housing (Rural Workers) Acts, 1926 and 1931, were 869 in the year 1933 and 1,120 in the year 1932. Buildings undertaken without permission while a planning scheme is under consideration, Sir Hilton Young announced on March 1st, are liable to be removed, pulled down, or altered without compensation. Sir GODFREY COLLINS told Mr. Kirkwood, on March 1st, that at May 31st, 1933, the number of State-aided houses under construction in Scotland was 23,505, and at January 31st, 1934, 18,694. In comparing the months of May and January regard had to be paid to the difference in the climatic conditions. There had not been a reduction in the output of houses. The number of State-aided houses completed in Scotland during 1933 was 20,915, which was the highest number erected in any year since 1919, and for January, 1934, the number completed was 1,195, compared with 860 in January, 1933. In an answer, on March 5th, to Mr. John Wilmot, Mr. SHAKE-SPEARE said that 1,500 Fulham families had been provided

with housing accommodation by the London County Council. In addition, 400 new dwellings had been provided by the borough council. Overcrowding in Fulham remained a problem, and was receiving the attention of the Government. In the meantime, the L.C.C., in common with other housing authorities, were concentrating on the more immediate task of slum clearance.

Vaccination.—In reply to Mr. Summersby, on March 1st, Sir HILTON YOUNG said the number of deaths during the ten years 1923 to 1932 registered as being due to vaccinia, or associated with vaccination, was 118. He could not undertake to introduce legislation during the present session to make vaccination no longer compulsory to the extent it was. Registrars of births and deaths received their instructions from the Registrar-General, and those instructions did not authorize or require registrars to distribute any form other than Form A in connexion with the Vaccination Acts.

Medical Benefit in Lanarkshire.—Mr. SKELTON told Mr. Graham, on March 1st, that approximately 4,000 persons in the county of Lanark, including all burghs except Glasgow, had ceased to be entitled to benefits under Subsection (5) of Section 1 of the National Health Insurance and Contributory Pensions Act, 1932.

Pure Milk Supply Campaign.—Dr. ELLIOT told Mr. Guy, on March 1st, that he would endeavour to enlist the support of the medical profession in his campaign for securing a pure milk supply and an expansion of the liquid milk consumption of the country. In reply to Captain Elliston, on March 1st, Dr. Elliot said he could not make any statement concerning the precise allocation of the sum to be devoted to securing a purer milk supply pending the results of consultation between the Departments concerned and the Milk Marketing Boards. He noted, however, Captain Elliston's suggestion that funds should be available for dairy farmers who were willing to install pasteurization plants as advised by medical officers of the public health services. Answering Captain Elliston, on March 5th, Dr. Elliot said no information was available on which to base a firm estimate of the percentage of milch cows in the dairy herds of England and Wales which were infected with tuberculosis. The measures now in force were designed to remove animals in a stage of disease which rendered them dangerous to public health and to other animals, and not primarily for the eradication of disease as such. Mr. SHAKE-SPEARE, in a reply on March 6th to Captain Elliston, said local authorities already had powers for stopping the supply of milk infected with tuberculosis. A committee of the Economic Advisory Council was considering measures for reducing the incidence of bovine tuberculosis and for improving the milk supply.

Convictions under the Food and Drugs Acts for sale of adulterated milk are not shown separately.

The Water Shortage.—Replying, on March 5th, to Colonel Ropner, Mr. SHAKE-SPEARE said it would be an unfair burden on local authorities to give any resident whose water supply had failed a right to call on the local authority to supply him. There were few towns where up to the present there had been serious difficulties. Information received from over 300 rural district councils in response to an inquiry sent to each of them showed that in most rural areas supplies were at present sufficient, or special measures had been taken. Sir Hilton Young was looking into cases of difficulty reported to him, and had also impressed on water undertakers the need of watching the purity of supplies. He had indicated measures to be taken, where necessary, against contamination.

Town and Country Planning.—Sir HILTON YOUNG announced, on March 5th, that resolutions to prepare schemes under the Town and Country Planning Act had been passed for areas in the districts of 117 authorities, and covered over 1½ million acres of land. In addition, schemes covering over 10 million acres were being prepared for areas in the districts of 726 authorities. Fourteen new Joint Planning Committees had been formed under the new Act, of which thirteen were executive. The Greater London Regional Planning Committee, which was advisory, had been reconstituted under the new Act. He did not think steps were necessary to expedite action in cases where use had not yet been made of the new Act.

MEDICAL NEWS

MARCH 10, 1934]

Air Ambulance Service in Scotland.—Mr. SKELTON, answering Mr. Kirkwood on March 6th, said the Department of Health for Scotland had arranged with the county council of Argyll that urgent cases nominated by local medical officers—that is, the patient's family doctor—would be conveyed to hospital by aeroplane. The charges for the hire of the aeroplane, so far as not met by patients, were shared by the county council and the Department of Health. These arrangements would apply to any part of the county, island, or mainland where the service can be operated. The possibility of assisting a similar service elsewhere in the Highlands and Islands was being kept in view.

Housing Conditions in Stirlingshire.—Mr. SKELTON informed Mr. Kirkwood that public local inquiry into the housing conditions in Stirlingshire, was held on January 15th and 16th, and a commissioner inspected the houses on January 29th. His report had been submitted, and was under consideration.

Notes in Brief

It does not appear to the Minister of Health that the Haweswater scheme promoted by Manchester Corporation would provide the best method of supplying additional water to the towns and other water authorities of South Lancashire. Very few musk rats are being caught in the infested areas of Salop and West Sussex. Dr. Elliot sees good reason for hoping that the pest is under control.

Medical News

A Chadwick Public Lecture will be given by Dr. Charles S. Myers, F.R.S., on "The Causes and Prevention of Human Accidents," at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., on Monday, March 12th, at 5.30 p.m. Admission free, without ticket.

Two lectures on "The Prevention of Disease through Diet" will be given by Dr. Clement Nicory for the Food Education Society at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, on Tuesdays, March 20th and 27th, at 5.15 p.m. Admission free.

A post-graduate lecture on cancer, arranged under the joint auspices of the British Empire Cancer Campaign (Yorkshire Council) and the Leeds and West Riding Medico-Chirurgical Society, will be delivered by Dr. A. T. Todd of Bristol at the School of Medicine, Leeds, on Wednesday, March 21st, at 3.30 p.m. The title of the address is "The Medical Treatment of Cancer," and the lecture will be illustrated by lantern slides. The chair will be taken by Professor G. W. Watson, and all medical practitioners are invited to attend.

The Fellowship of Medicine and Post-Graduate Medical Association (1, Wimpole Street, W.) announces that the ninth lecture-demonstration on iron and liver, by Dr. Clark-Kennedy, at 11, Chandos Street, W., will be given on March 13th, at 2.30 p.m. The tenth lecture, on March 20th, will deal with glands. A fortnight's course in orthopaedics will be given at the Royal National Orthopaedic Hospital, from March 12th to 24th, and will occupy the whole of each day. A week-end course in chest diseases will be given at Brompton Hospital on March 24th and 25th, occupying the whole of each day. Other forthcoming courses include infants' diseases at St. Mark's Hospital, April 9th to 14th; rheumatism at the British Red Cross Clinic, on Tuesday and Thursday evenings, April 10th to 26th. Detailed syllabuses of these courses will be issued shortly.

A provincial meeting of the Tuberculosis Association will be held in the Physiology School, Downing Street, Cambridge, from March 22nd to 24th. The subjects for discussion are: allergy in tuberculosis; the value of blood counts in tuberculosis; tuberculous bacillaemia; the uses of tuberculous institutions; the value of lateral radiography in the diagnosis and treatment of the various

types of the lung and pleura; and the normal chest radiologically considered. The president's reception will be held in Emmanuel College, and the annual dinner and annual meeting in Sidney Sussex College. Excursions have been arranged to the Fitzwilliam Museum, the Pepys Library, and the new Physical Laboratory.

The Royal Sanitary Institute has arranged a sessional meeting at the White Rock Pavilion, Hastings, on Friday, March 23rd, at 5 p.m., when a discussion on "Certain Problems of the Housing Situation, both Present and Future," will be opened by Dr. G. R. Bruce, medical officer of health, Hastings.

We are asked to state that hospitals situated within eleven miles of St. Paul's desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1934 must make application before March 31st to the honorary secretaries of the Fund at 10, Old Jewry, E.C.2 (G.P.O. Box 465A). Applications will also be considered from convalescent homes which are situated within the above area, or which, being situated outside, take a large proportion of patients from London.

Colonel R. J. Blackham, M.D., has been elected deputy governor of the Honourable the Irish Society. The society was created by Royal Charter of James I in 1613 for the Plantation of Ulster, and owns a great deal of property in Londonderry and Coleraine, besides the salmon fishing on the Rivers Foyle and Bann. It is constituted like the great City Companies, but the Court of Assistants is appointed from the members of the Courts of Aldermen and Common Council of the Corporation of London.

A tour through Austria, Switzerland, France, and Italy begins on March 20th at Vienna, where visits will be paid to the various health resorts and places of historic interest in the vicinity. Proceeding through Zürich to Paris, the Pasteur Institute and Madame Curie's Radium Institute will be visited. The remainder of the journey continues through Nice and Monte Carlo to Mentone for an inspection of Professor Voronoff's establishment, and thence back to Vienna via Venice, Florence, and Rome. Further details may be obtained from Dr. F. Barach, Studien- und Gesellschaftsreisen, Biberstrasse 11, Vienna, 1.

The first Sardinian medical congress will be held at Cagliari next May, when the subjects for discussion will be the haemorrhagic diathesis, malaria and pregnancy, the thyroid gland and goitre in Sardinia, echinococcus disease, and cutaneous leishmaniasis. Further information can be obtained from the president of the executive committee, Professor Luigi Castaldi, Istituto di Anatomia, Cagliari.

We have received the second number of volume i of *Folia Medicinæ Internæ Orientalis*, published in Jerusalem. This issue contains articles (with summaries in French, English, and German) on malaria as an epidemiological problem, the diagnosis of undulant fever, indicanæmia in acute nephritis, and infectious diseases in Palestine. There are also case reports, society transactions, and a special balneological article on the waters of Calthea.

Lieut.-Colonel W. H. L. McCarthy, D.S.O., M.C., M.D., second deputy coroner for South-East London, has succeeded the late Mr. A. W. Mills as coroner to the King's Household.

Dr. Strohl, professor of medical physics in the Paris Medical Faculty, has been elected a member of the Académie de Médecine in place of the late Dr. Hanriot.

The Dutch Institute for Pharmacotherapeutical Investigation has issued a report, which is published as a supplement to the *Nederlandsch Tijdschrift voor Geneeskunde*, for February 17th. It contains an account of the composition of a number of secret remedies.

According to the *Journal of the American Medical Association* of January 27th the percentage of illegitimate births in 1932 was 14.1 in Sweden, 12.1 in Germany, 10.7 in Denmark and Czechoslovakia, 8.4 in France, 7.1 in Norway, 4.9 in Italy, 4.6 in Great Britain, 4 in Bulgaria, and 1.4 in Greece.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Some of their articles published in the *British Medical Journal* communicate with the Financial Secretary, British Medical Association House, Tavistock Square, W.C.1. Receipt of proofs. Authors over-seas if reprints are required, as proofs are

not sent abroad.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is **EUSTON 2111** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

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MEDICAL SECRETARY, Medisecra Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Vomiting after Appendicectomy

"**PERPLEXED**" (Paisley) writes: A lady patient of mine, aged 30 years, unmarried, had her appendix removed about two years ago owing to persistent right iliac pain. At the operation the organ was found to be definitely diseased, being abnormally long, thickened, and kinked in places. The operation has certainly relieved her of all pain, but soon afterwards she began to vomit during every meal, and has done so ever since, with the result that she is now much underweight. Consequently, she is unable to take a meal in public, or leave her own home on holiday. X-ray examination of the abdomen by a series of plates has failed to reveal anything abnormal, and medicines have afforded her no relief whatever. She has been seen by two consultants, from whose treatment she has derived no benefit at all. Any suggestions will be much appreciated.

Cracked Tongue

"**CEYLON PRACTITIONER**" asks for suggestions in the treatment of a man of about 28 years with cracks on his tongue of over seven years' duration. The cracks are painful. He complains of burning sensations at the pit of the stomach, and of flatulence. The bowels are regular, and the stools, to the naked eye, are not abnormal—nothing in the shape of typical sprue stools. No history of syphilis. There are so far no signs or symptoms characteristic of sprue, and the patient, apart from the condition mentioned, is in good health and attending to his professional duties. He has had various treatments, such as parathyroid extract and calcium, milk diet and fruits, liver treatment, ventriculin, and fermented toddy (a local preparation of yeast), but none of them rid him completely of his condition. Whenever it becomes worse he goes on liver diet, which leads to improvement but does not cure. No analysis of gastric contents or biochemical examination of stools has been made, because laboratory facilities are not available.

Tobacco Habit

"**X Y Z**" writes: Can any of your readers suggest a remedy for excessive smoking? My patient is a young man of 23, and I have tried everything I can think of.

Income Tax

Various Deductions

"**JODDLES**" inquires with regard to some points which will be sufficiently clear from the following reply.

* Subscriptions to the B.M.A. or a medical defence society are allowable expenses, whether incurred on behalf of the principal or assistant. Interest payable on loan—for example, to an insurance company—is not deductible; the payer has the benefit of deducting the tax from the interest at the time of payment. If, however, the interest is paid to a bank, tax cannot be deducted, and the interest is an allowable expense. If the practitioner's wife did, in fact, assist in the work of the practice, and did receive "a

salary of £50 per annum" for so doing, that sum can be claimed as a professional expense. If the claim was not made when the return was made it can be claimed later on the ground of "an error or mistake" in the return; but the fact that it was not made at the proper time may raise some question as to whether the payment was a professional and not a domestic one.

LETTERS, NOTES, ETC.

Lumbago and Quinine

Lieut.-Colonel CHARLES H. BARBER, I.M.S. (ret.) (Florence), writes: No mention is made, in the books I have at hand, of the use of quinine in lumbago, and I have no knowledge of its use by other medical men, so that it seems worth while to draw attention to its value. In India, with the thought at the back of my mind of a possible malarial origin of the trouble, I have on occasion treated cases by the oral administration of 15 or 20 grains of quinine hydrochloride per diem and have found it to act surprisingly well. Recently, after a month's suffering and after using aspirin and the usual remedies with no effect, I tried quinine on myself, with the result that within a few hours I was relieved, and in four days practically free of pain and disability, although other conditions were unchanged. I may add that I suffered from lumbago long before I went to India, and also that whilst there I had malaria only very slightly and on rare occasions.

Herpes and Varicella

Dr. R. WHITTAKER (Weymouth and District Hospital) writes: In connexion with the recent correspondence about the relation of herpes zoster to varicella, a household I attended as locumtinent in the Isle of Man may be of interest. I was originally called to see the father, a man of about 40, with severe herpes of the left trigeminal region and geniculate herpes on the same side. Four days after I first saw him his two children developed typical varicella, and on the sixth day I found he had it himself, as well as the herpes. The chicken-pox rash cleared up very quickly, but the herpes was still very marked when I last saw him, a fortnight after my first visit.

Road Dangers

Dr. GEORGE JONES (London, S.E.13) writes: If something is not done, and that very soon, the roads will be completely blocked up, and neither pedestrian nor motorist, quick drivers or slow, will be able to use them safely or at all, except with great loss of time. Traffic blocks, even in suburban London, are becoming worse and worse. They seem to be due largely to lorries of ever-increasing size, with trailers behind them, and to motor coaches, whose length rather than breadth seems excessive. I have seen lorries whose bodies extended a good foot over the wheels passing quite close to the edge of the pavement. It is not needful to send tons and tons of bricks or paving stones by road, and passengers can be carried quite easily by rail, especially from long distances. Parliament imposed stringent conditions on the railways: if it does not do something more for all classes of road users we shall find ourselves worse and worse off year by year.

Corrigendum

GLAXO LABORATORIES (London, N.W.1) ask permission to correct a mistake which occurred in their advertisement of March 3rd. The mistake (for which they accept sole responsibility) occurred in the last paragraph but one of the second column of their advertisement. "Sunshine Glaxo is enriched by 200 and Full Cream Glaxo by 165 international units of this essential body-building anti-rachitic factor" should read: "Sunshine Glaxo is enriched by 200 and Full Cream Glaxo by 165 international units, per pint reconstituted, of this," etc.

The British Drug Houses Ltd. have just issued a priced catalogue of preparations for parenteral administration, arranged in alphabetical order. Practitioners can obtain a copy free of charge on application to this firm, Graham Street, City Road, London, N.1.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 39, 40, 41, 42, 43, and 46 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 96.

THE CAUSES AND TREATMENT OF ARTHRITIS*

BY

CHARLES W. BUCKLEY, M.D., F.R.C.P.

PHYSICIAN TO THE DEVONSHIRE HOSPITAL FOR RHEUMATIC DISEASES, HUXTON; MEMBER OF THE
BRITISH MEDICAL ASSOCIATION ARTHRITIS COMMITTEE

In the report of the B.M.A. Arthritis Committee a classification¹ was adopted differentiating on broad lines rheumatoid arthritis and osteo-arthritis. This differentiation is of the utmost importance from the point of view of aetiology, prognosis, and treatment, and as the subject is so wide I shall limit my remarks to the treatment of rheumatoid arthritis alone. This has been subdivided into primary and secondary; in the former no focus of infection can be found; in the latter such a focus can be identified and should be dealt with as radically as possible, with due regard to the general condition of the patient. It is essential to remember that wholesale extraction of teeth or enucleation of tonsils may be accompanied by as much shock as a major operation, and resistance may be so much lowered by such a procedure that the disease gains a firm hold, and the patient's condition is worse than before. This disastrous result may be, in some measure, caused by the liberation of toxins and micro-organisms in great amount, and their entrance into the general circulation. I shall not attempt to enumerate the many possible foci from which infection may proceed, but would stress the fact that the existence of a focus needs to be associated with other factors before infection spreads to the joints or other tissues. The soil is, in fact, as important as the seed. Heredity is a factor in about 50 per cent. of cases, and the bodily characteristics are a slight, spare physique, the patient often being emotional and lacking in endurance, with poor circulation, cold extremities, and a liability to chilblains. This is probably the outcome of endocrine influences, with sympathetic instability and defective calcium assimilation. You will note the resemblance to the type of individual prone to tuberculous infection, and the close analogy between arthritis and tuberculous disease is a feature to which I shall have occasion to return.

We have, then, two aetiological factors—soil and seed; and there is a third in external influences, such as excessive fatigue—mental or physical—emotional strain, or shock. The combination of cold and damp with unfavourable hygienic conditions depresses resistance to disease generally, though arthritis is by no means a slum disease, and is met with in all classes. Local as well as general influences play a part, and in the less severe types it is noticeable that the joints first affected are those which are most subjected to strain or which have been the seat of injury. The small proportion of so-called primary cases are almost entirely confined to the female sex, and in these, although no focus of infection can be detected in the light of our present knowledge, it seems not unlikely that here also there is a microbic factor which has by some means obtained access to the system.

A French authority¹ has recently criticized severely the doctrine of focal infection and the operative treatment of foci. He admits that cure sometimes appears to follow the eradication of septic foci, though in other cases no such happy result ensues; while there are also instances of the arthritis being cured or, it may be, dying out in spite of the continued existence of such foci. He furthermore denies that there is any proof that the streptococci, commonly regarded as the cause, are anything more than common saprophytes; and, while admitting that a focus of infection may serve as a portal of entry for whatever germ may be responsible for the arthritis, he asserts that we are completely ignorant of its nature. He agrees that

it is sound practice to deal with infective foci in order to put the system into a better state of defence against the infection, whatever it is, and that the extraction of septic teeth, etc., is, for this reason, equally indicated in a case of gonococcal arthritis. While these views will not be accepted in their entirety by workers of experience in this country, they point an important moral—namely, that the treatment of septic foci should be carried out with the aim of improving the general health and never in such a way as to weaken the patient or reduce the powers of resistance through the shock of extensive surgical procedures. In the primary form, attention to the general health and mode of life is of equal importance, together with treatment of endocrine deficiencies so far as may be possible; in other respects the principles of treatment for both forms will proceed along the same lines, for there is a strong probability that as our knowledge increases the distinction between the two forms will cease to be made.

ROLE OF THE STREPTOCOCCI IN ARTHRITIS

Opinions vary widely as to the form of streptococcus which is the probable cause of arthritis, and as to whether other microbes may not be equally incriminated. If we admit that the case against the streptococci—haemolytic, anhaemolytic, or *viridans*, to name the three types most commonly met with in septic foci associated with rheumatic disorders—may not be completely proved, it will still be advisable to look upon them with grave suspicion, and, therefore, to consider the evidence. We are at once faced with the doubts which are arising as to the differences between these three types. Besredka² states definitely that it has been established that a streptococcal infection can take on different clinical forms according to the individual resistance of the subject and according to the ultimate structure of the inoculated region, quite independently of the nature of the streptococcus or of its original source. He holds that the streptococci met with in scarlet fever, for example, may belong to several varieties; and, on the other hand, the same variety of streptococcus may be met with in diseases clinically different. He further asserts that demonstrating by means of the microscope the presence of streptococci in the course of an infection is not enough to enable us to conclude that it is a streptococcal illness, a truism which seems sometimes to be forgotten.

Recent researches indicate that there are many culturally different strains of streptococci which may be concerned in the aetiology of rheumatic conditions, that laboratory and cultural distinctions are of less importance than has hitherto been supposed, and that some character common to them all is the important factor in producing tissue reactions of rheumatic type. Some workers believe that it is possible, by suitable cultural methods, to change a haemolytic streptococcus into the *viridans* type, and thence into the anhaemolytic form. There is also evidence that some, at least, of the diphtheroids which are so frequently met with in cultures from the tonsil may be streptococcal variations. If these changes should be proved our views of the relation of streptococci to certain pathological processes must undergo profound modification. It seems to me also not unlikely that a streptococcus may be modified in its characters and effects, not only by the tissues in which it grows, but also by other micro-organisms which are present in the same focus. It is very usual to find the *Streptococcus viridans* associated

*Address to the Halifax Division of the British Medical Association, November 8th, 1933.

with the *Staphylococcus aureus* as well as with many other microbes. If we accept the view, as I think we must, that rheumatoid arthritis is commonly associated with the presence of a septic focus and that such focus always contains micrococci of one type or another, the question arises: Do these microbes set up the arthritis, and, if so, how?

Rosenow³ believes that certain strains of streptococci have a special affinity for joints or connective tissues, and that such affinity may be developed by repeated passages *in vivo* in rabbits' joints or by other methods; these strains have been termed "arthrophile." His views are not universally accepted, but cannot lightly be set aside. Of more serious moment are the arguments which seem to be gaining ground that the arthritis which some workers claim to have produced in rabbits by the injection of streptococci does not possess the character of a true rheumatic granulomatosis, but is an ordinary septic arthritis. Magrassi,⁴ who holds this view, claims to have brought about true rheumatic lesions by injecting haemolytic streptococci from rheumatic fever into a joint; a focus is thus formed, and sensitizes certain tissues by means of substances which enter the circulation from it. After an interval of time these substances act as provoking material, and set up local inflammatory reactions or lesions of true rheumatic type. He notes that in such states the intravenous injection of streptococcal antigen will provoke or increase such effects. Although his work has been concerned with rheumatic fever, it seems to have a definite bearing on arthritis. The silent period which has been shown by Glover and others to elapse between an attack of tonsillitis—formation of a focus—and the development of an attack of acute rheumatism seems to find an explanation in Magrassi's work. There is considerable evidence in support of the view that the joint and other lesions of rheumatic fever, and also of acute infective or rheumatoid arthritis, are due not to the actual presence of the infecting micro-organism itself in the affected tissues, but to allergic effects. The classical example of allergy in joints is one which many of you will have seen—namely, the arthritis which sometimes follows the injection of horse serum in the form of antitoxin. These allergic reactions may result in animals sensitized to them from the injection of suspensions of streptococci killed by heat, and are analogous to the tissue reactions of rheumatism; but they occur in experimental investigation only in places where an allergic "phlogosis" has been provoked by the introduction of antigen. Swift, Derrick, and Hitchcock,⁵ prominent American workers on this subject, say:

"There is much clinical evidence to support the contention that focal infection has an important bearing on the evolution of this [rheumatic] disease, but up to the present the importance of the focus was thought to rest in its role as a nidus from which the virus was disseminated throughout the body. Our conception of the focus, on the other hand, is of an area where the allergizing substance is produced and whence it is spread to sensitize the various tissues. This conception does not deny that virus may also gain entrance to the blood stream from the focus, but stresses the allergizing effect."

They also observe that "inoculation with non-haemolytic streptococci produces a hyperergic condition and increased susceptibility, not only to the same strain, but also to more distantly related strains."

From these and many other observations on similar lines has developed the theory that a septic focus continually passes into the blood substances which act upon certain tissues for which they have a predilection in such a way that these tissues become sensitized. Sooner or later a heavy dose is absorbed, or the endocrine defences break down, or the local or general resistance is reduced by one of the many causes already referred to, and inflammation results—an arthritis or fibrositis. This

appears to explain adequately the joint lesions of acute rheumatism or the connective tissue reactions of fibrositis, but whether it is sufficient to explain the persistent and progressive lesions of rheumatoid arthritis without the actual presence of the infecting micro-organisms in the joint tissues is not so evident. In this connexion it is necessary to mention the recent work of Cecil, Nicholls, and Stainsby,⁶ who, by a special technique, have succeeded in growing a streptococcus from the blood. Their work has yet to be confirmed by other observers, but the fact that the organism requires fifteen days to grow suggests that its virulence is low, and strengthens the idea that presensitization of the tissues is essential if it is to exert any pathogenic action.

RHUMATISME TUBERCULEUX

Some Continental authorities, especially in France, believe that there is a type of rheumatoid arthritis which is tuberculous in origin. It is claimed that filter-passing forms of the bacillus of Koch have been discovered in these cases. Where a polyarthritis occurs in conjunction with other lesions more generally recognized as tuberculous it is difficult to deny that the joint lesions may also be of that nature. It is claimed, however, that cases of acute polyarthritis resembling acute rheumatism but resistant to salicylates and free from cardiac complications, tending to persistent hydrarthrosis or passing into a chronic polyarthritis, are often tuberculous. Cases of this type in this country are not differentiated clinically from ordinary rheumatoid arthritis, though a few English physicians speak of the Poncet type, after the French physician who first advanced this view. It cannot be denied, however, that the constitutional type and the symptoms, apart from the actual arthritis, are in many cases similar to those of tuberculosis, and that the same general principles of treatment are often indicated. I have examined many cases of this nature without finding evidence of tuberculosis elsewhere, and the von Pirquet and Mantoux tests have proved negative; nor has it fallen to my lot to see any of the cases develop frank tuberculosis. Some of them, however, have given positive reactions to the intradermal vaccine of Ponndorf, without any sign of awakening tuberculous foci elsewhere in the body. Ankylosing spondylitis has also been claimed to be tuberculous, but in this condition also, although its victims are commonly of the tuberculous type, I have not yet been able to satisfy myself that the special lesions were tuberculous; in fact, they are in sharp contrast to the typical appearance and course of tuberculous caries of the spine.

Whatever may be the ultimate outcome of all these theories, one thing at least seems clear—namely, that acute rheumatoid arthritis is usually associated with the presence of septic foci in the body, and presumably is caused by one or more of the micro-organisms therein. Such foci must therefore be the first object of treatment. We must next consider how we may combat the invasion of the system and the joints especially, remembering that in the more acute forms of arthritis there is ample evidence of general constitutional illness, of which the joint lesions are the most obvious.

VACCINE THERAPY

The question of vaccine treatment may first be considered. It has had a great vogue, but now the pendulum is swinging in the other direction. The success of vaccines in prophylaxis in many diseases led to high hopes that they would be equally successful as a method of treatment, and they have been employed more extensively in chronic rheumatic disease than in any other condition. Faced with a disease which so often pursues

a steady downhill course the doctor is naturally glad to try any remedy which offers a promise of helping in the fight, especially if it appears to have a scientific basis. Unfortunately the purveying of vaccines has, to a great extent, become commercialized, and the art of advertising has done something to extend their use. From my own observation I should say that there have been more cripplés than cures following the injudicious, uninstructed, and often haphazard, administration of a remedy which with care and skill has sometimes proved of great value in my own experience and in that of many others.

In the leading textbooks on the subject there is a marked lack of enthusiasm. Freund,⁷ a prominent Vienna authority, in his *Gelenkerkrankungen*, states definitely that he has found no marked differences between the results from vaccine treatment and from non-specific methods. Thompson and Gordon⁸ say that the most that can be expected from vaccines is that they should act as adjuvants to other forms of treatment. They point out that they sometimes appear to be remarkably effective and at other times, in cases apparently identical, there is no benefit whatever. In some instances there is marked reaction to small doses, and in others a large dose produces no reaction at all, making it difficult to give any guidance in treatment. They regard local reaction in the joints as the best guide, and advocate the smallest dose that induces such a reaction. Pemberton⁹ quotes Kolmer, an American authority on immunology, and agrees with his opinion that vaccines made from septic foci, joints, etc., have not given encouraging results. He also advises that, where there is local reaction in the joints, the dosage should be small and continued over a long period of time. He holds the view that the effects may be non-specific in great measure. Congdon,¹⁰ in a close statistical analysis of 330 cases of secondary rheumatoid arthritis treated with vaccines in the Devonshire Hospital, Buxton, found a difference of 13 per cent. in favour of cases treated with vaccines. She also showed that stock vaccines gave as good results as autogenous ones: this is opposed to the view of specific therapy. Coste,¹¹ after denying that there is any conclusive evidence that the strains of streptococci commonly incriminated have any aetiological relation to arthritis, states as his opinion that all the so-called specific vaccines for arthritis, with the possible exception of gonococcal vaccine and tuberculin, act only by setting up protein shock, to which arthritics are very susceptible. He expresses doubt even as to the specific effect of gonococcal vaccine in the arthritis of this disease, and suggests that its frequently beneficial action may be owing to some non-specific factor, illustrating this by observations on cases of arthritis which were certainly not of this nature, but which were definitely benefited by gonococcus vaccine. Warren Crowe,¹² an enthusiastic believer in vaccine therapy in arthritis, claims remarkably good results. He is of the opinion that a micrococcus closely allied to the common skin staphylococcus is a factor in the production of rheumatoid arthritis, and employs a vaccine of this organism as well as a mixed vaccine from a great number of strains of streptococci. He advocates very small doses, closely regulated by the reactions produced. Cronin Lowe¹³ and other workers have devised what they term the "pathogen selective" method of vaccine therapy. Inoculation of material from the suspected focus is made into the patient's own blood, the theory being that those organisms which survive and are grown on subsequent cultivation are those to which the blood is lacking in protective substances. Apart entirely from the question of vaccine therapy, this procedure seems likely to throw light on the specific character of the microbes in the focus and possibly also on the nature of the infective agent in arthritis.

RATIONALE OF VACCINE THERAPY

The principle involved in injecting a vaccine is generally held to be the stimulation of the formation of antibodies, with the object of strengthening the natural resistance against a specific infection. It is easy to see the preventive value of such a measure, as in the case of inoculation against enteric fever, but the problem becomes far more difficult when it is proposed to use such a vaccine as a method of treatment during the actual course of any disease, when the system is already invaded by the specific micro-organism and its toxins, against which the defensive forces of the body are already fully mobilized. Hence, vaccines are employed for curative purposes in comparatively few diseases caused by a specific micro-organism, and even in those their value is not universally admitted, and is, indeed, often denied. On the face of it, it would seem illogical, when there is already an invasion of a living and toxin-producing microbe, to inject into the system a series of further doses of the same microbe, even though dead: the dead bodies contain the endotoxin, and in some forms of vaccine the exotoxins are also present. Yet there is clinical evidence that cure has at times followed this line of treatment, and thus, in the case of arthritis, there are enthusiastic advocates of vaccine therapy and others who condemn it with equal energy. It seems probable that it is not a simple matter of antibody formation. Besredka¹⁴ says definitely that vaccine therapy does not depend on the elaboration of antibodies. To quote his words:

"There are few pathogenic microbes which are as bad producers of antibodies as the staphylococci. However, the clinicians affirm—with a unanimity to which they are but little accustomed—that they know no recoveries more striking than those obtained by vaccine-therapeutic treatment."

His sarcasm at the expense of clinicians may with force be applied to the bacteriologists, for they are sadly lacking in unanimity in the advice they give us. In this problem, as in many others, there is urgent need for more effective liaison between the bacteriologist and the clinician. The former is a rare visitor in the wards, and the latter is not always welcomed in the laboratory; yet the practical value of bacteriology must depend upon the close association of clinical observation with laboratory investigation. Only then will it be possible to lay down with any certainty the proper procedure in treatment, and to decide whether specific or non-specific therapy is likely to yield the best results.

In the face of these considerations it seems to me that we should employ vaccines of specific type only when an infective focus has been identified and eradicated. We can ignore, I think, the possibility that the infecting organism has become an inhabitant of the bowel, for there is sufficient evidence that bacteria do not normally enter the circulation from this source; and the toxins, if absorbed, are probably greatly modified, if not destroyed, by passing through the lines of defence. In such a case we can give vaccines with reasonable confidence, since the supply of the infecting material from the focus has been cut off and we are stimulating the defences of the body without the risk of increasing toxic reactions. Autogenous vaccines may here be the most advantageous, but they must be started in small doses, their effects closely watched, and dosage and interval regulated accordingly. If there is any marked reaction in the joints, or any pyrexial effect, doses must be reduced and intervals increased: such phenomena are likely to be caused by the existence of some unsuspected secondary focus, for which search must be made. An important aspect from the practical point of view of the allergic theory is that, the tissues being sensitized to the toxins, a process of desensitization is indicated. As asthma

and hay fever, due to pollens or other non-living substances, are treated by injection of minute doses of the specific substance in order to desensitize the tissues, so may arthritis on the same grounds be treated by vaccines. This is the view of those who believe in extremely small doses, which sometimes, curiously enough, are attended by reactions as definite as those from doses, it may be, a hundred times as great.

PROTEIN SHOCK

How far are vaccine effects the result of protein shock is the problem which must next be faced. That arthritics have a heightened susceptibility to this has already been mentioned, and the view held by some is that any benefit following vaccines is of this nature. Protein shock induced by non-specific vaccines such as T.A.B., or by the injection of milk, casein, and other special non-bacterial substances such as bee stings, has been tried extensively: in this category must also be placed auto-haemotherapy. Such procedures often give good results, but perhaps oftener fail, or relapses occur; as they are apt to be attended by shock, sometimes severe and always attended by risk, the more drastic of these methods are falling into disuse. The employment of stock vaccines as a method of protein shock therapy is less open to objection, and also has the advantage that, if the specific microbe is present, it may assist by more direct action. On this principle stock vaccine may be used where a focus is still thought to exist, but with the same precautions as have already been mentioned for autogenous ones. If favourable results are likely to accrue there will soon be signs of this, and if improvement is not quickly seen it is doubtful policy to persevere with the vaccine.

INTRADERMAL VACCINATION

While vaccines are generally administered by the subcutaneous or intramuscular route, there is another method—namely, intradermal inoculation—which is of proved value in some other bacterial infections, and which is believed to act by stimulating the formation of protective substances from the fixed cells of the deeper layers of the dermis. This has been tried in arthritis, but has not so far been strikingly successful; it is, however, safer, since absorption is slower, and it is an important feature in a method which is widely employed in France and for which much is claimed, not solely on account of the way of administration, but also because of the vaccines used—the Ponndorf vaccines. These vaccines are of three types: A, which is derived from bovine tubercle with some proportion of an autolysate of Koch's bacillus; B, which has A as a basis, with the addition of autolysates of staphylococci, streptococci, pneumococci, and the bacillus of Pfeiffer; and G, which contains, in addition to B as a base, an autolysate of the gonococcus. All are administered by scarifying the skin and rubbing the vaccine into the scarified area, much as in ordinary vaccination. In rheumatoid arthritis B is indicated, and may give rise to three types of reaction: (1) local, which may vary from slight redness up to a free serous exudation and formation of a scab; (2) general, which may be absent or severe, with a rise of temperature lasting for a few days; and (3) focal, an increase in the joint symptoms which, when it occurs, is of good augury.

While some French writers are enthusiastic over this treatment it has not had the same success in the hands of other workers. Personally, in a not very extensive trial, I have had some positive results and some negative; I propose to continue its use in suitable cases. (There is a similar preparation, milder in its action—the vaccine of Paul.) It is wise to examine carefully for any tuberculous lesions, active or quiescent, which are generally

held to be a contraindication to the method. It is interesting to note that an English physician, Copeman¹⁷ adds to the vaccine he employs in some cases a small proportion of tuberculin as a universal non-specific antigen.

CHRYSOTHERAPY

Chrysotherapy as a way of treating arthritis has recently come into fashion, and is being widely resorted to on the Continent, though, as yet, but little in this country. Coste¹⁸ asserts that it is the most important addition which has been made for a long time to the therapy of chronic rheumatic diseases. We owe much of the work on the subject to Forestier,¹⁹ who, observing the similarity between tuberculosis and arthritis, conceived the idea of treating cases of chronic polyarthritis with the salts of gold, which were being therapeutically applied in the former disease. His first publication was an account of forty-four cases, with seventeen very good results, sixteen good results, ten moderate, and only one negative.

Several compounds have been tried, but chiefly allochrysin (an organic compound of gold and sulphur, with sodium) in France, and solganal B (a compound of gold, sulphur, and glucose) in Germany. I have used allochrysin in a certain number of cases with some promising results, but the number is not yet sufficient nor have they been under observation long enough for me to quote my own experience. The salt is given by the intramuscular route; 5 centigrams are given at weekly intervals and the doses are increased cautiously; the treatment is not notably painful. After about twelve weeks, or when a total of 1.5 to 2.5 grams have been given, an interval of six weeks must be allowed for elimination, as the salts of gold are cumulative in the system. Improvement sometimes does not show itself during the first course, and a second or third may be required before a positive opinion can be formed. The first sign is improvement in general health, followed by diminution of articular swellings, but pain on movement may be diminished much earlier than this, as tested by the amount of aspirin or other analgesics required. In favourable cases the anaemia lessens and the sedimentation rate tends to alter in the direction of normal—an important test.

The principal effects which may result from overdosage or indicate intolerance are: (1) a rise of temperature of half a degree or more, rarely of two or three degrees (which occurred in one of my cases, but was followed by a marked improvement)—this pyrexia is usually confined to the first dose, and if it continues it indicates intolerance; (2) skin eruptions of scarlatiniform or morbilliform type, fleeting in character, and with some itching—this appears to be an anaphylactic reaction, and does not contraindicate treatment. Later symptoms may be a metallic taste, and if this is neglected stomatitis may follow; the treatment must be temporarily abandoned, or this may become severe. Skin eruptions of a more severe type, and glandular enlargement, may arise. In a few cases albuminuria has been noticed, but almost all these complications followed a dosage much greater than I have mentioned. They indicate, however, the desirability of proper dental toilet and of testing the renal functions beforehand.

Of solganal B I have no personal experience: it is said to be less toxic and of higher therapeutic effect. It has been given by the mouth, and good results are claimed for this method. Skin eruptions may be met with, and one notable symptom as the dose approaches a maximum is fatigue, more or less pronounced, and accompanied by loss of appetite. The focal reactions to the first dose may be more marked than with allochrysin. It is well to examine the blood for any sudden variation in the

number of leucocytes—a fall in polynuclears especially is an indication to reduce the dose or to suspend treatment. The urine must also be watched for signs of renal irritation. It is necessary to stress the fact that this line of treatment is in its infancy, and needs much careful observation before exact procedures can be laid down.

Recognizing the possible ill effects, one can say that they are no greater than those which accompany vaccine therapy, protein shock, or other methods, and in view of the grave prognosis in untreated cases we are justified in taking some risk, just as the surgeon must regard risks as inseparable from operative measures. The part played by sulphur in these compounds is of interest, as it would appear to increase the activity of the gold acting synergically. This is probably its action when administered independently, as a mineral water, an organic sulphur compound, or otherwise, activating other substances.

IODINE AND CALCIUM

Iodine is a remedy widely employed, and sometimes beneficially. It may be given as the alcoholic solution (thirty grains in an ounce of rectified spirit is a useful prescription), beginning with one drop in milk three times a day and increasing gradually to five or more, with occasional intervals. Or one of the colloidal forms, such as collosol iodine, may be prescribed. The fatty compounds present some advantages, and I have found lipiodol a good one, injected intramuscularly. Compounds of iodine and hexamine are in common use abroad, but I have no experience of them. Iodide of iron with arsenic is a valuable tonic in arthritis.

Calcium is now extensively given because of the evidence of defective calcium metabolism as shown in radiograms by increased transparency of the bones. It is likely that its action is by no means limited to replacing calcium wastage in the bones, and the vogue which the calcium-containing mineral waters have had for centuries for the treatment of rheumatic diseases is suggestive. The intake of calcium in ordinary diet is probably adequate, but the cells appear to have lost their power of assimilating it; it may be that in mineral waters other constituents, such as radon, act by increasing this assimilation in the same way as the action of sulphur already referred to. It is also desirable to include vitamin D in the form of cod-liver oil or its concentrates to promote assimilation of calcium, or to attain this object by means of exposure to ultra-violet rays.

Many other remedies have been tried in this intractable disease, but time will not permit me to discuss them further. In particular, I regret having to omit all reference to mineral waters and other hydrological methods, and to physical methods of treatment in general, which many authors regard as at least as valuable as vaccines or any other form of internal medication; but you will find these dealt with in the B.M.A. report.

REFERENCES

- ¹ Coste: *Traitement du Rhumatisme chronique des Jointures. La Pratique Médicale Illustrée*, Paris, 1933.
- ² Besredka: *Immunity in Infectious Diseases*, 1930.
- ³ Rosenow: *Journ. Amer. Med. Assoc.*, lxx.
- ⁴ Magrassi: *Acta Rheumatologica*, 1933, v, 17.
- ⁵ Swift, Derrick, and Hitchcock: *Journ. Amer. Med. Assoc.*, 1928, xc; *Amer. Journ. Med. Sci.*, clxxxi.
- ⁶ Cecil, Nicholls, and Stainsby: *Journ. Exper. Med.*, 1929, l, 617.
- ⁷ Freund, Ernst: *Gelenkerkrankungen*, Berlin, 1929.
- ⁸ Thompson and Gordon: *Chronic Rheumatic Diseases*, 1926.
- ⁹ Pemberton: *Arthritis and Rheumatoid Conditions*, 1926.
- ¹⁰ Congdon: *Lancet*, 1932, i, 178.
- ¹¹ Coste: *Loc. cit.*
- ¹² Crowe: *Annals of the Pickett-Thomson Research Laboratory*, iv, Part 2.
- ¹³ Lowe, Cronin: *British Medical Journal*, July, 1921.
- ¹⁴ Besredka: *Loc. cit.*
- ¹⁵ Coste: *Loc. cit.*
- ¹⁶ Forestier: Quoted by Coste, q.v.
- ¹⁷ Copeman: *Treatment of Rheumatism in General Practice*, Arnold, 1933, p. 108.

TREATMENT OF MALARIA IN EUROPEANS BY ATEBRIN

WITH SPECIAL REFERENCE TO THE RELAPSE RATE

BY

P. D. JOHNSON, M.R.C.S., L.R.C.P.

MEDICAL OFFICER, BATU GAJAH, PERAK, F.M.S.

Between June, 1932, and June, 1933, forty-nine European admissions to Batu Gajah Hospital with malaria have been treated by atebtrin uncombined with any other specific antimalarial remedy. As all but three of these cases have been followed up for periods ranging from two months to over a year, it has been possible not only to observe the immediate effects of treatment, but also to test the value of this new chemotherapeutic discovery in preventing relapses, for it is in this respect that the greatest claims have been made for atebtrin. Of these forty-nine cases, twenty-nine were diagnosed microscopically as benign tertian, seventeen as subtertian, and three as mixed tertian malaria. Atebtrin was given in the form of 0.1 gram tablets three times a day between meals, children receiving a proportionately smaller dose. The total adult dose varied between 1.4 and 2.4 grams. Complete rest in bed was maintained for forty-eight hours after the termination of the febrile period, and, apart from a preliminary dose of calomel, a daily saline purgative, and aspirin during the "hot stage," no other drugs were prescribed as a routine.

IMMEDIATE EFFECTS OF TREATMENT

Compared with eighty-three European cases treated between June, 1931, and June, 1932, by quinine, plasmoguinine, and alkalis, the treatment by atebtrin has proved very satisfactory. A large proportion of the quinine-treated subtertian cases were given intramuscular injections on account of vomiting, but in only one instance had this to be resorted to in the atebtrin-treated cases. It may be that a particularly mild type of infection was encountered in the 1932-3 series, but the impression remains that quinine by the mouth very frequently excites vomiting. In both series subtertian malaria took rather longer to control than benign tertian, but atebtrin seemed superior in this respect to quinine. It was found comparatively pleasant to take, and did not cause any of the neurotropic symptoms so frequently associated with quinine. For this reason it was particularly valuable in children, who tolerated doses rather larger than those usually recommended. One infant, aged 8 months, was given 0.1 gram daily for five days without any ill-effects. Many patients expressed a feeling of well-being during treatment, and those with previous experience of quinine were unanimous in their preference for atebtrin.

Malaria complicating pregnancy was treated in three cases by quinine and in two cases by atebtrin. On no occasion did quinine or atebtrin appear to have any deleterious effect on the pregnant uterus. One patient with an idiosyncrasy to quinine developed urticarial and pseudo-asthmatic symptoms after 5 grains, but was able to take a full course of atebtrin without any ill effects. A comparison between the duration of the pyrexial period and the persistence of malaria parasites in the blood after the beginning of treatment is given in Table I. The quinine-treated cases received 2 grams of quinine and 0.01 gram of plasmoguinine daily.

As far as the immediate treatment is concerned, it would appear from these figures that atebtrin is superior to quinine in controlling the temperature and ridding the blood of parasites in all types of malaria, but particularly so in subtertian infections. Its occasional provocative effect on the parasites of subtertian malaria will be discussed later.

TABLE I

	B. T.		S. T.		B. T. and S. T.		All Types	
	Q.	A.	Q.	A.	Q.	A.	Q.	A.
Average duration of pyrexia in hours	58.8	43.2	76.8	58.4	60.0	56.0	65.2	52.5
Average persistence of parasites in hours	67.2	52.8	72.0	67.2	86.4	56.0	75.2	58.6
Number of cases ...	41	29	34	17	8	3	83	49

Q = Quinine.

A = Atebrin.

TOXIC SEQUELAE OF TREATMENT BY ATEBRIN

The yellow discoloration of the skin which occurred in a large proportion of European cases cannot be regarded as a sign of toxicity, but is due to the staining properties of the drug. It is more common in fair-skinned Europeans than in Asiatic. Green¹ recorded it in only seven out of fifty Asiatic cases. In our series of Europeans it did not appear as a rule until the fourth or fifth day of treatment, and in some instances not until a week or more after leaving hospital. It is of interest to note that in one patient having jaundice on admission to hospital bile disappeared from the urine while full doses of atebrian were being taken.

The toxic symptoms attributed to atebrian by various observers are "light-headedness," headache, and epigastric pain. In none of our patients was the first apparent, but one female patient complained of severe headache after a course of 1.6 grams. No patient suffered from abdominal pain during treatment, but six experienced it after leaving hospital. This amounted to slight indigestion in four cases, each of which had received 1.3, 1.5, 2.1, and 2.4 grams of atebrian respectively. In the other two cases the condition was more serious; in both the onset of pain coincided with a yellow skin discoloration, which disappeared respectively a week and a fortnight after completing treatment. Both patients had received a total dose of 1.5 grams. The pain, which was confined to the epigastrium, was made worse by taking food, but there was no vomiting. A milk diet for a few days combined with alkalis caused a rapid cessation of the pain, which has not recurred. This delay in the appearance of toxic symptoms illustrates the cumulative action and slow excretion of atebrian.

Atebrin, like plasmoquine, appears occasionally to have a provocative effect on subtertian parasites during the first forty-eight hours of treatment. One female patient with subtertian malaria became definitely worse after the exhibition of 0.4 gram. She had a feeling of impending dissolution, and showed signs of collapse. After an injection of quinine and adrenaline, atebrian was continued in small doses without any further ill effects. She has had no relapse since. In three patients with negative blood films on admission to hospital parasites appeared in large numbers in the blood only after 0.6 to 0.9 gram of atebrian had been taken.

COMBINED COURSE OF ATEBRIN AND PLASMOQUINE

Apart from other considerations it was felt that, as the purpose of this investigation was to test the effect of atebrian on malaria, the addition of plasmoquine would stultify the value of any results that might be obtained. Several cases, however, were admitted to hospital as a result of this treatment.

Case 1.—A male European took four tablets of atebrian and plasmoquine daily for two days. He was admitted to hospital with severe epigastric pain and vomiting. There was pronounced yellow staining of the skin and conjunctivae, and the lips were cyanosed. Subtertian parasites were present in the blood. The urine contained albumin, granular casts, and red blood cells. Atebrin was continued cautiously without any further ill effects till a total of 1.5 grams had been taken. He relapsed, however, within one month of leaving hospital.

Case 2.—A female European was admitted after taking twelve tablets of atebrian and twelve of plasmoquine (three of each daily), with dyspnoea, cardiac distress, and a feeling of constriction of the jaws and pharynx. There was well-marked cyanosis of the lips and nails. Nothing abnormal was detected in the urine, and the blood, which had not been examined prior to treatment, was negative for malaria parasites.

Case 3.—A male European was admitted to hospital with abdominal pain and vomiting following a total dose of 1.2 grams of atebrian and 0.08 gram of plasmoquine. There was the usual intense yellow staining of the skin. The blood and urine were negative. He relapsed two months later with benign tertian malaria, and received a five days' course of atebrian without any toxic manifestations. He has not relapsed since.

In these three cases the total amount of plasmoquine taken would not be expected in itself to give rise to symptoms. It is probable, however, that a combination of atebrian and plasmoquine is more toxic than either drug alone.

Thonnard-Neumann and Le Doux² found that about half their atebrian-treated and plasmoquine-treated cases developed abdominal pain, whereas those treated by atebrian alone were completely free from this disturbance. Duncan³ observed that 14 per cent. of his cases treated by atebrian and plasmoquine developed abdominal symptoms, while those treated by atebrian alone did not. In spite of the apparent lower relapse rate in benign tertian malaria after the combined course, he doubts whether such treatment is justified. There is a certain amount of evidence that atebrian and plasmoquine are more effective than atebrian alone in preventing relapses in benign tertian malaria. Out of 168 benign tertian cases treated by Duncan with atebrian 10.7 per cent. relapsed, but he was able to reduce this relapse rate in a series of 116 benign tertian cases treated by atebrian and plasmoquine to just over 5 per cent. Barrowman⁴ found that, whereas 12 per cent. of his benign tertian cases relapsed after a course of atebrian, only 3 per cent. did so after atebrian and plasmoquine. It is interesting to note that a 5 per cent. relapse rate in subtertian cases was unaffected by the addition of plasmoquine.

There would thus appear to be a rational basis for treating benign tertian malaria by the combined course, but it is for subtertian malaria that it is generally prescribed. The reason is, presumably, that atebrian, like quinine, is believed to have little or no effect on the gametocytes of *P. falciparum*, whereas plasmoquine has a selective action on these forms of the parasite. Plasmoquine, on the other hand, has a very feeble action on the ring forms of subtertian malaria, though it has a definite action on all forms of *P. vivax*. It is known that malaria cannot be transmitted to the mosquito during the first week or ten days of the primary attack, and that only a small proportion of cases have sufficient gametocytes in the peripheral blood to infect mosquitos. Furthermore, Amies⁵ has shown that a dose of 0.04 gram of plasmoquine given twice weekly is effective in preventing crescent carriers from infecting mosquitos.

It follows, therefore, that the use of plasmoquine in benign tertian malaria should be confined to patients under strict observation, so that it can be discontinued if toxic symptoms appear imminent. In subtertian malaria there is no justification for administering plasmoquine during the febrile period; it can do little or no good, and may do harm. It should be employed solely as a gametocidal when a clinical cure has been effected.

THE RELAPSE RATE IN EUROPEANS

In Malaya the possibility of reinfection must always be borne in mind when estimating the value of any treatment. The uneducated Asiatic rarely uses a mosquito net or appreciates the part the mosquito plays in con-

veying infection. The educated European, on the other hand, can generally be relied upon to take precautions against infection, especially if he has already experienced the discomforts of malaria. A recurrence of malaria, therefore, in a European within a few months of treatment is more likely to be a relapse than a reinfection, though it must be remembered that in benign tertian malaria a relapse can occur as long as eight months after a primary attack.

1. Quinine-treated Europeans

Of eighty-three cases treated by quinine between June, 1931, and June, 1932, twelve have been followed up for from one to two years, and have had no recurrence of malaria; twenty-four have relapsed clinically and microscopically, and the subsequent history of the remaining forty-seven is unknown. These results are given in tabular form, but owing to the large number of cases not followed up it would be unwise to draw any definite conclusions from them. It is, however, probable that over 60 per cent. of Europeans relapse after a short course of quinine.

TABLE II.—Quinine-treated Europeans

	B. T.	S. T.	B. T. and S. T.	Total of All Types
Number of cases ...	41	24	8	83
Relapses ...	12	10	2	24
Not relapsed ...	3	6	3	12
Not followed up ...	26	18	3	47
Relapse per cent. ...	80	62.5	—	65.6

A study of the relapses after primary infections is interesting, as it shows that 100 per cent. of subtertian relapses and over 50 per cent. of benign tertian relapses occur within two months of treatment. This is best shown diagrammatically.

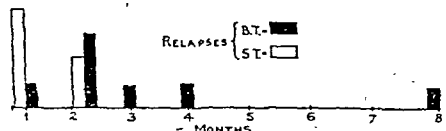


FIG. 1.—Quinine-treated cases. Showing the period in months after a primary attack when relapses usually occur.

If these figures, based on a few cases, are correct for the majority, it follows that in estimating the relapse rate in subtertian malaria it is only necessary to follow up cases for two or three months, whereas in benign tertian malaria a much longer period is required, though three or four months is long enough to give a good indication of the results of any treatment.

2. Atebrin-treated Cases.

Out of the first 100 Asiatic cases treated in Batu Gajah Hospital by atebrin alone between June and December, 1932, twenty were kept under observation for four months, during which period only one relapsed. This relapse rate of 5 per cent., though calculated on too small a number to be accurate, agrees with the published figures of other observers in Malaya. R. Green² in Kuala Lumpur had only one relapse in forty-eight Asiatic cases kept under observation from nine to eighty days after a six days' course of atebrin. P. G. E. Jolley³ treated eleven cases with atebrin, and observed no relapses during forty days of subsequent observation. A. L. Hoops,⁴ in 253 estate coolies in Malacca, reported only eleven relapses, while David Duncan,⁵ at the Singapore naval base, had eighteen relapses in 168 benign tertian cases treated by atebrin. Barclay Barrowman,⁶ in 805 cases treated by atebrin,

had only thirty-two relapses. From these figures it would appear that the relapse rate in Asiatics treated by atebrin is between 5 and 10 per cent.

TABLE III.—European Cases Treated by Atebrin

No.	Sex	Type of Parasites	Date of Last Attack	Date of Admission	Total Dose in Grams	Date of Recurrence	Period Followed Up in Months
1	F	B.T.	2/11	2/16/32	1.4	24/10/32	Relapsed
2	M	B.T. & S.T.	3/4/32	21/6/32	2.1	Nil	14
3	M	B.T.	Nil	17/7/32	1.5	"	12
4	M	B.T.	"	1/9/32	1.5	"	11
5	F	B.T.	"	4/9/32	1.5	"	11
6	M	B.T.	2/7/31	4/9/32	1.5	"	11
7	F	B.T.	Nil	7/9/32	1.5	"	11
8	M	S.T.	"	17/9/32	1.5	"	11
9	M	B.T. & S.T.	"	24/10/32	1.5	9/2/33	Relapsed
10	M	B.T.	2/8/32	29/10/32	1.5	Nil	10
11	F	B.T.	5/4/32	4/11/32	1.3	4/5/33	Relapsed
12	M	B.T.	8/9/32	13/11/32	1.7	3/3/33	"
13	M	S.T.	Nil	17/11/32	1.5	Nil	9
14	M	B.T.	"	4/12/32	1.5	8/1/33	Relapsed
15	F	S.T.	"	9/12/32	1.8	Nil	7
16	F	B.T.	"	11/12/32	1.5	"	7
17	F	S.T.	"	3/1/33	1.8	"	6
18	F	B.T.	"	1/1/33	1.8	21/2/33	Relapsed
19	M	B.T.	"	5/1/33	1.5	18/2/33	"
20*	F	B.T.	"	5/1/33	0.25	27/2/33	"
21	F	B.T.	5/12/32	6/1/33	2.1	5/2/33	"
22	M	B.T.	4/12/32	8/1/33	2.1	23/3/33	"
23	M	S.T.	Nil	20/1/33	2.1	23/2/33	"
24	M	S.T.	3/12/32	21/1/33	2.1	Nil	7
25	F	S.T.	Nil	22/1/33	2.1	—	—
26	F	S.T.	"	23/1/33	1.6	24/2/33	Relapsed
27	F	B.T.	"	28/1/33	1.5	1/4/33	"
28	M	B.T.	9/1/33	1/2/33	1.5	6/3/33	"
29*	M	B.T.	8/1/33	2/2/33	0.55	20/3/33	"
30	M	S.T.	Nil	14/2/33	2.1	15/3/33	"
31	M	B.T.	5/1/33	18/2/33	1.6	Nil	6
32	F	B.T.	5/1/33	21/2/33	1.5	"	6
33	F	B.T.	Nil	21/2/33	2.1	"	6
34	F	S.T.	"	21/2/33	2.1	—	—
35*	F	S.T.	5/1/33	27/2/33	0.5	9/3/33	Relapsed
36	M	S.T.	Nil	17/2/33	2.1	Nil	6
37	M	B.T.	3/1/33	28/2/33	1.6	"	6
38	F	B.T.	Nil	15/3/33	2.4	"	5
39	F	B.T.	"	9/4/33	2.1	"	4
40	M	B.T.	"	10/4/33	2.1	"	4
41	M	S.T.	1/12/32	20/4/33	2.1	"	4
42	F	B.T.	28/1/33	21/4/33	1.6	"	4
43	M	B.T.	5/2/33	29/4/33	2.1	21/7/33	Relapsed
44	F	S.T.	Nil	3/5/33	2.1	Nil	2
45	M	S.T.	"	5/5/33	2.1	5/6/33	Relapsed
46	F	S.T.	"	9/5/33	1.3	—	—
47	M	S.T.	"	11/5/33	2.1	Nil	2
48*	F	B.T. & S.T.	27/2/33	9/6/33	0.5	23/7/33	Relapsed
49	F	S.T.	Nil	11/6/33	1.9	Nil	2

* Children.

23. Aged 7 months. Dose 0.5 gram daily.

29. Aged 3½ years. Dose 0.1 gram daily.

35. Aged 8 months. Dose 0.1 gram daily.

48. Aged 10 months. Dose 0.1 gram daily.

It was hoped that results within these limits would be obtained for Europeans, but reference to Table III will show that this is not by any means the case. Out of forty-nine Europeans followed up for from two months to over a year, twelve had a recurrence within one month, three within three months, four within four months, and one, while on a voyage to Europe, within six months of treatment. Assuming that reinfection did not occur in any of these cases, over 43 per cent. relapsed within six months of treatment.

A comparison between the relapse rate in benign tertian and subtertian malaria shows, as would be expected, a higher figure for the former.

TABLE IV.—*Atebrin-treated Europeans*

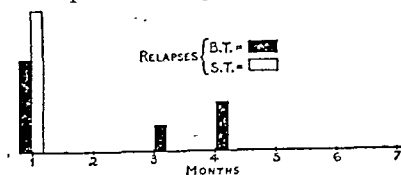
	B. T.	S. T.	B. T. and S. T.	Total of All Types
Number of cases	28	18	3	49
Relapses	13	5	2	20
No relapse	15	10	1	26
Not traced	0	3	0	3
Relapse per cent.	46.42	33.3	—	43.47

That better results were obtained in treating the primary infection than relapsing cases is shown in Table V.

TABLE V

	First attack	With Previous Recent Attack
Number of cases	31	18
Relapses	11	9
No relapse	17	9
Not traced	3	0
Relapse per cent.	39.28	50

Of cases relapsing after a primary infection, 100 per cent. of subtertian relapses and 57 per cent. of benign tertian relapses occurred within one month of treatment. This is in accordance with the findings for quinine-treated cases, and is best represented diagrammatically.

FIG. 2.—*Atebrin-treated cases*

The total dose of atebtrin usually recommended for adults is 1.5 grams, but in this series of cases it varied between 1.3 and 2.4 grams. To increase the dose above 1.5 grams did not appear to have any effect on the relapse rate. Sixteen adults were given an average total of 1.48 grams, and of these 37.5 per cent. relapsed. Out of twenty-six adults given the larger average total of 1.95 grams 38.4 per cent. relapsed.

Though it is realized that this series of cases forms an inadequate basis for any final conclusions, the difference between a 43 and a 10 per cent. relapse rate invites some explanation. The 5 or 10 per cent. relapse rate of other observers in Malaya is based exclusively, or almost exclusively, on Asiatic cases. The Asiatic, exposed from birth to infection, develops in the course of time an immunity to malaria. This may only be a relative immunity, but it is strong enough to decrease the liability to relapse compared with that of the non-immune

European. A comparison between the immediate effects of treatment by atebtrin on Europeans and Asiatics in Batu Gajah Hospital shows that the average Asiatic responds more rapidly to treatment than the European.

TABLE VI.—*Atebrin-treated Cases. All Types of Malaria*

	Asiatics	Europeans
Number of cases... ..	100	49
Average pyrexial period	38.9 hours	52.5 hours
Average duration of parasites in the blood	42.6 hours	58.6 hours

The difference is more striking when it is realized that the bulk of the Asiatic cases—impoverished Chinese, Indians, and Malays—were undernourished and anaemic, while the Europeans were generally well nourished and in good physical condition.

CONCLUSIONS

1. It would appear that atebtrin is definitely superior to quinine in the treatment of malaria, for it not only reduces the temperature and clears the blood of parasites more rapidly, but is more pleasant to take, and does not give rise to neurotrophic symptoms such as tinnitus and deafness. It is well tolerated by children in relatively large doses, and is invaluable for those showing an idiosyncrasy to quinine. The shortness and simplicity of the treatment is another point in its favour.

2. A high percentage of Europeans develop a yellow discoloration of the skin during or after treatment. This should not be regarded as a sign of toxicity, though it may be a source of annoyance to female patients if it persists for two or three weeks. Atebrin by itself is relatively non-toxic, but it has a cumulative action and is excreted slowly. In consequence, toxic symptoms may not appear until some time after treatment has ended. The signs of toxicity observed in Europeans were headache in one case and abdominal pain in over 12 per cent. of cases. The abdominal symptoms respond very rapidly to treatment by diet and alkalis. Atebrin occasionally appears to have a provocative effect on the parasites of subtertian malaria during the first forty-eight hours; nevertheless it is probably superior to quinine for this type of malaria, and is much less likely to excite vomiting.

3. A combination of atebtrin and plasmoquine is undoubtedly more toxic than atebtrin alone, and for this reason plasmoquine should never be combined with atebtrin in the treatment of the febrile stage of subtertian malaria. It has little or no action on the asexual parasites, and does not appear to influence favourably the tendency to relapses. It should be employed solely as a gametocide after clinical cure has been effected. There is some justification for combining plasmoquine with atebtrin in the treatment of benign tertian malaria, as this combination seems to be more effective in preventing relapses than atebtrin alone, but, owing to the frequency of toxic sequelae, its use should be restricted to those cases under strict observation in hospital.

4. The relapse rate in Europeans after a short course of quinine probably exceeds 60 per cent. Atebrin has reduced this to somewhat over 43 per cent. The relapse rate in Asiatics after atebtrin is probably between 5 and 10 per cent. This is due to an acquired immunity, a statement which is supported by the fact that the Asiatic as a rule responds more rapidly to treatment for malaria than the European. It is doubtful whether prolonging treatment by atebtrin beyond five days lessens the tendency to relapses; 1.5 grams is therefore the optimum dose for an adult. Treatment of the primary attack, particularly in benign tertian malaria, holds out more chance of completely eradicating the parasites than does treatment of a subsequent relapse. In subtertian malaria

—whether treated by a short course of quinine or by atabrin—if a relapse does not occur within two months of the primary attack the prognosis is extremely good. In benign tertian malaria this is not the case; nevertheless, over 57 per cent. of those who relapse after a primary attack do so within two months of treatment.

5. Though atabrin has reduced the liability to relapse in European malaria cases by about 20 per cent., it cannot be said to have fulfilled the somewhat exaggerated claims made for it, but as the precursor of more effective synthetic preparations it is a definite milestone on the road towards the complete eradication of the malaria parasite.

I have to thank the State medical and health officer, Perak, Federated Malay States, for permission to publish this paper, and the patients who, by their intelligent co-operation, have made it possible to follow up the results of treatment.

REFERENCES

- Green, R.: *Lancet*, 1932, i, 826.
- Thonnard-Neumann, E., and Le Doux, H. A.: *Twentieth Annual Report, Medical Department, United Fruit Company*, 1931, p. 57.
- Duncan, D.: *Malayan Med. Journ.*, 1933, viii, No. 2, 79.
- Barrowman, B.: *Ibid.*, 1933, viii, No. 3, 163.
- Amies, C. Russell: *Bull. Inst. Med. Research, F.M.S.*, 1929, No. 5.
- Green, R.: *A Comparison between Atabrin and Quinine in the Treatment of Malaria*, a progress report from the Institute for Medical Research, F.M.S., November, 1932.
- Jolley, P. G. E.: *Malayan Med. Journ.*, 1932, vii, No. 4, 129.
- Hoops, A. L.: *British Medical Journal*, 1933, i, 993.

TREATMENT OF MALARIA WITH ATEBRIN

BY

E. J. R. MacMAHON, L.M.S.S.A.LOND.

TRINIDAD

The following short account of fifty cases of malaria treated with atabrin requires little explanation. A considerably larger number of cases were treated with atabrin and plasmoquine co., but this report deals only with those in which blood films showed parasites before the commencement of treatment. Every case recorded was kept under such observation as is hardly practicable outside institutions; some patients were required to attend thrice daily at the dispensary, and all possible precautions were

taken to ensure that the prescribed courses were carried out punctually and thoroughly. Quinine was administered only in febrile cases, the atabrin treatment being instituted as soon as acute symptoms had subsided. With the exception of yellow pigmentation, which was marked in only one case, any complications arising as the result of treatment were, I am convinced, due to the use of plasmoquine co., and were never of great severity: grave symptoms were noted in two cases (not included in this series, because repeated examinations of the blood failed to discover any parasites), and were attributed to the fact that the patients were not properly nourished whilst taking the treatment.

The mention of "quinine clinic" (Q.C.) refers to the six weeks' treatment which was carried out before the

Case	Age	Sex	Race	Symptoms	Blood	Treatment	Remarks
1	35	M	E.	Malaise. "Rheumatism"	M. T.	15 At./15 P.C.	Acute colic for two hours in middle of course: felt 100 per cent. well at conclusion of treatment. (Colic possibly not due to treatment)
2	40	M	E.	Frequent attacks of fever, resistant to plasmoquine and all forms of quinine. Lihen th threatening his continued employment	M. T.	15 At./15 P.C. 7 At./7 P.C.	"Cured" after full course in January, 1933. Later half course precautionary. No recurrence of fever.
3	35	M	E.	T. 103° F. Ague. Frequent attacks	B. T.	Q. to allay fever. 15 At. 7 At./7 P.C. in second week	Felt "cheap" at conclusion of treatment; blood negative. Later half course precautionary. No recurrence since January.
4	20	M	N.	T. 14° F. P. 143. (Q.C. 1931 and 1932)	B. T.	Q. to allay fever. 5 P.C./15 At.	Rapid pulse persisted for eight days after conclusion of treatment.
5	25	M	N.	T. 104° F. Ill. (Q.C. 1931 and 1932)	M. T.	Q. gr 60 in two days. 15 P.C./15 At.	Rapid recovery. No recurrence.
6	30	M	N.	T. 105° F. Prostrated	Mixed (B. and M.)	Q. gr. 80 in two and a half days. 15 P.C./15 At.	Returned to work in seven days.
7	20	M	E.	T. 103° F. P. 128. Otherwise strong	M. T.	Q. gr. 8 four-hourly for two days. 15 P.C./15 At.	Developed yellow pigmentation. No malaise.
9	25	M	N.	T. 103° F. Q.C. October, 1932	M. T.	Q. gr. 20 stat. 15 P.C./15 At.	Off duty for one day only.
11	16 mths	M	N.	Recurring fever. Palpable spleen	B. T.	5 At. half tab. m. et n.	
13	17	M	E.I.	T. 103° F. Weak. (Q.C. April and August, 1932)	M. T. 19/8/33 29/8/33	(1) 10 P.C./10 At. (2) 15 P.C./15 At.	Failed to complete course, so that from August 29th another course was administered. On September 4th blood film showed no parasites. Probably a relapse; possibly reinfection.
13A	17	M	E.I.	Mild fever. Not off duty	M. T. 25/9/33	(3) 15 P.C./15 At.	
17	31	M	E.I.	Chronic malaria. T. 104° F.	M. T.	Q. gr. 20. 15 At./15 P.C.	Blood negative after seven of each tab. t.
19	19	M	E.I.	Chronic malaria. Weak	M. T.	12 At./12 P.C. 15 At./15 P.C.	Patient failed to complete full course, so that another course was administered.
22	25	M	E.I.	Chronic malaria. No fever. (Q.C. 1931)	B. T.	2 P.C./15 At.	Blood negative after 2 P.C./7 At.
25	30	M	N.	Four attendances Q.C. 1931 and 1932	M. T.	15 P.C./15 At.	No fever since April, 1933.
30	23	M	E.	T. 1.3° F. Vomiting	M. T. (crescents)	Ini. Q. gr. 7½. 15 At./15 P.C.	Colicky pains persisted for several days.
32	14 mths	F	E.I.	Recurring fever. Palpable spleen	B. T.	5 At. half tab. m. et n.	Mild fever on second day of treatment.
35	29	M	E.I.	Chronic malaria	B. T.	15 At.	Returned with "fever" two months later. No parasites. Responded to cod. salicyl. and Q.
38	29	M	N.	Frequent attacks of fever	M. T.	Q. 15 At./15 P.C.	No attack from January-November, 1933.
39	40	F	N.	Ill. Pains all over. (Q. and P.C. 1931 and 1932)	M. T.	Q. 15 At./15 P.C.	Gained 12 lb. in following six weeks.
42	5	F	N.	Frequently recurring fever	B. T. 9/10/33 M. T. 20/11/33	Q. 13 At. 14 At./13 P.C.	This patient's blood showed B. T. on October 9th, but treatment was not commenced until November 14th, when M. T. rings were seen. On November 24th a further combined course was administered, the patient taking 27 tab. atabrin in fourteen days without any toxic symptoms.
45	33	M	N.	Frequent attacks. (Three courses Q.C. 1931 and 1932)	B. T.	Q. 2 P.C./15 At.	
48	16	M	E.I.	Fever resistant to Q. gr. 10 o.d. for two weeks. Palpable spleen	M. T. (crescents)	16 At./15 P.C.	Blood showing parasites at commencement of treatment, despite two weeks' Q. Fever stopped after 3 At./3 P.C.
50	12	F	N.	Mild fever	Quarant	17 At./14 P.C. in seven days	No complications.

ABBREVIATIONS.—At.=Atabrin gr. 1½.
T.=Temperature.
P.=Pulse.

E.=European.
N.=Negro.
E.I.=East Indian.

Q.=Quinine.
M. T.=Malignant tertian.
B. T.=Benign tertian.

P. C.=Plasmoquine co. (gr. 2 & Q. gr. ij).
Q. C.=Quinine clinic, six weeks' course, with varying doses of P.C.

introduction of the five-day course of atebtrin; patients were usually given twelve tablets of plasmoquine co. during the first week, and two tablets during each of the remaining weeks, the usual quantity of quinine administered daily being twenty grains. Results of this treatment were not to be compared with those obtained from the atebtrin course, as may be gathered from the number of Q.C. references on my list. In my experience the size of a palpable spleen has diminished at about the same rate, whether the malaria has been treated with quinine or by atebtrin. Quinine in large doses (grains xx stat.) brought about relief of symptoms far quicker than did atebtrin in orthodox doses.

The only occasion on which I have injected atebtrin was in the case of an ill-nourished East Indian girl, aged 3, with convulsions. The prognosis seemed hopeless, and I was surprised that she recovered, as my mortality with such cases treated by quinine injections is very high. Case 13 was apparently one of relapse; a careful examination of the surroundings of this patient's dwelling place failed to discover any source of infection.

Each of these patients appeared, and believed himself, to be cured as the result of this treatment; observation over several more months will be necessary to establish the actuality of such "cure." No follow-up treatment has been carried out, except to administer cod-liver oil to a small percentage of these cases; all patients were requested to return immediately to the dispensary in the event of recurrence of fever.

The ages of the patients ranged from under 3 years to over 40, the majority being between 20 and 30 years old. Thirty-seven were males and thirteen females. Europeans numbered six, negroes twenty-nine, and East Indians fifteen. Benign tertian malaria was present in twenty-four cases, malignant tertian in twenty-four, mixed benign and malignant in one, and quartan in one. The course of treatment included: (1) haustus mag. sulph. & sod. bic.; (2) quinine with potassium bromide in cases with acute symptoms; (3) fifteen tablets of atebtrin (one t.d.s.) in cases of benign tertian; and (4) fifteen tablets of atebtrin and fifteen of plasmoquine co. (of each, one t.d.s.) in cases of malignant tertian and quartan. At the conclusion of the treatment all bloods were negative, except in Case 42, which had been treated for benign tertian and was found to be a case of malignant tertian (rings) when examined after treatment with atebtrin only. There was only one return case.

CONCLUSIONS

1. That the atebtrin, and atebtrin combined with plasmoquine co., treatment of malaria (in Trinidad) is superior to its predecessors.

2. That atebtrin is an effective preparation which can safely be handed out to patients of moderate intelligence.

3. That the dosage of plasmoquine co. mentioned in this paper is sufficient, and that the advice of the manufacturers—that the administration of plasmoquine be carried out under medical supervision—is of very great importance.

These notes were presented at a meeting of the Southern Division of the Trinidad and Tobago Branch of the British Medical Association, and I am grateful to members for their advice and kindly criticisms, which are responsible for the form of the present report. I am also indebted to the staff of the Apex Oilfields Company for their assistance in securing regular treatment.

The annual report of the Registrar of Births and Deaths, Federated Malay States, draws attention to the fact that throughout 1932 no deaths were recorded from small-pox, cholera, or plague. Eleven deaths were, however, caused by meningococcal meningitis as against six in 1931, and there were forty-six deaths from diphtheria as compared with twenty-nine. It is possible, the report adds, that more exact diagnosis is the explanation of the increased numbers recorded.

THE "RECOVERY PRINCIPLE" IN GAS-OXYGEN ANAESTHESIA

A "CLOSED" SYSTEM

BY

W. B. PRIMROSE, M.B., CH.B.

SENIOR ANAESTHETIST, GLASGOW ROYAL INFIRMARY

The principle of "gas recovery" as applied to gas-oxygen anaesthesia is a development about which a good deal is being heard at present. Several publications have appeared in journals and other literature under various titles which, however, all deal with the same idea—namely, the use of means whereby general anaesthesia may be maintained by the constant re-use of a limited amount of anaesthetic gas. It may be helpful to define the principle more exactly.

By "recovery principle"—the term to be used throughout—is meant the continuous rebreathing of a relatively small fixed volume of anaesthetic gas which is constantly maintained in a respirable and life-supporting condition. This definition implies a completely "closed" system, consisting of the apparatus and the respiratory organs of the patient with whom the apparatus is connected: it also implies the removal by suitable means of the gaseous waste products of the patient, and the supply to him of an adequate amount of oxygen to sustain life. This idea of recovery of anaesthetic gas is not new, protection by patent having been sought by German and American experimenters from 1926 onwards. Others, in all probability, have had the idea in mind before that, as the chemical basis of the principle has been known for a considerable time. Within the last two or three years British anaesthetists have exhibited an increasing interest in this matter, and have produced experimental machines of remarkable capabilities, but, so far, the possibilities of this method of anaesthesia do not appear to have been sufficiently realized in practice to justify the permanent adoption of the principle by anaesthetists. That the recovery principle has come to stay there can be little doubt, but it has to be developed along lines different from those generally adopted in existing machines.

On looking into the various inventions in this particular field one is struck with the almost complete identity of thought exhibited by the several inventors (including the writer in his earlier experiments). This problem has, in all cases, been approached from an analytical standpoint, which reasons and visualizes the several functions of the necessary apparatus as occurring in a unidirectional cycle, the rhythm of which is governed by the act of respiration. It is therefore found that all recovery machines, described or in use, are constructed according to this point of view, and are therefore very similar in their working and general design. From experience the writer is able to state that this point of view, and the method of construction based upon it, while it works reasonably well, is not the most efficient one, and consequently enough cannot be made of the recovery principle to justify its complete acceptance with confidence. Practical experience with four machines constructed on this scheme of breathing in a circle showed the inherent defects of the method, and it ultimately became apparent that the respiratory circle with its double tubes and directional valves was quite unnecessary. Much better results were later obtained from machines worked by simple to-and-fro breathing through a single tube, since by this arrangement the breath has to pass through the absorbing chamber on *inspiration* as well as on *expiration*. The same, of course, applies to the ether chamber when it is in use. This simple but important change, by thus increasing efficiency, led to greatly improved construction,

and the machine now made according to this arrangement is known as "anaesthetor M 7."

THE APPARATUS DESCRIBED

In this machine the difficulties attendant on the application of the recovery principle have been dealt with rather differently from those occurring with the usual methods described.

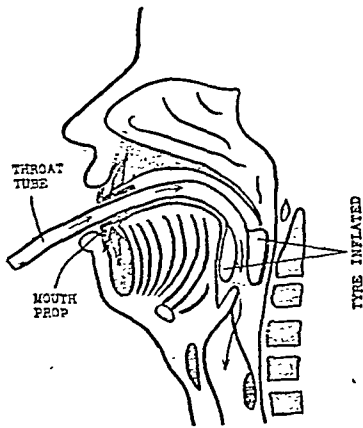


FIG. 1.—Diagrammatic section of mouth parts, showing throat tube in position.

Concerning the problem of effecting the closure of the gaseous system (upon which the recovery principle primarily depends) the writer found at the outset that no masking appliance or tracheal tube could do this effectively in all cases. A special tube for introduction into the patient's throat, after the production of unconsciousness by a mask, was designed and tried with success. This tube consists of a very flexible, rustless steel, oval wire coil, over which is drawn a rubber cover that has a small tyre at its free end. This tyre is inflatable from outside the mouth after the tube has been placed in position in the throat. With this breathing tube correctly inserted, and the tyre making close peripheral contact with the pharyngeal wall behind the tongue, the gaseous system is effectively closed. Further advantages are also obtained by the use of this tube. A perfect airway is always provided in any position in which the patient may be placed: no saliva or foreign matter can escape past the tyre into the lower air passages: the head, face, and mouth are accessible for surgical and dental

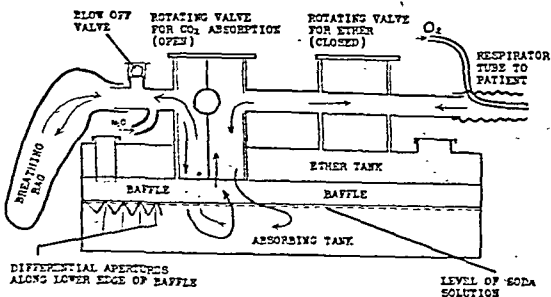


FIG. 2.—Diagrammatic section of anaesthetor.

work, and positive pressure to individual limits—say, 20 mm. Hg—is easily maintained without leakage. Such pressure is, however, used with discretion. This breathing tube provides the key to the successful application of the recovery principle, and it is an essential element of recovery machines.

The method of absorbing the exhaled CO₂ is also of interest. In the experimental stages the writer was

always encouraged to use granular soda-lime absorbent, but it was found that the dry absorbents were not best suited to anaesthetic conditions—where one had, in many cases, to deal with very low respiratory power. Other objections became evident, such as the difficulty of uniform packing, and consequent irregularity in the track of the breath as shown by the irregular colour change of the absorbent. What was of importance also was the

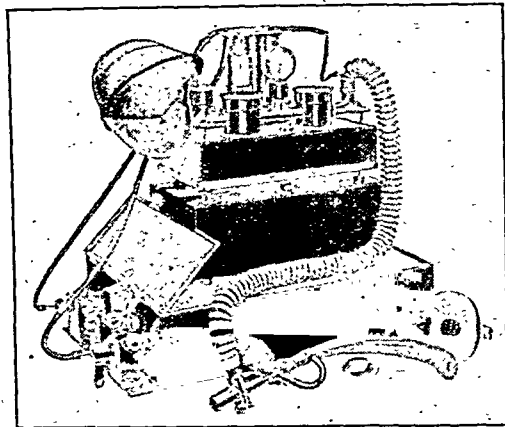


FIG. 3.—Portable pattern anaesthetor.

difficulty of being able to determine the amount of work that could be expected from a canister that had been previously used. After trial and consideration, the solid absorbents were abandoned in favour of a strong solution of caustic soda. Arrangements were made in the machine to effect absorption of CO₂ at a very low resistance, and also for the handling of such solutions without difficulty

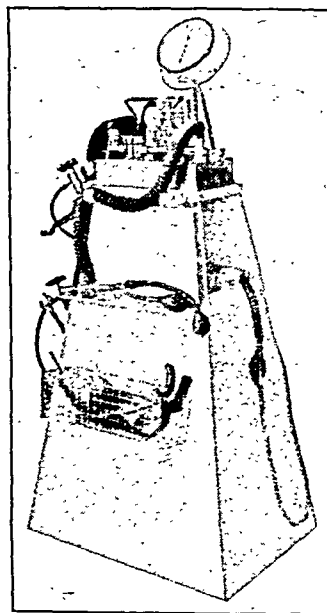


FIG. 4.—Hospital unit anaesthetor.

or danger. This method has proved very successful. The chemical avidity for CO₂ of such a solution is greater than with a solid absorbent; the absorption is uniform, and a simple method has been worked out to give a good idea as to how much absorption any solution is capable of after having been previously used. This is particularly necessary in hospital practice, where the machine may be taken in hand by different anaesthetists.

With these two inherent difficulties dealt with in this way, and construction in accordance with to-and-fro breathing, the machine becomes remarkably simple, light, and compact, with essential parts similar to those of other instruments. In addition, however, there is a level and levelling screws; for it is essential that the machine be level when in use for the proper absorption of the CO_2 . The supply of gases is by simple fine adjustment valves through ordinary sight-feeds. There are no special mixing arrangements required, as the nitrous oxide atmosphere in the machine is absolute, just as is the nitrogen of the air which it replaces. Oxygen is added at the metabolic rate, and delivered almost at the patient's mouth, producing immediate effect.

ADVANTAGES

In practice the "anaesthetor" is simple to work, is most satisfactory from the clinical standpoint, and operates with the highest degree of economy—three gallons or less of anaesthetic gas per individual case, irrespective of duration. Owing to its simplicity of construction, complete dismantling for purposes of cleaning and sterilizing is a matter of only a few minutes' work, and there is no part which cannot be completely sterilized, even to the rubber throat tubes. The rubber of these tubes is of such make that it can be judiciously boiled without damage. Such are the chief advantages that the recovery principle has to offer through "anaesthetor M 7." Space forbids an extended account of its performances, which may be summed up as showing great progress in (1) the management of general anaesthesia; (2) the provision of surgical anaesthetic conditions; (3) the recovery of the patient from the anaesthetic; and (4)—not unimportant—working costs of a previously unheard-of low degree. The apparatus is arranged as a unit suitable for hospital conditions, carrying one 40 cubic foot (or smaller size) cylinder of oxygen and two angle-valved cylinders of nitrous oxide, either 100 or 200 gallon size. The unit is also fitted with "Tyco" blood-pressure-registering equipment. The machine is also arranged as a portable apparatus weighing, with metal case, about twenty-eight pounds. A separate cylinder carrier may be used in conjunction with the machine, and it accommodates very compactly three angle-valve cylinders of any capacity up to the 100 gallon (N_2O) size. Cylinder weight will be reducible in the future when the firms who fill them are in a position to accept the light-weight cylinders unconditionally.

In the tenth annual report of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation it is announced that twenty-one grants were made in 1933, one being a continued annual grant. Twelve of the new grants were made to scientists outside the United States, among whom was Dr. H. A. Krebs of Cambridge, who received assistance for the continuation of studies on the breakdown of protein in animals and of the metabolism involved in the action of insulin. Another beneficiary was the Academic Assistance Council of London. In the ten years of its existence the Foundation has made 200 grants, researches being favoured which were directed towards the solution of problems in medicine or surgery, or in branches of science relating thereto. Applications for grants to be held during the year 1934-5 must be forwarded to Dr. J. C. Aub, Collis P. Huntington Memorial Hospital, 695, Huntington Avenue, Boston, Massachusetts, to reach him before the end of April. They must state definitely the qualifications of the investigator, the character of the proposed research, the amount of the grant requested, and the specific way in which the money would be expended. It is advised also that letters of recommendation from the directors of laboratories or clinics where the work is being done should accompany the applications. The maximum size of the grants will usually be less than 500 dollars.

THE MANAGEMENT OF BREAST-FEEDING IN GENERAL PRACTICE*

BY

H. R. YOUNGMAN, M.D.CAMB.

Failure to feed at the breast is still only too common. It will be so as long as this subject is enveloped in the public mind by a cloud of ignorance, evil tradition, and old wives' tales. It is the duty of the general practitioner to lose no opportunity of dispelling this cloud. This paper is limited to the management of breast-feeding in normal cases and slight variations from the normal. Since at least 95 per cent. of cases start normal, it should not be difficult to keep them within these limits.

ANTE-NATAL CARE

It has been stated that a woman's confidence in her natural power to nurse a baby can be inspired "by an exaggerated air of optimism on the part of those about her." Personally I can imagine nothing more calculated to put her off. Rather, the power to give confidence depends on one's gifts of sympathy and tact. But most of all, on one's own confidence that if difficulties do arise one will be able to put them right. The breasts should be examined when the patient is first seen. She should be instructed to brush the nipples with a soft brush and toilet soap daily when washing for the last two months, and to sponge the breasts with cold water before drying them. A warning should be given against any application containing spirit. If there is any retraction of the nipples she should be shown how to draw them out daily and roll them between the finger and thumb with a little oil as lubricant. In extreme retraction it may be necessary to apply a breast pump daily for a time.

PHYSIOLOGY AND ITS APPLICATIONS

The normal stimulus which maintains the secretion of the breast is regular sucking. The response varies with the degree and, up to a point, the frequency of emptying. The normal gain in weight is shown by the dotted curve in Fig. 1. A weight curve on this chart is much more useful than a written record of ages and weights. Every normal child will be found to keep very nearly parallel to this average curve, above or below it according to its weight at birth. A child whose curve does not ascend as steeply as the average for its age is to be regarded as "underweight," and will soon show signs of malnutrition if left alone. The weight at any age taken by itself is no guide to the child's condition. To take an extreme example, in Fig. 1 the child A is normal at ten weeks while the heavier child B is obviously "underweight." In each of these curves it should be noted that the infant gained weight faster than normal for a time after a set-back, tending to regain its former relation to the average. In treating underweight babies one has to aim at this result. For further examples see Fig. 2.

The quantity of milk required for normal progress is indicated in the following table:

Breast-milk Requirements: Normal Infants

Age in Months	Normal Weekly Gain of Weight in Ounces	Milk required Daily per 1 lb. Body Weight in Ounces
0	7	2½
4	5½	2½
8	4	2

Underweight infants require up to half as much again as normal infants of the same weight and age.

* Part of a paper read to the Cambridge Medical Society.

The figure of $2\frac{1}{2}$ ounces per pound is rapidly approached in normal cases during the first two or three weeks, and from a month onwards the figures given are seldom varied from with healthy infants by as much as a quarter of an ounce per pound. Underweight babies, as stated before, are not contented until they are gaining weight faster than normal. Accordingly, during the period of rapid gain they require more food than a normal baby of the same age and weight.

THE FIRST WEEK

As soon as the mother and child have had their first rest, within eight hours of birth, the child should be put to *both* breasts, for two or three minutes only. It is no use tiring it and giving it wind with sucking empty breasts for long, but the earlier regular stimulation of the breasts begins the better they will respond. If the

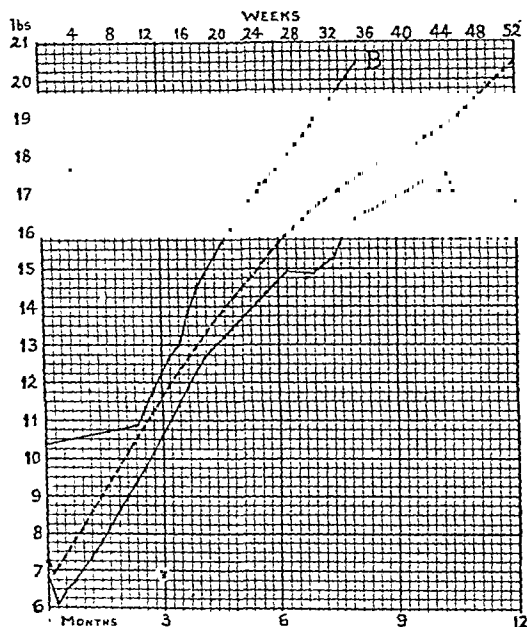


FIG. 1.

nipples are retracted, they begin to get drawn out before the breasts become engorged and tender. The child gets the colostrum, and has learned to suck well by the time the milk comes in.

On the first day short feeds like this should be given every six hours, and on the second every three or four hours. Until lactation is established, up to an ounce of warm boiled water should be offered at the end of each feed. As the milk comes in the length of the feeds is gradually increased, remembering what was said above about sucking empty breasts. Both breasts are given at each feed for equal times by the clock, and alternate sides used first. Infants vary in the amount of time they need. A maximum of ten minutes a side should be approached unless signs of over-feeding appear. Babies over seven pounds in weight usually do well on four-hourly feeds. Four-hourly feeds should be given at 6, 10, 2, 6, and 10 o'clock, and three-hourly feeds at 6, 9, 12, 3, 6, and 10 o'clock, leaving in either case an eight-hour night. When lactation is fully established the length of feeds in minutes should be fixed. I am convinced by experience that it makes an enormous difference if one can persuade the nurse or mother to keep rigidly to the prescribed times, not allowing haphazard variations of half, or a quarter, of an hour, and

to time the feeds themselves with a watch. The infant develops a responding rhythm at once. Control of the length of feeds is necessary for the very reason that alterations may have to be made. It is most unsatisfactory to rely on the infant's judgement of when it has had enough, or to trust it to reject any excess. Some do not take enough food for a normal rate of growth unless persuaded; others consistently overload themselves if allowed. In either case, the result is a fractious, restless child.

NIGHT TRAINING

For the first few days the evening and morning feeds should be given at exactly 10 and 6, whatever happens. If the child cries at night it must be changed and made comfortable, but on no account should it be lifted up or taken into somebody's bed. A drink of plain water may be given with a spoon. One must, of course, avoid

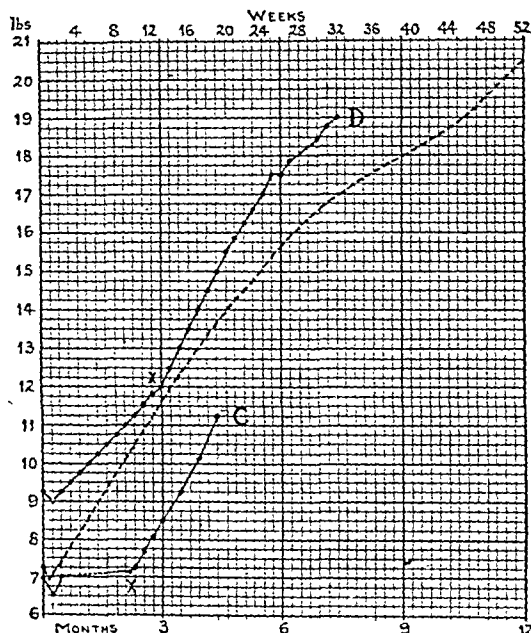


FIG. 2.

certain things that might make anyone sleep badly. Lack of fresh air and the use of too many bedclothes are common ones.

If there is difficulty after the establishment of lactation, one can shorten the nights temporarily by giving the last feed at 11 or the first at 5, or both, without altering the times of the other feeds. It often happens that a baby that cries in the early morning has to be woken up for its 10 o'clock feed at night, and does not take much because it is sleepy. The remedy is obvious—leave it till it wakes for its last feed. It will be hungry, there will be more milk, and it will have a good meal and sleep later in the morning. One should, however, work back to the proper times. A baby, like anyone else, has a better temper and digestion if it gets eight hours' sleep at night. Under the above regime a few babies sleep all night from birth, and the majority by the end of a week. Some take longer to "settle," but nothing can be gained by allowing them night feeds. When restlessness by night or by day persists into the second week, it is necessary to make sure the child is getting enough milk. Especially is this imperative if it does not begin to regain weight after the usual initial loss. On the other hand, over-feeding is occasionally met with as early as the second week.

OVER-FEEDING AND UNDER-FEEDING

It is very easy to confuse over-feeding and under-feeding. This mistake is constantly being made, with disastrous results, where the obvious diagnostic test of weighing the feeds is neglected. (It appears that infant welfare centres are often managed without any use of test-weighing. This provides the general practitioner with a wonderful opportunity to compete successfully with one of the much-discussed encroachments on private practice.) The following table serves chiefly to show how difficult diagnosis by symptoms may be:

	Over-feeding	Under-feeding
Sleep ...	Usually disturbed	May sleep well if well trained
Crying ...	Caused by colic, and by hunger if much vomiting	Caused by hunger—only towards feeding-time in slight cases
Vomiting ...	Usual	Often present, due to swallow-air when sucking empty breasts
Stools ...	Copious, frequent, often loose, curdy, and green; or constipated if much vomiting	At first constipated, brown; later, small frequent, loose, curdy, and green. "A little whenever changed"
Weight ...	Poor gain or loss. (May be early excessive gain.)	Poor gain or loss

The mother's feelings and the appearance of the breasts are no guide whatever.

In case of doubt, however, the question can be settled for certain by test-weighing. The ideal is to weigh all the feeds for twenty-four hours, but a fair estimate can be made on three, or even two. In estimating, assume the 6 a.m. feed to be $1\frac{1}{2}$ times, and the others not weighed equal to the 12 or 2 o'clock feed. In interpreting results one must remember the increased requirements of under-weight infants.

In most cases of under-feeding there is no need to resort to artificial food. When the test feeds yield three-quarters or more of the theoretical requirements, the supply of natural food can usually be quickly brought up to normal. It may be advisable to change from four-hourly to three-hourly feeds, especially if the child is crying much and, tired out by this, sucking feebly. The other ways of applying extra stimulation to the breasts, which should always be used, are sponging, massage, and expression. Sponging and massage should be done twice a day between feeds; the breasts are sponged with alternate hot and cold water for ten minutes, and then dried and stroked firmly all round from the periphery towards the nipple for another few minutes. After each feed any remaining milk is expressed or withdrawn with a breast pump and given to the child with a spoon. The only things the mother can take which have any effect are good food and more fluid, and extra rest; all the evidence seems to be against so-called galactagogues having any action. In more severe cases of under-feeding it is necessary to complement the breast-feeds with artificial food, temporarily, until the supply of breast milk has been worked up. These cases are outside the scope of this paper.

Over-feeding can often be corrected by simply giving a tablespoonful or two of water before each feed. This should be done first, and then the length of some or all of the day's feeds cut down if necessary.

USE OF BOTH BREASTS AT EACH FEED

Giving only one breast at each feed is the commonest cause of under-feeding and premature weaning. Using both sides at each feed from the start gives a better establishment of lactation, and indeed may lead to over-feeding occasionally. This is much easier to treat than the opposite.

The baby C in Fig. 2 at the age of 9 weeks only weighed two ounces more than at birth, and looked very thin and feeble. The mother said that it slept well and sucked well.

She was feeding it for about twenty-five minutes at one breast, every four hours. It was passing from three to six frothy yellow motions daily, and vomiting a little after feeds—signs of over-feeding at first sight. Test-weighing showed that it was getting about twelve ounces of milk in the twenty-four hours—far below what it needed. I told the mother to feed it at each breast for ten minutes every three hours, and also wrote her a recipe for complementary feeds of modified cow's milk. Three days later she came back and said the baby was "much better, but wouldn't touch the bottles." It never did touch the bottles. So the only change made at X on the chart was from one breast four-hourly to both breasts three-hourly.

Curve D represents a similar, less extreme case. At 13 weeks the mother complained that her milk was not satisfying the baby, that it cried a lot, and had diarrhoea. There were four or five greenish watery motions a day. It was having four-hourly feeds, on one breast each time. It was gaining weight steadily, but only four ounces a week. Test feeds yielded $21\frac{1}{2}$ ounces of milk in twenty-four hours—6 to 8 ounces short of what this underweight baby now needed. The only change made at X was to give both breasts at each feed. The rate of gain was immediately doubled and the symptoms disappeared.

When the first few weeks of breast-feeding have been safely navigated it is much plainer sailing. There must be many more babies unnecessarily weaned in the first and second months than in the third and fourth. I am sure it pays not to part finally from mother or baby until two months after attending a confinement. From the selfish point of view, though the extra attendances may have to be gratuitous in some cases, they bring in a lot of good will. From the professional point of view, the preservation of breast-feeding is first-class preventive medicine, and preventive medicine is the subject in which general practitioners are specialists.

In place of a complete bibliography, which the writer is not competent to give, he would mention the following:

Jewesbury's *Mothercraft*.

Paterson and Forest-Smith's *Modern Methods of Infant Feeding*.

The excellent series of penny pamphlets published by the Mothercraft Training Society, Cromwell House, Highgate, both for distribution to patients and for the edification of the distributor.

Clinical Memoranda

MALARIA IN A EUROPEAN TREATED BY ATEBRIN BY MOUTH AND INTRAMUSCULARLY

In the Third General Report of the Malaria Commission of the League of Nations¹ stress was laid on the value of atebryn in malignant tertian cases, especially the primary type. The following case may therefore be of interest.

HISTORY OF CASE

On December 27th, 1933, a ship's officer, aged 44, consulted me on account of constant pain in the epigastrium, which proved later to be due to a duodenal ulcer. He stated that he had a slight temperature that morning, but except for the pain, which was severe, did not feel ill. His temperature was found to be 103° , and he was admitted into hospital the same afternoon. A blood smear (thick film) revealed malignant tertian (M.T.) rings, forty to a field, but no crescents. He was given atebryn 0.1 gram t.d.s., by mouth.

On December 28th, 6 a.m., the temperature was 100.6° . The patient's general condition was bad; he was lying on his side hunched up in bed, with flushed and somewhat cyanosed face, foul tongue, weak pulse. He complained of an intense headache at the back of the neck and right side of the occiput. Atebrin was given as before. At 12 a.m. the temperature was 103.4° , remaining up during the day. Urine: albumin, a trace; granular casts.

On December 29th the general condition was as before. At 8 a.m. blood showed thirty-five M.T. rings per field.

¹ *Quart. Bull. Health Organization*, July, 1933, ii, No. 2.

and at 10 a.m. the temperature rose to 104.8°. At 11 a.m. atebirin 0.1 gram was injected intramuscularly, and at 4 p.m. there were thirty-three rings per field in the blood. Temperature had dropped to 99.6° at 6 p.m.; and half an hour later atebirin 0.1 gram was given intramuscularly. Atebrin by mouth was taken as before.

On December 30th the patient was better. Tongue was clean and the headache less. At 6 a.m. the temperature was 100.2°; at 8 a.m., eighteen M.T. rings per field; at 2 p.m. the temperature was 102°; and at 6 p.m. 101.8°, when an intramuscular injection of atebirin 0.1 gram was given. Atebrin by mouth was prescribed as before.

On December 31st, at 6 a.m., the temperature was 98.8°. The patient's condition was much improved: headache almost gone; tongue clean. Blood: M.T. rings one in five fields. At 2 p.m. the temperature was 100°, and at 6 p.m. 101.4°. Atebrin by mouth as before; no further intramuscular injection.

On January 2nd the temperature was normal and the blood was clear of parasites. The patient was discharged to ship on January 7th, the temperature having remained normal since January 2nd.

COMMENT

No quinine was prescribed for this patient, who progressed steadily to recovery. The case is of interest owing to the heavy parasitization and the rapid response to atebirin alone, and would indicate the value of resorting to the intramuscular use of atebirin in heavy and dangerous infections with the malignant form of the parasite.

E. MORRIS FRANKLIN, L.R.C.P., L.R.C.S.ED.

European Hospital, Accra,
Gold Coast.

F.R.F.P.S.Glas.

LARGE VESICAL DIVERTICULUM

The following is an interesting case of vesical diverticulum:

The patient, an optician, aged 23, had had difficulty in micturition for the past two years; previously he had been quite healthy. He stated that he could only occasionally pass his water in the upright position, and that he usually found it necessary to lie down or bend over; sometimes the stream would stop suddenly. For the last two months he had suffered from nocturnal incontinence, and had noticed a swelling in the lower abdomen. There was no daily frequency, but he usually woke two or three times in the night with the desire to micturate. There was no history of haematuria.

EXAMINATION

Everything about the patient on January 27th, 1933, appeared normal, except the lower abdomen, where a swelling, thought to be the bladder, was found reaching half-way between the symphysis pubis and the umbilicus, but more marked towards the left side. On the right side a definite swelling could be felt above the pubes. Per rectum a distended swelling could be felt pressing backwards into the rectum.

Cystoscopy.—The capacity of the bladder was twenty-seven ounces. It was much trabeculated, and an orifice of a diverticulum was discovered behind and outside the right ureteric orifice. A diverticulum lamp and the actual cystoscope were passed into the cavity of the diverticulum, but proved of little help, because owing to the large size of the cavity and the fixation of the cystoscope no real view of the interior could be obtained. It was like trying to examine the interior of a large room by standing in the doorway and holding a single candle in front. The cavity was clearly of large dimensions, and such view of the interior wall as could be seen near the orifice showed that there was inflammation of the interior of the sac. The fluid within the cavity was purulent, which also increased the difficulty of getting a satisfactory view. Attempts to wash out the cavity would have had to be prolonged unreasonably, but did serve to show that the diverticulum possessed a definite, though weak, contractile power.

An x-ray examination was made on February 2nd, but nothing was found on the ordinary plate. A ureteric catheter was passed into the diverticulum, which was filled with a solution of sodium iodide, and a cystogram taken. The report stated: "The appearances are not typical of a diverticulum unless it is as large as the bladder."

OPERATION

On February 5th a catheter was passed, and connected by a two-way cock to an irrigating vessel about 5 feet above the level of the patient, who was in the Trendelenburg position. By this means fluid could be run into, or out of, the bladder by the operator, and its distension varied according to the needs of the moment. The usual suprapubic approach to the bladder was made, and the peritoneum pushed upwards, the urachus divided, and the bladder freely mobilized. The bladder was found to be enlarged, and when opened at a later stage of the operation to be at least half an inch in thickness, owing to hypertrophy of the muscle. It was pushed forward and somewhat to the left by the diverticulum, which was at least as large as the bladder, lay behind it, and overlapped it on the right side, and practically occupied the whole of the pelvis.

The diverticulum, therefore, was the swelling which had been felt just above the right side of the pubes. The separation of the peritoneum from the back of the sac was difficult, tedious, and took a long time, but once the lower reflexion was reached the rest of the separation was relatively easy. When the diverticulum was delivered into the wound the right ureter was observed running from behind forwards below its neck. The ureter was carefully stripped away from the vicinity of the diverticular neck, which was then completely isolated. The external diameter of the neck was found to measure about an inch and a half, and its substance contained dense fibrous tissue. During the final stage of the operation the bladder was opened by a mid-line incision, and the final separation and division of the neck guided by the help of a finger inserted from the bladder through the orifice into the cavity of the diverticulum. When the diverticulum was removed the internal orifice, previously seen by the cystoscope, was found to measure about half an inch in diameter. The hole in the bladder was sutured and the incision into the anterior wall completely closed. Rubber dam drainage was inserted down to the site of the orifice of the diverticulum and into the prevesical space. The wound was then closed in the usual manner, a catheter being tied into the urethra.

AFTER-HISTORY

The patient had a mild pyrexia for a few days, probably due to a post-operative bronchitis. On February 21st the catheter was removed, but owing to the appearance of a slight suprapubic leakage it was reinserted next day. It was finally removed on March 8th, when the wound was dry and healed.

Specimen.—Immediately after the operation the specimen was distended with water from the tap, but, in order to avoid damage, only a certain amount of water was introduced. This was measured and found to be just over ten ounces. The specimen was then carefully stuffed with wool to prevent contraction, but in spite of this there was some diminution in size before it was finally mounted. The interior of the cavity was observed to be inflamed, being dark red and velvety in appearance. Before final mounting a window was cut in the wall, and the piece removed used for a microscopical section. The section shows no trace of mucous membrane, considerable fibrous tissue, and degenerating muscle fibres.

Cystoscopy in the out-patient department on March 30th showed that the interior of the bladder was slightly inflamed and highly trabeculated. The site of the diverticulum has practically disappeared, and its situation is now ill defined. The patient is in excellent health, and passes his water easily and naturally, though there is still a slight frequency.

H. L. ATTWATER, M.CHIR., F.R.C.S.

Honorary Assistant Surgeon,

E. JACOBSON, F.R.C.S.

Senior House-Surgeon,

All Saints' Hospital, London.

Reviews

RHEUMATISM IN GENERAL PRACTICE

Once more a medical man has applied himself to the task of compiling a work on the complex subject of rheumatism¹ which shall be intelligible to the general practitioner, and, on the whole, Dr. M. B. RAY is to be congratulated on his achievement. In a foreword, Lord Horder gives it as his opinion that this is the best book on rheumatism in the English language. Perhaps that is not such high praise as it sounds, for neither in this nor any other language has the entirely satisfactory book on rheumatic disease yet been written.

Dr. Ray starts with a preliminary chapter on the physiology of the skin and heat regulation, and goes on to consider diathesis and the powers of adaptation of the body to various environmental conditions. Acute and subacute rheumatism and rheumatism of children is then dealt with. We doubt if the idea of including Still's disease in this section is a happy one, for it is now generally held that Still's disease is essentially a manifestation of rheumatoid arthritis in young subjects, and that the splenic and lymphatic involvement is a peculiarity of the age of the subject and not of the disease process. The chapter on fibrositis is a good one, and gives a competent picture of the protean manifestations of this reaction; the discussion of "neuritis" is admirable, and the importance of differentiating between a perineuritis and a parenchymatous neuritis is adequately stressed.

"Metastatic" arthritis is discussed in two chapters: one devoted to those cases associated with specific infections, such as gonorrhoea, tuberculosis, or dysentery, and one with focal infection, such as apical abscess, infected tonsils, gall-bladder, etc. Dr. Ray favours the separation of rheumatoid arthritis as a clinical entity, and with this view most of those who have had long experience of rheumatic diseases will concur. He regards this syndrome as fundamentally different from his metastatic group, and seems to imply that their differentiation is therefore easy; with this contention few will agree. Reliance is placed on the radiological appearance of the hand in diagnosis, and photographs are reproduced, but few people, unless they are very expert in interpretation, would feel confident in making a diagnosis from an examination of such plates. It is possible that in the future this may prove to be a real assistance in diagnosis, but it cannot be claimed so far that it has a wide application. Gout is discussed between rheumatoid arthritis and osteoarthritis, which would seem to be an unfortunate position, for gout is surely a disease *sui generis* in which joint affection is incidental. It is perhaps logical to include serum sickness, toxic arthritis, and so-called rheumatic purpura in the same chapter, as they are all probably allergic conditions. Osteoarthritis is then discussed, and Dr. Ray includes "Heberden's nodes" in this category, though most people would associate these with fibrositis rather than with osteoarthritis, especially as it is uncommon for patients exhibiting these nodes on the fingers to suffer from osteoarthritis in other joints. Neurotrophic arthritis is included here, and Dr. Ray considers that something more is involved in such cases than an arthritis in an insensitive joint, but he is by no means clear as to what that something is. No mention is made of a form of "climacteric" arthritis in which endocrine disturbances are prominent, though this is not uncommonly differentiated in treatises on rheumatic diseases. The final chapter of the first part gives a useful summary of the various measures of physical treatment applicable in rheumatic diseases. The second part of the book treats

of rheumatic infections considered regionally, and from the point of view of differential diagnosis is admirable. Probably it would have been better to restrict this section entirely to this, for the notes on treatment are redundant and out of place. There seems to be no reason, for example, to treat cervical fibrositis differently from fibrositis of equal intensity in any other region, and a perusal of this section does not disclose any special method not advocated elsewhere.

The book is written in a readable style, but it is a little disappointing, in view of Dr. Ray's long and varied clinical experience, that he does not give us more of his own opinion. He is very erudite and quotes many opinions, but sometimes leaves us in the air, wishing to know what he thinks. For example, is osteoarthritis primarily a degenerative disease, or is infection a prime factor in its causation? Both views are quoted, but Dr. Ray is unwilling to commit himself. The reader may consider that the author has lived long enough in the south to have outgrown the caution acquired in his earlier northern habitat and tell us what he really believes. The arrangement of the text is admirable, and the paragraphing and clear headings make reference easy. References to authors are given in the text, which is perhaps a pity, and not all of them are accurate. So far as this notice is critical it is because the reviewer regards this book as worth criticizing and, *a fortiori*, worth reading. In view of the very wide incidence of rheumatic disease and the large proportion it assumes in the daily work of every practitioner, all medical men will be well advised not only to read but to possess this volume, in which the subject is presented in such a way that information bearing on the needs or complaints of any patient is easily obtained, and a practical solution of most difficulties of diagnosis and treatment is offered.

PULMONARY TUBERCULOSIS IN INFANCY AND CHILDHOOD

ARMAND-DELILLE and LESTOCQUOY's luxurious "atlas,"² recently published, should go a long way towards remedying the state of confusion which exists on certain aspects of pulmonary tuberculosis in childhood. The book is a combined clinical, radiological, and pathological study of nearly a thousand children who have been under their care at the Hôpital Hérodol in Paris. Moreover, it should be added that, as secretaries of the Oeuvre Grancher, the authors have had the opportunity of observing the large number of home contacts recommended and accepted for boarding out in the country.

The first part of the book is devoted to their methods of investigation. These have already been the subject of a note in the *Journal* on March 3rd (p. 370). Special stress is laid on lateral skiagrams, and, in case of death, the fixation of thoracic organs by a method which permits accurate comparison of anatomical sections with x-ray photographs. Finding it essential to arrange their material in some logical sequence, the authors discuss and reject both Aschoff's histological and Ranke's three-stage classifications (the latter not very convincingly), and adopt the classical two-stage French theory of "primo-infection" and endogenous reinfection. In both sections they deal in turn with the various macroscopic pathological entities encountered, each lavishly illustrated with well-reproduced skiagrams (mostly full-size), with excellent photographs of morbid specimens and their histological sections, and with clear two-colour explanatory diagrams. Finally,

² *La Tuberculose Pulmonaire et les Maladies de l'Appareil Respiratoire de l'Enfant et de l'Adolescent (Iconographie de l'Hôpital Hérodol)*. Par P. F. Armand-Delille et Ch. Lestocquoy, avec la collaboration de René Huguenin. Introduction du Professeur Calmette. Paris: Amédée Legrand 1933. (Pp. xu + 500; 352 figures, 212 explanatory diagrams. In one volume, 350 fr.; in two volumes, 375 fr.)

¹ *Rheumatism in General Practice*. By M. B. Ray, D.S.O., M.D. London: H. K. Lewis and Co., Ltd. 1934. (Pp. viii + 404; 6 plates. 16s. net.)

there are chapters on treatment (artificial pneumothorax and other methods of collapse therapy) and on general diseases of the respiratory system.

A few points of great interest brought out in Armand-Deille and Lestocquoy's work may be mentioned. They indicate the frequency of various types of lesions at different ages. Certain false conceptions based on radiological evidence only are clearly demonstrated: for example, that a perihilar x-ray shadow does not correspond to "perihilar tuberculosis," the existence of which they doubt; that basal tuberculosis is rare, the x-ray shadow often seen in the right base being due to infiltration of the middle lobe; and that x-ray infraclavicular infiltrations really belong to the "apex" of the lung. A good deal of space is given to an account of "epituberculosis" or "spléno-pneumonie": the latter term, first coined by Grancher and descriptive of the morbid appearance presented, is retained by the authors. They consider that it represents 50 per cent. of the pulmonary tuberculosis in children between 5 and 10 years old, and bring forward a certain amount of evidence to show that it is an extensive oedematous or cellular alveolar infiltration in which characteristic tuberculous lesions or tubercle bacilli can seldom be demonstrated. Often (but not necessarily) this infiltration is in the vicinity of a partially or completely healed tuberculous focus. There is here a close correspondence with the phenomenon of hypersensitivity in the skin when a positive tuberculin test is obtained.

It is much to be regretted that full references are omitted from a text which repeatedly mentions the work of other authors. Whatever views the reader may have with regard to the aetiology and mechanisms of tuberculosis in childhood (and he might well be disposed to criticize Calmette's statements in the Introduction in particular), the book forms a "living document" on which he can base his own opinions.

VETERINARY HYGIENE

The second edition of *Veterinary Hygiene*,³ by R. G. LINTON, Ph.D., M.R.C.V.S., professor of that subject in the Royal (Dick) Veterinary College at Edinburgh, is a most satisfactory book of reference for the modern veterinary practitioner, the student, and the official. In all statistical respects it is an excellent piece of work, which reflects the greatest credit for industry and accuracy upon the author and his collaborators, whose names are given in the preface. If the reader wishes to build a stable, a byre, or kennels, to construct a dipping bath for cattle and sheep, to analyse the air or water supply, as well as to know every detail of the orthodox procedure for the control of infectious diseases of animals required by all kinds of official regulations, he will find what he needs in this book. But if he wishes to know more of prophylaxis from a pastoral point of view, he must go elsewhere, because not much space is given to this vital aspect of the science of health. It is to be regretted that Professor Linton has not chosen to say more on this topic at a time when, as the result of the economic decay of farming in Britain, diseases of animals, due largely to a deteriorated environment, are by no means decreasing, and at a time when dairy cows, owing to the ravages of tuberculosis, mastitis, infectious abortion, and Johne's disease, are said to have an average productive life of less than four years.

There is an apparent discrepancy in this book which may be of general interest. In discussing sewage-polluted water the author alludes to an experiment carried out at the Research Institute of the Veterinary College in London during 1932 and 1933, in which three cows were

given large quantities of diluted crude sewage for twenty-one months and thrived on it. This evidence was probably the deciding factor in an important legal case which was settled in the Court of Appeal last year. If it is to be an accepted fact that human and other organic sewage is innocuous to cattle—and Professor Linton does not dissent—the thirty-nine pages of his chapter on water would appear to have mainly an academic interest so far as veterinary surgeons are concerned. On the other hand, a subject of great practical importance to a considerable number of veterinarians—the sea and land transport of animals—is not mentioned in this edition.

THE "ANNALS OF EUGENICS"

In the recently issued Parts III and IV of volume v of the *Annals of Eugenics*⁴ the papers of most direct interest to the medical reader are by Dr. Ethel M. Elderton and by Dr. Percy Stocks and Miss M. N. Karn. The report issued by the Department of Health for Scotland on the Lanarkshire experiment was subjected to some criticism on the ground that the experiment had not been planned in a way calculated to measure satisfactorily the relative advantages of raw and pasteurized milk. Thus, *inter alia*, raw and pasteurized milk were never given in the same schools, and the initial heights and weights of controls and milk-fed children were not the same. Dr. Elderton has attempted to evaluate the importance of the second criticism by sorting the cards into age and sex groups, and then forming pairs of children of approximately equal initial heights and weights. Having done this, she has compared the respective gains in heights and weights. Her general result is that girls derived more advantage than boys from the milk ration, and, on the particularly controverted question, she finds that "there is no evidence that raw milk has an advantage over pasteurized or pasteurized over raw in increasing growth when the two are directly compared on this selected material." Professor Pearson, dealing with the same issue, points out that there seems to be some difference between the sexes, in that in girls raw milk did seem to promote growth in stature more than pasteurized milk.

Dr. Stocks and Miss Karn provide a very detailed comparison of samples of patients suffering or not suffering from cancer. The plan adopted was the following. Each observer was asked to record elaborate particulars of a hospital patient suffering from cancer and to choose another hospital patient within five years of the age of the former but not suffering from cancer. The same information was recorded with respect to the control as noted for the cancer patient. In the end, 462 schedules of cancer patients and 435 of controls were obtained. The investigators then had to answer a whole series of questions of the following kind: an article of food, for instance, white bread, is (a) never eaten, (b) occasionally eaten, (c) eaten weekly, (d) eaten daily by such and such proportions of the cancer patients and the "control" patients. Are the differences between the proportions in the two series such that it is improbable that they can fairly be regarded as samples from a common population? The result of applying the test is to show that in many of the characters studied there is no significant differentiation. There are, however, exceptions. It seems clear, for instance, that the use of certain vegetables was less frequent in the cancer than in the control series. The authors are careful to point out that no suggestion is made by them that all or any of the vegetables yielding these results prevent cancer, that they go no further than to

³ *Veterinary Hygiene*. By R. G. Linton. Second edition. Edinburgh Veterinary Series. Edinburgh: W. Green and Sons, Ltd. 1934 (Pp. 472; 129 figures. 21s. net.)

⁴ *Annals of Eugenics*. Vol. v. Parts III and IV. October, 1933. Edited by Karl Pearson and E. M. Elderton. London: Francis & Taylor Laboratory for National Eugenics, University of London. (Pp. 227-415; illustrated. Annual subscription, 50s. net; double parts, 35s. net.)

suggest that more research should be undertaken. The same remark applies to other discrepancies found.

With this issue Professor Karl Pearson relinquishes editorial control of the *Annals*. "My endeavour," he writes, "during the twenty-two years in which I have held the post of Galton Professor has been to prove in the first place that eugenics can be developed as an academic study, and in the second place to make the conclusions drawn from that study a ground for social propaganda only when there are sound scientific reasons upon which to base our judgements, and, as a result, our opinions as to moral conduct. Even at the present day there are far too many 'general impressions' drawn from limited or too often wrongly interpreted experience, and far too many inadequately demonstrated and too lightly accepted theories for any nation to proceed hastily with unlimited eugenic legislation. This statement, however, must never be taken as an excuse for indefinitely suspending all eugenic teaching and every form of communal action in matters of sex." Few men have served the cause of truth with so single-minded a devotion as the author of those words. Professor Pearson has lived to see the kind of ill-balanced "publicist" who, a generation ago, sneered at eugenic "fads," eagerly demanding, in at least one country, drastic legislation. He was never discouraged by opposition, he is not elated by praise. His successor enters upon an intellectual inheritance worthy of the traditions of British science.

BIOCHEMISTRY FOR MEDICAL STUDENTS

We have much pleasure in welcoming the fourth edition of Mr. T. R. PARSONS'S *Fundamentals of Biochemistry*^a in relation to human physiology. This work was written with the purpose of providing medical students with a short and readable account of the chemical changes that occur in the human body. During the decade that has elapsed since it first appeared there has been a very great growth in the subject of biochemistry, but the author has succeeded in preserving his original aim—namely, that of presenting an outline of the more fundamental biochemical topics in the form of a story rather than of a catalogue. The book covers a very wide range of knowledge, but the author has kept it within reasonable limits of size. He has a remarkable gift for presenting the essential facts in a form that is brief and yet both readable and accurate. The chapter on vitamins is an example of this; for in fifteen pages an account is given of the salient facts regarding the biochemistry of vitamins, an account which includes such recent advances in knowledge as the formulae of carotene, vitamin A, and ascorbic acid. In general, the book can be recommended to all who wish for a simple and yet accurate account of the principles of biochemistry which are of chief importance in the study of human physiology.

Notes on Books

The first number of the new volume of the *Annals of Medical History*^b opens with Dr. JOSEPH WALSH'S pleasantly written account of Galen's works and the influences which made him so extremely active; the pen is said to have, with two periods of abstinence, been constantly in his hand from the age of 13 to 68. This article pays a tribute to Professor Johannes Ilberg (1860-1930) of Leipzig, to whose researches the world is indebted for most of its accurate chronological knowledge

about Galen's life. Dr. A. C. Krause of Baltimore, in an article on Assyro-Babylonian ophthalmology, points out that Herodotus's description of the extremely primitive character of Assyro-Babylonian medicine is, as a result of the recent interpretations of the cuneiform texts, erroneous, and that in point of fact there was an elaborate medical organization, and that before 2000 B.C. surgeons performed operations on the eyes. Dr. E. C. Jessup of Long Island writes with a bibliophilic enthusiasm on incunabula: of the two or three hundred thousand in existence, out of the estimated twenty millions printed, there are perhaps twenty thousand medical; he specially deals with the earliest medical item—namely, *De Sermonum Proprietate, seu de Universo*, 1467, which was an encyclopaedia with a chapter on medicine and diseases. The astonishing fact is that it was written by Rabanus Maurus, Archbishop of Mainz and one of the foremost scholars of the age of Charlemagne, who died in 856, and that the text was therefore already six hundred years old when it was first printed. The other three articles in this instalment of the *Annals* deal with the eighteenth century: Drs. Leona Baumgartner and Elizabeth M. Ramsey conclude their study of that wonderfully modern hygienist Johann Peter Frank; Drs. W. T. Dawson and J. Chapman write on withering and digitalis; and, in his extremely interesting essay on medicine in Horace Walpole's letters, Dr. Robert Hutchison draws a contrast between the letter writer, who had not any friends in the medical profession, which he ran down, and Samuel Johnson, his contemporary.

Mr. MACLEOD YEARSLEY'S attractive little book on *Doctors in Elizabethan Drama*,^c as he announces in the introduction, forms part of a hitherto unpublished work on the medicine of Shakespeare and his contemporaries, of which it is to be hoped subsequent portions will appear in due course. Including the introduction the present volume contains six chapters, devoted respectively to the consideration of medical education and practice in the Elizabethan era; physicians as dramatis personae, of whom no fewer than forty-nine occur in Shakespeare and his contemporaries, though only eighteen are given names; surgeons and apothecaries, of whom the former occupied a decidedly inferior position to the physicians, while the latter often incur a good deal of abuse and ridicule owing to their frequent trade in poisons; midwives and nurses, the latter including the monthly nurse, the wet nurse, the children's nurse, and the sick nurse; and irregular practitioners who, in the form of mountebanks, quacks, bone-setters, and astrologers, were extremely rife in the Elizabethan period. Mr. Yearsley is to be congratulated on the meticulous care with which he has searched the texts not only of Shakespeare but of his contemporaries, including Beaumont and Fletcher, Ben Jonson, Chapman, Dekker, Ford, Greene, Heywood, Massinger, Middleton, and Webster, for appropriate passages to illustrate his text.

Chemical and Microscopical Examinations at the Bedside,^d by H. LENHARTZ, seems to be a popular textbook on clinical pathology as practised in Germany. The eleventh edition, published this year, is a book of about 370 pages, and well illustrated.

Medical Notes and First-Aid Treatment for Flights in the Tropics and Sub-tropics (H.M. Stationery Office, 4d. net) is intended for the personnel of the Royal Air Force when engaged in flying in localities where medical aid is not available. It is not concerned with medical aeronautics, as a casual glance at the title might suggest, but deals in a very elementary fashion with the commoner tropical maladies and their prevention. The text is simply and clearly written, and the first-aid notes on drugs and their employment appear to be fool-proof. The manual should prove very useful to those for whom it has been compiled.

^a *Fundamentals of Biochemistry*. By T. R. Parsons, B.Sc., M.A. Fourth edition. Cambridge: W. Heffer and Sons, Ltd. 1933 (Pp. 435. 10s. 6d. net.)

^b *Annals of Medical History*, New Series, vol. vi, No. 1, January, 1934. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc.; London: Baillière, Tindall and Cox. (Pp. 1-94; illustrated. Volume of six numbers, £2 15s.; single number, 12s. 6d.)

^c *Doctors in Elizabethan Drama*. By Macleod Yearsley, F.R.C.S. London: John Bale, Sons and Danielsson, Ltd. 1933. (Pp. 128. 7s. 6d. net.)

^d *Mikroskopie und Chemie am Krankenbett*. Von H. Lenhart, fortgeführt von E. Meyer, bearbeitet von A. v. Domarus und R. Seyderhelm. Berlin: J. Springer. 1934. (Pp. 370; 180 figures. R.M. 18.60; geb., R.M. 19.80.)

BRITISH POST-GRADUATE MEDICAL SCHOOL

HISTORY AND RECENT PROGRESS

Certain recent announcements may justify a review of the circumstances which gave rise to the institution of the British Post-Graduate School at Hammersmith.

London has long been realized to have a remarkable, indeed almost unique, supply of clinical material. Of this advantage should be taken not only in the training of medical students by undergraduate schools but, in addition, by the provision of courses for doctors resident in this country, in the Empire beyond the seas, and abroad who wish to refresh their knowledge, to obtain instruction in new developments of medicine, surgery, and obstetrics, or to participate directly in the clinical practice of a hospital.

Attempts to utilize this abundant material are by no means new. In the closing years of the last century the Medical Graduates College and Polyclinic was set up largely through the activities of Sir Jonathan Hutchinson. This organization was of great value to London practitioners, but was not run in connexion with any one particular hospital, and, although there were associated with it classes in certain special hospitals and medical schools, it could not provide that regular attendance at in- and out-patient departments which may be looked on as the principal requirement of the general practitioner and the more specialized post-graduate student.

With the next stage of the development should be remembered the name of Sir William Osler. Among others, many of whom are fortunately still with us, he made possible the formation of the Fellowship of Medicine and Post-Graduate Medical Association. During the years which have since elapsed many practitioners have been thereby enabled to take advantage of the instruction provided at the various London teaching hospitals. This organization is still very active and does most valuable work, and there has been no falling off either in the facilities which it offers or in the numbers who have taken advantage of those facilities. Nevertheless, the Fellowship of Medicine suffers, in some measure, from not having any one hospital with which it is particularly associated, and thus it has no really adequate centre for its activities.

THE ATHLONE COMMITTEE

To trace the story of the School back to its inception, in January, 1921, the then Minister of Health (Dr. Christopher Addison) set up, at the suggestion of the University Grants Committee, a committee, under the chairmanship of the Earl of Athlone, to consider provision in London to meet the needs of medical practitioners and other graduates. Chief among the recommendations which it made in its report, published in May, 1921, were the following: (a) There should be a school, attached to a hospital in London, which should be devoted solely to post-graduate instruction in clinical medicine, including surgery, midwifery, etc., and (b) an institute should be established in which instruction should be given in public health, etc. While the committee paid full tribute to the services rendered by the Fellowship of Medicine and Post-Graduate Medical Association, particularly in the first matter, it concluded that higher medical education in London was still, and unwarrantably, behind that provided in Continental centres such as Vienna. It was the second of these recommendations that came first to fruition.

In July, 1926, Mr. Neville Chamberlain, the then Minister of Health, laid the foundation stone of the London School of Hygiene and Tropical Medicine, whose development had largely been made possible by the very generous grant of the Rockefeller Foundation towards the cost of appropriate new buildings. In July, 1929, the School buildings in Bloomsbury were opened by His Royal Highness the Prince of Wales. However, the other objective of the Athlone Committee remained to be secured. Its report unfortunately appeared at a time when post-war depression had already begun, and in consequence the project was born out of season.

A PRACTICABLE SCHEME

As soon as it was possible Mr. Neville Chamberlain set up a new committee with a membership which included representatives of the Royal Colleges of Physicians and of Surgeons, of London University, of the great teaching hospitals, and also of the British Medical Association, and of the Fellowship of Medicine. The terms of reference of this committee were more specific: "To draw up a practicable scheme of post-graduate medical education centred in London."

This committee's report constituted a substantial advance in several respects. After a careful survey of the existing teaching institutions it concluded that it was financially impossible to set up an entirely new hospital and medical school, and also that it was impracticable, for many and different reasons, to associate the new school with any existing teaching hospital. However, the position had been again altered by the passing of the Local Government Act in March, 1929. Under its provisions there came under the control of the London County Council between twenty and thirty public general hospitals and, therein included, about 17,000 beds. The committee then investigated the advisability of associating the new post-graduate medical school with one of these establishments.

At the hospital in Ducane Road, Hammersmith, there were about 400 beds, in a building no part of which was more than 25 years old. Even before the question of a post-graduate school had arisen in this connexion, the L.C.C. had described the hospital as "exceptionally good and well designed for the purposes of a hospital dealing with the acutely sick." With the full co-operation of the L.C.C. the committee made further and more detailed inquiries, and finally came to the unanimous conclusion that the conversion of this (the Hammersmith) hospital was the best solution of the problem.

THE FIRST STEPS

In April, 1930, Mr. Arthur Greenwood, the then Minister of Health, announced in the House of Commons the Government's acceptance of the recommendations of the committee and its willingness to contribute a sum up to £250,000 for building and equipping the school. Furthermore, it would provide, through the University of London, annual grants for the maintenance of the school. This decision was followed by the setting up of a committee, over which Lord Chelmsford presided, and, as a result of its recommendations, a Royal Charter was, on July 10th, 1931, granted to the School. The Charter appointed a governing body and entrusted to it the supervision of the erection and equipment of the School and its management when it came into existence.

Soon after came the financial crisis of 1931 to put the whole scheme in jeopardy. After very necessary and serious consideration the Government of the day decided that it would be against the public interest if the scheme were to be indefinitely postponed, and that, in spite of the difficult state of the national finances, it would invite Parliament to make a grant not exceeding £100,000. The L.C.C. agreed to expend a similar sum on such developments and adaptations of the existing hospital as were found to be most desirable at the present time in view of its forthcoming association with the School.

For financial reasons the commencement of the building had to be delayed, but on July 17th, 1933, the foundation stone was laid by Mr. Neville Chamberlain. The building work is being carried out by the L.C.C. under the terms of an agreement with the Governing Body.

The L.C.C. is, on the hospital side, providing new buildings for midwifery cases, for out-patients, and for casualty departments as well as many other modifications, while the School buildings will consist mainly of laboratories, lecture theatres, and accommodation (non-residential) for the teachers and students.

"LAY-OUT" OF THE BUILDINGS

Though very substantial progress has been made during the last seven months, there is as yet but little to show the ultimate arrangement of the buildings in hand, and a brief description of the general "lay-out" may be appreciated. Though some parts are more specially addi-

tions to the existing L.C.C. hospital and others particularly concerned with the new School, they have been designed to serve the best interests of both institutions, and must in large measure be considered as a whole.

The present buildings are set at right angles to a corridor running through east to west, along which beds can easily be wheeled and cases moved from one ward to another. It is at the eastern end of this corridor that the chief new building is being erected. The medical school part of the block stands back further from Ducane Road and has three stories arranged round a square courtyard, thus providing abundant light and ventilation.

On the ground floor there are the Medical School offices, including accommodation for the dean, for clerical staff, etc., and a committee room. These take up one side of the square, while the north side is chiefly occupied by the post-mortem department, with an associated laboratory and classroom for histological work. Opening off the main corridor mentioned above is the clinical theatre (with accommodation for close on 100 students) and rooms for the examination of patients and for the lecturers. The remaining side is chiefly devoted to a large chemical laboratory with centrifuge, polarimeter, and balance rooms.

The second floor can be described more briefly: above the clinical theatre is a somewhat larger lecture theatre (both of these include full provision for the projection of cinematograph films), while over the School offices are to be found a well-lit library and two rooms for the use of the teaching staff. The remainder of the floor is devoted chiefly to five medium-sized laboratories and six smaller rooms, each of the latter suitable for a single worker. There is, in addition, a large museum with windows on two sides and top lighting as well. The top, or third, story is slightly smaller; it contains bacteriological laboratories, autoclave rooms, and two smaller laboratories. To turn now to the southern half of this new block—a part which belongs more closely to the hospital—on the ground floor the L.C.C. is providing a large and carefully planned out-patient department. The main hall is lit from above, and will accommodate about 300, while opening off it are various consultation and examination rooms and a theatre for minor operations. Adjacent to the general out-patient hall, but with a separate entrance, is the ante-natal care department, while also on the ground level are two small wards available for casualties. Though provision has been made for later expansion upwards as occasion arises, there are for the present to be only two stories in this part of the building. The upper floor is chiefly devoted to an x-ray department, on the one side to investigative work—for example, screening and photography—and on the other to therapy. It is believed to be the intention of the L.C.C. to send from its other hospitals to Hammersmith any patients who might be expected to benefit by the facilities there provided for specialized treatment or investigation and diagnosis.

The out-patient department is not the only substantial addition to the hospital; there is also being erected a new block chiefly for maternity cases and well provided with delivery rooms, operating theatres, etc.

TEACHING ARRANGEMENTS AND POLICY

It was announced the other day that London University had "recognized" the new institution as a school of that University, and also that it had approved certain proposals with regard to the conditions of tenure, etc., of the professors. There is little doubt that in a few weeks at the most the members of the Governing Body will find themselves able to complete the necessary preliminaries, and to proceed to the steps necessary to fill the various chairs. As mentioned in a note appearing at page 490, there will be four professorships, three in the main clinical subjects—medicine, surgery, and midwifery and gynaecology—and the fourth in pathology. The former group will, by arrangement with the London County Council, have general charge of the beds in the hospital which are devoted to their various subjects, and will also be provided with facilities for original investigations in medical science. The "research" accommodation will, of course, be supplemental to the laboratories required no less than lecture rooms for the teaching of the post-

graduate student. The department of pathology will require rather more generous laboratory accommodation and equipment, but this subject now includes at least three main divisions: (1) morbid anatomy, (2) biochemistry, including pathological chemistry, and (3) bacteriology.

When it has been possible to select the holders of the chairs—and these posts have already been advertised in the medical press—the next stage will be to proceed to the more detailed organization of each teaching "team," for we must presume that assistants of various grades will be needed in each unit. No doubt, courses will also be delivered from time to time by eminent physicians and surgeons not permanently attached to the school.

It is of the first importance that the teaching should be of a really high level—suitable for increasing the knowledge of the better grade of medical practitioners. The provision of "refresher courses" may well be regarded as an important item in the activities of the comprehensive post-graduate scheme. Such courses should be particularly adapted to the needs of men who are working in sparsely populated rural areas, and who have not reasonable access to a town in which hospital practice is available. Nevertheless, this type of activity should not be allowed any chance of "swamping" the more advanced work, which may be expected to appeal more particularly to graduates proposing to specialize in some one branch of medical practice. For these, courses of an essentially different character will be needed.

"THE CENTRE OF A GREAT TEACHING ORGANIZATION"

It is not to be expected, nor, indeed, is it desirable, that the whole of post-graduate teaching in London should be transferred to Hammersmith. Such a plan would overlook the abundant clinical material and teaching ability which are to be found in the existing special and general hospitals, and which have, chiefly through the activities of the Fellowship of Medicine, been made largely available, for example, to medical graduates from over-seas. Rather is it to be hoped that the new School will act as a centre and that a cordial relationship will be maintained with other institutions and their valuable and generous work. To quote the report of the Athlone Committee in 1921: "In order to meet the needs of (1) practitioners able to devote up to three months to general instruction, (2) those seeking further knowledge in special subjects, (3) officers in the Services on study leave, and (4) graduates from over-seas, a post-graduate medical school should be instituted which should be attached to a large and well-equipped hospital, and should be the centre of a great teaching organization in which the London special hospitals, the Poor Law infirmaries, and the existing medical schools with their clinical units and research departments would all find their place." Nevertheless, it should be emphasized that though the School is being set up in London, and though it will of course be most readily accessible to practitioners resident in the capital, its appeal must not be restricted in any way. The School, with its close and novel association with a public hospital owned by the L.C.C., has a national side in that it represents the beginning of an organized attempt to enable general practitioners to keep abreast with the advance of medical knowledge—and a progressive and up-to-date corps of general practitioners is the foundation of any sound scheme for public health. The School has an Imperial side, since nowhere more keenly than in the great Dominions is the desire felt that it should be possible for medical men to find in London and among their own folk access to the latest knowledge and the most recent developments of medical technique. It also may claim to have a distinctly international side, since in countries like the United States of America and the Argentine (to mention only two) the desire for such an institution in London is constantly expressed. Great advantage can be expected to accrue to the School, and to the advance of medicine, by the presence of a certain number of colleagues and fellow students from countries whose system of medical training differs somewhat from our own.

The early stages of the School's work must be, to a great extent, provisional, and on the experience then gained future courses will have to be designed.

British Medical Journal

SATURDAY, MARCH 17th, 1934

CEREBRAL STRUCTURE AND FUNCTION

It has been estimated that there are some twelve thousand million (12×10^9) nerve cells in the human brain. A wealth of anatomical interconnexion endows the mechanism with a complexity which can stagger the imagination, even of those who are accustomed to astronomical dimensions. Nevertheless, the grouping of a few pathways, such as the visual tracts and those leaving the motor area of the cerebral cortex, has allowed inferences to be made as to their general categories of function. The effects of destruction of portions of the brain by disease or by experimental lesion permit the labelling of particular areas with various general functions such as visual perception. The most elaborate cartography of the cerebral cortex according to its cellular pattern, and the careful study of the change of such patterns by disease, has thrown a little light on the relation between structure and function. Compared with the known complexity of structure the sum total of knowledge of the actual details of function of any part of the brain is profoundly meagre. The many advances in biochemistry, in histology and histopathology, in electrophysical methods, and all the other tools at the call of the modern investigator leave untouched a problem which has exercised the contemplation of all philosophers. The behaviour of the mind gives no indication of the way in which nerve energy is transformed into mental energy.

Sir Charles Sherrington, in the fulness of years of patient and fruitful research into the fundamental processes of nervous activity, sets before us a delightful essay on the physiological mechanism of the brain.¹ The subject-matter forms the Rede Lecture, delivered in Cambridge last December. The complexity of the most lowly of the spinal reflexes involves complete accounts of the subject in a bewildering glossary of technical terms, but here in everyday language and with entertaining lightness of touch the great problem of cerebral nervous function is stated. In simple language the issues emerge the more clearly. For essential principle in any consideration of cerebral function it has long been customary to regard the brain as an elaboration of elementary reflex circuits. There is, in fact, a dearth of competing hypotheses. In the nervous network of these circuits the hypothetical wearing of pathways can be made to accommodate the various aspects of the subconscious mind, of conditioning, or of memory. The utility of fundamental theory on this basis is severely restricted by lack of

¹ *The Brain and its Mechanism*. By Sir Charles Sherrington, F.R.S. London: Cambridge University Press. (1s. 6d. net.)

any information as to the way any one part of the cerebral nervous mechanism functions. The spinal reflexes exhibit the effects of interaction of the two nervous states, excitation and inhibition, arising as a result of stimulation. It appears reasonable to suppose that the cerebral neurones are subject to the same phenomena, but here the source and control of these states offer a baffling problem. Inhibition is an active state, and requires to be maintained by nervous activity. If, for instance, sleep be considered as the effect of inhibition then sleep must be an actively maintained process.

In this lecture Sir Charles Sherrington brings forward no fresh elaboration of hypotheses, but critically examines the old, to throw the poverty of verified scientific fact into clear relief and to etch the problem the more clearly. Indeed, he pauses to consider whether solution will ever be found, as might a hardened mountain climber reflect on the possibilities of reaching the topmost peak of Everest.

D'ARSONVAL AND HIS WORK

"I am convinced that therapeutics of the future will employ as curative methods physical agents such as heat, light, electricity, and others still undiscovered. The rude system which, under pretext of curing, merely poisons with the most potent drugs known to chemistry, ought to give way to physical methods whose use has at least the advantage of introducing no foreign substance into the body." So said d'Arsonval in 1881, in the days before the discovery of x rays or radium. Now in 1934 it has become difficult even to imagine the limitations upon treatment which would ensue in medicine and surgery were physical methods suddenly withdrawn from our reach. In the medical treatment of certain forms of rheumatism, vasomotor disturbances, poliomyelitis and pneumonia, and in gynaecology—most conspicuously in the cure of cervical erosion—diathermy has been proved to have valuable effects unobtainable by any other known treatment. The enormous progress in surgery of the urinary tract can be attributed directly to development in the use of high-frequency currents for fulguration and electrocoagulation. The happy results in the treatment of common disfigurements are another instance of the successful application of such currents, used with skill and fine control. Yet these are only a few developments of the work of one man, Arsène d'Arsonval, in whose honour the Sorbonne celebrated a jubilee last May in the presence of a most distinguished and enthusiastic assembly. To Professor d'Arsonval, then in his eighty-third year, homage was paid for the great benefits to mankind which are the outcome of his research and discoveries, and he was acknowledged in many eloquent addresses as the father of modern physiotherapy.

The October issue of the *Journal de Radiologie et d'Electrologie* appeared as a special jubilee number containing reports of the Sorbonne speeches, interesting

articles on d'Arsonval's life and work, and facsimiles of two noteworthy letters. Of these, one is Professor d'Arsonval's own charming letter of thanks to the *Journal* for honouring his work, for so long unrecognized and misunderstood, and the other the letter from Claude Bernard, which obtained from d'Arsonval's father permission for his son to devote himself to a scientific career instead of becoming an assistant in his practice at Limoges. Arsène d'Arsonval had commenced the study of medicine reluctantly, not from his own choice, but in compliance with his father's wishes and the family tradition. Medicine did not interest him, for he felt it was too empirical and inexact to satisfy his mind, which was of a clear, scientific quality, more suited to the study of mathematics or physics. But a chance meeting with Claude Bernard at the Collège de France suddenly proved the inspiration which transformed his career into a passionate study of the relation of physics to the phenomena of life. Claude Bernard, the foremost physiologist of the day, saw in the young d'Arsonval that rare combination of qualities which distinguishes the mind of a great man, and by welcoming him in his own laboratory continued to inspire him and provided the milieu for his researches.

So well known is d'Arsonval's name in connexion with his discovery of the therapeutic uses of high-frequency currents that his work in other subjects, immense and varied though it was, is apt to be overlooked. In a short space it is impossible to give an account of the many problems that his fertile brain investigated, or of the success of his efforts in different undertakings. He invented many delicate instruments for use in laboratory experiments, and his remarkable "calorimètre-à-compensation" was the origin of all modern calorimetric methods. Earlier workers on the physiology of muscle had been content in their experiments with records of gross visible contractions, but d'Arsonval went further than this, devising his myophone, which was able to record the minimal contractions, imperceptible by other means. From this he evolved his theory of the importance of the form of electric wave used, "la caractéristique de l'excitation," which was the basis for later experiments. While using high-frequency currents, he observed that the stimuli they excited diminished as the frequency was raised, and he expected that by further increasing the frequency a state might be reached at which no stimulation would occur. At that time (1889) no means were available for producing a frequency higher than 10,000 per second; but by a most fortunate coincidence Hertz then discovered how to produce a current with a frequency of several millions, and d'Arsonval was able to test his theory and found it correct. In 1891 he communicated his findings to the Société de Biologie, shortly before Tesla, in New York, reached the same conclusions. With this tremendous advance d'Arsonval applied himself more ardently than ever to his research on high-frequency currents, designing his own apparatus and experimenting on himself. Through his study of

electrical burns and the phenomena of electrocution, he advocated the treatment of electric shock by artificial respiration, which has meant the saving of many lives. At first his ideas and discoveries were rejected with scorn, but happily he has lived to see them accepted and increasingly employed.

When the first attempt at wireless telegraphy was made from the Eiffel Tower, apparatus designed by d'Arsonval and Oudin ten years before was used, and provided the impetus for the rapid development of broadcasting. In another field commercial firms owe to d'Arsonval the discovery of the methods of sterilizing organic fluids by cold, which have made possible the manufacture of the products used in organotherapy. It ought to be more widely known that d'Arsonval, in collaboration with Brown-Séquard, played an important part in investigating the properties of organic liquids, and foresaw the development of endocrinology, of which he said, in 1891, before the Société de Biologie: "We believe now that all tissues, whether glandular or not, contribute something to the blood, that each phase of nutrition is accompanied by internal secretion. We believe consequently that all the tissues can and ought to be used in special cases as a mode of treatment; that, in a word, a new therapy will be created in which the medicaments will be products made by different tissues of the body. . . ." Whatever subject d'Arsonval touched, he enriched it by the originality of his ideas, and the debt medicine owes him is incalculable. But with the modesty and simplicity characteristic of a great man he attributes his success to the circumstances in which destiny placed him—his meeting with Claude Bernard, his niche in the laboratory of the Collège de France, the affection of his wife and the solace of his home, and his own insatiable interest in the phenomena of life. In addition to his great achievements as a scientist, d'Arsonval is a serene philosopher, whose kindness of heart and equable temperament endear him to all who have the good fortune to be his colleagues.

BRITISH POST-GRADUATE MEDICAL SCHOOL: WHOLE-TIME CHAIRS

In our advertisement pages last week there appeared a notice by the Senate of the University of London inviting applications for four university chairs tenable at the British Post-Graduate Medical School at Hammer-smith, which is expected to open its doors next autumn. These professorships are in medicine, in surgery, and in obstetrics and gynaecology, each with a salary of £2,500 a year, and in pathology, at £2,000. Applications (twelve copies) must be received not later than first post on May 4th by the Academic Registrar, University of London, S.W.7, from whom further particulars may be obtained. We have before us the full announcement relating to the chair of surgery, from which the terms of the other three may be inferred. Candidates must possess qualifications which are registrable in Great Britain, and their applications must be accompanied by the names of not more than three

persons to whom reference may be made. If any of the referees are resident abroad they should be asked to write direct to the academic registrar without further intimation. Under the University regulations the board of advisers is not limited in its choice to persons who have applied for the post. The full title of the holder of the chair will be "professor of surgery in the University of London and director of the surgical unit at the British Post-Graduate Hospital and Medical School;" and the professor will be appointed by the London County Council to the office of surgeon to the Post-Graduate Hospital. The chair will be a whole-time appointment and the professor may not hold any other public appointment, nor engage in any other professional work without the approval of the Governing Body of the School. He may not hold office after September 30th in the session in which he attains the age of 60, subject to a proviso that the Senate, on the advice of the Governing Body, can renew the appointment until a later age as provided by the regulations on university titles. Subject to the directions of the Governing Body, the professor will have charge of the surgical unit at the hospital and direct and supervise the work of the students in that unit. He will be required to organize a department of clinical research and to do all in his power to promote and advance the study of surgery. Other conditions as to tenure, superannuation, and duties are set out in the official announcement obtainable from the academic registrar. An article, describing the inception of the School and the progress so far made with the scheme, appears at page 487.

ABDOMINAL MANIFESTATIONS IN RHEUMATISM

Under this title in 1931 Dr. K. H. Tallerman contributed an article to these columns¹ which drew attention to the possibility of involvement of one of the serous membranes of the body—the peritoneum—in the course of rheumatic infection. In a special number of the *American Journal of Pathology*,² in honour of Frank Burr Mallory, Dr. L. J. Rhea has recently discussed the occurrence of rheumatic peritonitis. He bases his remarks on the case of a man of 25 who had suffered from three previous attacks of acute rheumatic fever, in which the heart had become involved. He was admitted in his last illness with abdominal cramps and aching pains in front of the chest, radiating to the back. His abdomen was found to be rounded, a little distended, and with resistant abdominal muscles. With rest in bed and proper medication most of the signs and symptoms partly or wholly disappeared. Then heart failure supervened, and during the last few days of illness the patient complained of generalized abdominal pain. At necropsy the peritoneum showed evidence of localized areas of acute inflammation, and, microscopically, except for the fact that the lesions were diffuse, the appearances were similar in every way to the so-called Aschoff bodies found in the heart in this and in other cases of rheumatic fever. Dr. Rhea believes that such lesions are specific, resulting from the action upon the peritoneum of the causative agent of the disease. He suggests that involvement of the peritoneum in rheumatic fever is more common than is generally thought. This is borne out by the reports³

of other cases in France, showing, however, points of difference. Two of these were observed by M. G. Baudet, who reported a similar case in 1931. In one, that of a girl of 18, the illness began with a typical acute appendicitis, which was dealt with by operation. Fifteen days later one of her wrists became painful, red, and swollen. This was resistant, however, to sodium salicylate, so the rheumatic nature of the abdominal disorder must be reckoned doubtful. The other case was in a man of 21, who complained of pain in the right iliac fossa after cavalry exercises. Operation revealed a congested appendix and in the abdomen a certain amount of clear fluid, which was sterile on bacteriological examination. Some days later the knees became painful and swollen, and there was much general perspiration. Treatment with sodium salicylate removed all the articular signs and symptoms within forty-eight hours. At the same discussion in France, M. Robert Monod described another variety of abdominal rheumatism. A woman of 32 began her illness with an acute follicular tonsillitis, followed about twelve days later by a localized painful swelling in the thyroid gland. After twenty-four hours this had settled down, but suddenly, a week later, acute pain in the right iliac fossa supervened, with vomiting. Some rigidity of the abdominal muscles developed slowly, and three days later a very slight degree of congestion in the appendicular and caecal regions was observed at operation. The appendix was removed. Five days after this diffuse articular pains recurred, with some swelling and redness of the metatarso-phalangeal joint of the left foot. There was also fever, and it was thought that a mitral systolic murmur could be heard. Sodium salicylate quickly relieved all signs and symptoms. This last case does appear to be one of rheumatic appendicitis, with some degree of peritoneal reaction, but in all three of these French cases the diagnosis is retrograde, since arthritis appeared after the abdominal manifestations. Diagnosis before this stage would have been impossible, and exploration of the abdomen was inevitable in all three. The preceding tonsillitis in the last patient is of especial interest.

TOXIC GASES

It is perhaps too late in the development of modern civilization to express horror and disgust at the amount of intensive research still being carried out on war gases. Nor does it serve to deter nations to remind them that nearly twenty years of study of the technique of gas warfare have elapsed since the "black day of Ypres," when the first great gas attack was made by the Germans. In a recent work by O. Muntsch, one of the principal medical officers of the Reichswehr, pride is taken of the fact that "it remained to German scientific genius, as so often before, to bring gas warfare to an effective military form." These twenty years have made gas warfare, as it was known in 1915-18, seem childish, but simultaneously methods have been devised to combat gas attacks, and with man's extraordinary power of adaptation it is possible to say, as Dautrebande does in *Les Gaz Toxiques*: "It is not to be considered that these war gases constitute a particularly deadly or mysterious arm. It also appears to us useless to

¹ *British Medical Journal*, 1931, ii, 844.

² 1933, vol. ix, Supplement, p. 719.

³ *Bull. et Mém. Soc. Nat. de Chir.*, 1934, ix, 5.

⁴ *Les Gaz Toxiques*. Par L. Dautrebande. Paris: Masson et Cie. (60 fr.)

protest violently against their use." This author goes on to argue that gas warfare has not that particularly inhuman character which one was inclined to give it in the first days. In the last war gas casualties numbered less than 9 per cent. of those from other methods: also, while of English casualties only 3.3 per cent. of the gassed died, other methods had a mortality rate of 25 per cent. Further, while the civil population has no special means of defence against the usual arms of war, it has a very effective special defence against gas attack, so that Dautrebande considers gas as the least murderous of war methods. It seems to us that this is going too far, for antidotal methods are known only for the gases whose compositions have been published, and we have no means of knowing what deadly compounds are in the hands of possible enemies and which would find us, in case of war, without effective measures. War has a habit of bringing surprises. But this monograph offers much matter of extreme interest, and describes in detail the properties of a great variety of substances which can give rise to toxic results, whether they fulfil the criteria of a war gas or not. Very abundant detail is given in the consideration of the physiopathology of the respiratory tract, and much will be found to interest the clinician and physiologist. An excellent chapter on the carotid sinus is particularly to be recommended.

THE DYEING OF EYELASHES

Last year the *Journal of the American Medical Association*¹ published reports of seven cases of eye injuries, several of them severe, following the use (in all but one instance) of a preparation known as "lash lure" and said to contain an aniline derivative. Three of these patients had keratitis and uveitis, three others had recurring attacks of dermatitis and conjunctivitis, while in the seventh there were dense corneal opacities leaving permanently obstructed vision. Whether the damage was due to personal idiosyncrasy or to an excessively strong solution or to careless application does not seem to be clear. The Health Commissioner of New York took a serious view of the situation, and in a communication issued on November 23rd he announced a ban upon the manufacture, sale, or use, in beauty parlours in the city, of dyes known to contain harmful ingredients. Several examples of dyes charged with causing eye afflictions showed a high presence of aniline derivatives, while two others were found to contain such large percentages of silver nitrate as to render them dangerous. The ban does not extend to the use of eyebrow pencils or "mascara," or, presumably, to the familiar lamp-black preparations which need repeated application to the eyelashes and (being merely superficial "paints" and not dyes in the true sense) are proof against neither tears nor rain. It is generally agreed that while all hair dyes are to some extent dangerous, the descending order of potential harmfulness is: (1) aniline ("para" and its associates); (2) mineral dyes (copper, silver, and lead, generally combined with pyrogallol or sodium thio-sulphate); (3) vegetable dyes such as henna. "Lash lure" appears to belong to the paraphenylenediamine group, and as such would be likely to produce a severe reaction in sensitive persons.

Eyelash dyeing in the strict sense, by which is meant the use of some chemical substance that blackens the whole hair shaft and causes it to retain its colour, enjoys a certain popularity in this country. Many of the smallest hairdressers, at any rate in London and the big towns, will undertake to dye a customer's eyelashes for a very small sum. The higher grades of beauty specialists ("beauticians" in America) may have as many as 300 regular customers on their books who pay visits at two-monthly intervals when the naturally growing and untinted eyelash has become (to them) unpleasantly conspicuous. In most cases, however, hairdressers are not anxious to dye eyelashes and are careful to warn the customer of possible dangers. Some sort of medical history is generally taken, and a few firms employ a skin test. This is seldom the patch test recommended by Ingram,¹ but usually involves applying the dye powder dry on the skin, which has been lightly scarified beforehand. It is of interest here to note that even with the patch test there may be a greatly delayed reaction, and Ingram recommends that the patient should be under observation for at least a month. As to the actual application of an aniline dye, hydrogen peroxide is used to make a paste; this is put on with orange sticks to the lashes of the closed eye, and generally takes ten to twenty minutes to act. It is then removed. The mechanism aimed at is the oxidation of the dye in the hair shaft, the resultant substance in the case of "para" being the relatively inert "Bandrowski's base." Ingram estimates the idiosyncrasy to the phenylamine diamines at 4 per cent. among normal persons. If this figure is accepted it is surprising that the practice of eyelash dyeing has not been followed in England by consequences as disastrous as those reported in America. It may well be that manufacturers have succeeded in obtaining a substitute for "para" which is less irritating than one has reason to suspect; it may be that no dye as strong as "lash lure" is used, and it may be that the technique of application and selection of "cases" receives more careful attention over here.

METCHNIKOFF'S LAST PAPERS

At the time of Metchnikoff's death two of his writings of considerable interest—namely, *The Death of the Silkworm Moth* and *The Sexual Function*—remained unpublished. These articles are supplementary to his *Studies on Human Nature and Optimistic Essays*, and on that account, as well as from their inherent interest, it has been deemed advisable to publish them. They are now included, together with his work on 'Pasteur, Lister, and Koch (published in Russia in 1915), in a volume entitled *Three Founders of Modern Medicine*.² In the two articles mentioned, Metchnikoff returns to the subject of longevity and normal death or thanatology, to use his own expression. He quotes the Italian Bodio to show that the average duration of life is no greater now than it was in the time of King David, if the first years of infancy are left out of account. He enumerates many circumstances which conspire to limit the duration of life to the present average of seventy.

¹ Ingram, J. P.: *Brit. Journ. Derm. and Syph.*, 1932, xlv, 424.

² *Trois Fondateurs de la Médecine Moderne*. Par E. Metchnikoff. Nouvelle collection scientifique. Paris: Félix Alcan. (15 fr.)

years, which cannot be accepted as the normal duration. He himself attached great importance to the intestinal flora, which he regarded as injurious, in opposition to the general opinion that there is symbiosis between the microbes and the human organism. He believed that by suitable dietetic measures, adopted from infancy onwards, the intestinal microbes could be eliminated, and that this, together with the prevention of disease through the increase of medical and hygienic knowledge, would lead to the prolongation of life to its normal length, terminating in normal death. Here Metchnikoff assumes the role of philosopher, propounding his doctrine of orthobiosis, that the end of existence is life itself, active, conformed to the disposition of the individual and prolonged to the onset of the instinct of death, when man experiences the satisfaction of having lived long enough and begins to desire death, to which he voluntarily yields. One must be content at present with the average duration of life, but normal death may be made the subject of scientific investigation. Metchnikoff sought a suitable subject for experimental research, and found it in the silkworm moth. This creature is incapable of taking nourishment; it is not organized to live more than a few days (about fourteen), and, as death occurs before the nutritive reserves in its body are exhausted and independently of injurious physical conditions such as desiccation, its death may be regarded as normal. Metchnikoff made an exhaustive histological study of the tissues, but could find nothing to throw any light on the cause of death; then, turning to the secretions, he made the interesting discovery that after the first few days the moth exhibited complete retention of urine, and the fluid taken from the enormously distended cloaca was found to be highly toxic. He concluded that "although the moths react to pain to the last moment, one must believe that they die poisoned by the products of their own organism, without suffering and without the apprehension of death. One may hope," he adds, "that this end, which the moths reach by a simple natural process, will be attained in the future by men also." Apparently he considered the toxic substance to be the product of a special internal secretion.

SECTION OF RADIOLOGY AT BOURNEMOUTH

At the Annual Meeting of the British Medical Association next summer the Section of Radiology and Electro-Therapy will meet on July 25th, 26th, and 27th. Unfortunately these three sessions coincide with the International Congress of Radiology at Zürich. The officers of the Section appreciate that there will be great difficulty in obtaining speakers, especially as it will be impossible to have any foreign guests, and because so many British radiologists will be going to Zürich. At the same time, they are very anxious to make the Section a success, and are arranging what they hope will be an attractive programme. The honorary secretaries (Dr. G. Lieba Buckley, 29, Poole Road, Bournemouth, and Dr. John Roth, 40, Harley Street, London, W.1) would therefore be glad to hear of any radiologists or electrotherapists (members of the Association) who intend to visit Bournemouth for the Meeting, especially those who would be willing to take part in the discussions.

THE PHARMACOPOEIA COMMISSION

The *British Pharmacopoeia* which was published in September, 1932, has been on the whole favourably received, but has necessarily led to considerable criticism of detail. The new Pharmacopoeia Commission, which took office in October, 1933, is now engaged in dealing with these criticisms, in investigating disputed points, and in collecting the material required for revision. Expert subcommittees have been formed to deal with different aspects of the work. It is proposed that a complete revision shall be made during the next seven years, and that a new *Pharmacopoeia* shall be issued in 1941. It is proposed, also, to publish an addendum in 1936. This will contain any alterations in the standards and tests of the *Pharmacopoeia* which experience shall have shown to be advisable, and will include descriptions of, and standards for, new drugs. The Commission is desirous of the opportunity of considering comments upon the standards and tests for the substances included in the *Pharmacopoeia*, and it invites manufacturers, pharmacists, and others to send to the secretary of the Pharmacopoeia Commission, 44, Hallam Street, W.1, any representations they wish to make.

LORD ABERDEEN

The Marquess of Aberdeen, who died on March 7th, was elected an honorary member of the British Medical Association in 1897, during his period of office as Governor-General of Canada, which coincided with the Annual Meeting of the Association at Montreal in that year. The Marchioness was elected an honorary member in 1909, on the occasion of the Belfast Meeting, during Lord Aberdeen's Lord Lieutenancy of Ireland. At the memorial service held in London on March 12th at St. Columba's, Pont Street, the British Medical Association was represented by its Treasurer, Mr. N. Bishop Harman.

The twenty-fourth Oxford Ophthalmological Congress will be held in Keble College from July 4th to 7th. On the morning of July 5th a symposium on functional diseases of the eye will be opened by Sir Farquhar Buzzard from the neurological, Mr. Williamson-Noble from the ophthalmological, and Dr. William Brown from the psychological, aspect. The Doyne Memorial Lecture will be given by Professor Joseph Meller (Vienna) on "Tuberculosis and its Relation to Spontaneous, Post-traumatic, and Sympathetic Ophthalmia."

According to the quarterly return of the Registrar-General, the birth rate in England and Wales for the last quarter of 1933 was 12.8 per 1,000 population—the lowest ever recorded. The birth rate for the whole of 1933 is provisionally estimated at 14.4 per 1,000; the death rate at 12.3 per 1,000 population; and the mortality of infants under 1 year at 64 per 1,000 live births.

The ninety-eighth annual general meeting of the Royal Medical Benevolent Fund will be held at 11, Chandos Street, W., on Thursday, March 22nd, at 5 p.m., with the president, Sir Thomas Barlow, in the chair.

THE HASTINGS LECTURE

The sixth Sir Charles Hastings Popular Lecture, arranged by the British Medical Association, was given in the Great Hall of the Association's House, Tavistock Square, on March 7th, by Dr. Robert Hutchison, whose subject was "The Food of the Growing Child." The attendance was almost a record in the history of these lectures, and every seat on the floor of the hall was occupied. Lord Horder took the chair, and among others on the platform were the Mayor of St. Pancras (Mr. F. Hewson), the Chairman of Council of the Association (Sir Henry Brackenbury), the Treasurer (Mr. Bishop Harman), Dr. C. O. Hawthorne, Dr. F. W. Goodbody, Dr. Alfred Cox, and the Medical Secretary (Dr. G. C. Anderson).

LORD HORDER briefly introduced Dr. Hutchison, and reminded the gathering that these lectures were primarily intended to form a liaison between the medical profession and the public interested in personal and public health.

Dr. HUTCHISON then delivered his lecture (which was printed in full in last week's *Journal*, p. 439).^{*} The lecture occupied just an hour in delivery, and Dr. Hutchison managed to bring to an important subject not only a good deal of common-sense counsel, but more than a few touches of dry humour.

QUESTIONS AND ANSWERS

At the close, members of the audience were invited to send up questions, and for twenty minutes Dr. Hutchison was occupied in answering, very tersely, a sheaf of them. The first question was whether tobacco smoking adversely affected the growth of the adolescent. Dr. Hutchison replied that there was no scientific reason to suppose that tobacco smoking did so, but smoking between meals undoubtedly interfered with appetite, and therefore indirectly might interfere with growth. Asked why sugar was more harmful than starch if taken in excess, especially in view of the fact that starch was absorbed into the blood in the form of sugar, he said that the reason was that starch took some time in conversion, its absorption was very slow, and the blood was not flooded with a large amount of it at once. Again, sugar was an irritant in strong solutions. Grocers working with sugar got eruptions on the arm, called grocer's eczema, and in the same way there was irritation of the stomach if excessive quantities of sugar were taken, a thing which did not happen with starch. Another questioner asked whether fruit did not help to avoid constipation, which was one cause of lack of appetite. Dr. Hutchison replied that that was a very roundabout way of getting the result. Raw fruit was not nearly so laxative as many people supposed. A pill might be at least equally effective, and it did not "fill one out" as fruit did. Asked whether he advised cereal foods for the child's breakfast, he said that as a Scotsman he still stuck by porridge, but the objection to cereal foods in general was that from the nutrient point of view they were not worth their cost. They were a costly way of buying starch. There was no physiological objection to them, but there was that economic one. In reply to a question as to how to produce an appetite in a child, he said that this often meant big changes in the child's surroundings, one of the first being, perhaps, to send the child away from his mother.

^{*} *Corrigendum*.—In Dr. Hutchison's Lecture, as printed in the *Journal* of March 10th, the second sentence of the first paragraph should read: "and it is right that his name should be kept in remembrance, for in founding the Association he conferred a great benefit not only on the medical profession," etc. Owing to a printer's error the fifth line was omitted and line 10 of the same paragraph reduplicated.

These "appetist" children were nearly all solitary children, and on that account received too much notice. If taken away from the company of adults and made to sit down at meals with children of their own age they often did better. Asked how to deal with inability to take fats, he said that it was a matter of proceeding cautiously, beginning with small quantities, seeing that the fat was distributed through various foods, and using milk, which was probably the fat most easily taken. But there were some children whose livers never learned to deal with fat, so that they could not enjoy fats in anything like the average amount. On the question as to the desirability of milk, he said that, however good it might be, a great many children could not digest it. If it was a rule to give every child a pint or a pint and a half of milk a day, there would be a large minority unable to digest it comfortably. Asked what quantity of milk a child 2 years old should require he replied, "a pint."

Another questioner wanted to know how to tell when a child's appetite was normal, and whether it did not vary with the individual. Dr. Hutchison replied that that was just the point. The child's appetite was an index of the demand at the moment for energy intake. Each person dealing with a particular child knew the range of that child's appetite. As an outside observer he could only say of a child that he was a hearty eater or that he had an extremely bad appetite; the many intermediate stages could only be estimated by those who were with the child constantly. Asked as to the differences in the amount and kind of food required in summer and in winter, Dr. Hutchison said that during summer most children stood still or lost weight. Weight was chiefly gained from late September until the end of March. Appetite tended to fall off in the hot season, though the energy demand might be at the same level. If the child was forced to take part in active exercises in the summer he might readily lose weight. Asked whether he advocated forcing children to eat when they had no appetite, he said that he doubted whether this could be done. The best way of dealing with children with no appetite was to take no notice of them; not to coax or persuade them. They would eat less than ever in order to get attention. In the desire to receive notice they would eat very little at meals, and the more they were coaxed and persuaded the more definite was their resistance. Asked in what way brain-work affected food requirement, Dr. Hutchison said that educational overstrain did interfere with the power of digestion. The child who was worried and overstrained, as, for example, at examinations, suffered in his digestive power and hence his power of taking in and making use of adequate quantities of food, the result being loss of weight. Some question was raised as to the diets of different nationalities, but Dr. Hutchison remarked that such comparisons were extremely difficult. The differences between a Swede and an Englishman, for example, could not be explained on diet alone, but took in racial, climatic, and habit factors. In reply to a question as to the cause of acidosis, he said that it was usually due to the intake of more fat than the child could deal with relatively to his digestive capacity—not necessarily to an excess of fat in the diet. Asked whether conditions of the mouth, such as carious teeth and septic tonsils, were not a cause of loss of appetite, the lecturer replied that he did not know, but they might set up some catarrh of the stomach. He insisted, in reply to another question, on regular meal-times, with no extras between meals to tempt the child with a poor appetite. "Those who will not when they may, when they will they shall have nay." He approved, however, of the giving of milk to school children between meals: a glass of milk in the middle of the morning was all to

the good. One member of the audience urged a curfew for children, on the ground that insufficient sleep was a cause of lack of appetite. Dr. Hutchison agreed, but thought it would meet with opposition from the children and their mothers.

VOTES OF THANKS

Dr. C. O. HAWTHORNE, in proposing a vote of thanks to the lecturer, said that the Popular Lecture had been associated with a reasonable degree of entertainment and inspiration. Perhaps Dr. Hutchison's professional colleagues would particularly appreciate the lecture as illustrating the truth, which was not always recognized, that the practice of medicine was common-sense, associated with and founded upon technical knowledge, and that the object of medicine was not merely the cure of certain patients, but the prevention of disease and establishment of health. The lay audience might well be particularly grateful to Dr. Hutchison for having dealt with a highly technical subject in so lucid a fashion and with a minimum supply of polysyllables. There were two points on which he wished to congratulate him: first, the success and distinction with which he had passed his "examination" (meaning the facility with which he had answered the questions put to him), and secondly, the large contribution of service which he made

to his profession as a physician, and, that evening, as a lecturer.

Dr. HUTCHISON said that it had been a great pleasure to come and address the gathering, and an additional pleasure to have a vote of thanks proposed by a fellow countryman of his own, because he knew that Scotsmen were not given to flattery. He felt complimented, too, on seeing that so many had taken the trouble to come and listen to him, but he did not know whether it was altogether a good sign of the times. He could not help feeling that this interest in food was a little morbid, and that his audience might have been better employed in amusing themselves in some other way and have left the growing child to nature!

LORD HORDER, in reply to a vote of thanks which was moved by Dr. Hutchison, said that he had not hesitated for a moment when he received the invitation to preside, and nothing could have given him greater pleasure than to be associated on the platform with Dr. Robert Hutchison. Dr. Hutchison had brought to bear upon his theme a happy combination of extensive experience and practice with children, and of researches which throughout the whole of his professional life he had been carrying on in matters of diet. This had enabled him to present the subject not only happily and lucidly, but "with authority and not as the scribes."

France

[FROM OUR CORRESPONDENT IN PARIS]

Length of the Medical Curriculum in Paris

While various devoted reformers have been cudgelling their brains over the reform of the medical curriculum and the addition of another year of studies, it is natural to ask what is the burden, counted in time, under which the medical student already labours. A recent study¹ by the secretariat of the Faculty of Medicine of Paris deals with the 596 medical students who qualified as doctors in 1933. It was found that 85.73 per cent. had taken six years or more to qualify. There were only two who had been industrious and nimble-witted enough to satisfy their examiners in as short a time as five years and two or three months. There were seventy-nine who had taken exactly six academic years, and 430 who had exceeded this limit—by how much we are not told.

A General Medical Council for France

The Bill providing for a new "Order," with functions similar to those of the General Medical Council in England, has now been passed by the Chamber of Deputies. Introducing it to the Senate on January 25th, Dr. Gadaud reviewed its antecedents. In the past schools of medicine had vouched for scientific attainments by examinations and diplomas, but had not taken moral probity into account. Hitherto, traditions of honour and the high standing of medicine in France had assured moral as well as scientific probity. To-day, the conditions under which doctors work are profoundly changed, and it is necessary to meet the growing temptations and the facilities for yielding to them by the creation of an organization with disciplinary powers. One of the most important changes within the last forty years is the growing congestion in the medical profession. In 1913 there were only 1,572 medical students registered in France. The corresponding number in 1932 was 3,125. Again, the growing complexity of medical science has inevitably entailed co-operation between general practitioners and various specialists—a state of affairs providing opportunities for fee-splitting and other illicit financial readjust-

ments between doctors. Lastly, the introduction of State sickness insurance has brought the medical profession into contact with an impersonal, absentee, inattentive paymaster, the cheating of whom in the minds of a few delinquent practitioners is too tempting. It has been argued that the medical associations which most doctors have joined are capable of maintaining discipline within their ranks, and that the proposed Order is superfluous. It is true that more than 20,000 of the 26,500 French doctors are members of some medical association, but Dr. Gadaud argued that the function of a medical association or syndicate is very different from that of a medical Order. The former is concerned with a doctor's rights, the latter with his duties.

New Income Tax Regulations

The new income tax regulations of December 23rd, 1933, have exasperated the medical profession to such a degree that not only the various medical associations, but even the detached and austere Academy of Medicine have protested vehemently. According to the new regulations, a medical practitioner has to keep a book of receipts on which, as well as on the counterfoils, he must enter every day the sums he receives. The receipt and its counterfoil bear identical numbers instead of identical names—this to assure that professional secrecy which is imposed by law on French doctors, on whom heavy damages may be inflicted if, however inadvertently, they give information to a third party about their patients. The income tax inspector is to have access to these counterfoils, and it is easy to see how, posing as a patient, he could check a doctor's income tax return. It is felt that the medical profession has been degraded to the level of tradesmen by this system, which entails the prompt distribution of receipts for any sums received, however trifling. As pointed out by the Vice-President of the Academy of Medicine, Dr. Siredey, at a recent meeting of the Academy, consultants do not, like many general practitioners, have a fixed scale of charges, but temper the wind to the shorn lamb to such an extent that, while accepting a fee of 300 francs from one patient, they leave it to the patient in straitened circumstances to pay what he likes, even if it be only 20 francs. "How shall we be able to convince the income tax inspector of the bona fides of our book of records in which a receipt for

¹ *Concours Médical*, February 11th, 1934.

20 francs appears next to one for 300 francs? In his eyes we shall appear as first-class swindlers!" The Academy of Medicine has adopted the following resolution:

"The Academy, wishing to associate itself with the protests of different medical groups with regard to the new fiscal regulations imposed on the medical profession—remembering that doctors consider themselves bound to respect professional secrecy absolutely—protests against these regulations, which appear, on the one hand, to be inapplicable in practice, and, on the other hand, to be even contrary to the spirit of human and public solidarity of the medical profession, which cannot be assimilated in the slightest degree to commercial occupations."

Hospital Congestion and the Well-to-do Patients

The public hospitals of Paris are apt to be so congested that some patients have from time to time to be put up in extemporized beds or discharged too soon. One suggested remedy for this state of affairs is to provide more hospital accommodation. Another is to comb comparatively well-to-do patients out of institutions originally and still intended only for the poor. A recent discussion by hospital authorities in Paris has brought to light certain curious features of the present situation. It has been calculated that approximately a third of the inmates of the public hospitals at the present time are well-to-do and therefore out of place. The doctors on the staffs of these hospitals complain that by having to attend to this class of patient the really poor patient is liable to be pushed aside and the private practitioner is robbed of his dues. In 1925 the municipality of Paris granted 150 million francs to the *Assistance Publique*, which includes hospital services. The corresponding grant in 1932 was 350 million francs! The general practitioner not only suffers from this state of affairs but is also partly to blame for it. He finds it so temptingly easy to shift his difficult private cases on to a public hospital.

England and Wales

The L.C.C. Election

A noticeable feature—and, in the public interest, a very satisfactory feature—of the London County Council election on March 8th is the large number of members of the medical profession who have been returned. There should be no difficulty in staffing the mental hospitals, the Housing and Public Health, and the Hospital Management Committees (to give them their new titles, hitherto somewhat unfamiliar) with medical members well competent to offer sound professional advice to the lay members in those important branches of the Council's work. To take them in the order of their constituencies, Bermondsey (Rotherhithe) has returned Dr. J. A. Gillison (Labour), the junior partner in a firm in that district and a member of the Panel Committee for the County of London: he has not previously sat on the County Council. Greenwich returns Miss Esther Rickards, F.R.C.S. (Labour), hitherto an alderman; she is on the honorary staff of the Lock Hospital and is an assistant medical officer under the Finsbury Borough Council; on the outgoing Council she was a prominent member of the Central Public Health Committee, and displayed especial interest in matters relating to maternity and child welfare. Hackney (Central) has elected Dr. Bernard Homa (Labour), who is a new recruit at County Hall but has experience to his credit as Member of Council of the Metropolitan Counties Branch of the British Medical Association, on the London Panel Committee, and on the Central Committee of the London Public Medical Service. Hampstead sends another new member in the person of Dr. S. Monckton Copeman, F.R.S. (Municipal Reform), the

very well known former medical officer to the Ministry of Health. Dr. Copeman is a member of the Metropolitan Counties Branch Council of the British Medical Association. Kensington (North) returns Dr. Henry Robinson (Municipal Reform), who has already represented that constituency and has been for the last year or two vice-chairman of the hospital management subcommittee of the Central Public Health Committee, as well as chairman of the Bexley Mental Hospital and of St. Peter's Hospital, Whitechapel. He has been for some years honorary treasurer of the Medical Defence Union, member of Council of Epsom College, and Member of Council of the Metropolitan Counties Branch of the British Medical Association; he is now Chairman of the Kensington Division, and last December was elected to the Central Council of the Association. Shorechitch returns Dr. S. W. Jeger (Labour), a member of the outgoing Council, who is a public vaccinator in his area and chairman of the Public Health Committee on the local Borough Council. Southwark (North) is once more represented by Dr. C. W. Brook (Labour), who comes of a medical family established for some generations at Lincoln (and still notably represented there); he is anaesthetist to the British Dental Hospital, and in general practice at Balham. Stepney (Mile End) sends for the second time Mr. Somerville Hastings, F.R.C.S. (Labour), formerly M.P. for Reading, and well known in London through his connexion with the Middlesex Hospital, where he is surgeon to the ear and throat department. He has been prominent in the Council Chamber on such subjects as tuberculin-tested milk and health propaganda by means of posters, which he wishes to have displayed in the Council's hospitals on the walls of waiting halls, corridors, etc. Westminster (St. George's) returns Dr. Florence Barrie Lambert (Municipal Reform), who has sat for twelve years on the Council, where for the last seven years she has been Chairman of the Central Public Health Committee. The range and quality of the work she has done there is recognized by both political parties, and by none more than by the members of the medical profession, though London as a whole is by no means fully cognizant of how much it owes her. Dr. Lambert was trained as a nurse at the London Hospital, went to the South African War as a fully trained sister, then took up a medical career and attained the rank of Major in the R.A.M.C. during the European War. She was for some years on the medical staff of the Ministry of Health. Woolwich (West) sends up Dr. S. McClements (Labour), another new member with his spurs yet to win and youth on his side. Only one medical member of the late Council is not returned, Dr. Adeline Roberts (Municipal Reform), who sat for St. Marylebone but did not stand again in circumstances which have already been ventilated in the daily press; her absence will be a loss to the County Council, where she has been a valuable member for twelve years. Apparently no medical candidate throughout the County of London failed to secure election—a most remarkable record.

Medical Society of London: Anniversary Dinner

The 160th anniversary dinner of the Medical Society of London was held on March 6th at the Trocadero Restaurant, with the president, Sir John Thomson-Walker, in the chair. In proposing the health of the Society, the Home Secretary, Sir John Gilmour, said that its work was directed immediately to the alleviation of pain and the betterment of mankind. He could speak with a knowledge of the difficulties encountered by the medical profession in peace and in war, as he had come into close contact with its members in the South African and in the late war. Referring to scientific progress in medicine, Sir John Gilmour remarked that the man who did not make experiments or take risks probably did not

good in this world. It was a great help to him in his official work to meet members of the medical profession, from whom he had derived benefit in both public and private life. Sir John Thomson-Walker, in reply, said that they met that evening in accordance with the rules laid down in 1773. At that time there were eight medical societies in London, but this Society was the only one that had survived. It owed its survival to the fact that it was founded by a general practitioner, John Coakley Lettson, a very active, shrewd Quaker, who saw the danger of a society's being run as a one-man show. Lettson died in the year of Waterloo, when the Society was forty-two years old. The Medical Society of London gave birth to the Medical and Chirurgical Society, which later became the Royal Society of Medicine. Since the formation of their Society, Sir John said, one of the greatest changes in the medical profession had been the growth of specialism. The dangers of specialism observed in other countries had been avoided here owing to the robust common sense of its practitioners. Sir William Willcox, in proposing the health of the guests, said that the Society was very glad to have with it Sir John Gilmour, who was not only a distinguished politician but a lover of country life. The Home Office had one bond in common with the medical profession—they both investigated crime. Welcoming Lord Macmillan, the speaker referred to the great efforts he had made on behalf of the University of London. Among the other guests Sir William alluded to Sir A. Grant, one of the founders of the Scottish National Library. In a witty speech of reply on behalf of the guests, Lord Macmillan said that he was especially glad to meet distinguished members of another profession, and such contact was of immense benefit to both: they had a great deal to learn from each other. In his work for the University of London he had found that it was one of the greatest medical universities in the world, and in this connexion he welcomed the new Post-Graduate School of Medicine at Hammersmith. If the Empire was to continue in strength, Lord Macmillan continued, it needed to acquire professional ideals and aspirations: the bonds of the spirit must be strengthened by the professions. In the Dominions the classes who governed were the doctors, the lawyers, and the accountants—the professional classes.

Bristol Health Congress

In connexion with the Health Congress, which is to be held this year at Bristol from July 9th to 14th, the Royal Sanitary Institute announces the following among other presidents of sections and conferences. Professor W. W. Jameson, M.D., Section on Preventive Medicine; Dame Janet Campbell, M.D., Section on Maternity, Child Welfare, and School Hygiene; Professor J. T. Share-Jones, F.R.C.V.S., Veterinary Hygiene Section; Mr. Frank Lewis, Section on National Health Insurance; Dr. L. H. Lampitt, Hygiene of Food Section (arranged in conjunction with the Food Group of the Society of Chemical Industry). The Lord Mayor of Bristol will preside over the Conference of Representatives of Sanitary Authorities, and Dr. Charles Porter over the Conference of Medical Officers of Health.

The Infirmary Appeal at Leeds

The appeal which was launched some months ago by the General Infirmary for the large sum of £250,000 is meeting with an amount of support which encourages the authorities to look forward with hope to the time when all the money may be obtained. The amount given or promised up to date is £133,364, and steady additions are noted every week. Many of the surrounding towns are interesting themselves in the matter, and are making special efforts to help. It is right they should do so,

since the statistics show that there are many areas outside the borough of Leeds from which large numbers of patients come, or are sent to the Infirmary, but which contribute very little to its support. It is very encouraging to find that this is being more fully recognized now than it has been in the past. The proud title of "The General Infirmary at Leeds" (not the "Leeds General Infirmary") should carry with it not only great responsibilities outside the boundaries of the city but a proportional degree of financial support. Meanwhile, careful thought is being given to the plans for extension, and in this, as happily is always the case in Leeds, the opinion of the honorary staff is being given every consideration. In the *Magazine* of the Medical Society of the University, Mr. Charles Lupton, writing from an experience of more than half a century and from a fullness of knowledge which, in Leeds at least, must be unique, expresses himself as follows:

"So far as finance is concerned, I think we are passing into a new era. The fact that our hospitals are giving to the poorest a safer and better relief from their sufferings than can be obtained by the highest in the land by treatment in their own homes or in a nursing home, is already well known to the working classes, and the news is spreading rapidly."

This is, indeed, very true, but in the extension scheme the needs of those who are not deemed suitable for purely gratuitous treatment, or who cannot afford the heavy expenses of private treatment in a nursing home, are not being overlooked; and here again Mr. Lupton may be quoted, for he continues as follows:

"The new pay wards (one of the most important of the proposed extensions) will only be a first step in the ladder. I have a strong belief that the next change we shall see will be a demand for much greater paying accommodation."

As the requirements of the Infirmary, through the medium of these columns, may be brought to the notice of that large number of medical men who look back with pleasure, gratitude, and pride to their student days within its walls, it is hoped that they will bring the claims of this important part of their Alma Mater before those who may be in a position to subscribe, and also add to the goodly number of those former students who have already responded to the appeal.

District Nursing in London

The annual meeting of the Central Council for District Nursing in London was held on February 22nd, when the nineteenth annual report, for the year ended December 31st, 1933, was adopted. The scheme for the home nursing of persons coming within the scope of the Public Assistance Department of the London County Council has now been in operation for over a year. The total number of cases in receipt of relief or referred from L.C.C. hospitals or by district medical officers for the year ended September 30th, 1933, was 3,243, and the visits paid to these cases totalled 139,845. The Central Council received a grant of £200 from the trustees of the London Parochial Charities, to enable nurses who had difficulty in finding the examination fees for the C.M.B., thus increasing their usefulness in their profession and to the area in which they work. Since these grants were first inaugurated forty nurses have passed this examination. District nursing has gradually extended in Middlesex. A new association has been formed to include Golders Green estate, some adjoining poor streets, and the Council estate of Clitherhouse. The district associations of Wealdstone and Harrow have amalgamated. The East London Nursing Association has built a new and commodious home, and others are projected elsewhere. Grants and subscriptions have been received for distribution from the City Parochial Charities, the Peabody, Guinness, and Samuel Lewis Trusts, and the London County Council.

In the case of the last named a subsidy of £1,000 was received quarterly in respect of the district nursing of Poor Law cases. The allocations were determined on the basis of the number of visits paid, and this enabled a distribution to be made of approximately 6½d. a visit for the first, second, and fourth quarters, and just over 7d. for the third quarter. The cost of a nursing visit in London has been estimated to average about 1s. 4d. The representatives of the British Medical Association on the Central Council were Mr. Comyns Berkeley and Dr. William Paterson, and Dr. Christine Murrell, until her death last October.

Alcohol and Motoring

Mr. W. McAdam Eccles, on taking the presidential chair of the Temperance Collegiate Association on March 7th, devoted his address to the question of alcohol and motor vehicle control. He began by emphasizing that the pedestrian as well as the motorist who failed to avoid a so-called "accident" because his reaction time was dulled by alcohol circulating in his blood was blameworthy. The public should realize that it was not always the driver who was responsible, and the number of people walking in the road under the influence of drink was perhaps greater than the number of drivers whose perception was blunted from the same cause. Mr. Eccles further pointed out that alcohol in all its stages of influence upon the nervous system was not a stimulant, but a narcotic, meaning a substance inducing stupor or drowsiness and some deprivation of sense. One drop of alcohol in 1,000 drops of blood (0.1 per cent.) produced symptoms, three drops produced real drunkenness, and five drops such stupor as to bring about the possibility of death from acute alcoholic poisoning. It was not the amount taken into the stomach, but the proportion circulating in the blood which induced the state of being "under the influence." He claimed that all persons taken under this suspicion to the police station should have the percentage of alcohol circulating in their blood estimated, either by the police surgeon or the doctor of their choice, or both. If the percentage was over 0.1 it could be definitely stated that the person had sufficient alcohol circulating in the blood to render him "under the influence" of drink. Some recent extraordinary statements, even from the judicial bench, showed how greatly a really scientific and yet practical test was needed. Certain administrators of justice were evidently still incapable of seeing the difference between being "under the influence" and being drunk.

In a brief discussion Dr. Alexander Baldie, a divisional surgeon of the Metropolitan Police, said that the amount of alcohol in the blood had to be related to the idiosyncrasy and temperament of the person concerned. The element of fatigue in particular came in, and bulked to nearly the importance of alcohol. It happened repeatedly, said Dr. Baldie, that men such as commercial travellers drove about the greater part of the day, eating little or nothing, and after refreshing themselves at the wayside inn with alcohol on an empty stomach found that the combined effect of alcohol and fatigue led to loss of control. Fatigue was only an illustration of a number of conditions which rendered a man susceptible, and which made it difficult to lay down the absolute rule that alcohol should be forbidden to all persons driving, irrespective of other conditions. Mr. McAdam Eccles, while agreeing with Dr. Baldie that the matter was one for joint conference by psychologists, neurologists, and sociologists, said he was sure that Dr. Baldie would not uphold the view that alcohol was the best antidote to fatigue; in any case the serious accidents of which one read in the newspapers were due less often to fatigue than to unwise indulgence on social occasions, into which no element of weariness after bodily or mental labour had entered.

Scotland

East Fortune Sanatorium

The eleventh annual report by Dr. Charles Cameron, medical superintendent of the sanatorium maintained at East Fortune by the South-Eastern Counties of Scotland General Sanatorium Board, points out that for the year ending May, 1933, the weekly cost of maintenance per patient was 36s. 7d., which compares favourably with an average cost in the majority of similar institutions in England of between 40s. and 70s. The total daily average number of patients was 205. Patients discharged from the institution numbered 209; of these 32 per cent. were apparently recovered, 47 per cent. improved, 6 per cent. stationary, and 4 per cent. worse; 10 per cent. died. Of the twenty-two deaths fifteen had been in lung cases. On the general subject of tuberculosis the report points out that the disease is not simply one of a limb or organ, but of the whole body—a fundamental point which has only recently been completely grasped. Accordingly the early days of the present century saw much surgical interference with tuberculous patients, which was often productive of bad results. The sanatorium treatment of tuberculosis of the lungs pointed the way to the important part played by raised body resistance in the healing process.

Edinburgh Dental School

The report presented to the forty-second annual general meeting of the Incorporated Edinburgh Dental Hospital and School, with Professor Sydney Smith presiding, showed that during the year there had been 150 students attending hospital practice as against 139 in the previous year, and that thirty-one new pupils had been apprenticed. During the year forty-two students had had their fees paid in whole or in part by the Dental Board. The income had amounted to £6,177, and there was a credit balance of £14 18s. Reference was made to the resignation from the office of dean of Dr. William Guy, on September 30th last. Lieut.-Colonel Finlayson had acted as dean for three months, and Mr. Arthur Cyril William Hutchinson, Manchester, had been appointed to the post as from January 1st, 1934. In connexion with this appointment the Dental Board had offered a grant of £500 per annum, for a period of five years, towards the salary of the dean as a whole-time teacher of clinical dental surgery. With regard to the work of the Dental Hospital there had been 12,788 conservation cases, 1,948 prosthetic cases, and 5,952 extraction cases.

Edinburgh Orthopaedic Clinic

At the annual meeting of the Edinburgh Orthopaedic Clinic, which was held on February 20th, Mr. Charles Guthrie, who presided, said that the object of the clinic was to provide massage, medical gymnastics, medical electricity, and ultra-violet light treatment for people of limited means at moderate fees. During the year 338 patients had been admitted, and 6,980 treatments had been given as against 6,841 in the previous year. The revenue had been £709, but there was a deficit of £202 on the year's working. Miss Gertrude Herzfeld said that the work of the clinic had begun in a single room with one masseuse; at the present time there were fifty patients, daily under treatment and eight masseuses, who worked four hours daily. The work had increased steadily during the past seven years, and there was a long waiting list of over sixty patients, some of whom would require to wait for about four months before commencing their treatment.

Reports of Societies

HAEMATEMESIS

At a joint meeting of the Sections of Medicine and Surgery of the Royal Society of Medicine on March 7th, with Professor G. E. GASK, president of the Section of Surgery, in the chair, there was a discussion on haematemesis.

Dr. ADOLPHE ABRAHAM enumerated the causes of haematemesis, naming peptic ulcer, malignant and benign gastric tumours, cirrhosis of the liver, splenic anaemia, and the haemorrhagic diathesis. The symptom was not, he said, common in cancer of the stomach, and innocent tumours were rare. Occasionally blood from the nose or the lung might cause uncertainty, but frank haematemesis, and the accompanying blood in the stools, offered no difficulty in diagnosis. The subject of haemorrhage from peptic ulcer had been discussed in 1923; since then advances in haematology had affected the treatment. A degree of anaemia that at one time would have excited panic was now regarded with equanimity. There was bound to be a discrepancy of mortality figures between those favouring surgical intervention and those preferring conservative treatment. Certain types of patient demanded surgical measures—for example, those with degenerate arteries which could not contract. Others, such as oozing cases, offered greater difficulty. One type of ulcer patient showed a special tendency to bleed, and authorities differed as to whether surgery was particularly valuable for this group. Apart from peptic ulcer and splenic anaemia the indications for surgery were few, and splenectomy did not always prevent or retard cirrhosis of the liver and subsequent grave haematemesis. Gastric bleeding was sometimes followed by pyrexia, which might be due to stagnating blood clot in the intestine, or to activity of the ulcer. Blindness following haematemesis might be both complete and permanent; its mechanism was obscure.

Mr. G. GORDON-TAYLOR mentioned, as additional causes of haematemesis, non-calculous cholecystitis, fibroid appendix disease, and rare cases of intestinal stasis. None of these demanded urgent surgery, which should only be employed after definite proof of the existence of chronic ulcer. Prophylactic surgery could not guarantee success, unless it took the form of resection. Mortality increased enormously after each successive haemorrhage, and operation should be performed after the first. It was more convenient to wait until the bleeding ceased, but there was no certainty that it would cease. Figures from the Middlesex Hospital showed a mortality rate of 78 per cent. for second haemorrhages, but a slightly lower death rate for medical than for surgical treatment in bleeding ulcers. Patients with stenosis, mid-gastric narrowing, perforation, or large, deep, or chronic ulcers would almost certainly die if left alone. The decision must be made at once: early enterprise was the most certain prelude to success. Local anaesthesia and abundant blood transfusion must be used, and as little anaesthetic given as possible.

Dr. T. IZOD BENNETT agreed with Mr. Gordon-Taylor in his plea for co-operation between physician and surgeon, and in his selection of cases urgently calling for consultation with a surgeon—namely, chronic peptic ulcer and stenosis. Unfortunately these formed but a small proportion of all cases of haematemesis. The vast majority of cases of haematemesis seen in hospital ought never to have been admitted; they had been moved through mistaken judgement or on account of bad home circumstances. Grave cases of gastro-intestinal bleeding should not be moved. Statistics from hospitals should therefore not be quoted in a discussion of the relative advantages of surgical and medical treatment; they represented only the very worst cases. Dr. Bennett discussed seven cases of fatal haematemesis in his experience; only one, he felt certain, could have been saved by surgery. The indications for operation were exceedingly rare. The proper medical

treatment included meticulous care for at least a week: absolute withdrawal of anything by mouth for thirty-six hours; morphine in sufficient doses to produce twilight sleep for the same period; rectal salines; and most careful nursing night and day. Food and drink should then be restored most cautiously, with constant observation of the pulse and stools. Normal saline by mouth was the first thing to give.

Mr. A. S. MORLEY spoke of the improved transfusion service, and said that haemorrhage from acute ulcers was the province of the physician. Since some 10 per cent. of those with haematemesis died there was a grave problem for consideration. Many patients were unfit for thorough investigation to prove the presence of chronic ulcer, but the clinical history was a valuable diagnostic indication, though it would not distinguish between gastric and duodenal ulcer. Rules could not be formulated to fit every case, but serious bleeding was usually due to erosion of a large vessel, and death followed a series of bleedings. Collapsed exsanguinated patients should not be operated on, nor should interference be postponed for months. If the diagnosis was reasonably sure the surgeon should aim at getting the patient fit for operation as soon as possible, by the medical means mentioned by Dr. Bennett. It was safer to operate than to wait, once the circulation had reached a favourable condition. Indirect measures were likely to be futile; the only satisfactory operation was some form of excision. These patients should not be left to doctors of inadequate experience. Greatly swollen, red, and congested appendices caused haematemesis. Early post-operative haematemesis was due to failure of technique, and remotely to anastomotic ulcer. Splenectomy might offer the only hope in cases of thrombocytopenic purpura, but it would not cure oesophageal varices.

Dr. R. S. AITKEN emphasized the importance of distinguishing between mild and grave cases, and brought forward figures from the London Hospital showing an appreciable mortality in serious cases treated medically. He stressed the value of transfusion.

Professor C. A. PANNETT said that statistics were concerned with series which were not really comparable. He advocated early surgery—before grave anaemia had resulted from repeated bleeding. The best guide to fitness for operation was the amount of blood the patient had lost; 50 per cent. was about the limit. Operation should never be performed with a pulse rate above 100 from haemorrhagic shock. The procedure should be the smallest possible, provided that the ulcer could be removed.

Dr. G. GRAHAM said that repeated transfusion might be necessary. If the haemoglobin was below 40 per cent. blood should be given. Sometimes the haemoglobin dropped next day, because the patient was able to dilute the blood and make up the volume. An estimation should therefore be made directly after transfusion; if it did not go up, at least temporarily, more blood was needed.

Mr. H. PATERSON thought that very few of these patients died if left alone, and believed in medical treatment. The important thing was absolute rest. The teaching that egg and milk might be given had done much harm. In most cases the blood came from general gastric oozing, not from an eroded vessel. Surgery in acute haemorrhage was totally unnecessary, and very rarely justifiable.

The CHAIRMAN, summing up, thought there had been general agreement that patients should not be moved, and that operation should be rare. A proportion, however, did reach hospital; some died, and some could have been saved by surgery. Blood transfusion helped both medical and surgical treatment. There was division of opinion about the time of surgical intervention; the risk to life was enormously increased after any repeated haemorrhage. The surgeon must find the bleeding point and secure it, and this was best done by some form of resection. It was clear that there was no golden rule, and a very nice judgement was required to select cases for surgery. The way to choose was by careful co-operation and careful examination.

CLEAN MILK IN DUBLIN

At a meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland, held in the Royal College of Physicians on February 23rd, with the president, Dr. J. McGRATH, in the chair, Professor J. W. BIGGER read a paper entitled "Fifteen Years' Progress in the Clean Milk Campaign."

He said that in 1919 he had found milks sold in Dublin with total counts of up to 73 million bacteria per c.cm. The best month of the year was September, in which the average number of bacteria found in the milks examined was 289,000. Thirty-five per cent. of the milks tested during the year contained over one million bacteria per c.cm. Seventy-three per cent. contained *B. coli* in 0.01 c.cm. or less. During the eight years 1926-33 319 milks had been examined in the School of Pathology, Trinity College. The highest count, which was found in 1926, was 50 million per c.cm., and the next highest, in the same year, 7,900,000. Since then the counts were much lower. Out of 129 milks examined in the years 1932 and 1933 only two had exceeded one million bacteria per c.cm. In each of the last two years three counts of under 1,000 per c.cm. had been obtained. The improvements in the total counts were further illustrated by the medians and weighted means. The weighted mean for 1926 was 782,000 and for 1932-3 40,000. In 1926-7 31 per cent. of the milks fell within the limits of Certified milk, and 57 per cent. within those of Grade A milk. In 1932-3 62 per cent. fell within the Certified and 85 per cent. within the Grade A limits. In 1926-7 7 per cent., and in 1932-3 29 per cent., contained no *B. coli* in 1 c.cm. In the earlier period 45 per cent. contained *B. coli* in 0.01 c.cm. or less, as against 25 per cent. in the later period. Improvements were also shown by the results obtained in the routine examination of the milk supplied to a Dublin hospital. Finally, Professor Bigger emphasized that, despite the great change for the better in the Dublin milk supply, legislation was urgently required.

The PRESIDENT, in thanking Professor Bigger for his paper, said that he was largely responsible for the great improvement which had taken place in the milk supply of Dublin in the last fifteen years. The results of the work were so good that he thought Professor Bigger could feel that, although it had been a very big task, his work in the matter had been well worth while. He noticed that all the samples which Professor Bigger had examined had been morning milk, and he thought that if they had been evening samples the bacterial count might have been very different. If the count was one thousand bacteria in the morning, he thought it might have increased to one million by the evening. The question of pasteurization had always been under discussion. He personally believed that pasteurization was a very good thing. The types of apparatus used for pasteurization had become much better in recent years. He asked Professor Bigger what proportion of the milk supplied in Dublin was Grade A certified milk, compared to the total quantity of milk which was produced.

Mr. P. F. DOLAN said that much credit was due to Professor Bigger for the work he had done. He thought there was a great deal in favour of pasteurized milk, and felt that in time a considerable proportion of the milk supply of Dublin would be pasteurized. Some years ago one was told by some people that it would be quite impossible to set up a tubercle-free herd of cows, let alone to maintain it. Eight or nine years ago the Corporation of Dublin had established a tubercle-free herd at Crookslong Sanatorium, and at present the herd was tubercle-free and also abortion-free. Many farmers in the Free State could, if they wished to do so, set up a tubercle-free herd and an abortion-free herd and keep them free. A lot of the trouble was, he felt, due to the impossibility of bringing the consumer in touch with the producer. There were many people who believed that cold or low temperature killed organisms, and that if milk when delivered was put into a refrigerator all the organisms would disappear. In another few years he thought it would be possible to reach the ideal with regard to a milk supply by getting milk which had not

been touched at all by human hands. The standard of milk machines was improving, and they were now sterilized regularly twice a day. Legislation in connexion with the milk supply was extremely important, and he felt that there was a good deal of misunderstanding regarding this question. Legislation was required to protect the milk vendor who was really careful about his dairy and did things properly. It was essential that the consumer should have an assurance that the milk which was sold as Certified was really certified.

Professor W. D. O'KELLY said there was no doubt that Professor Bigger was the pioneer of clean milk in Dublin. He thought it should be remembered that people who came with milk to be examined did not usually bring dirty milk. He felt that there was still quite a lot of dirty milk sold as clean milk. In the laboratory at University College counts of two to three hundred organisms per c.cm. were obtained last week. Cold weather was, of course, very favourable for low counts. He asked what percentage of the milk sold in Dublin was pasteurized.

Dr. J. A. HARBINSON said that in his public health work he had very early come up against the milk problem, and Professor Bigger's work had been of the greatest help to him. He was glad to see from the figures which Professor Bigger had put on the screen that there was a steady improvement as reflected by the weighted mean. In many other places where he had seen the figures he had found it very difficult to ascertain exactly what progress had been made. He thought the production of milk in the rural areas as well as in Dublin itself had to be considered. In the rural areas the vendors' idea was to produce as much milk as possible, and they had no regard for whether it was clean or not. Not only the large producers but also the small ones had to be considered, and it was necessary to think of what could be done to improve the cleanliness of milk which was supplied by the small producers. It was necessary to make the producer realize what was needed in order to get the best production, and it was essential to protect the consumer against dirty milk. When dealing with legislation it should always be borne in mind that legislation would be produced if a public request demanding its production could be obtained. Legislation was necessary which would provide a standard of milk, but that standard must be one which would appear reasonable both to the producer and to the consumer. A good deal of education would have to be carried out to show the small producers how to produce milk which would come up to the standards required by legislation. Even when it was possible to have tubercle-free milk introduced into every home in Dublin there would still be the necessity for education regarding the care of milk when it reached the homes.

Dr. W. R. F. COLLIS referred to the number of children who got tuberculosis and other infections from a bad milk supply, and mentioned a recent paper by Dr. Moncrieff, in which the author stressed the difference in the milk supply in Germany and in England, and referred to the fact that there was a good deal more bovine tuberculosis in England than in Germany. Much more pasteurized milk was drunk in England than in Germany. He felt that it was necessary to get the ordinary poor, uneducated mother to realize that milk was not really safe as a food for children unless it had been boiled or was guaranteed as being tubercle-free. If legislation was introduced, he personally would like to see milk divided into two classes—safe and unsafe. Professor T. T. O'FARRELL asked Professor Bigger if he had tested samples for antiseptics, and how far it was necessary for a bacteriologist to test for antiseptics before he analysed milk, and if pharmaceutical chemists tested for antiseptics. He also asked how far Professor Bigger tested his *B. coli* out. In his view milk should not be handled at all, but this was impossible at present, when there were so many small producers who had to handle it. For the time being he regarded pasteurization as the safest method, though there was much difference of opinion as to whether milk was damaged by pasteurization or not. Dr. R. E. STEEN asked what were Professor Bigger's

views regarding the boiling of milk, and if he thought that an educated mother should be told to boil milk even when it was obtained from a tuberculin-tested herd. He also asked for how long the milk should be boiled, and what was the absolute margin of safety for destroying every pathogenic organism present in it. Dr. W. H. ASHMORE referred to the great importance of legislation, and said he thought a great deal would be accomplished if one could be absolutely certain that milk which was labelled Grade A or Tubercle-Free was really tubercle-free. Until it was made a serious offence to use a milk bottle for any other purpose except for holding milk not much progress would be made with pasteurization.

Professor BIGGER, in reply, said that if milk was going to be pasteurized it need not be clean. It was now possible in Dublin to get really clean milk. Fifteen years ago this had not been possible. He had not paid particular attention to antiseptics, but had never found them present.

EARLY OPERATION FOR CHOLECYSTITIS

At a meeting of the Liverpool Medical Institution on February 22nd, with the president, Dr. J. MURRAY BLIGH, in the chair, Mr. PHILIP HAWE read a short paper on "Early Operation in Cases of Acute Cholecystitis."

Mr. Hawe considered that the time had arrived to replace the "medical expectant" policy in these cases by the more satisfactory method of immediate operation. The pathology of the condition was discussed and the frequent occurrence of necrosis, with spread of infection, due to pressure of the stone or vascular interference, was stressed. In over 90 per cent. of these cases stones were present, and even if resolution occurred fresh stone formation was to be expected. Moreover, in the early stages of acute cholecystitis the infection was mild and confined to the gall-bladder—delay resulted in rapid progress of the infection both inside and outside the gall-bladder. Pancreatitis and pericystic abscess and other serious complications were much more frequent than was generally recognized. From the pathological point of view the benefits of early operation appeared certain. A series of operations in forty-five cases of acute cholecystitis was analysed. In the majority, except the severe grade, expectant measures were at first adopted, but it was found that whereas early operation in ten cases in this series carried no mortality, in the thirty-four cases which failed to subside on expectant lines there were four deaths. In this group of delayed operations serious complications often called for performance of the less satisfactory operation of cholecystostomy. The following conclusions were reached: (1) Early cholecystectomy is a most satisfactory procedure—if conditions are unsuitable early cholecystostomy or partial cholecystectomy gives good immediate results. (2) Expectant treatment frequently leads to a delayed and difficult operation in the presence of serious complications. (3) In acute cholecystitis the serious nature of local complications in a most vulnerable area involving liver and pancreas carries grave risk which can be avoided by early operation.

Mr. C. A. WELLS agreed that in a majority of cases it was possible at an early operation to carry out radical procedures and, very commonly, with less difficulty than in the case which had been left over for an interval to settle down, since in that recovery period dense adhesions were formed. He considered there was little to be gained by preliminary investigations, since the practical precautionary measures which it was possible to adopt were a three—namely, the administration of glucose and calcium and the employment of a non-toxic anaesthetic. He suggested that these measures could be applied with equal facility in the early case. It had been his practice for a number of years to operate on these cases early rather than late, and he had so far not had cause to regret this plan. The existence of early jaundice seemed a good indication for operation, since it was impossible to predict the progress of the condition, and once it became well established it constituted a very grave factor, seriously endangering the prospects of recovery. He looked forward to the day when the accepted attitude

would be "immediate operation in the absence of indications to the contrary," rather than the present teaching, "expectant treatment and delayed operation in the absence of indications to the contrary."

Self-administered Anaesthesia in Childbirth

Dr. R. J. MINNITT described a method of self-administration of nitrous oxide gas and air for the midwifery of general practice. Photographs were shown of a new apparatus devised for this purpose, and it was explained. The principle of its action was that the mixture inspired was constant, and only available for intake by the patient on inspiration. The average amount of gas consumed was thirty-five gallons an hour, and the analysis of the mixture inhaled was 35 per cent. nitrous oxide in air. Owing to the analgesia the mother received great relief from pain, amnesia being produced in most cases. No ill effect had been observed on the child. The apparatus had been tried in two institutions: (1) the Wellhouse Hospital, Barnet, Herts, by Dr. John Elam, under the supervision of Mr. Roland Segar, medical superintendent; and (2) the Liverpool Maternity Hospital, by Dr. Hilda Garry, under the direction of Dr. R. J. Minnitt, honorary anaesthetist, a grant having been obtained for this purpose through the National Birthday Trust Fund. Dr. Elam's report and that of Dr. Segar were both read, and an analysis of sixty-four successful cases, with one failure owing to non-cooperation of the patient, was given.

Dr. HILDA GARRY showed a photograph of the machine used by her in hospital, and analysed 121 cases who had received N₂O and air analgesia. There were eighteen failures in the series, owing to causes not directly connected with the administration. She pointed out the beneficial effects of the method upon mother and child, and showed that: (1) In the first stage of labour pains were relieved and apprehension removed. (2) In the second stage the same effect was observed without interfering with the normal voluntary effort. She also stated that the mothers showed much less stress and strain of labour than was usual without analgesia, and that no appreciable alteration in the mother's pulse or the foetal heart was found.

Professor LEYLAND ROBINSON said that ever since the days of Sir James Y. Simpson attempts had been made to find an easy and safe method of relieving the pains of childbirth, but up to the present time no completely satisfactory method had been discovered. The anaesthetic or analgesic must not only be innocuous to the mother and the child *in utero*, but it must have no effect upon the delicate functions of the parturient uterus; and since at least 50 per cent. of all confinements were conducted by midwives in the absence of a doctor it was essential that the apparatus should be simple, portable, and fool-proof. Dr. Minnitt and Miss Garry had devised a method which achieved all these objects, and all obstetricians would view further experiments with the greatest interest and offer every facility for the adoption of the method in domiciliary midwifery.

Dr. JOHN HALTON said it must be remembered that although chloroform and ether had been used in maternal anaesthesia since their inception, these drugs had more affinity for foetal tissues, especially the liver, than the mother's. Self-administered gas and air was probably first used about 1908, but was abandoned on account of foetal distress. It must never be forgotten that nitrous oxide was a dangerous anaesthetic in midwifery. A progressive anoxaemia, often difficult to recognize, occurred frequently if this method was used by the inexperienced, and Greene had shown that this could cause a direct central respiratory failure and a reflex cardiac rhythm acceleration. On the other hand, it was generally understood that a gas-air mixture of at least 40 per cent. was necessary for a true analgesia. If Dr. Minnitt had succeeded by his machine in avoiding these dangers and at the same time produced a satisfactory analgesia then a new era in obstetric anaesthesia had commenced. Dr. J. GRAHAM MARTIN said that the administration of such an anaesthetic by the patient really would be of great assistance to a general practitioner in midwifery work. He inquired when a "light-weight" apparatus

could be expected to be for sale and light-weight cylinders could be obtained, as a medical man's outfit for maternity cases was heavy enough already. Dr. ARTHUR A. GEMMELL said that from his own observations he was satisfied that the method described by Dr. Minnitt gave great relief, and frequently produced a complete amnesia of the delivery.

Fractures of Neck of Femur

Mr. W. J. EASTWOOD read a paper on "Fractures of the Neck of the Femur," based on the results in forty-one patients who replied to a follow-up. The various methods of treating a recent fracture were considered, emphasis being laid on the value of a walking calliper and early walking in the type of patient who was too old and in too poor a condition to warrant any treatment designed to obtain bony union. The causes of failure of the Whitman method were considered, and the importance of first obtaining full length in the affected limb, and the absolute necessity for good internal rotation at the site of fracture, and not at the joints of the foot and knee, were stressed. Provided these details were carefully observed the Whitman method still offered the best chance of bony union in the hands of most surgeons, other methods requiring too high a degree of surgical skill ever to be universally popular. In old ununited fractures the best treatment was the Lorenz subtrochanteric osteotomy, altering the line of weight-bearing so that weight was transmitted directly on the shaft of the femur and not through an unstable fibrous union. X rays and details of the end-results of forty-one recent and nineteen ununited fractures were given.

Mr. R. WATSON JONES said that he had operated on twenty-eight cases of high fracture of the neck of the femur using a stainless steel Smith-Petersen nail, introduced by a special technique which solved all the difficulties of accurate centring of the nail. The operation was still a difficult one, but the results were vastly superior to those of the Whitman plaster method. (1) The mortality was very much lower: in twenty-eight patients of 50 to 80 years of age there was only one post-operative death. (2) By the Whitman method it was generally agreed that bony union of subcapital fractures was only gained in 40 or 50 per cent. of cases. In his series of cases treated by operation 90 per cent. had united by bone. (3) By the Whitman method, even in the 40 per cent. of cases uniting by bone, the femoral neck was shortened and hip movement was therefore limited. With the greater fixation of the nail this did not occur, and excellent hip movement was retained. (4) The knee-joints of old patients were often arthritic, and became painful and stiff if immobilized in plaster. No plaster was necessary with the nail. (5) There was no doubt as to the serious discomfort of a plaster spica in elderly patients. After operation, on the other hand, patients sat up in bed, moving their limbs; there was no discomfort and their only difficulty was to know why they were not allowed to get up and walk.

Mr. T. P. McMURRAY agreed with the conclusions that Mr. Eastwood had come to regarding the benefit of treatment of fractures of the neck of the femur in plaster. He stated that the proportion of 80 per cent. bony union following this treatment was a very much higher percentage than had been shown in any other clinic. He agreed also that in regard to the treatment of ununited fractures of the neck of the femur, nothing that had yet been devised could approach in efficacy the operation first described by Lorenz as a bifurcation osteotomy of the femur.

Mr. E. N. WARDLE said that Mr. Eastwood's plea for the treatment of the patient as such and not as a mechanical problem appealed to him considerably, but it applied both ways. He felt that most patients preferred an operation followed by comparative freedom to spending three months fixed in plaster, and therefore thought that fixation of a subcapital fracture of the neck of the femur by a Smith-Petersen nail was the best form of treatment. With regard to risk, any patient who was fit for manipulation under an anaesthetic could stand the operation. He did not think Mr. Eastwood laid sufficient

stress on the nursing difficulties of the Whitman method, particularly that of keeping the elderly patient free from chest complications.

ENDOMETRIOMA OF ABDOMINAL WALL

At the February meeting of the Midland Obstetrical and Gynaecological Society, held at Birmingham, with the president, Dr. C. E. PURSLOW, in the chair, Professor BECKWITH WHITEHOUSE showed two clinical cases of ulceration of the vulva for diagnosis, and these were discussed. Dr. MITCHELL read a paper on some aspects of the chemical composition of haematocolpos fluid, and Professor WHITEHOUSE a short communication on a case of sarcoma botryoides with recurrence after twenty-three years.

Mr. T. C. CLARE described a case of endometrioma of the abdominal wall following Caesarean section eighteen months previously. He excised a small tumour from the scar, superficial to the rectus sheath, which showed typical microscopical appearance of an endometrioma. Professor WHITEHOUSE mentioned two cases of the condition. The first patient menstruated regularly through the scar of an old-standing ovariectomy incision—she had a pelvic endometriosis too extensive for operative removal. He excised the ulcer, and all her other symptoms cleared up with deep x-ray therapy. The second case, which had all the typical microscopical appearance of endometrioma, occurred in a male after appendicectomy and drainage. He thought that the theory of peritoneal metaplasia accounted for the origin of some of these cases. Professor STATHAM said he had met with five of these cases, of which two were endometriomata of the umbilicus occurring without any previous operation, one followed Caesarean section, one a myomectomy, and one a radical cure of a hernia involving the round ligament. Mr. R. L. E. DOWNER described two similar cases, the first being an implantation growth in the scar of the abdominal hysterotomy for hydatidiform mole, and the second a tumour the size of a cherry in the vaginal wall at the fourth month of pregnancy. This disappeared as pregnancy advanced but had reappeared six months later. Mr. LOCHRANE said that these growths always shrank after all ovarian tissue was removed or destroyed. He had excised one five times, with recurrence each time.

THE PARENT, THE SCHOOL DOCTOR, AND THE HOME DOCTOR

The need for greater reciprocity between parents, consultants, home doctors, and school authorities, especially in matters relating to health, was the subject of a discussion at the annual meeting of the Medical Officers of Schools Association on March 2nd.

The discussion was opened by Sir MONTAGU FOSTER, head master of Stubbington House, Farnham, who remarked on the blindness of parents to their children's defects, such as curvature, short-sightedness, and flat feet. On the other hand, the schoolmaster was too apt to label a boy stupid when the real trouble was some remediable physical disability; while the school doctor—he was thinking particularly of preparatory schools, where it was impossible to have a whole-time medical officer—could only proceed on what the boy told him (which was not always reliable), or what the master told him, or what he might have learned in correspondence with the parents. The most important thing was that the school doctor should be able to see the boy as others saw him, in the ordinary activities of the school, especially in the common room. But what chance had the doctor who was only called in from outside when a pupil was reported sick? He urged that there should be a medical history sheet beginning with the boy's first day at school, and containing a note of all ailments, as well as measurements and personal peculiarities. Sir Montagu Foster mentioned two or three cases in which a boy had perceptibly suffered through the fussiness of

his mother, and when the mother was brought to see the error of her ways, and left the boy alone, he developed normally.

Dr. H. C. CAMERON spoke of the difficult task of the school medical officer in framing a report, which must be careful but not alarmist, in the early stages of an illness; also in having to deal with one or more members of a family who had not chosen him as doctor, but to whom he was an appointed person, a stranger to the parents, and ignorant of the home surroundings. It would be all to the good if the school doctor could meet the mother, good for the mother because some latent hostility on her part might be dispelled, and good for the doctor because a knowledge of the type of mother would help him in studying the child. As things were, if parents and school doctor did meet, it was usually at some time of crisis, when the personal situation was difficult. One school doctor of his acquaintance followed the useful plan, when a pupil was ill at school, of writing an explanatory letter, using medical terms, to the home doctor, but sending it, with a covering letter, by way of the parents. Dr. Cameron also spoke of the peculiar difficulties which arose owing to the popular dissemination, in these days, of medical knowledge. When King Edward had appendicitis the editor of a great Scottish daily telephoned Dr. Cameron's father to learn what this disease was; nowadays it was a bogey that kept mothers awake at night whenever their boys had a pain in the stomach. In his own childhood earache was considered a painful thing that would be all right in the morning; "nowadays an oto-rhino-laryngologist, armed to the teeth, rose at 2 a.m. to puncture the drum." Often, however, the schoolmaster saw an entirely different individual from the boy as he was at home, and no doubt he felt that the mother was fussy and exaggerative. Nothing was worse for the child than to think there was antagonism between the parents and the school.

Dr. G. E. FRIEND of Christ's Hospital said that occasionally he had to complain of want of reciprocity on the part of the home doctor. Family practitioners did not always seem to remember that a whole-time school doctor became, by force of circumstances, somewhat of the nature of a specialist. He thought it would be an extremely good plan if a medical history sheet were the rule in every school, as it was in the majority of public schools. Very often, however, such sheets were not comprehensive enough. Dr. KENNETH WILSON, medical officer of Bryanston School, said that some school officers felt very acutely that they had not been chosen by the parents, and for that reason they were inclined to call in the consultant too often. Dr. Wilson added that he kept a book of "peculiar parents," who insisted on some rule or prohibition. He, too, had suffered from mothers. At one school where he was officer he wrote to a mother that her son should see an ophthalmologist; in reply he got four pages of abuse, with an insistence that the boy had perfect sight, but underneath the angry signature was a postscript: "My husband has just come in and seen your letter; he says, 'By all means have an ophthalmologist,' so please arrange!" Not liking to use medical terms in letters to parents, he wrote of a boy who had erythema nodosum that he had a rash down his shins which would undoubtedly clear up, but when the parents came, at the end of a fortnight, they declared that they had no idea it was erythema, and were angry, and took the boy away. Another boy had tinea cruris, and here he mentioned in a letter the technical term, whereupon the parents wrote complaining of the morals of the school, under the impression that the boy had venereal disease. Dr. L. R. LEMPRIERE of Haileybury complained of parents who sent drugs—even small medicine chests—with their boys to school.

Others who joined in the discussion were teachers and parents. The head mistress of a London girls' school pleaded for uniformity as to length of quarantine in infectious diseases. This lady added that during the twenty-five years she had been in charge of a combined day and boarding school there had only been one epidemic—of measles—and, apart from that occasion, never more than six pupils away at one time with the

same complaint. A father gave some amusing experiences of his search for a public school for his son. One well-known school had a well-equipped operating theatre and an enormous sanatorium, which "gave him the shivers"; another refused all information about epidemics, holding that parents were not competent to form an opinion. In one school he learned that cascara was administered as a routine measure twice a week to the younger boys; a school medical officer who spoke later considered this a very good thing. This same parent found the dietetics in many public schools "deplorable"; modern knowledge as to vitamins had not penetrated their ancient portals. The chairman of the Association of Preparatory Schools (Mr. J. E. MAITLAND) said that on visiting many public schools in America he had been impressed with the taking of medical histories, each history covering both sides of a quarto sheet. He proposed as an outcome of the discussion "a committee of health for schools," with representatives of masters, parents, and medical officers, but the suggestion was not taken up, and apparently the publication of the report of the discussion will be the only immediate result.

CORRESPONDENCE

Reform of the Medical Curriculum

SIR,—It may now, I think, fairly be assumed that the need for drastic changes in the medical curriculum is all but universally recognized. The recent history of this movement is of interest. Twelve years ago the General Medical Council, as a result of a special inquiry into medical education, issued recommendations on the subject which, if they had been given effect to, would have profoundly improved medical education and brought it much more into line with modern requirements. Little or no attention was paid to these recommendations by the various teaching bodies concerned. Since that date numerous references have been made to the subject in the columns of the leading medical journals, and by individual teachers who have interested themselves in reform of the curriculum, these references increasing in frequency and cogency in the past few years.

Coincidentally, for some years past the undergraduates of several medical schools, notably in Edinburgh and London, have expressed their views on the subject, indicating clearly their recognition of the need for reforms, adapted to bring their teaching more into line with the modern requirements of future general practitioners. In the last three years the Students' Representative Council of Edinburgh University has interested itself especially in the matter, frequent open discussions on the subject having been held and resolutions passed. Further, if we may take, as is likely, the Edinburgh medical school as a guide, it is known that certainly more than 90 per cent. of the teachers are in complete agreement as to the need and urgency for radical changes, although the agreement at once disappears when individual subjects come up for consideration.

More recently the British Medical Association has completed, through a specially appointed Education Committee, a valuable preliminary report on the subject, which has been submitted to, and approved by, the large Representative Body of the Association. The subject is now beginning to receive the close attention of the public, and numerous references to it have recently appeared in the Press. To mention one only, a recent leading article in the *Times* said: "It may very well seem to outside observers that reforms ought to be carried further than most of the professional advocates seem anxious to go. . . . What seems to be needed is a reorientation of outlook upon the physician's office."

There are many who are asking what is to be the next move in this vitally important question. There is undoubtedly a widely felt and expressed feeling that, probably arising largely from the interdependence of the various teaching and examining bodies, the necessary great reforms are not likely to be attained without appropriate legislative action. I share this view. The preliminary report of the B.M.A. committee has been of immense value, and appears to be amply complete for its main purpose. What seems necessary now is some form of judicious compulsion to get the principles laid down in the report universally applied in practice. This can be done in such a way as to leave a reasonable amount of elasticity called for by local conditions and traditions.—I am, etc.,

Edinburgh, March 10th.

CHALMERS WATSON, M.D.

Monilia in the Sputum

SIR,—The investigation reported by Dr. Bertram H. Jones in the *Journal* of March 3rd (p. 368) seems to afford a complete answer to those who attach undue significance to the finding of monilia in sputum. The publication has induced me to abandon, as no longer necessary, a desultory investigation designed to show the frequency of this finding; perhaps I may report here the results obtained hitherto—namely, that of eighty-four unselected specimens of sputum monilia could be demonstrated by cultural methods, usually only in small numbers, in fifty-three. Of these fifty-three strains forty fermented maltose, a property which G. K. Stone and I have shown (*Journ. Path. and Bact.*, 1931, xxxiv, 429) to correspond with pathogenicity for the rabbit, and to be characteristic of a serologically homogeneous group which it appears correct to designate *Monilia albicans*. There is ample evidence that this fungus is a common saprophyte and potential parasite in the mouth and throat, and the frequency of its mere presence in sputum, which must necessarily contain some proportion of admixed saliva, is therefore neither surprising nor significant.

In one direction, however, Dr. Jones's results are inconclusive. It is the contention of Dr. P. Janvrin Marett, who is stated to have suggested this investigation, that secondary infection with monilia is common in pulmonary tuberculosis. Only three of the cases reported by Dr. Jones were suffering from this disease, and one of them affords the solitary example in his whole series of monilia being found in the bronchial secretion itself. In my own series of sputa the presence of monilia was somewhat more frequent in specimens sent to be examined for tubercle bacilli than in those from, presumably, non-tuberculous cases, although the numbers concerned are so small that I wish neither to report them nor to suggest that they necessarily mean anything. Nevertheless a feeling of doubt remains, and the position really is that while Dr. Marett has not proved his contention, Dr. Jones, although clearly demonstrating an important source of possible error, has not disproved it.

While bronchoscopy, when it is feasible, is an ideal method of ascertaining the flora of the lower air passages, surely we need not altogether neglect the information obtainable by a more critical examination of ordinary sputum. In a fresh and otherwise suitable specimen monilia will be very few if they have been added to it in transit through the mouth; they may be very numerous if their origin is the ultimate source of the sputum itself. Dr. Marett's method of cultivation in a fluid medium would yield the same result in either case, whether, in fact, his inoculum contained only half a dozen monilia cells or a hundred thousand.

It is an elementary principle, which appears to have been neglected by some workers on this subject, that

the demonstration of a micro-organism which is not an obligatory parasite should be, at least roughly, quantitative. There is so much difference between the mere presence of a few monilia in culture from a sputum and their demonstration in profusion in direct films of fresh washed muco-pus, a small fragment of which will yield thousands of colonies in primary culture on Sabouraud plates, that I even doubt whether Dr. Jones is justified in saying that "bronchomoniliasis cannot be diagnosed from the examination of the sputum alone." However that may be, I venture to commend more critical methods of sputum examination to those who believe that bronchomoniliasis is common, if only that they may thereby select cases for the more stringent type of investigation suggested by Dr. Jones.—I am, etc.,

LAWRENCE P. GARROD.

St. Bartholomew's Hospital, E.C.1, March 5th.

Influence of Oil Emulsions on Lethal Effects of Toxins

SIR,—I was much interested to read in your issue of March 10th an article by V. G. Walsh and A. C. Frazer on the effects of subcutaneous and intravenous injections of toxins combined with fine emulsions of oils. I have been investigating this problem during the past three years at this laboratory, and was pleased to learn that these two workers have obtained results which confirm my earlier findings. These findings were embodied in a thesis which was submitted by me to the Board of the Faculty of Medicine of this University eighteen months ago. As these two observers may not have seen this thesis, which is lodged in the University Library, or the abstract of the work which was published and circulated last year by the University Press,¹ I should be glad if you would allow me to publish a brief outline of the results obtained by me.

My experiments have been conducted on a large scale, and more than 1,500 animals have been used since the investigation was commenced with the late Professor W. E. Dixon three years ago. The majority of these animals were guinea-pigs, while a number of rabbits and cats were used also.

The object of the investigation was to determine whether oils and fats have any modifying influence upon the action of bacterial toxins. Oils and fats derived from vegetable, mineral, and animal sources were used, and those selected as being the most suitable were olive oil, liquid paraffin, and the cream of cow's milk. Their influence upon the lethal effects produced by the toxins of *B. diphtheriae*, *B. tetani*, *Cl. welchii*, and the *Vibrio septique* were studied. The oils and fats were mixed with aqueous solutions of lethal doses of the toxins so as to form emulsions, which were injected subcutaneously into animals.

The results of this investigation have shown that olive oil and liquid paraffin emulsions are able to protect animals against the lethal effects of 24 M.L.D. of these toxins; this was the experimental limit of the toxins used, but it is conceivable that larger doses of the toxins could be tolerated by the animals if given in this manner. The protection afforded by these emulsions is proportional to the fineness of the emulsion. Coarse emulsions afforded no protection against the lethal effects of these toxins. The addition of a binding agent, such as gum acacia, to the emulsions renders the protection more secure by making the emulsion more permanent. Unstable emulsions afford no protection whatever. I have also established that these toxins have a greater solubility or affinity for water than for the oil, even when they are mixed in the form of an emulsion.

The cream from cow's milk was found to afford no protection whatever against lethal doses of these toxins, even when

¹ Abstracts of Dissertations Approved for the Ph.D., M.Sc., and M.Litt. Degrees in the University of Cambridge. 1932-3. Cambridge University Press.

only 1.5 M.L.D. were used. My results have definitely shown that the oil of these toxin-oil emulsions is very slowly absorbed from the tissues after subcutaneous injection, accompanied by a slow liberation of the toxin. The serum of such animals when injected into other animals has been shown to protect against 2.5 and 3.5 M.L.D. of the specific toxin used. Further, it has been shown that a definite active immunity due to antitoxin formation can be produced by the injection of these toxin emulsions into animals. Such animals, after six weekly subcutaneous injections, can withstand 2 and 3 M.L.D. of the toxin used in the original emulsion.

I am at present improving this method with a view to applying it in clinical medicine for the production of active immunity against infectious diseases. I might add, in conclusion, that a short paper embodying these later results has been accepted for publication in the *Journal*.—I am, etc.,

Pharmacological Laboratories,
Cambridge, March 12th.

G. NORMAN MYERS.

A Milk Ration for Children

SIR,—The *Times* of March 5th publishes a letter from Sir E. Graham-Little, in which he gives figures to show that certified milk is not safe. The letter does not say where the figures come from, nor where the samples were collected, and ends with this sentence: "The potentialities of mischief with a raw milk inferior to these grades [that is, Certified and Grade A (T.T.)] would therefore be even greater than the milk with which the experiment dealt." This suggestion that certified milk is little better than the ordinary ungraded filth is simply monstrous. Certified milk of extremely good quality can be produced, and is produced, and Sir E. Graham-Little's figures are no more than evidence of the shockingly slack supervision by the Ministry, which I brought to his notice some time ago. There is no reason why perfectly safe certified milk should not be produced in all parts of the country, and I would put the following points to Sir E. Graham-Little:

1. If he is not satisfied as to the safety of certified milk, what objection has he to my suggestion that the producer of certified milk should be allowed to pasteurize his milk?

2. If he prefers to damn certified milk until the producers, and their tubercle-free herds, are driven out of business, how does he propose to set about building up healthy herds again? Ordinary pasteurized milk will not do it. London has had pasteurized milk for many years and the herds supplying this milk are as diseased as ever.

3. Sir E. Graham-Little objects to certified milk for State-aided schools on the ground that it is too expensive. I venture to suggest that it is the duty of the medical authorities to prescribe what is best, regardless of cost; if the education authorities choose to buy pasteurized milk from diseased herds because it is cheap that is their responsibility. It is the clear duty of the Ministry of Health to provide a milk which everyone can recommend; the ordinary raw milk is out of the question; Sir E. Graham-Little refuses to recommend raw certified milk. I (for one) refuse to recommend the ordinary pasteurized milk from diseased herds. What is the objection to making pasteurized certified milk available?—I am, etc.,

Wetherby, March 5th

R. L. KITCHING.

SIR,—In the explanatory letter of Miss Marjorie E. Green in your issue of March 3rd (p. 402), in relation to your leader on the subject (February 24th, p. 339), it is stated that the term "fresh milk" was used simply to exclude dried and tinned milk. This statement is liable to be interpreted that, in the opinion of the committee,

milk powder and evaporated milk are unsuitable foods for children, and it cannot be allowed to pass unchallenged.

There is no need for the writer to stress the danger of raw milk as a carrier of disease—so admirably summed up in your leader—but the dietetic aspects may be considered so far as milk powder is concerned. Dame Janet Campbell, late of the Ministry of Health, in her report on infant mortality, after adverting to the dangers of raw milk, states:

"This difficulty is met by the distribution of large quantities of dried milk... this milk is of good quality and content, and its use for artificially fed infants has not only improved nutrition but has also directly prevented much gastro-intestinal disease which is so often caused by impure or stale milk."

Recent tests in supplementary milk rations for children carried out at the Princess Beatrice Centre, Fulham, and the Augusta Johnson Social Centre, Camberwell, extending over four months on sixty children, in which pasteurized milk was used in one group and roller milk powder in another, there was no difference in the gain of weight between the two milk groups over the control group. This gain equalled an increase of thirteen ounces over the increase in weight in the control group. Milk powder is being used in hundreds of schools as the basis of the mid-morning ration in the form of chocolate milk, etc., served hot with the most satisfactory results, and it is being used in preference to raw milk in hundreds of infant welfare centres and in the infant departments of our hospitals. In my contribution to this problem in the *Journal* of June 11th, 1932, I pointed out that, especially in the case of roller dried milk, an important dietetic advantage was secured in the feeding of children, inasmuch as the rennin coagulum of the reconstituted milk was of a flocculent nature, presenting a large surface for peptonizing action, in contradistinction to the solid curd of raw milk—a matter of supreme physiological importance in child dietary. In addition the powder is sterile to pathogenic flora, and the loss of vitamin in the powdering process, if any, is negligible.—I am, etc.,

East Dulwich, March 5th.

JOHN CAMPBELL, Ph.D.

Hypochondriasis

SIR,—May I thank Dr. Robert Hutchison for his excellent and timely paper on hypochondriasis in your issue of March 3rd (p. 365)? This paper should be reprinted, with suitable amendments, in every newspaper in the country, and should be learned by memory by the medical officers of the Ministry of Health and the Department of Health for Scotland.

However, I wish to refer, mainly, to the implications of that section of the paper dealing with the modern woman's mental attitude towards labour and her capacity to carry it through. In my opinion woman is becoming more unfitted (using this term in its broadest sense) to carry through an unaided labour.

What factors are at work to produce this result? First, the trend of civilization, especially since the later years of the war. This is a factor on which medical practice can have little effect. Secondly, the two points made by Dr. Hutchison: propaganda on behalf of the reduction of puerperal morbidity and mortality has reached the public in unsuitable form and out of proportion; also misdirected ante-natal work is fostering fear, which becomes intensified until labour is reached. For these factors the section of the profession concerned may be blamed. Thirdly, the overuse of some form of anaesthesia during labour. We have lay schemes whose object is to provide every woman in labour with anaesthesia. We have a scheme for anaesthesia by chloroform bombs to be given to every woman in labour in a large London hospital, with a

suggestion that ultimately every midwife in the country might use the bombs at will. We had the "twilight sleep" vogue, which certain medical opinion is bent on converting to a "gas-and-oxygen" vogue. Basal narcotics are being introduced in labour. We are apparently bent on teaching modern woman that interference in some form is indispensable in labour; and therefore, in her mental attitude, fear is once more encouraged. The ultimate outcome would seem to be a race of women mentally incapable of carrying through labour unaided, and at a later stage physically incapable also.

No woman—in fact, no human being—is to be so admired as the woman who enters her first labour determined to make the best use of her physical powers, and completes her primary function with bravery, fortitude, and endurance. A correct mental attitude can shorten a woman's labour by hours, and save her a corresponding time of pain. It behoves every medical practitioner, therefore, by preparing his patient's mind during properly directed ante-natal care, to secure the undoubted benefit of that correct mental attitude, whenever possible. In this connexion the question arises as to the best place to conduct a labour. It is possible for the practitioner, by interpreting each patient's mental make-up, to know whether she will be a suitable case for domiciliary confinement, or whether the steadying influence of all-round competency, which should be present in the nursing staff of all types of institution undertaking midwifery, will be of assistance to the patient's mind.

The same problem emerges in the correspondence at present taking place in your columns over the pre-medication of operation cases. Dr. Hutchison is of the opinion that such considerations are of national importance, and the profession, at least, could mend its ways without revolutionary changes.—I am, etc.,

Kilmarnock, March 4th.

JAMES W. HAMILTON.

Tonsillectomy: Complete or Partial?

SIR,—In his letter in your issue of March 3rd (p. 406) Dr. Freer asks if diseased tonsils should be completely or partially removed. The overwhelming majority of laryngologists will, I feel sure, agree that they should be completely removed. We are speaking of diseased, not simple hypertrophied, tonsils. He implies, however, that complete removal can be achieved only by the dissection method, as he states "it would seem that the only rational procedure is complete removal by dissection, whereas partial removal by the guillotine only is wholly illogical, inadequate, and of questionable usefulness." This is not correct. Tonsils of the young can be perfectly enucleated by the guillotine, by the Whillis-Sluder method. It requires accurate technique, good "hands," and long practice to achieve skill with the guillotine. The art of dissecting tonsils is much more rapidly acquired. One has to do hundreds of tonsils by the guillotine before one becomes really proficient. Indeed, some never succeed in acquiring the art. Like hitting a golf ball, a certain knack is required as well as practice. It looks easy, but it is not so easy as it looks.

For the above reasons it follows that a good deal of imperfect work is done with the guillotine. This has given it a bad name. Indeed, I really think that the use of the guillotine is becoming a lost art! At the throat hospital where I learned my work some of the staff were adepts in its use. Now I am told the staff are all "dissectors," and yet in children the guillotine should give a perfect enucleation with less trauma and a lessened anaesthetic risk. For adults removal by dissection is the more reliable method.—I am, etc.,

Guildford, March 5th.

T. B. JOHNSON, M.D., B.Ch.

Duties of the Medical Witness

SIR,—The writer of the article on "Duties of the Medical Witness," in your issue of March 3rd (p. 407), says: "An expert witness, in order to amplify his opinion, may quote from books of admitted authority." In a recent case in the High Court the judge refused to allow me to quote from an official volume of statistics, compiled in a Government Department and published by the Stationery Office. A medical witness should rarely wish to quote from a book, but in every case the question of admissibility is one for the judge to determine. It is not clear what the writer means by "admitted authority" in the above statement.

With regard to the advice not to use technical terms, this may easily be carried too far by medical witnesses. The popular word should only be used when it is the exact equivalent of the medical term, and then, as a rule, they are both equally well known. To paraphrase or use the nearest word for a medical term, such as "oedema" or "synovial membrane," for which there is no popular equivalent, is often to introduce an element of inaccuracy, which counsel will be quick to take advantage of. The best plan is to use the technical term, and then explain it, if necessary. Ambiguity may also occur. I remember a case in which a medical witness, following the advice given in certain books, spoke of "the lining membrane of the intestine," meaning the peritoneum, but was understood by counsel to refer to the mucous membrane, and there was considerable confusion in the court before the misunderstanding was cleared up.

In saying "He may be called in to a patient who dies in such circumstances that he cannot see his way to signing the death certificate" (for example, where the patient is suffering from injuries which may be due to violence or to an attempt at criminal abortion) . . . the writer of the article has evidently overlooked the provisions of the Births and Deaths Registration Act, 1926, which require a certificate to be given in every case, whether death was due to violence or not.—I am, etc.,

The Medical School, Charing Cross
Hospital, March 5th.

W. A. BREND.

Legal Ownership of X-Ray Films

SIR,—Dr. Swarbrick's criticism (March 10th, p. 459), coming from a medical man with practical experience of the customs governing the use of x-ray films in his Dominion, are most interesting. I fully sympathize with the slight degree of irritation which he expresses, for the legal attitude towards professional matters is apt to appear tiresome and somewhat unreal to practical men. There is little doubt, however, that any dispute would be largely settled on the custom which was proved to exist, and it is probable that he would have less dissatisfaction with the decision in an actual case than he has with my necessarily tentative generalizations.

The general practitioner faced with an action for negligence should have no difficulty in putting the x-ray films in evidence, for he would only have to serve a subpoena on the radiologist. The evidence of the radiologist would, in fact, be essential to prove the films. If he wished, as a general rule, to safeguard himself in every case he undertook, his best course would, I suggest, be to ask the radiologist for prints in order that he might file them with the records of the case. It is one thing to claim the legal ownership of a film and quite another thing to have the right to put it in evidence. The general practitioner's usual defence would, however, be to produce the radiologist's report, and say that, after himself seeing the films, he had agreed with, and acted upon, the opinion of the specialist, which he had every right to do. It is not part of the general

practitioner's duty to interpret films with the same skill as the radiologist.

I still do not think that there is a contract between the general practitioner and the radiologist as to the nature of the x-ray photograph to be taken. If the x-ray examination is done unsatisfactorily the patient can succeed against the radiologist and/or the general practitioner if either has been guilty of negligence. He can sue for breach of an implied contract to take care, for he is giving consideration in the shape of a fee. It is quite true that the use of experience and superior knowledge may be valuable consideration, but the general practitioner is giving this consideration to the patient and not to the radiologist, and therefore makes no contract with the radiologist. Perhaps your correspondent, brought up in a Dominion governed by Roman-Dutch law, does not quite appreciate the supreme importance of consideration in a valid English contract. The doctrine is, I believe, peculiar to the English common law. It may be that in South Africa the law would recognize a *justa causa* sufficient to constitute a valid contract between the two doctors, but that is not within my scope.

On the facts, I do not think that the radiologist can possibly be the agent of the general practitioner; he is not acting on the practitioner's instructions, but only giving his advice as an independent colleague. I cannot see anything absurd in the suggestion that the general practitioner cannot claim of his own right to see the film, because I am dealing purely with legal and not with ethical rights. I have, however, suggested elsewhere in the article that the patient, as the contracting party, certainly has the right to demand that his agent, the general practitioner, shall see the film, and the patient's legal right provides a basis for the practitioner's customary right.—I am, etc.,

March 11th

THE WRITER OF THE ARTICLE.

Fungus Infections of the Skin

SIR,—With reference to the discussion on fungus infections of the skin, reported in your issue of March 10th (p. 450), I am reported to have said, "he himself had found iodox ointment useful, but it left a disagreeable stain." I did say I had found iodox ointment useful. I went on to state that 1 per cent. gentian violet was another remedy I had tried, but it left a disagreeable stain. I do not consider that iodox ointment is disagreeable in any way, and I shall be glad if you will kindly make this correction.—I am, etc.,

London, W 1, March 9th.

P. O. ELLISON.

Ovulation and Menstruation

SIR.—I have been interested in the cases of intermenstrual bleeding to which Dr. Annie M. Hain refers in the *Journal* of March 10th (p. 454), and I reported eleven cases of this kind in 1929. If sections are made through the endometrium and myometrium of the uterus of women in the child-bearing period of life, it is not uncommon to find intense hyperaemia of the endometrium. Often large interstitial haemorrhages are formed in the functional layer, and in cases of intermenstrual bleeding of the type to which Dr. Hain refers it will be found that the bleeding is caused by oozing of the blood from the endometrium by a process which is different in its histology from that found in the menstruating uterus. The haemorrhages are not artefacts, for one can frequently find evidence of past haemorrhages in the form of connective-tissue cells engorged with blood pigment. These haemorrhages into the functional layer of the endometrium are encountered fairly frequently,

although they do not always give rise to bleeding from the uterus. The haemorrhages may be found quite early in the cycle, a few days after the end of menstruation. I do not think that the haemorrhages can be regarded as being restricted to the time of ovulation, for they can be demonstrated both before and when secretory hypertrophy is established.—I am, etc.,

London, W.1, March 12th.

WILFRED SHAW.

Hereditary Scoliosis

SIR,—In your issue of February 24th there is an article by Dr. Hugh H. Garland on hereditary scoliosis. I am acquainted with a family of which several members, in at least two generations, have (but do not suffer from) this slight deformity. In two cases the original deformity was a slight shortness (or perhaps coxa vara) of the right leg, and the resulting scoliosis did not develop or was not apparent until the later teens. Has this sequence of events originated in a faulty habit of standing, with the body's weight mainly resting on one leg, at a time when the bone was still imperfectly calcified, or is it due to a hereditary shortness of one leg?—I am, etc.,

Dervock, co. Antrim, March 7th.

THOMAS MCKEE.

Medical Examination at the Police Station

SIR,—Dr. Spurgin has quite misunderstood the observations of Mr. Justice Rigby Swift. The learned judge stated that in his opinion it was improper that a doctor, called by a patient accused by the police of being under the influence of drink, should express to the police any opinion on the condition of his patient. This, I think, we should all agree is absolutely correct ethics. In the particular case to which the judge referred the doctor had given to the police an opinion that the patient who had sent for him was under the influence of alcohol. Later he was actually called by the police as a witness against his own patient. Mr. Justice Rigby Swift expressed the view that under such circumstances the doctor should not retain the fee paid by his patient. The doctor accepted the suggestion of the judge, and returned it.—I am, etc.,

Hove, March 11th

L. A. PARRY, F.R.C.S.

The Services

Mr. Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.Ed., has been appointed consulting surgeon to the Royal Navy

DEATHS IN THE SERVICES

Lieut.-Colonel James Francis Donegan, C.B., R.A.M.C. (ret.), died at Farnham, Hants, on March 8th, aged 70. He was born at Cork on March 29th, 1863, and was educated at Edinburgh, where he took the L.R.C.P. and S. in 1885. Entering the Army as surgeon on July 28th, 1886, he became lieutenant-colonel after twenty years' service, and retired on March 29th, 1918. He served in the Burmah campaigns in 1887-9 (medal with clasp), and in the Peshawar and Teikoon expeditions in 1899-92 (clasp); in the North-West Frontier campaign of 1897-8 (medal with clasp); in the South African War, 1899-1902, including the defence of Ladysmith, operations in the Transvaal and Orange Free State, in the actions at Talana, Laing's Nek, Red Bank, Bellart, and Lydenburg, and in operations on the Zululand frontier of Natal in September and October, 1901 (mentioned in dispatches in the *London Gazette* of February 8th, 1901 Queen's medal with five clasps and King's medal with two clasps); and in the war of 1914-18 (mentioned in dispatches in the *London Gazette* of April 5th and July 13th, 1916, and C.B. in 1916). He was the author of *Camp Songs, Ractime, Military Poems for Recitation* (1912).

Medico-Legal

THE DUTIES OF THE MEDICAL WITNESS.—II

NOTES TAKEN AT THE TIME*

Sometimes the success or discomfiture of a medical witness is determined years before the case comes on and he enters the witness-box. If a witness brings with him the original notes he has taken at the time of the event of which he is speaking he may use them to refresh his memory, but he is not allowed to use any other kind of memorandum. For this reason medical men cannot be urged too strongly and too often to take notes, at the time, of any matter on which they are in the least likely to have to give evidence later. A medical witness is in a very strong position if he can say to cross-examining counsel: "This is what I wrote immediately the patient had gone."

In 1926, a Mr. W. S. Harnett brought an action against Dr. Fisher, who had certified him as a lunatic fourteen years before. Naturally Dr. Fisher could not remember any details of the occurrence, and he had most unfortunately omitted to keep any notes. The result was that when he was cross-examined by Mr. Harnett's counsel he could not remember a single one of the questions which he had put to Mr. Harnett, or the answers on which he had founded his opinion that the man was insane. It is possible that if he had been able to arm himself with notes taken at the time he might have defended himself successfully against the charge of negligence, instead of having heavy damages awarded against him—from which he was only saved by the operation of the Statute of Limitations.

This is an extreme case, but even if the medical man is not faced with an action for negligence he may undergo public humiliation and confusion if he has to rely on an unaided memory—particularly if he is misguided enough to overdraw on it.

PENALTIES AND PROTECTION

The medical witness may receive from the solicitors of the party calling him a "subpoena"—a writ issued by the officers of the court in which the action is to be tried. It calls upon him to attend a named court at a named time, and may direct him to bring with him certain named documents. It carries the authority of the Crown itself. A copy is "served" on the witness, usually by one of the clerks to the solicitors acting for the party calling him; the original must be shown to him at the same time. The writ must be accompanied by sufficient conduct money and expenses.† If he is appearing purely as an expert and he has made an agreement with the solicitors about the remuneration he is to receive, they may possibly not serve a subpoena on him, but merely notify him by letter of the place and time. Coroners do not call witnesses by subpoena, but by summons, or sometimes by a mere informal message.

As its name implies, a subpoena carries with it a penalty for disobedience. A witness who disobeys a subpoena may be fined or imprisoned for contempt of court; he may be made to pay on pain of imprisonment a statutory penalty of £10; and he is also liable to be sued for damages by the party calling him if the party has suffered loss through not having the benefit of his evidence. The court will only punish him if he has shown intentional defiance of authority, and so he may escape by showing good and sufficient excuse. Among the excuses with which witnesses have in the past placated injured justice have been that the witness was ill and unable to travel; *bona fide* and reasonable grounds for thinking that he would not be required; and that he did not receive a proper sum for expenses with his subpoena. The following excuses, on the other hand, have been unsuccessful: that the case was not called on; or that it was called on unexpectedly; or that the witness's evidence was not material. A civil action

against a witness who did not appear when properly summoned would be founded, not on defiance of the commands of the court, but on his negligence in not performing the duty which he owed to the party calling him. He would therefore have to show that he had not been negligent; but the court, in deciding the point, would probably apply to his excuse the same standards as it would apply if he were defending himself against the charge of wilful disobedience. A coroner has the power to fine a witness £5 for not obeying his summons.

On the other hand, a witness is given by law certain protection to enable him the better to discharge the duty he owes the public. For instance, the court has inherent power to prevent any abuse of its process, such as service of a subpoena when the case cannot be tried in the current sittings, or of a subpoena which requires the witness to produce a number of unnecessary documents, or entails great expense, or is not served *bona fide* to obtain relevant evidence. The best course for a medical man who considers himself aggrieved by a subpoena is to talk the matter over with a good solicitor and to see whether it is worth while applying to the court to have the subpoena set aside. A witness is protected from arrest on civil process—for example, for not paying rates or a judgement debt—for a reasonable time before and after he gives evidence. What is more important to him is that he need have no fear of an action being brought against him for anything he says in his capacity as a witness. Even if a witness's evidence is damaging to the reputation or interests of some other person he cannot be sued for damages, because evidence given in court is absolutely privileged. The same privilege covers the "proof" of evidence which the witness gives to the solicitors and the party for whom he is appearing, in order that they shall know what evidence he is prepared to give.

In the case of *Watson v. M'Ewan* (1905) a woman who wanted a separation from her husband called in Sir Patrick Watson, an Edinburgh consultant, to examine her, in order that when she brought her action she might summon him as a witness to support her statement that her husband's cruelty had broken down her health. He examined her in 1901, and found that she was pregnant, and in the habit of taking alcohol and morphine, and among the notes which he made at the time in his private notebook he wrote the following passage:

"Advised should be sent to a nursing home till after her confinement over, to wean her from morphine, and separate her and her husband, and also her own family, until after the birth of the child. This view not pleasing to patient nor to her father (who has married a second wife), and it seems they are all bent upon inducing premature labour, so as to free the patient from any permanent reminder of this marriage, and, if possible, arrange a separation."

He naturally told the woman's law agents (this was a Scottish case) that his evidence would be unfavourable to her. A year later, when she brought her action in the Court of Session, Sir Patrick was consulted by the law agents acting for her husband and asked to examine the wife, together with other medical men, on the husband's behalf. This he did, and reported the result to the husband's agents, and at the same time voluntarily gave them information about the examination which he had made a year before, at the request of the wife, and showed them his notes. He gave evidence at the action and read his notes in court. She lost her action, and in 1904 sued Sir Patrick for (a) breach of confidence, and (b) defamation, asking for £2,500 damages on each head. The Court of Session, in deciding which of the issues she raised should be tried, disallowed those which dealt with Sir Patrick's evidence in the box on the ground that it was protected by absolute privilege. They also disallowed the issue that Sir Patrick had committed a breach of confidence in disclosing the information to the husband's legal advisers, but allowed the issue that in doing so he had slandered the wife. Sir Patrick appealed to the House of Lords. Lord Halsbury, the Lord Chancellor, said in his judgement: "It appears to me that the privilege which surrounds the evidence actually given in a court of justice necessarily involves the same privilege in the case of making a statement to a solicitor." If, he pointed out, an aggrieved person, though he could not bring an action on evidence given in the witness-box, could bring it for what the witness told the solicitor beforehand, he was going to say in the witness-box, the object for which the privilege existed would be gone, and no witness would ever give any information to solicitors.

* The first of this series of five articles appeared in the *Journal* of March 3rd (p. 407).

† *British Medical Journal*, 1933, ii, 513.

The public policy which makes the protection of witnesses necessary for the administration of justice must necessarily involve that which is a step towards, and part of, the administration of justice—the preliminary examination of witnesses to find out what they can prove. After all, if the witness lies in the box he can be prosecuted for perjury, and if he merely lies to the solicitor and his evidence does not get as far as the box, it does not much matter to anyone. The House of Lords therefore allowed the appeal with costs.

WHEN HEARSAY IS EVIDENCE

The law governing what evidence may be admitted and what may not is very long and complicated. The medical witness need know very little of it, since the question is one for the judge and counsel to thrash out. The doctor's task is to answer the questions which are put to him. If he observes the ordinary rule that hearsay is not evidence, he may help to save a little of the time of the court, but speedy correction will not be lacking if he infringes it. Nevertheless, there are a few fairly important classes of hearsay evidence which especially concern the doctor. One of these exceptions to the rule about hearsay is a statement made by a person about his bodily or mental feelings or condition, or state of health, if at the time the statement was made the feelings or condition were material to some issue in the proceedings. A doctor, or any other witness, may give evidence of such a statement to prove the facts set out in the statement. It does not matter whether or not the person against whose interests this evidence is given was present when the statement was made.

In *Aveson v. Lord Kinnaird* (1895) Aveson insured his wife's life. The medical man who examined her for the company found her a good life, and her husband warranted her to be in good health. She died shortly afterwards from the effects of immoderate drinking, and the insurance company refused to pay. The husband brought an action, and the company called evidence that soon after the medical examination she had complained to a neighbour that she had been poorly when she had gone to be examined and had not been fit to go, and that she was afraid that she would not live till the policy was returned. On this evidence the jury found that the husband had given a false warranty. The husband appealed on the ground that this evidence was improperly admitted, but the Court of King's Bench held that it was perfectly admissible.

Evidence such as this is obviously much more valuable if the doctor can bring the notes he made at the time in order to refresh his memory. He may not, however, read a letter written to him by a patient detailing his symptoms, and he can only tell the court how the patient described the actual symptoms he was feeling at the time. The patient may have told a lengthy narrative describing how the symptoms were caused, but the doctor cannot repeat this in evidence.

Dying Declarations

Another variety of hearsay evidence which the courts will sometimes admit is the dying declaration. When a doctor attends a patient whom he suspects or knows to have suffered from the wrongful act of another, he should bear in mind the possibility of the patient's making a declaration which may later become important if the offender is put on trial. The most likely instance is a case of criminal abortion which has gone wrong, and in which the doctor is called in too late to save the woman's life. She may make a statement about the acts which led to her death, and the doctor may consider it his duty as a citizen to take all steps to ensure that this statement is available as evidence if the offender is brought to trial. As it will not in any event be admissible if the patient lives, the question of professional confidence does not arise. If there is time, and he decides to act, he should ask a justice of the peace to come and take the statement, but it may be necessary for him to take it himself.

The first essential is that the patient shall be in settled, hopeless expectation of death. The theory is that the sense of approaching death is calculated to produce a sentiment of responsibility equal to that which a religious and conscientious man feels when required to make a

statement on oath. The doctor should take down her statement in writing, preferably before witnesses, and she should sign it if she is able to do so. Neither the writing, nor the witnesses, nor the signature are necessary; they will, of course, make the statement much more credible, but it must contain some expression of her knowledge that she cannot hope to live.

For instance, in *Rex v. Abbott* (1903) a woman who had taken nitric acid constantly repeated the words "I'm dying!" She did die in about twelve hours, and her husband, who had also taken the acid, but recovered, was charged with murder as the survivor in a "suicide pact." Mr. Justice Kennedy would not admit the declaration, even though the evidence that she had abandoned hope was very strong. He considered that the repetition made the evidence weaker, suggesting that the ejaculation referred to the pain rather than the fixed and settled belief in impending death.

In *Rex v. Goddard* (1882), however, where a woman said "I'm dying; look to my children," her statement was admitted by Mr. Justice Hawkins after consulting Lord Justice Baggallay. But in *Rex v. Jenkins* the woman, when her declaration was read over to her containing the words "with the fear of death before me," asked the clerk to put in the words "at present." These words prevented her statement from being received in evidence, as they showed that her despair was qualified and not absolute.

In *Rex v. Whitmarsh* (1898) a woman made a statement before she had lost hope, and afterwards, when really in fear of death and without hope, acknowledged it as true. Mr. Justice Darling would not admit it because he was unwilling to extend the doctrine of the admissibility of dying declarations in any way. Nevertheless, he admitted a statement which had been compiled by a metropolitan magistrate from extracts from this first statement, and had been read over to the woman and signed by her as correct. It was headed: "Having the fear of death before me, and being without hope of recovery."

In all the reported cases on whether a dying declaration was admissible, the injured person died (or the declaration would not have been admissible, whatever its form). In all of them the indications that hope had been abandoned were very strong. Yet so strict are the judges in interpreting this rule that they have rejected these statements whenever there was the slightest suggestion that the deceased had not definitely abandoned hope. If the doctor is ever responsible for recording a dying declaration, he must see that there is no hope, that the victim knows it, and that she says so clearly in her statement. A safe formula is: "Having the fear of death before me, and being without hope of recovery." When a dying declaration is otherwise admissible, it is not invalidated if the victim afterwards entertains hope before she dies.

For a full discussion of the controversy on the doctor's duty in this situation readers are referred to *Taylor's Medical Jurisprudence*, vol. i, p. 48.

(To be continued)

The annual report for 1932-3 of Livingstone College, Leyton, the medical training centre for missionaries, reveals that after a falling off in the number of students in recent years, the present session shows a larger number of entries, and that there is satisfactory promise as regards future ones. The value of this training is illustrated by citations from letters, and by reports rendered at the annual meeting held last June. There was a deficit of £143 on the year's working; in the previous twelve months the deficit was £346. This loss of income is attributable to a reduction in the fees payable by students by about 15 per cent., and partly by the fall in the number of students. During the last forty years Livingstone College has received 1,343 students, and the need of such a source of sound training for the relief of bodily disabilities has been abundantly demonstrated. At the annual meeting the value of this education was emphasized by the Archbishop of York, who urged that at least thirty students should be sent there each year to take the full course, as well as others for the shorter periods of training. The principal centre of clinical work for students is the medical mission at St. James the Less, Bethnal Green, and very useful practical assistance has been given by the Poplar, Connaught, Mildmay Mission, and Seamen's Hospitals.

Obituary

J. L. BIRLEY, M.D., F.R.C.P.

Physician to St. Thomas's Hospital

By the death, on March 6th, of James Leatham Birley, at the early age of 49 years, the profession has lost a member of outstanding ability and striking personality.

Born on July 12th, 1884, he was educated at Winchester and at University College, Oxford, where he gained first-class honours in the final school of physiology. After qualifying from St. Thomas's Hospital he held the post of house-physician at his own hospital and at the National Hospital for Nervous Diseases, Queen Square, returning later to St. Thomas's as resident assistant physician. During the following three years the war claimed all his time and energies, and from the first great battle of the Somme until the end of the fighting he was largely concerned with the development of the medical service of the Royal Air Force. His valuable work in that sphere was quickly recognized, and he rose to the position of its chief medical officer in France, with the rank of lieutenant-colonel, and, after his return to civil life, became its consulting physician, a post he retained



until his death. In 1919 Birley was elected a Fellow of the Royal College of Physicians, and in 1920 he gave the Goulstonian Lectures, choosing as his subject "The Principles of Medical Science as Applied to Military Aviation." The remainder of his life was chiefly devoted his work on the staff of St. Thomas's Hospital, and with the exception of a few years, when he was assistant physician to the National Hospital in Queen Square, he held no other hospital appointment.

Birley's great interest lay in neurology and in psychological medicine. He was one of the first honorary secretaries of the Council of Mental Hygiene, the excellence of his work in that capacity being greatly enhanced by his sane and critical outlook on the difficult problems with which the council was confronted in its early days. It is to be regretted that—owing partly to his constitution, which was far from robust, and partly to his dislike of rushing into print unless he had something of worth to contribute to the fund of common knowledge—his literary efforts were not more numerous, because he had the gift of expressing his thoughts both clearly and attractively. His Goulstonian Lectures afford ample evidence of his powers of exposition, and they must remain for a long time—it is to be hoped for ever—one of the best attempts to describe the reactions, physiological, physical, and psychological, of the normal individual to the stress and strain of an entirely strange and exacting environment. In particular, his shrewd analysis of the factors which lead to a breakdown of human efficiency, and the clinical picture of these factors at work on active service, form an invaluable guide to those in authority should the necessity for fighting in the air again arise. Birley's physiological training at Oxford profoundly influenced his outlook on medicine, and, combined with his sympathetic understanding of a patient's individuality and his transparent honesty of purpose, made him, at an unusually early age, a consultant whose opinion was eagerly sought and respected by the profession, especially in the field of neurology.

In no gathering could Birley be overlooked. His height, his athletic figure, and fine ascetic features never failed to arrest attention, and closer acquaintance with the man revealed keen intelligence, wide culture, and an unusual capacity for clear thinking and quick decision. In his too infrequent hours of leisure he was a delightful and exhilarating companion; his personal charm, his appreciation of the humorous aspects of life, his infectious laugh, and the absence of any kind of affectation, gave him the immediate and lasting friendship of children, while, if adults might at first be a little alarmed by his penetrating directness of manner, the genial warmth of human kindness which lay beneath soon dispelled their fears. His accomplishments and hobbies covered a wide field. He excelled at the piano and at the billiard table. His intimate knowledge of the turf and of cricket, and his intense love of nature, more especially of birds, gave his holidays a full measure of interest and recreation.

A short but rich life, conscientiously spent, and blessed with the crowning glory of a supremely happy marriage. His wife, Margaret Edith, elder daughter of Mr. W. A. Tennant, with two sons and a daughter, survive him. To them, in their loss, is assured the deep sympathy of a large circle of mourning friends within and without the profession which James Birley adorned.

E. F. B.

WILLIAM DARLEY-HARTLEY, M.D., M.R.C.P.

Emeritus Editor of the *Journal of the Medical Association of South Africa (B.M.A.)*

We have to record with regret the death of Dr. W. Darley-Hartley of Rondebosch, Cape Province, in his eightieth year, after a life of devoted service to South Africa and to the British Medical Association.

Born in Sheffield in 1854, William Darley-Hartley received his medical education at Guy's Hospital. He obtained the diploma M.R.C.S. in 1878, and the L.R.C.P.Ed. in the following year. A house appointment at Guy's Hospital followed his qualification, but the outbreak of the Zulu War led to a change in his plans, for he was offered, and accepted, a post as civil surgeon in the force which was hurried to South Africa. A year later hostilities ended for the time with the overthrow of Cetewayo, and Dr. Darley-Hartley decided to settle in South Africa. He built up a good practice in East London, and then accepted the post of district surgeon at Cathcart. His previous experience resulted in his obtaining also a commission as captain in the Frontier Mounted Rifles. Four years later he returned to East London, but there was little likelihood of a long sojourn, for the Boer colonists were pushing out first from the Orange Free State, and then from the Transvaal, into the territory of the Bechuanas; the inevitable war ensued, and Dr. Darley-Hartley once more ceased to be a civilian practitioner. There followed the exciting but sadly unsettling times when Cecil Rhodes and others were vigorously engaged in composing disputes, withstanding native risings, securing safety in new territories, and gradually establishing the foundations of what was to be eventually a civilized country under white control. In all these varied activities of a transitional period Dr. Darley-Hartley took part.

This early experience of pioneering had its inevitable influence on the character of a man who had always been of resolute purpose. Moreover, he had gained a deep affection for South Africa, and was always ready to take what opportunities offered to advance her interests. He visited England in 1898 for a short time, during which he obtained the M.R.C.P. and graduated M.D. at Durham. He returned to Capetown to restart his medical life as a consultant physician, but the continuance of the unsettled national conditions prevented him from fully

developing this line of work, and the Boer War once more recalled him to the duties of a civil surgeon with the British forces, until peace was signed and his life took a new, but no less vigorous, turn. Elected to membership of the British Medical Association in 1895, Dr. Darley-Hartley had formed a clear view of what such an institution might be capable in South Africa. Already an experienced journalist, he determined to try to succeed where others had previously failed, and accordingly he founded the *South African Medical Record*, which was to be a mouthpiece of unfettered medical opinion. He inevitably encountered opposition, both to some of the views and also to the way in which they were expressed. Foes as well as friends multiplied, and his previous life had not been of a kind to soften his attitude in controversy. As a member of the Cape of Good Hope (Western) Branch Council in 1904, and the Cape Colony Medical Council, of which he was at one time president, he made his strength of purpose felt, and eventually in medical circles, as previously in the country as a whole, ways of making peace were found.

Reporting on his visit to South Africa in 1926 (*B.M.J. Supplement*, 1926, i, 234) the then Medical Secretary, Dr. Cox, described Dr. Darley-Hartley as one "who occupies in South Africa a position suggesting an unofficial combination of the Editor of the *B.M.J.* and the Medical Secretary." Thus, when 1926 was reached, and the Medical Association of South Africa came into being, the *South African Medical Record* was accepted as its official organ under the title of the *Journal of the Medical Association of South Africa (B.M.A.)*. After editing the paper in its new form for two years he retired, and was appointed emeritus editor. In the same year he headed the poll at the election of the new South Africa Medical Council. Further recognition of his outstanding merits followed in 1933, when he was awarded the gold medal of the Medical Association of South Africa (B.M.A.), and elected an honorary member. His latter days were spent in his home near Groote Schuur—once the abode of another who gave his heart to South Africa—and in the suburbs of Capetown, where he had in the end won his way through strife to peace and honour.

THE LATE DR. A. G. BARRS

Dr. C. H. CATTLE (consulting physician, Nottingham General Hospital) writes: In the notices of the late Dr. Barrs of Leeds in your issue of March 10th I do not see any reference to his very valuable paper in the *British Medical Journal* for May 10th, 1890, on "The Tuberculous Nature of So-called Simple Pleuritic Effusion." This view of pleurisy was at the time almost revolutionary. Text-books ascribed simple pleurisy to "cold," "idiopathic causes," "rheumatism," "blows on the chest," etc., but never mentioned tubercle as a cause of primary pleurisy. Dr. Douglas Powell had already raised the question whether some "simple pleurisies" might not be tuberculous. He was familiar with the fact, now so well established, that "simple pleurisy" was often followed by phthisis. Dr. Barrs frankly stated his disbelief in the influence of cold as a cause of disease: as our knowledge of microbic causes has increased, by so much have the fields of "cold" and "idiopathy" diminished. He examined the records of the Leeds General Infirmary for 1880-4, and found that twenty-one out of seventy-four cases of simple pleurisy resulted in death within five years from some other tuberculous affection. A recent modern textbook ascribes the majority of cases of pleurisy to the tubercle bacillus, allowing chill or injury as depressing and contributory causes. Dr. Barrs was one of the first in this country to give expression to this view of the origin of pleurisy, basing his opinion on careful observation, and has thus earned a place among the many great men who have added to our knowledge of tuberculosis.

We regret to announce the death on March 8th of Dr. WILLIAM WILKING STABB of Torquay. From Cambridge, where he graduated with honours in the Natural Sciences Tripos in 1887, he went to St. Thomas's Hospital, and obtained the M.B. and B.Ch. degrees in 1890, proceeding M.D. three years later. At St. Thomas's he won the Mead Medal for practical medicine, and served as resident house-physician. He then began general practice at Torquay, and at the age of 26 was appointed physician to St. Raphael's Convalescent Home, administered by the Clewer Sisterhood; he was also for many years medical officer to the St. Barnabas Home for Incurables. He had been a member of the British Medical Association for forty-three years. We have received from the Hon. Lady Leveson-Gower a tribute to Dr. Wilking Stabb's fatherly care of the patients at St. Raphael's Home, where he earned the devotion and gratitude of all. He worked assiduously with the various sisters superior who succeeded one another, and never failed in his skilful attendance and kindness to the patients. "In 1892," writes this correspondent, "I was a girl of 22 dying slowly from myxoedema, for which nothing could then be done. In the autumn of that year Dr. Stabb learned of raw sheep's thyroid as a cure, two women in Scotland having benefited through this discovery. Dr. Stabb, young as he was, absolutely inexperienced both as regards the illness and the cure, took that responsibility against the advice and warning of other doctors both in London and at Torquay—with the result that I recovered sight, hair, figure, speech, and movement, and lived to enjoy excellent health."

We regret to record the death of Dr. CHRISTOPHER THOMAS HELSHAM of Beccles on March 3rd, at the early age of 39. His medical education was somewhat interrupted by the war. He held a commission as surgeon probationer R.N., and was awarded the D.S.C. After studying at Newcastle and Guy's Hospital, he obtained the diplomas M.R.C.S., L.R.C.P. in 1919. His early appointments included house-surgeon at Guy's Hospital and the Norfolk and Norwich Hospital. Continuing to specialize in surgery, he settled at Beccles and was appointed surgeon to the local hospital. He was the author, in 1921, of an article in the *British Medical Journal* on a case of strangulated scrotal hernia with a volvulus of the small intestine in the inguinal canal. Dr. Hesham was a keen supporter of the British Medical Association. He was a Representative at the Annual Meeting at Bradford in 1924, and again at the Meeting at Nottingham in 1926, and had been chairman of the North Suffolk Division. He was also a member of the Norwich Medico-Chirurgical Society.

We regret to announce the death on March 7th, at the age of 78, of Dr. THOMAS GEORGE AINSLEY, at West Hartlepool, where he had resided for seventy years. Dr. Ainsley received the diploma of M.R.C.S. in 1877 and the degree of M.B. Durham in 1880, proceeding M.D. in 1887. Dr. Ainsley was a justice of the peace for the county borough of West Hartlepool, and consulting surgeon to the Hartlepool Hospital and Cameron Hospital, West Hartlepool. He had been a member of the British Medical Association for fifty years. By a sad coincidence his brother, Mr. F. W. Ainsley, died the same day.

The death is announced, on March 2nd, at the age of 68, of Dr. THOMAS STEELE of Ardmuir, Cadzow Street, Hamilton, N.B. A native of Fauldhouse, Dr. Steele graduated M.B., C.M.Ed. in 1891. After practising for a short time in West Hartlepool he became assistant to Dr. Lennox and Crawford in Hamilton forty-two years ago, and later succeeded the latter as senior partner, retiring in 1933. He held the position of surgeon to the Lanarkshire County Police, medical officer to the Post Office, and certifying factory surgeon for the Hamilton

district. During the war Dr. Steele carried on the practices of several brother doctors in the district, and this arduous work, which was faithfully and cheerfully done, will always be gratefully remembered. A popular practitioner, Dr. Steele was also a keen sportsman, and held the captaincy of the Hamilton Golf Club for several years. He had been a member of the British Medical Association for forty years, and took a lively interest in the proceedings of the Lanarkshire Division.

By the death of Dr. W. M. SHUTTE on March 5th Weybridge has lost a much-loved doctor and friend, who had practised there for many years. He received his medical education at the University of Cambridge, where he graduated M.A. in 1898, and at St. George's Hospital, qualifying as M.R.C.S. and L.R.C.P. in 1904. At the outbreak of war he immediately joined the R.A.M.C. and served in England and France for the whole of its duration. After the cessation of hostilities he sat for some years on many of the Pensions Boards, but did not return to private practice, though he still continued to reside in Weybridge until the day of his death. He leaves behind a wife and family, and countless friends to mourn his loss.

Universities and Colleges

UNIVERSITY OF OXFORD

Schorstein Research Fellowship

The Board of the Faculty of Medicine will make an election to the Schorstein Research Fellowship in Medical Science in June, 1934, if a candidate of sufficient merit presents himself. The board has power, in special circumstances, to divide the fellowship into two studentships.

The fellowship, of the annual value of £200, will be tenable for two years from October 1st, 1934, in any of the medical departments at Oxford, under such regulations as the board may approve. Candidates must be graduate members of the University, holding a registrable medical qualification, and must be under 35 years of age on October 1st, 1934. Candidates must submit their applications to the dean of the Medical School, University Museum, not later than April 30th, 1934. Each candidate must submit evidence of age, testimonials (three copies) or names of referees, a statement of his career, and a statement of the department of medical science in which he proposes to research.

The Board of the Faculty of Medicine has granted leave to F. J. Sale, B.A., B.M. (Christ Church), to supplicate for the degree of Doctor of Medicine. The evidence submitted by the candidate was entitled "Auricular Fibrillation."

UNIVERSITY OF CAMBRIDGE

The Syndicate on Medical Courses and Examinations of the University has issued a second report dealing with the necessary changes of Ordinance so far as its previous recommendations concern degrees in medicine and surgery. The regulations proposed (*Cambridge University Reporter*, March 6th, p. 703) include all the recommendations dealt with in the Syndicate's amended report, which was approved on November 17th, 1933, and they deal also with certain minor points not previously considered.

Dr. E. B. Verney, F.R.C.P., formerly scholar of Downing and now Professor of Pharmacology in University College, London, has been appointed to the Sheild Readership in Pharmacology as from October 1st, 1934.

Sir Pendrill Varrier-Jones has been appointed to represent the University at the twentieth annual conference of the National Association for the Prevention of Tuberculosis, to be held in London in June.

F. M. Collins and D. M. Lewis have been approved for the degree of M.Chir. Kathleen Alice Muir has been approved for the degree of M.D.

At a congregation held on March 10th the following medical degrees were conferred:

M.D.—H. G. Oliver, G. S. W. Evans.
M.B., B.Chir.—J. T. W. Spiridion-Klisczewski, W. G. Gill,
C. L. Alcock.
M.B.—H. F. Green.
B.Chir.—P. T. Cooper.

UNIVERSITY OF SHEFFIELD

Dr. Edward Johnson Wayne has been appointed to the Chair of Pharmacology in succession to Professor Edward Mellanby. Dr. James Clark has been appointed Lecturer in Infectious Diseases.

The Council has appointed Professor G. A. Clark, Dean of the Faculty of Medicine, to represent the University at the celebration commemorating the one hundredth anniversary of the foundation of the Liverpool medical school on May 11th and 12th.

NATIONAL UNIVERSITY OF IRELAND

At a meeting of the Senate on March 8th, with Dr. Denis J. Coffey, Pro-Vice-Chancellor and President, University College, Dublin, in the chair, a resolution of congratulation to Dr. Coffey upon the signal honour recently conferred upon him by the President of the French Republic by including him amongst the Chevaliers of the Légion d'Honneur was unanimously adopted.

The Senate decided to award the M.D. degree to the following candidates upon the published works submitted by them: B. A. Coghlan and W. J. Roche of University College, Dublin.

The Senate decided that the prize in Irish historical research for 1933 should be awarded to Dr. Richard Hayes for his published work entitled, "Ireland and Irishmen in the French Revolution."

The following representatives were appointed: Dr. Denis J. Coffey to attend the centenary celebrations of the foundation of the medical school, University of Liverpool, in May; Professor John C. Saunders to attend the annual conference in London of the National Association for the Prevention of Tuberculosis.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Council Election

The secretary of the Royal College of Surgeons has sent out the usual announcement, which on this occasion states that on Thursday, July 5th, at 11 a.m., there will take place an election of four Fellows into the Council in the vacancies occasioned by the retirement in rotation of Mr. Ernest W. Hey Groves, Mr. G. Grey Turner, and Mr. Hugh Lett, and by the death of Mr. R. P. Rowlands.

A voting paper will be sent by post to each Fellow whose address is registered at the College on April 3rd. Fellows are requested to give notice without delay of any change of address, in order that voting papers may not be mis-sent.

Meeting of Council

A meeting of the Council was held on March 8th, with Sir Holburt Waring, the President, in the chair.

Mr. R. H. Burne, F.R.S., the Physiological Curator of the Museum, who is retiring from office, was presented with an address expressing the Council's appreciation of his services to the College during a period of forty-two years.

Licences in ¹ntal Surgery were granted to thirty-three candidates.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Physicians, to the following eighteen candidates:

H. W. Applin, Edith D. Bowie, W. G. Davidson, G. D. Gordon, H. G. Grieve, J. N. Jaswal, A. R. Khan, E. H. W. Lyle, P. H. Maal, W. B. E. McCrea, G. G. Patel, A. W. Patton, L. G. Scoular, J. Sherne, K. H. Singh, Effie Slater, P. I. Tierney, R. L. H. Townsend.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The Council has elected to Honorary Fellowship Émeritus Professor Archibald Donald (Manchester), and Sir William Josiah Smyly (Dublin). The following Members have been admitted to the Fellowship: A. M. Claye (Leeds), D. Coutts (Patna), J. Ellison (London), P. F. Gow (Calcutta), S. N. Hayes (Lahore), M. L. Treston (Rangoon).

The following have been awarded the Diploma of the College: W. N. Chisholm (Preston), V. H. J. Davies (Swansea), J. C. Hatrick (London), R. S. MacArthur (Stourport), Adah E. Platts-Mills (London), P. R. Thiagarajah (Ceylon), Gertrude Cuttle (Liverpool), A. S. Rajasingham (Ceylon), H. Richards (Cambridge), G. D. S. Briggs (London).

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the monthly meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on March 5th, the following were admitted Fellows: M. D. Black, W. Blyth, T. W. Buchan, W. A. Mackey, and G. McC. Wyburn.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week discussed the Estimates for the Navy and Army. The Consultative Committee on the Army agreed that at an early opportunity Sir Francis Fremantle should speak on the correlation of the Medical Services in the Defence Forces.

The Mining Industry (Welfare Fund) Bill was considered on report and read a third time in the Commons on March 13th. On the same night the Rural Water Supplies Bill came up for third reading, having passed through committee on March 7th. The Offices Regulation Bill was down for second reading on March 16th.

In the House of Lords on March 13th the Shops Bill passed through committee. Amendments were made in the provisions for overtime. The Supply of Water in Bulk (No. 2) Bill was considered on report by the Lords.

On March 7th the Parliamentary Medical Committee and lay M.P.'s met Lord Moynihan and Lord Dawson of Penn. Lord Moynihan explained the Road Traffic Emergency Treatment Bill, which has been sent to the Commons from the Lords. As time is unlikely to be provided for this by the Government, the meeting, which was generally sympathetic with the objects of the Bill, agreed that a deputation from both Houses should be appointed to represent to the Minister of Transport the case of hospitals and medical practitioners for statutory compensation for treating motor accidents. Three suggestions were made in the discussion: a contribution of £100,000 annually from the Road Fund; a levy on motor licences; or a contribution from motor insurance. The Ministry of Transport was stated to be against all three. To serve on the deputation to the Minister the meeting selected Lord Moynihan, Lord Dawson, Colonel Moore, Sir Francis Acland, Sir Arnold Wilson, Dr. Salter, and Sir Francis Fremantle, to whom two or more lay peers would be added. Lord Dawson then explained the Contraceptives Bill, as amended in committee. The third reading of the Contraceptives Bill is set down in the House of Lords for March 20th.

The certificate issued by the Attorney-General on the Birmingham Joint Hospitals Bill is in its favour, but suggests minor amendments.

The Adoption of Children (Workmen's Compensation) Bill has been reported to the House of Commons with amendments from a Standing Committee.

Particulars of the slum clearance programmes submitted by local authorities in England and Wales were issued on March 13th as a White Paper. This shows that 266,851 houses are proposed for demolition during the five-year programme under the Slum Clearance Act, 1930, and that 285,189 new houses are to be built for the 1,240,000 persons dispossessed. The Government will, at a later date, introduce a Bill for a complementary policy on reconditioning houses. The peak of slum clearance is expected in 1936-7. The preliminary surveys have been made on the advice of medical officers of health.

Insurance Capitation Fee

Replying to Major Mills on March 8th, Sir HILTON YOUNG, Minister of Health, stated that the capitation fee payable to insurance doctors was, by agreement with the British Medical Association, reduced from 11s. to 9s. 6d. per insured person as from January 1st, 1922, and, after reference to a court of inquiry, from 9s. 6d. to 9s. from January 1st, 1924. The fee of 9s. was made subject to an economy deduction of 10 per cent. from October 1st, 1931. The amount of the saving effected by a reduction of the capitation fee depended on the number of insured persons entitled to medical benefit, which

varied from year to year. The saving accruing to the national health insurance funds of England and Wales in the first year of the first reduction was approximately £995,000, and the saving in the first year of the second reduction was approximately £342,000. The Exchequer proportion of these sums was approximately £221,000 and £76,000 respectively. The whole of the saving effected by the economy deduction of 10 per cent. accrued to the benefit of the Exchequer, and this saving in England and Wales in 1932 amounted approximately to £715,000. [The official report of a deputation to the Minister from the Insurance Acts Committee of the British Medical Association is printed in the Supplement this week at page 97.]

Milk for School Children

Mr. RAMSBOOTHAM told Mr. Elliston, on March 8th, that the Board of Education, in approving proposals by local education authorities for the provision of milk to school children, urged the authority to make every effort to secure a supply of pasteurized or tuberculin-tested milk. Captain Heilgers asserted that it was difficult to obtain Grade A (T.T.) milk because "the medical profession has a preference for dirty milk pasteurized, and that preference has nearly killed the production of clean milk in this country." No answer was returned.

Sir F. FREMANTLE, on March 12th, asked the Minister of Agriculture whether, before approving any proposals submitted by the Milk Marketing Board for providing milk to schools at reduced rates, the Government would satisfy itself that such milk would be free from the risk of tuberculosis or other infections. Dr. ELLIOT replied that under present voluntary schemes the source of milk supplied to schools had to be approved either by the school medical officer or by the local medical officer of health. He had no doubt that the Milk Marketing Board would take note of existing procedure in framing the proposals which it would submit for approval, and he would bear the point in mind himself.

Mr. SHAKESPEARE, on March 12th, told Sir Arnold Wilson that the attention of the Minister of Health had been drawn to a report on causal factors in tuberculosis, published by the National Association for the Prevention of Tuberculosis. Sir Arnold Wilson asked if the Minister's expert advisers confirmed the view that the incidence of tuberculosis varied with the consumption of raw milk, "a shortage of which more than of any other foodstuff is a predisposing cause of tuberculosis." Mr. Shakespeare said the causal factors in tuberculosis were numerous and complex, including under-nourishment, but the Minister of Health was advised that the nutritive value obtained by the consumption of raw milk might be accompanied by some increase in the risk of infection by bovine tubercle bacilli unless suitable precautions were taken to ensure the safety of the milk.

Water Shortage: Government Action

Replying, on March 12th, to Mr. LEVY, Mr. SHAKESPEARE said that it was not proposed to give the regional advisory committees statutory powers to enable them to carry out schemes of regional water supply. The committees had been formed for advisory purposes only.

Replying to Sir J. Lamb, Mr. Shakespeare said that, so far, 475 rural district councils had replied to the recent circular on the shortage of water due to drought. Of these, 315 reported that their districts were not suffering from shortage; the remaining 160 reported shortage of varying degree. Where shortage was reported, with few exceptions special measures were being taken. Where the replies suggested that further action was required, a visit was made by an engineering inspector of the Ministry of Health. Additional engineering staff had been engaged to enable this to be done.

Payment of Midwives' Fees.—Sir HILTON YOUNG told Mr. D. G. Somerville, on March 8th, that cases had come to his notice in which midwives had complained of difficulty in obtaining payment of their fees. The choice of a midwife and the amount and payment of her fees were matters of private contract between the midwife and the person engaging

her services. Where the confinement was that of a woman entitled to maternity benefit the payment of the midwife's fee was ordinarily regarded as the first charge upon that benefit. He did not think that the introduction of amending legislation to protect the interests of the midwife in this respect would be justifiable.

Tuberculosis Death Rate.—Sir HILTON YOUNG told Captain J. MacAndrew, on March 8th, that, on the basis of the standardized death rates for all forms of tuberculosis annually published in the Registrar-General's Statistical Review, the 1932 mortality in England and Wales was approximately 56 per cent. of that in 1911 and 22½ per cent. only of the corresponding mortality of the quinquennium 1851-5. Comparable figures for European countries were not completely available, but it would appear that no less improvement had been experienced in certain other countries. The Minister informed Mr. A. Todd, on March 8th, that no further tests had been carried out by the Ministry of Health in connexion with the treatment for tuberculosis called *umekaloabo*.

Slaughter of Tuberculous Cattle.—Replying, on March 8th, to Dr. Howitt, Mr. ELLIOT said that, during eight years' operation of the Tuberculosis Order of 1925, up to September 30th, 1933, 141,220 tuberculous cattle were slaughtered by local authorities in Great Britain. Compensation paid amounted to £521,581.

Bovine Tuberculosis.—On March 13th Sir HILTON YOUNG, replying to Mr. Groves, said he was advised that there was proof that the cases of tuberculosis in which the bovine germ had been found were caused by that germ. The scientific proof of this would be found in the second Interim Report of the Royal Commission on Tuberculosis (Human and Bovine), Part I (Report), 1907, Cd. 3322.

Housing.—In reply to Mrs. Tate, on March 8th, Sir HILTON YOUNG said that, with the exception of London and of a few instances in which he was negotiating with the authorities concerned with a view to securing acceleration, the slum clearance programmes adopted by local authorities were for completion within five years. The Minister told Mr. Mitchelson, on the same day, that the estimated number of houses in England and Wales per 1,000 of the population in September, 1933, was 245.8. The corresponding numbers at the censuses of 1911 and 1921 were 214.9 and 211.9 respectively. Mr. Shakespeare states that up to February 28th 2,083 areas had been declared by local authorities to be slum clearance areas.

Medical Officers Employed by Local Authorities.—On March 12th Mr. RAMSBOTHAM informed Sir Wm. Jenkins that in 1920-21 316 local education authorities in England and Wales employed 812 school medical and assistant medical officers; 235 authorities employed 420 school dentists; and 316 authorities employed 1,941 school nurses. In 1932-3 316 authorities employed 1,341 medical officers, equivalent to 659 whole-time officers; 312 authorities employed 774 dentists, equivalent to 555 whole-time dentists; and 316 authorities employed 5,630 nurses, equivalent to 2,243 whole-time nurses. In 1925-6 twenty-seven orthopaedic surgeons were directly employed by local education authorities; in 1932-3 the number was 125. Orthopaedic schemes were frequently operated by arrangements between local education authorities and orthopaedic hospitals. In those cases the orthopaedic surgeons were not directly employed by the authorities.

Drunkenness from Methylated Spirit.—Mr. HACKING, replying to Mr. McEntee on March 12th, said that in 1928 there were 446 convictions for drunkenness attributed to the drinking of methylated spirit in England and Wales, and 40 in the County of London. In 1929 there were 409 convictions in England and Wales and 39 in London. In 1930 the figures were: England and Wales, 476; London, 22; in 1931: England and Wales, 582; London, 24; in 1932: England and Wales, 596; London, 30. These figures included cases of persons who had been convicted on more than one occasion. Full particulars for 1933 were not yet available.

Notes in Brief

At the end of 1933 the number of persons in England and Wales in receipt of a pension under the Blind Persons Act, 1920, was 22,167.

Medical News

A meeting of the medical staffs of the London teaching hospitals, to consider the problem of London's hospital development, will be held at B.M.A. House, Tavistock Square, W.C., on Thursday next, March 22nd, at 5 p.m., with Lord Horder in the chair. The discussion will be opened by Dr. J. S. Fairbairn, Sir Crisp English, Mr. V. Zachary Cope, and Dr. Geoffrey Evans. It is hoped that there will be a full and representative attendance. A leaflet dealing particularly with the Hospital Policy of the British Medical Association as it concerns London has been prepared for the occasion by the officers of the Metropolitan Counties Branch.

The annual dinner of the Irish Medical Schools' and Graduates' Association will be held at Claridge's Hotel to-day (Saturday), March 17th, at 7.45 p.m. The guests of honour will be the Countess of Iveagh and Lieut.-General J. A. Hartigan, C.B., C.M.G., D.S.O., the new Director-General of the Army Medical Services.

A luncheon to celebrate the jubilee of the Society for the Study of Inebriety will be held at the Langham Hotel, London, W., on Tuesday, April 10th, at 1.30 p.m., with the president, Sir Humphry Rolleston, in the chair. Applications for luncheon cards (5s. each) should be sent to the honorary secretary, Dr. T. N. Kelynack, 19, Park Crescent, W., without delay, accompanied by remittance. The annual meeting of the society will be held at 11, Chandos Street, W., on the same day at 4 p.m., when Sir Humphry Rolleston will deliver a commemorative oration on "The Aims and Work of the Society for the Study of Inebriety during the Fifty Years of its Existence."

Sir Austen Chamberlain and the Standing Committee of the Ross Institute have invited members of the Indian Tea Association and their friends to the London School of Hygiene and Tropical Medicine, on March 19th, at 4 o'clock, when Dr. G. C. Ramsay will demonstrate by a cinema film: "Malaria Control on Tea Estates in Assam and Bengal," and Dr. G. P. Crowden will give a short demonstration on the principles of heat insulation for human comfort in buildings, coolie lines, etc.

On Friday, March 23rd, at 8.45 p.m., at the Princess Elizabeth of York Children's Hospital, Shadwell, E., Dr. S. V. Larkey, professor of medical history in the University of California, will speak on "Superstition and Medicine in Elizabethan England." Dr. Herbert R. Spencer will be in the chair. Visitors are welcomed.

A meeting of the Medico-Legal Society will be held at 11, Chandos Street, W., on Thursday, March 22nd, at 8.30 p.m., when Mr. D. H. Kitchen (barrister-at-law) will read a paper on "Heart Disease in Workmen." The paper will be followed by a discussion.

A meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, March 21st, at 5.30 p.m., when papers will be read by Dr. E. S. Horning and Mr. Horace Beck.

The Fellowship of Medicine and Post-Graduate Medical Association announces that the tenth lecture-demonstration, by Dr. Clark-Kennedy, at 11, Chandos Street, will be given on March 20th, at 2.30 p.m. A week-end course in chest diseases will take place at the Brompton Hospital on March 24th and 25th, occupying the whole of each day. Other forthcoming courses include infants diseases, at the Infants Hospital, April 9th to 21st; proctology, at St. Mark's Hospital, April 9th to 14th; rheumatism, at the British Red Cross Clinic, April 10th to 26th (on Tuesday and Thursday evenings); medicine and surgery, week-end course at Southend General Hospital, April 14th and 15th. A series of evening lectures, suitable for M.R.C.P. candidates and for the general practitioner, will be given by Dr. Philip Ellman on "Chronic Diseases of the Chest in General Practice," on Wednesday and Friday evenings during April. Details of these lectures and of the special courses may be obtained on application to the Fellowship (1, Wimpole Street, W.).

A lecture (in English), dealing with his recent investigations on allergy in tuberculosis, by Professor Franz v. Gröer, head of the paediatric department of the Medical Faculty at the University of Lemberg, will be given in the theatre of the Lister Institute, Chelsea Bridge Road, S.W., on Monday, March 19th, at 5 p.m. All interested are cordially invited.

At a meeting of the Eugenics Society in the Linnean Society's Rooms, Burlington House, Piccadilly, on Tuesday, March 20th, at 5.15 p.m., Professor R. J. A. Berry, M.D., will give a lantern demonstration on some modern views of the human mind and its disorders. Sir Humphry Rolleston will take the chair.

The first Clarke Hall Lecture, on "The Ethics of Penal Action," will be delivered in the hall of Gray's Inn, W.C., on Monday, March 19th, by the Archbishop of York. The Lord Chancellor will take the chair at 5.30 p.m.

A medical congress will be held at Tunis under the presidency of Dr. Charles Nicolle, professor at the Collège de France, from March 21st to the 24th.

Country Life for March 10th contains a well-written and admirably illustrated article on Gonville and Caius College, Cambridge, of which foundation a good many of our readers are members.

Messrs. H. K. Lewis and Co. Ltd. announce for immediate publication the new edition of the late R. Prosser White's *Dermatogoses, or Occupational Affections of the Skin*. The author had completed the final revision of the proofs before his fatal seizure. The volume will include, as a memoir of the author, the obituary notice by Dr. W. E. Cooke which appeared in this *Journal*, together with a portrait and a reproduction of Dr. Prosser White's characteristic bookplate.

Punch celebrated the centenary of George du Maurier in a special supplement to last week's issue. The publishers make the claim on behalf of du Maurier that he was "an early apostle of eugenics who, long before the cult of athletics had begun to affect the stature and build of English girls, devoted his pencil to glorify the Junoesque type of English beauty." The pictures are prefaced by an appreciation of du Maurier from the pen of Mr. Guthrie ("F. Anstey"), the author of *Vice Versa* and *Voces Populi*, and brother of the late Dr. Leonard Guthrie, who wrote much for these columns. Now comes news of the death, on March 10th, of Anstey Guthrie himself.

Two £100 scholarships—at Port Regis Preparatory School, Broadstairs—established by Sir Milsom Rees for sons of medical practitioners, have been awarded to L. A. Beveridge, son of Dr. Alexander Beveridge of Dinas Powis, Glam., and to J. A. C. Morris, son of Dr. Cameron Morris of Gloucester Terrace, W.2.

Mr. George Alexander Morrison, M.A., LL.D., has been elected to fill the vacancy in the combined Scottish Universities Parliamentary constituency caused by the death of Mr. D. M. Cowan, M.P.

M. Louis Marin, a member of the Chambre des Députés, has succeeded M. Emile Lisbonne as the French Minister of Health and Physical Education.

Dr. Hugo Braun, extraordinary professor at the Frankfurt Institute of Hygiene, has been appointed professor of hygiene at Stamboul.

After nearly fourteen years of service as honorary director of the Institute of Medical Psychology Dr. H. Crichton-Miller, who was also its founder, has been obliged to resign the directorship owing to pressure of other work. He remains on the staff of the Institute as honorary senior physician, and is also a member of the council. Dr. J. R. Rees has been appointed medical director with two assistant medical directors, Dr. Henry V. Dicks and Dr. Mary C. Luff. The Institute announces that, after the very long period that the waiting list has been closed, it has now been found possible to reopen it for patients (from outside the L.C.C. area) who can attend at any hour of the day. The list for evening treatment of adults is still lengthy, and therefore names cannot be entered on it at present.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Midsecca Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Callosities

"PERPLEXED" (Surrey) asks for suggestions in the treatment of callosities under both big toes and at the base of the big toes and behind the small toes in a man of 69. He has tried bathing, painting, and ung. ac. salicyl. He has to be on his feet all day at work. The callosity under one big toe is very hard along the nail.

Vomiting after Appendicectomy

"W. T." suggests—quite at random, not knowing details—that "Perplexed's" patient (March 10th, p. 468) may have an oesophageal or a pharyngeal pouch causing the vomiting during meals.

Income Tax

Purchase of Practice—Valuation of Book Debts

"DIGNITAS" bought a practice as from December 31st, 1932, at a round figure to include outstanding book debts, which amounted to about £500 gross. His predecessor estimates the value of those debts at £100, and claims to close his final account for income tax purposes with that sum. How is "Dignitas" affected?

* In the first place "Dignitas" may elect to have his own liability dealt with as if he were starting a new practice as from January 1st, 1933. In that case he would ignore his predecessor's debts and any receipts from them entirely. This is simple enough in theory, but rather difficult to apply in practice. The other alternative is to bring in the book debts at January 1st, 1933, at their value—£100, if his predecessor's estimate is correct—and at the end of the year bring in the corresponding value—for example, if the gross debts are then £600, "Dignitas" could fairly contend that, as £500 gross was brought in at £100 value, £600 should be brought in as one-fifth of £600—that is, £120.

Payments to Children under Deed

"Q" has an income of £800 per annum, and pays each of his two children (both adults and unmarried) annuities of £100 each. The children have no other income, and the annuities are secured, by a legal document, for at least seven years. Can a rebate be claimed? "Q" also wishes to know the title and publishers of a practical book on income tax for professional men.

* The question of annuities payable to children or others is dealt with in Section 20 of the Finance Act of 1922. It is a complicated provision, but it seems clear that in the circumstances the annuities paid by "Q" are "income" of the children for tax purposes, provided that "Q" has no power of revocation of the grant which he can exercise without the consent of any other person. (The necessity for his wife's consent is not sufficient for this purpose.) As the income of the children it is they, and not "Q," who have any right of claiming rebate;

and that right is limited to what tax they have suffered. "Q" should therefore deduct tax when paying the annuities, and the children can claim repayment of the tax so deducted. If tax has not so far been deducted, an adjustment should be made when the next payment falls due, or earlier if possible. A useful little book is *Income Tax and the Professional Man*, published at 4s. 6d. by Crosby, Lockwood and Son, Stationers' Hall Court, Ludgate Hill, E.C.4.

LETTERS, NOTES, ETC.

Use of Quinine in Normal Labour

Dr. L. B. SHEINKIN (Highbury Hill, N.5) writes: Dr. A. G. Hawthorne English's letter (January 6th, p. 35) prompts me to relate my personal experience. On reading Dr. Douglas Mitchell's letter (July 15th, 1933, p. 126) I decided to try his method, and for this purpose I selected two young normal primigravidae, whose pregnancies were normal in every respect. They were given tablets of quin. sulph., 5 grains, i.d.s., p.c., for their last four to five months of pregnancy. The results and advantages of this treatment, however, were not obvious. In both cases the duration of labour was not shortened and no improved uterine functions were noted. In fact, the duration of labour was rather prolonged and the uterine contractions were weak and infrequent, resembling a slight degree of uterine inertia, which had to be counteracted by pituitrin injections. In one of these two cases so tedious and slow were the uterine contractions, even after pituitrin injections, that forceps had to be applied (after twenty-four hours in labour). In each case the puerperium was normal.

All in the Day's Work

Details have now reached this country, through the columns of the *Shanghai Times*, of the kidnapping and escape from death of Dr. R. Cecil Robertson, head of the division of pathology and bacteriology of the Henry Lester Institute of Medical Research, Shanghai, and a member of the British Medical Association. On January 31st Dr. Robertson left his home in his car for the institute with his chauffeur and the 8-year-old son of his Chinese cook, who was to be vaccinated that day. A wheelbarrow, pushed suddenly in front of his car, brought it to a standstill, whereupon four Chinese in black gowns jumped into it, ejected the chauffeur, and drove off swiftly towards Chinese territory. Dr. Robertson put up a fierce fight, during which he was twice shot at; appeals for help to Chinese police and bystanders were ignored. Dr. Robertson explained who he was, and his captors appeared surprised and disappointed, but the car continued its course. Resuming the struggle, one of the Chinese was wounded in the hand by his own revolver, the speed of the car slackened, and Dr. Robertson forced open the car door and jumped out, holding the boy. His captors made no further attack upon him, but drove off rapidly and escaped. Dr. Robertson, who is president of the Shanghai Medical Society, owed his life to the failure of a revolver to fire when in contact with his head. He ascribes the incident to an error on the part of the gangsters, who had presumably proposed to carry off a wealthy Chinese, but mistook the car. He was twice wounded in the war in France, and was awarded the M.C. He went out to Shanghai in 1925, and was at first pathologist to the Shanghai Municipal Council, joining the Henry Lester Institute in 1929.

History of Nitrous Oxide Anaesthesia

With reference to Mr. H. E. G. Boyle's paper "Nitrous Oxide: History and Development," published in the *Journal of January 27th* (p. 153), Mr. Eric Oscroft, managing director of Condensed Gas Co., Ltd., Manchester, has sent us an agreement dated April 27th, 1883, which was entered into between the founder of his firm, Mr. J. E. Blennerhasset, and a Manchester dentist, Mr. J. H. Parkinson, for the sale and delivery of N₂O gas, and appliances for delivering and administering it, within the London area. "As a matter of historical interest it is in a way complementary to some of the dates given in the above-mentioned paper, showing that a definite trade in this gas had been established by another firm as far back as the eighteen-eighties."

Aetiology of Cancer

Dr. A. T. BRAND (Driffield, E. Yorks) writes: In your issue of March 10th a report is given of an address delivered at Bradford-on-Avon by Mr. Comyns Berkeley, a member of the British Empire Cancer Campaign, in which he made the statement that "despite the work of large numbers of research workers in all parts of the world the cause of cancer still remained unknown." In this con-

nexion it is interesting to read the report of the United States Treasury Department of Public Health, Washington, of March 31st, 1933, of the production of a malignant growth in an experimental animal by T. J. Glover, M.D. "The purpose of this report is to place on record the production of metastatic malignancy in one of a group of guinea-pigs inoculated with a culture containing a spore-bearing micro-organism which was isolated, on special medium, from the tissue of a microscopically proved carcinoma of the human breast. The micro-organism was again recovered from the malignant tissue of the animal herein reported. A detailed report will be made at a later date giving the findings on the remainder of this group of guinea-pigs, as well as on a series of other experimental animals inoculated with the same micro-organism. The inoculation of the culture was made in the mammary region of an adult female guinea-pig on November 5th, 1932. The animal was observed at frequent intervals until sacrificed on February 28th, 1933." The report then gives the findings on post-mortem examination, and makes the following comment: "The new growth has apparently risen in breast tissue, resembles lactating mammary acini in histological structure, and is identical in structure in the primary and in the various metastatic masses. In the invasion and destruction of tissue and in the production of distant metastasis it fulfils two of the criteria of malignancy. *Diagnosis*: malignant adenoma with metastases in lymph nodes, omentum, and kidneys." The microscopical findings were made by Surgeon R. D. Lillie of the United States Public Health Service, in charge of the work in pathology, at the National Institute of Health, Washington.

Maternal Mortality and the Newspapers

Dr. J. HORR POOL (Newcastle-on-Tyne) writes: In your issue of March 10th Dr. Lachlan Grant paves the way for a fuller inquiry into the acceptance of medical articles by the "lay press." It is well known that the public are only too eager to read such contributions, and the general practitioner is constantly encountering instances of such "expert advice" in the homes of his patients. As an endorsement of Dr. Lachlan Grant's opinion on the matter I am taking the liberty of quoting from my thesis (1932): "At a time when the lay press is flooded with articles and criticisms of the maternal mortality, the medical profession, already burdened by years of investigations and unable to defend themselves publicly, are using their best endeavours to mitigate the tendencies to such complications. The maternal mortality may be alarming to the layman, but to members of the medical profession it is a grave question, and according to Professor Herbert Spencer, 'eclampsia is one of the bugbears of the profession at the present time.'"

Helping the Doctor

Several readers have told us how touched they are by the kindly thought of a London bookmaker, who writes to them: "Something more than the receiving of bets is required of the bookmaker to-day. Owing to the delay and irregularity with which fees are paid to the members of your profession, and assuming that you are interested in racing, I am prepared to open your account with a weekly credit limit of £5 (five pounds), and allow settlement to be made monthly."

Legal Logic

"X. P. S." writes from Nottinghamshire: "Is the accused drunk?"—this bugbear of the medical profession has, at long last, been laid by the judicial bench, and gratitude should be expressed by all police surgeons and general practitioners. How simple and expeditious it will be! Q.—"Do you consent to be medically examined?" A.—"Yes." Ergo, not drunk.

Short-wave Diathermy

Messrs. WATSON AND SONS, LTD., 43-47, Parker Street, Kingsway, W.C.2, have issued a ten-page illustrated pamphlet on short-wave diathermy equipment. Reference is made to an apparatus already installed at St. Thomas's Hospital. An account is added of the field of application of this so-called "fever diathermy," which, in addition to mere pyrogenic use, can be employed as an adjunct to normal diathermy in various medical conditions. Two special apparatus are described.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 48, 49, 50, 51, 54, and 55 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 108.

THE PATHOGENIC AGENT IN NORMAL HUMAN BONE MARROW

ITS NATURE AND RELATIONSHIP TO THE LYMPHADENOMA AGENT OF GORDON

BY

ULRICH FRIEDEMANN

(From the Farm Laboratories of the Medical Research Council, Mill Hill, N.W.)

In a previous paper¹ it was shown that when normal human bone marrow is injected intrathecally in rabbits these animals develop a progressive and fatal disturbance of the nervous system, paralysis of the hind legs being a characteristic feature of the late stages. It was recognized that the clinical appearances presented by these rabbits resembled those which M. H. Gordon² had already found in rabbits injected intracerebrally with material derived from human cases of lymphadenoma, but the relationship of the two pathogenic agents was not more closely determined. The nature of the agent contained in normal human bone marrow—whether it is a living or a non-living thing—was also left in doubt. The primary purpose of the present paper is to describe experiments directed towards the solution of these two problems.

Right at the outset I must acknowledge deep indebtedness to Dr. Gordon. To his efforts and kindness I owe all the samples of human bone marrow and viscera used in the series of experiments to be described. I have called these human tissues normal in the present paper. This is because I am satisfied they have represented the conditions present in normal human beings. Actually the specimens have been obtained post mortem from a large variety of pathological conditions and from cases of accidental death.

NATURE AND DISTRIBUTION OF THE PATHOGENIC AGENT

The living nature of the pathogenic agent present in normal human bone marrow would be satisfactorily established if this agent could be passed from rabbit to rabbit indefinitely. Renewed attempts to demonstrate such a passage have failed. Intracerebral inoculation of brain tissue taken from a paralysed rabbit was on one occasion followed by somewhat suggestive symptoms. This is the nearest approach to a positive result that I have seen in the new series of experiments. In the previous paper it was reported that in one experiment there had been evidence of transmission through three generations in rabbits, but we have not seen the like again. Perhaps it is significant that in this apparently successful experiment the first rabbit of the series was injected with bone marrow from a case of pernicious anaemia, but we cannot exclude the possibility that some adventitious virus may have been present. As the facts stand it has to be realized that serial transmission of the bone-marrow agent has not been proved, and that in this direction attempts to show the viral nature of the agent have broken down. Such failure is, however, not very strong evidence for the non-living nature of the agent.

It was thought that some knowledge of the species and organ distribution of the agent might be useful. In numerous experiments intrathecal and intracerebral injection of rabbits has shown that the pathogenic agent under investigation is not present in normal bone marrow of rabbits, guinea-pigs, cats, and horses. The bone marrow of dogs has not been tested: for technical reasons I found it difficult to obtain suitable material. The spleen and leucocytes of normal dogs, however, have been tested a number of times, and have given consistently negative results. Normal human liver and kidney also gave negative results, but normal human spleen produced symptoms similar to those produced by normal human bone marrow, though not with the same regularity. Difficulties arising

from the fact that available samples of human viscera were seldom free from contaminating micro-organisms disappeared when the material to be used in the experiments was heated for one hour at 65° C.

The consistency with which bone marrow from so many species has given negative results, and the fact that human liver and kidney are also innocuous, disposes finally of the possibility, discussed in the previous paper, that human bone marrow acts simply by stirring up some virus normally present in the rabbit's brain. The histological changes which follow the intrathecal and intracerebral injection of normal human bone marrow and spleen have not been investigated. For want of some better term we spoke of the condition as an encephalitis in the previous paper, and may do so again in this, but I do not wish to be misunderstood: the term is not used to indicate an opinion as to the ultimate nature of the process.

JOCHMANN'S PROTEOLYTIC FERMENT AND THE UNKNOWN AGENT

The peculiar species and organ distribution of the pathogenic agent under investigation closely resembles the distribution of a proteolytic ferment studied by Jochmann.^{3,4,5} This ferment, Jochmann showed, is present in the bone marrow, spleen, and leucocytes—but not elsewhere—of man, monkeys, and, to a slight degree, dogs. It could not be found in any other species of animal examined. Jochmann considered that the ferment is peculiar to the leucocytes of certain species, and that in these species the occurrence of the ferment in spleen and bone marrow is due solely to the presence of leucocytes in these organs. I have undertaken experiments to determine whether the agent which is present in human bone marrow and spleen, and which is pathogenic for rabbits, has properties similar to those of the ferment described by Jochmann.

Jochmann found that his ferment is rapidly destroyed at 70° C., withstands 65° C. for one hour without appreciable diminution in activity, and persists indefinitely at temperatures of 55° C. and under. He, along with Lockemann,⁶ described a method by which the ferment can be extracted. They used bone marrow and spleen principally. Tissue is incubated for twenty-four to forty-eight hours at 55° C., during which time a considerable amount of autolysis takes place. Then five volumes of alcohol-ether (two volumes of absolute alcohol to one of ether) are added. After twenty-four hours at room temperature the supernatant fluid is removed and discarded; then the deposit is dried in a desiccator and afterwards mixed with an equal volume of 50 per cent. glycerin in water. After another twenty-four hours at room temperature the still undissolved deposit is removed and discarded, and the supernatant glycerin is mixed with five times its volume of alcohol-ether (proportion of alcohol and ether as before). This mixture is allowed to stand for twenty-four hours at room temperature to give time for the precipitation of material which has gone into solution in the glycerin. This final precipitate contains the ferment. The ferment is soluble in saline, and was generally used by Jochmann made up to twice the volume of the original tissue.

The question now was whether the agent which is present in human bone marrow and spleen, and which is pathogenic for rabbits, will withstand the severe treatment to which Jochmann submitted his leucocytic ferment. To obtain material for the necessary experiments human

bone marrow and spleen were extracted by the Jochmann-Lockemann method. In both cases the final saline solution was somewhat turbid at the time it was made. In the cold room a precipitate formed. This was spun down and removed. The clear brownish supernatant fluid was taken for use in the various tests to be described. Both the extract of bone marrow and the extract of spleen were shown to contain the leucocytic ferment, which, as already mentioned, is a proteolytic ferment. In the presence of either extract litmus milk gradually became clear owing to the action of the ferment on the casein.

Intracerebral and intrathecal injection of these first extracts which I had prepared by Jochmann and Lockemann's method produced symptoms resembling in all respects those which follow similar injections of saline suspensions of fresh tissue of human bone marrow and spleen. In most of the rabbits employed in these tests there was an incubation period of four days, during which the animals remained in apparently perfect health: in only one case was the incubation period as short as twenty-four hours.

A lytic action on brain constituents seemed possible, and several *in vitro* tests were made, all with the same result. Only one will be described.

The brain of an adult 2,000-gram rabbit was ground in 10 c.cm. saline in order to obtain a very thick suspension. Two similar tubes were taken: into one was placed 4.5 c.cm. brain suspension and 0.5 c.cm. saline, and into the other 4.5 c.cm. brain suspension and 0.5 c.cm. of Jochmann extract of human bone marrow. Both tubes were incubated at 55° C. After twenty-four hours the mixture in the tube containing emulsion and saline was found to be coagulated; it would no longer flow when the tube was inverted. In contrast to this the mixture of brain suspension and Jochmann-Lockemann extract had become more fluid in the twenty-four hours, and this process of liquefaction progressed steadily during the remaining days of the experiment. When comparative tests were made the extract of bone marrow proved to be a rather more powerful lytic agent than the extract of spleen. It is unlikely that the lysis of brain tissue just described can have been due to the presence of a lecithinase in the extracts. I made a number of experiments, but was unable to find such a ferment. An ovo-lecithin was used in the tests, and the proportions of extract and substrate were varied over a considerable range. Red blood corpuscles of the sheep were used as a test for split products due to the action of lecithinase.

Various modifications of Jochmann and Lockemann's method of extraction have been tried. The pathogenic agent, as also the proteolytic ferment—if that is a different thing—was found to be insoluble both in acetone and in methyl alcohol. Sometimes tissue for extraction has been treated with one and then the other of these two reagents between the period of autolysis and the first treatment with alcohol-ether. There is no obvious advantage in this, and, in fact, too prolonged an exposure to either methyl alcohol or acetone may, I suspect, result in a final product of somewhat reduced potency.

These modifications of Jochmann and Lockemann's method are mentioned chiefly as a further indication of the stability of the agent under investigation. It was found, too, that autolysis of the tissue is not necessary; this means that Jochmann and Lockemann's preliminary incubation can be omitted. Perhaps the simplest method of extraction which I have used is the following. The tissue—bone marrow or spleen—is extracted with acetone. At the end of fifteen minutes the undissolved material is collected on filter paper in a Buchner funnel, and washed first with absolute alcohol and then with ether. The resulting dry powder is then mixed with an equal volume of 25 or 50 per cent. glycerin in saline. At the end of twenty-four hours the undissolved material is spun out and the supernatant glycerin is mixed with five times its volume of alcohol-ether (two volumes of absolute alcohol to one volume of ether). The precipitate is removed and then taken up in saline.

To test whether the pathogenic agent is present in human leucocytes the following experiment was carried

out. Some 250 c.cm. of my own blood was run into a flask containing citrate solution. The blood cells were washed several times with citrate in the ordinary way, and then with saline. Finally, the leucocyte layer was removed and suspended in a very small volume of saline. Many red cells were still present, but this dilution was of secondary importance, since the cellular suspension obviously contained a greater concentration of leucocytes than had been present in the suspension of bone marrow employed for the intrathecal and intracerebral injections. Two rabbits, each of about 2,000 grams in weight, received intrathecally 0.4 c.cm. of the leucocyte suspension. Characteristic and fatal encephalitic symptoms developed in one animal, and showed that the pathogenic agent is present in human leucocytes just as the leucocytic ferment of Jochmann is.

If it could be shown that the pathogenicity of Jochmann-Lockemann extracts of human bone marrow, spleen, and leucocytes runs parallel with the ferment activity, then the identity of the pathogenic agent might be considered as established. This method of investigation has not been attempted. My experience is that quantitatively accurate comparisons are very difficult to obtain by the method of intrathecal and intracerebral injection in rabbits.

DISCUSSION

The conclusions drawn from the experiments which have been described above may now be briefly stated. First, the conclusion is drawn that the agent which is present in human bone marrow, spleen, and leucocytes, and which is pathogenic to rabbits, cannot be a virus. I find it impossible to believe that a living thing could survive the drastic treatment demanded by the Jochmann-Lockemann method of extraction. Secondly come conclusions as to the relationship between the pathogenic agent and the ferment. Here somewhat greater caution is necessary, but it has to be admitted that identity is suggested very strongly by the similarity in species and organ distribution of the two, by the similarity in resistance to heat, and by similar stability in the presence of alcohol, ether, alcohol-ether, methyl alcohol, and acetone.

But although I am satisfied that the pathogenic agent found in human spleen, bone marrow, and leucocytes cannot be a living virus, the whole phenomenon still remains a puzzle. The effects of intrathecal and intracerebral injections in rabbits differ from the known effects of chemical substances—except those of toxins like diphtheria and tetanus—in that they are progressive in character. In this progressive character, following an incubation period, there is a close resemblance to infectious diseases. Thus in a prolonged case the clinical course may run much as follows. After an incubation period of about four days a progressive rigidity of the hind legs sets in. A week or so later these symptoms subside, and the animal gradually returns to a more or less normal condition, which may persist for a week or two. Then the hind legs become paralysed, and a week or two later the fore legs also become paralysed. Eventually the animal dies of a general paralysis.

Lack of material has prevented me from testing whether the agent which Gordon discovered in lymphadenoma glands can be extracted by Jochmann and Lockemann's method, but a prolonged experience with the pathogenic agent in bone marrow permits a closer comparison of the clinical manifestations of the two than was possible at the time of publication of the paper by Friedemann and Elkeles in 1933. It is now clear, for instance, that provided the route of administration is the same there is no demonstrable difference between the clinical effects produced by the agent from bone marrow and those produced by the agent from lymphadenoma glands. Gordon

described a rigidity of the legs as characteristic of his rabbits. He used intracerebral injections. Exactly the same thing is observed in rabbits which receive bone marrow intracerebrally. When, however, bone marrow suspension is given intrathecally, as in our original experiments, flaccid paralysis is the characteristic feature, though occasionally rigidity is seen. When bone marrow is injected intracerebrally, then rigidity is the characteristic consequence, just as in Gordon's rabbits. It is all a matter of technique. We have found, too, that, when tissue emulsions have been heated for one hour at 65° C. and then injected, it matters little whether the intracerebral or the intrathecal route is used; rigidity of the legs is a common feature in either case. Further, Gordon reported that his agent is remarkably stable in the cold. I find that the stability of the bone-marrow agent varies with the conditions of the experiment.

If bone marrow be ground in saline and then left in the cold room (4° C.) it loses its pathogenic activity rapidly—often within an hour. Whether there is an actual destruction of the pathogenic agent under these conditions has not been determined. The observed facts are that, when bone marrow is rubbed up in saline as described, a coagulation of the fatty matter soon sets in, clumps are formed, and the presence of the agent can no longer be demonstrated. Probably the agent is gathered up in the clumps. With alteration in technique the results alter. In the presence of 5 per cent. glycerin in saline the clumping sets in very slowly and the clumps are soft and easily broken down again. If the soft coagulated material be rubbed up in a mortar the fatty matter may be removed without difficulty. Glycerinated material has now been kept for six days in the cold room, rubbed up in a mortar, spun free of cells and gross particulate matter, and has then proved pathogenic for rabbits. Both agents are alike, too, in that they withstand a temperature of 65° C. Thus we reach the conclusion that the agent found in normal human bone marrow resembles the agent found in lymphadenoma glands in every material particular. Identity cannot, however, be said to be completely and finally established as yet.

CONCLUSIONS

Studies of the agent which is present in normal human bone marrow, and which Friedemann and Elkeles found to be pathogenic for rabbits, have been continued.

It is shown that this agent cannot be a living virus, since it withstands treatment which no living virus could be expected to withstand.

It has now been demonstrated that the agent, in addition to being present in human bone marrow and spleen, is present in human leucocytes.

The peculiar species and organ distribution which is displayed by this agent has been shown to be paralleled by the distribution of the proteolytic ferment which Jochmann found in normal human leucocytes. Whether the agent and the ferment are really identical remains to be finally established.

Increased familiarity with the pathogenic agent which we have studied still reveals no material difference between it and the agent which Gordon discovered in glands taken from cases of human lymphadenoma.

My indebtedness to Dr. Gordon has been mentioned already. It is now my pleasure to acknowledge financial assistance from the Rockefeller Foundation and the hospitality extended to me by the Medical Research Council at their Mill Hill laboratories.

REFERENCES

- Friedemann and Elkeles: *British Medical Journal*, 1933, ii, 1110.
- Gordon, M. H.: *Rose Research on Lymphadenoma*, 1932, Bristol.
- John Wright and Sons: *British Medical Journal*, 1933, i, 641.
- Müller and Jochmann: *Munch. med. Woch.*, 1906, Nos. 3 and 26.
- Jochmann and Ziegler: *Ibid.*, 1906, No. 43.
- Jochmann: *Kolle Wassermann. Handbuch der pathogenen Mikroorganismen*, 1913, Band II, vol. ii, Part 2, p. 1301.
- Jochmann and Lockemann: *Hofmeister's Beitr.*, 1908, ii, 450.

SOME PROPERTIES OF THE ENCEPHALITOGENIC AGENT IN LYMPHADENOMATOUS TISSUE

WITH FURTHER OBSERVATIONS ON GORDON'S BIOLOGICAL TEST IN THE DIAGNOSIS OF HODGKIN'S DISEASE*

BY

C. E. VAN ROOYEN, M.B., CH.B.

ASSISTANT, BACTERIOLOGY DEPARTMENT, EDINBURGH UNIVERSITY

Much interest has been aroused in the aetiology of Hodgkin's disease by the work of Gordon (1933), who found that rabbits injected intracerebrally with lymphadenomatous tissue frequently developed highly characteristic nervous lesions. This reaction applied as a biological test has proved valuable in the differentiation of Hodgkin's disease from other forms of lymphatic hyperplasia (van Rooyen, 1933), but the exact nature of the pathogenic agent and its aetiological relationship to the disease is still obscure. An attempt has therefore been made to gain further information concerning its nature by a study of its behaviour towards certain physical and chemical agents, and the data obtained, together with further observations on the clinical value of the biological test, are incorporated in this paper.

Recently Friedemann and Elkeles (1933) have reported that the intracerebral inoculation of rabbits with bone marrow derived from cases of acute leukaemia and pernicious anaemia produces effects very similar to those described by Gordon. In May, 1933, the writer made a similar observation with bone marrow removed from a case of acute myelogenous leukaemia, and there was certainly a close resemblance between the experimental condition produced by this material and the syndrome resulting from the inoculation of lymphadenomatous tissue. The further question therefore arises as to whether any relationship exists between the pathogenic agent present in the bone marrow in the leucoses and that present in the lymphatic glands in Hodgkin's disease.

FURTHER RESULTS WITH THE BIOLOGICAL TEST

The following are a list of cases in various parts of the country which have been investigated by means of the biological test.

Biological Diagnostic Test (Gordon)

Case No.	Patient's Initial	Specimen Supplied by—	Institution	Histological Diagnosis	Result of Test
H9	T.	Dr. Chalmers Watson	Royal Infirmary, Edinburgh	Hodgkin's disease	Negative
H10	J.	Dr. Goodall	"	"	"
H12	R.	"	"	"	Positive
H14	F.	Dr. Matthews	"	"	"
H15	L.	Prof. Murray Lyon	"	"	Strongly positive
H18	H.	Prof. Murray Lyon	"	"	"
H26	H.	Prof. Fraser and Dr. Eason	"	"	Negative
H32	C.	Dr. Goodall	"	"	"
H17	C.	Dr. F.E. Reynolds	Stobhill Hospital, Glasgow	"	Positive
H19	B.	Dr. Cruikshank	Royal Infirmary, Glasgow	"	Negative
H21	S.	"	"	"	Positive
H23	McS.	"	"	"	"
H28	McL.	"	"	"	"
H33	H.	"	"	"	Strongly positive
H37	G.	"	"	"	Positive
H40	C.	Prof. Bramwell	Royal Infirmary, Edinburgh	"	Strongly positive

* By kind permission of the Committee of the British Medical Association.
 † See Ogilvie and van Rooyen (1933).

Biological Diagnostic Test (Gordon)—Continued

Case No.	Patient's Initial	Specimen Supplied by—	Institution	Histo-logical Diagnosis	Result of Test
H31	—	Dr. Wm. Brown	Royal Sick Children's Hospital, Aberdeen	Hodgkin's disease	Positive
H35	B.	Dr. Larks and Dr. McConaghy	City Hospital, Plymouth, England	"	"
H111	A.	Dr. Goodall	Royal Infirmary, Edinburgh	Lympho-sarcoma	Negative
H113	McI.	Dr. Courrie	"	Pseudo-leukaemia	"
H20	S.	Dr. Goodall	"	Lympho-sarcoma	"
H22	McH.	Mr. Stewart	"	Gumma	"
H29	R.	Dr. Eason	"	? tubercle	"
H44	McL.	Dr. Cruikshank	Royal Infirmary, Glasgow	Acute lymphatic leukaemia	"
H26	IL	Mr. Chiene	Royal Infirmary, Edinburgh	Lympho-sarcoma	"
H27	L.	Prof. Willie	"	"	"
H8	A.	Prof. Murray	"	Tuber-culosis	"
H30	G.	Dr. Eason	"	"	"
H38	—	Prof. Ritchie	"	Carcinoma	"
H39	—	Mr. Stirling	Royal Sick Children's Hospital, Edinburgh	Leukaemia	"
H42	McQ.	Dr. J. G. McCrie	Western General Hosp., Edinburgh	Lympho-sarcoma	"
H43	G.	Mr. Struthers	Royal Infirmary, Edinburgh	Hodgkin's disease	Positive
H45	F.	Dr. Courrie	"	"	"

† Previously published. See van Rooyen (1933).

ANALYSIS AND DISCUSSION OF RESULTS

Gordon's test has, as tabulated above, been applied to clinical and post-mortem material derived from twenty separate cases of Hodgkin's disease, and fifteen of these were found to give a positive result. Other cases of lymphadenohypertrophy due to a variety of different pathological conditions have likewise been submitted to the test, but found to be negative. The test is exceedingly helpful as an aid to the diagnosis of Hodgkin's disease when the histological appearances are not entirely typical of the condition.

Effect following Variations in the pH of Tissue Suspensions

Animal Number	pH of Broth Used for Suspension	Concentration of Tissue	Duration of Maintenance at -4° C.	Results following Inoculation of Rabbit
R354	5.6	1.20	3 days	Negative
R345	5.6	1.20	4 "	"
R350	6.6	1.20	4 "	"
R351	6.8	1.20	4 "	"
R352	7.0	1.20	4 "	Positive
R340	7.1	1.20	7 "	"
R269	7.1	1.20	8 "	"
R264	7.1	1.20	14 "	"
R349	7.1	1.20	3 "	"
R352a	7.2	1.20	25 "	"
R237	7.6	1.20	3 "	Negative
R353	7.6	1.20	4 "	"
R379	7.6	1.20	8 "	Positive
R267	6.6	1.40	3 "	"
R265	7.6	1.40	3 "	Negative
R516	6.0	1.40	Inoculated immediately	"
R526	6.0	1.40	7 days	Positive
R517	7.0	1.40	Inoculated immediately	"
R218	8.0	1.40	"	Negative
R528	8.0	1.40	7 days	"
R527	10.0	1.40	Inoculated immediately	"

For example, in Case H40 death appeared to be due to bronchial carcinoma with secondary metastasis in the lymphatic glands and elsewhere. Microscopical findings, however, led to considerable diversity of opinion with regard to the diagnosis, and there was much speculation as to the nature of the condition. The case, however, gave a strongly positive reaction in the rabbit, and was ultimately proved to be one of Hodgkin's disease; for this patient had already, some years previously, been under the care of an institution elsewhere, at which biopsy had been performed and the histological section found to be typical of Hodgkin's disease. This is the second case I have encountered in which the test has proved to be of great value; the first of them has been recorded (Ogilvie and van Rooyen, 1933), and it is hoped that these findings may prove of interest to other workers.

It will be observed from the table that certain specimens of glands produced more severe lesions in the rabbit than others.

For example, Cases H33, H40, H15, and H18 all yielded a strong reaction in animals injected with emulsified glands soon after their excision from the patient. The remainder, however, had to be emulsified in broth (pH 7.1) and stored at -4° C. for seven days (at least) before a satisfactory result could be obtained in the animal. A few were entirely negative, and preliminary treatment did not influence the results.

In view of this marked variability in pathogenicity exhibited by different specimens, an attempt was made to ascertain whether the reaction was dependent on the predominance of any particular type of cell present in the lymphatic gland. Sections were therefore made from glands which gave strong, weak, and negative reactions respectively in the rabbit, and these were examined microscopically in order to detect any demonstrable differences in histopathological appearance. No significant differences, however, could be found, and attempts to correlate the syndrome with the presence of any particular type of cell seen in the histological picture described by Sternberg and Reed were unsuccessful. The syndrome does not depend on the presence of lymphocytes or immature forms of haemopoietic cells, for enlarged glands removed from cases of lymphosarcoma and leukaemia give negative results. It is not related to Sternberg-Reed giant cells, for glands containing large numbers of them appeared to be no more pathogenic to the rabbit than those which contain only a few.

This point is well illustrated in two cases of Hodgkin's disease, H19 and H40 respectively. The former of these revealed histologically numerous giant cells, but, nevertheless, repeatedly yielded a negative result (glands being excised both at biopsy and at necropsy). The latter, on the contrary, exhibited only a few of them but gave a strongly positive result.

The presence of eosinophilia does not appear to be of any consequence either, for the syndrome has been reproduced with tissue revealing only occasional eosinophil cells in histological sections. The result noted with bone marrow may help to throw some light on the problem, but the subject requires further study.

OBSERVATIONS ON THE BONE MARROW IN A CASE OF ACUTE MYELOGENOUS LEUKAEMIA

During the course of this work different tissues derived from various pathological conditions have been introduced into the brains of rabbits, including bone marrow derived from two cases of Hodgkin's disease. Only one result of any significance was obtained, and this is recorded below. It concerns the bone marrow removed from the femur in a fatal case of acute myelogenous leukaemia. The specimen was one which exhibited chloromatous change and contained little or no visible fat. The follow-

ing clinical and post-mortem notes describe the subject from which the specimen was procured:

C. F., female, aged 35, was under the care of Professor Bramwell at the Royal Infirmary, Edinburgh. She complained of progressive anaemia for several weeks, bleeding, ulceration, and swelling of gums. Metrorrhagia and menorrhagia had occurred during last ten days. There was ecchymosis on trunk and legs. Red blood cells 1,900,000 per c.mm., haemoglobin 33 per cent., colour index 0.8; white blood cells 7,000 per c.mm.—reticulocytes 1 per cent., polymorphs few, small lymphocytes increased, myelocytes and megaloblasts numerous. Post-mortem examination revealed leucoblastic reaction and deposit of chloromatus pigment in the marrow. Cloudy swelling of myocardium, liver, and kidneys was observed. Petechial haemorrhages into the epicardium and gastric mucosa were seen. The spleen was slightly enlarged, and gave a positive prussian-blue reaction. Of eight rabbits injected intracerebrally with this tissue after three to four days all developed a spastic condition of their hind limbs, which closely resembled the encephalitic syndrome of Gordon. On the other hand, a lymphatic gland removed from the same patient gave a negative result in the biological test.

Whether the encephalitogenic agent in bone marrow described by Friedemann and Elkeles (1933), and also by the writer of this paper, is identical with that present in lymphadenomatous tissue, can only be decided after further investigation. It is hoped that information supplied in this paper concerning some physical properties of the latter might offer help towards a solution of the problem.

PROPERTIES OF THE ENCEPHALITOGENIC AGENT IN GLANDS AFFECTED WITH HODGKIN'S DISEASE

Optimum Conditions Necessary for Activation of Pathogenic Agent from Tissue: Influence of pH

Some earlier results showed that the pH of broth used for the emulsification of tissue appeared to influence the pathogenicity of suspensions in the rabbit's brain. Accordingly, in these experiments an endeavour was made to discover the optimum hydrogen-ion concentration necessary for the activation of the pathogenic agent from lymphadenomatous tissue. It has previously been noted by van Rooyen (1933) that material procured from different cases of this disease showed marked variation in their pathogenicity to the rabbit. Hence it was necessary to estimate the degree of activity of each specimen of gland by the preliminary inoculation of rabbits with varying dilutions of tissue suspensions. An approximate estimation of the minimum pathogenic dose to the rabbit could thus be arrived at for each specimen employed. The proportion of tissue present in the emulsions varied from 1 in 20 to 1 in 40 parts per c.cm., of which the dose administered was 0.4 c.cm. intravenously and 0.4 c.cm. intracerebrally. Desiccated material derived from different cases of Hodgkin's disease was weighed, emulsified, and diluted in broth varying in range from pH 5 to pH 10, and then used for intracerebral inoculation (*vide supra*). Animals were injected both immediately after each suspension was prepared and after it had stood for periods varying from three to twenty-three days in a refrigerator at -4°C . The latter procedure was adopted in order to elicit further information concerning the nature of changes which occurred in these tissue suspensions when maintained at low temperatures, for varying periods of time, as in Gordon's original technique.

TECHNIQUE OF pH ESTIMATION

The method adopted was to obtain varying degrees of pH by adding N/20 NaOH to 5 c.cm. of buffered phosphate broth; 0.5 c.cm. of a 0.01 per cent. aqueous solution of phenol-red was used as indicator, and, by comparison with a standard set of indicator tubes readings were made over the range pH 6.6 to pH 8. Above and below these figures a universal

indicator and bromthymol-blue were used as indicators. The above method could not be used when working with smaller quantities of fluid, and the pH of these had to be ascertained by means of a B.D.H. capillator outfit, phenol-red, brom-cresol-purple, and thymol-blue being used as indicators in order to obtain the desired pH range.

The above results strongly indicate that the agent present in Hodgkin lymphatic tissue only exhibits maximum activity within a comparatively narrow range of pH (6.8 to 7.3). For example, whilst a 1 in 40 suspension of gland tissue emulsified in broth of pH 7 was found to be active both immediately and after three days, tissue suspended in broth of pH 5.6 or pH 8 produced no effect in the rabbit when tested under identical conditions.

The same common characteristic has been demonstrated in tissues derived from three different cases of Hodgkin's disease. Efforts made to reactivate tissues which had been previously rendered inactive by suspension in broth of pH 5 or pH 8 (*vide supra*), by the addition of fresh alkali or acid, were without success. It was therefore concluded that this inactivation was an irreversible reaction.

Reduction in Pathogenicity of Tissue Emulsions to the Rabbit by the action of Sodium Hydroxide, Sodium Bicarbonate, Ammonia, and Ammonium Carbonate

In view of the preceding experiments concerning the influence of pH on this agent, attention was next paid to the effect of treating highly pathogenic suspensions of Hodgkin lymphatic tissue with certain alkalis, prior to the intracerebral inoculation of rabbits.

Allusion has already been made to the difficulties encountered in attempting to arrive at an accurate standard of dosage for the rabbit. Accordingly, it was possible only to compare the relative severity of changes produced in two rabbits, the one inoculated with the usual material and the other with the same tissue after it had been treated with alkalis.

It was thus observed that the treatment of a highly pathogenic suspension of tissue with 1 per cent. NaOH for twenty-four hours at -4°C . resulted in considerable loss of pathogenicity for the rabbit. The effect was even more noticeable with less active tissue which could be inactivated by 0.5 per cent. liquid ammonia or ammonium carbonate within twelve to twenty-four hours. The effect appears to be quantitative in nature, for it depends on the activity of the tissue, the concentration of alkali, and the duration of its action. As previously, attempts to reactivate inactive material by neutralization with acid were unsuccessful.

FILTRATION EXPERIMENTS

Previous experiments to demonstrate the filterability of this pathogenic agent were unsuccessful. Since my findings have suggested that a comparatively narrow range of hydrogen-ion concentration is necessary for the satisfactory demonstration of this pathogenic agent, it is probable that variations in pH resulting from the act of passage through an earthenware candle may have been sufficient to account for the inert filtrates reported by Gordon (1932-3). I have overcome this difficulty by the employment of specially treated filter candles, and have been able to demonstrate the filterability of Gordon's pathogenic agent to the rabbit.

Technique of Filtration

Two types of filters were used, the one a Berkefeld (British), and the other a Seitz (EK) fine-pore asbestos disk $1\frac{1}{2}$ inches in diameter. The candle of the former and the disk of the latter were first treated with buffered phosphate broth of pH 6.7, by allowing the fluid to act on the two elements for twelve

hours at 26° C. They were then put into use. Material used for filtration was a desiccate of lymphatic tissue derived from a typical case of Hodgkin's disease that had previously yielded a strongly positive biological reaction. One gram of tissue was emulsified in 10 c.cm. of sterile broth of pH 7.1, and then placed in a refrigerator at -4° C. for seven days. Thereafter it was centrifugalized at 1,500 revolutions per minute for twelve minutes, and the supernatant fluid withdrawn with a sterile pipette. To this was added 0.5 c.cm. of an emulsion of *B. prodigiosus* prepared in broth of pH 7.1 standardized to approximate the density of Brown's opacity tube No. 1, and 0.5 c.cm. of a similar suspension of *B. melitensis*, which was also added. The mixture was then divided into two equal parts of 5.5 c.cm., and passed through each filter, a negative pressure of 350 mm. of Hg being applied for a total duration of twelve minutes at room temperature (20° C.). Both filtrates were clear in colour, contained neither *B. melitensis* nor *B. prodigiosus*, and 0.4 c.cm. of each was accordingly introduced intracerebrally and intravenously into four rabbits.

The animals recovered from the operation and remained in good health for a period of four days, after which they all developed the typical encephalitic syndrome. The brain of each animal was then removed and subjected to bacteriological examination. As no growth could be obtained from these by aerobic or anaerobic methods of cultivation after three months, it was concluded that the pathogenic agent was definitely filterable and could pass through both a Berkefeld (British) and the finest-pore Seitz filter. This experiment was repeated thrice with material procured from three different cases of Hodgkin's disease. The most active filtrates were obtained from lymphatic tissue that normally gave a strong positive biological test in the rabbit (van Rooyen, 1933), the material being suspended in high concentration in buffered phosphate broth of pH 7.1, and the pH of the filtrate being kept below pH 7.1.

THE ACTION OF ADSORPTIVE AGENTS

In these experiments emulsions of Hodgkin lymphatic tissue were first treated with adsorptive agents, and then injected into rabbits. Some interesting facts have been obtained, but these are of limited value, for only the behaviour of the agent at pH 7.1 could be investigated. This has been unavoidable, because the range of pH over which this agent exhibits activity is small (pH 6.8 to 7.3), and consequently it was not possible to conduct experiments on the effect of adsorbents at different hydrogen-ion concentrations.

Technique

Two and a half cubic centimetres of a 1 in 20 emulsion of Hodgkin lymphatic tissue prepared in broth of pH 7.1 containing 0.25 per cent. phenol was added to each of four different conical flasks containing 0.2 gram of sterile kieselguhr, pulverized vegetable carbon particles, calcium sulphate, and emulsified normal rabbit's brain. Also a fifth flask containing 45,770 millions of dead *B. typhosus*, a sixth with 37,870 millions of dead *B. coli*, and a seventh empty one, which acted as the control. The number of bacteria were calculated as follows: twelve twenty-four-hour agar slope cultures of each organism were heated to 65° C. for thirty minutes, emulsified in 10 c.cm. of 0.86 per cent. physiological saline solution of pH 7.1, standardized to approximate the density of Brown's opacity tube No. 10, and 10 c.cm. of the emulsion centrifugalized to yield the desired number of organisms. All seven flasks were mounted on a slowly oscillating electrical shaking machine, and placed in an incubator at 37° C. for four hours. Thereafter the contents of each flask were transferred with a sterile pipette into separate test tubes, and centrifugalized at 2,100 revolutions per minute for twelve minutes; the supernatant fluid was withdrawn from each tube, divided into two equal parts, and injected into two rabbits in the usual manner.

Of the fourteen animals injected, the two inoculated with control material developed the syndrome and died after five to seven days: likewise also did those injected with material treated with *B. typhosus*, *B. coli*, and calcium sulphate respectively. Slight loss of pathogenicity followed adsorption by normal rabbit brain, for these animals developed a less severe lesion than did the controls. Greater loss was observed after treatment with carbon, as one of the rabbits developed only a slight illness lasting two days and the other escaped completely. After treatment with kieselguhr, however, tissue suspensions of Hodgkin lymphatic tissue appeared to be completely non-pathogenic to the rabbit. The above experiment was repeated three times with clinical material supplied from institutions in Edinburgh, Glasgow, and London, and in each case the same result was obtained. It was therefore concluded that the pathogenic agent contained in these glands could be readily adsorbed in neutral solutions by treating with kieselguhr, less so by treating with carbon particles, and least of all by normal rabbit brain.

EFFECT OF DESICCATION

Gordon (1932) stated that the agent was capable of withstanding desiccation, and might be concentrated and rendered more active in glands by first drying them. This finding has been confirmed by the writer in the case of material from Case H28, which showed increased pathogenicity in the rabbit's brain after it had been desiccated *in vacuo* over P₂O₅ at 0° C. for four to six weeks. In consequence of these results, a number of specimens of lymphatic tissues removed from cases of pseudoleukaemia, lymphosarcoma, and two cases of Hodgkin's disease (H9 and H10, which gave a negative result in the rabbit even after prolonged refrigeration) were desiccated, re-emulsified, and then used for inoculation, but with negative results throughout.

EFFECT OF FREEZING TISSUE EMULSIONS TO 190° C. BELOW ZERO

In order to gain information concerning the action of extreme cold *per se* on this pathogenic agent, material derived from four different cases of Hodgkin's disease was investigated in the following way.

Technique

Tissue suspensions were put up in hard glass test tubes and then placed in a small Dewar vacuum flask. A pure specimen of liquid air was next siphoned off from its container into the flask. After twelve minutes' immersion in the fluid, suspensions were withdrawn and set aside to melt at 17.4° C.

On one occasion a desiccate of Hodgkin lymphatic tissue was frozen to -190° C. for twelve hours, after which it was emulsified in broth of pH 7.1, allowed to stand at -4° C. for seven days, and then used for inoculation.

The material appeared to be unaffected by such a degree of exposure to cold. It still retained its pathogenicity to the rabbit, and reproduced the characteristic syndrome after the usual incubation period of three days.

EFFECT OF X RAYS ON THE PATHOGENIC AGENT

Investigations were conducted towards ascertaining whether these rays produced, *in vitro*, any destructive effect on the agent in question.

Small fragments of desiccated tissue weighing from 230 to 350 mg. were placed in a quartz glass test tube (98 per cent. SiO₂ in composition), and then exposed for thirty-five minutes at a distance of 26 cm. to the rays emitted from a Muller W anticathode, utilizing 5 mA at 80 kV. A variety of different dosages were employed in the tests, and the greatest

them was an exposure of 4,545 r, approximately equivalent to unit skin doses.

As far as could be gathered from the results following subcutaneous inoculation, it did not appear that irradiation induced any diminution in the pathogenicity of the material to the rabbit. It was therefore concluded that the agent in these glands responsible for the encephalitic syndrome in rabbits was capable of withstanding considerable doses of x rays.

INSUSCEPTIBILITY OF RABBITS TO REINOCULATION AFTER RECOVERY FROM SYNDROME

Several animals which had recovered from the syndrome were allowed to regain their normal health and weight and then reinoculated with the same material as was used for their first injection. The period which elapsed between the two operations varied from a fortnight in some cases to three months in others. On no occasion, however, was it possible to demonstrate immunity to the second dose; indeed, so far as could be observed, it appeared that the rabbits were even more susceptible to it than before.

HISTOLOGICAL CHANGES IN BRAINS OF AFFECTED RABBITS

As previously stated, rabbits affected with the encephalitic syndrome only showed a slight leucocytic infiltration at the site of inoculation, and occasionally similar changes in the meninges overlying this area. The specificity of the latter was dubious, as its presence was comparatively infrequent, and was sometimes met with in normal rabbits. In a few animals, however, in addition to the foregoing changes, marked perivascular, round-cell infiltration, and "cuffing" was found to occur around blood vessels. The response appeared to be evanescent in type, for these changes were usually best demonstrable about the seventh to tenth days after injection, and apparently disappeared rapidly, irrespective of the state of the animal. No evidence of *Encephalitozoon cuniculi* infection could be found, and consequently the changes were not regarded as being of a spontaneous character. A search for inclusion bodies was carried out by removing the brains of rabbits which had been paralysed for three to six and twelve days respectively, fixing these in Bouin's solution and staining them by Mann's method, but none were found. A few animals which had recovered from the syndrome were examined after six to eight weeks, but the results were negative.

INTRACEREBRAL INOCULATION OF CATS, DOGS, AND FERRETS

Five kittens and two puppies were injected intracerebrally and intraperitoneally with suitable suspensions of lymphatic tissue, but no results were observed to follow after three months' observation. Fifteen ferrets were injected intracerebrally, intraperitoneally, and intracranially with similar material. Twelve of these animals died within two to four weeks, and some of them showed signs of encephalitis prior to death. The animals, however, had not been quarantined before the test in order to exclude ferret distemper, and no definite statement can be made yet regarding the significance of the results. It was also noted, in some of the ferrets which had been injected intracutaneously, that a small inflammatory nodule developed at the site of inoculation after five to six days, similar to that described by Twort (1930) in the guinea-pig. This part of the work is still in progress.

NATURE OF THE ENCEPHALITOGENIC AGENT: DISCUSSION

Extended observations on Gordon's test have again proved it to be a reliable laboratory method for the

diagnosis of Hodgkin's disease. The specificity of the reaction with lymphatic tissue obtained from this condition appears to be a well-established fact, but the precise nature of the agent—whether a virus, toxic substance, or enzyme—responsible for the syndrome in rabbits is quite obscure. The effects are not due to trauma (van Rooyen, 1933), but seem to result from some pathogenic entity present in lymphoid tissue affected with Hodgkin's disease, and to be demonstrable experimentally by the intracerebral inoculation of rabbits.

In his earlier work Gordon (1932) found it was necessary to place tissue emulsions in a refrigerator at -4°C . for several days before they showed pathogenicity. Since then many other cases of Hodgkin's disease have been investigated, and several have been encountered, both by Gordon (1933) and by the writer, in which tissue has been found to be active when immediately emulsified. This may be due to the fact that the quantity of the agent present in different pathological specimens varies greatly. Thus, when present in large amount in any one case, the immediate trituration and emulsification of the tissue may liberate a sufficient quantity to produce lesions in the rabbit. This presupposes that the pathogenic principle is intracellular either in origin or distribution. It has, in fact, been observed that feebly pathogenic emulsions of tissue may be rendered more active by allowing rapid cytotoxicity to occur—for example, by maintaining it at 37°C . for two to three days, or by intense freezing in liquid air followed by rapid thawing. The fact that fresh tissues may prove active excludes the possibility that the agent is a product of *in vitro* autolysis. The diffusibility of the agent is indicated by the positive results obtained with centrifugized and cell-free suspensions; and should it be of particulate nature, then the particles must be of ultra-microscopic dimensions. The filterability of this agent has been clearly demonstrated.

The work of Friedemann and Elkeles (1933) on bone marrow may throw some light on the problem, and it is of considerable interest, since Medlar (1931) has regarded Hodgkin's disease as a megakaryoblastoma and a tumour having its origin in bone marrow. This might suggest that the pathogenicity of lymphatic tissue is related to its cellular content, but so far no such correlation has been found to exist; moreover, further work is required to ascertain whether the encephalitogenic agent in bone marrow is identical or not with that demonstrated in Gordon's test.

Another question for consideration is the aetiological relationship of this encephalitogenic agent to the clinical condition, but no evidence is available at present which affords any definite indication that it is causally related to Hodgkin's disease, except for its striking association with the disease. Meanwhile, the demonstration of such an agent in bone marrow (normal and pathological) limits the significance to be attached to the encephalitogenic property of lymphadenomatous tissue.

In conclusion, there remains the problem concerning the exact nature of the pathogenic principle in lymphatic tissue, and some information has been obtained on its characters by a study of its behaviour and susceptibility towards certain physical effects. Thus, it exhibits great resistance towards cold and x rays, displays maximum activity in solution at pH 7.1, can be readily adsorbed by kieselguhr, carbon particles, and normal rabbit brain, and is definitely filterable. It has also been shown by Gordon to be capable of withstanding temperatures up to 70°C . for half an hour.

The significance of these facts cannot readily be assessed, because many of the features alluded to above are those which are common to both viruses and toxins, though the peculiar nervous syndrome produced in the rabbit, by analogy with other virus diseases of the central nervous

system, might seem to favour the virus hypothesis. On the other hand, the failure so far to transmit the experimental disease in animals, and the absence of immunity after recovery do not support the view that the active principle is of virus nature. Finally, there is the possibility that the substance may be of the nature of an enzyme, producing specific damage to the central nervous system.

The problem is one of the greatest interest and practical importance, and the data given in this paper are put forward as a further contribution towards its study. Whether or not the encephalitogenic agent is directly related to Hodgkin's disease, the fact remains that it is of clinical importance in the diagnosis of the condition, and as a new pathogenic principle merits the most careful investigation.

CONCLUSIONS

1. Twenty cases of Hodgkin's disease and thirteen other conditions of lymphadeno-hypertrophy have been investigated. Gordon's biological test gave positive results in fifteen (75 per cent.) cases of Hodgkin's disease, and was found to be negative in the others.

2. The occurrence of a reaction in the rabbit closely simulating Gordon's encephalitic syndrome has been observed to follow intracerebral inoculation with bone marrow derived from a case of acute myelogenous leukaemia.

3. The encephalitogenic agent in Hodgkin's disease has been found to exhibit the following properties: (a) The maximum quantity is liberated from Hodgkin lymphatic tissue when buffered phosphate broth of pH 7.1 is used for its emulsification. (b) Alkalies, such as sodium hydroxide, sodium bicarbonate, ammonia, and ammonium carbonate, may all cause considerable reduction in the pathogenicity of active material. (c) Tissue emulsions have been frozen to -190°C . for ten minutes and tissue desiccates for twelve hours, without inactivation. (d) The agent resists exposure to ten unit skin doses of x rays. (e) It can be readily adsorbed in neutral solutions by kieselguhr, less so by carbon particles, and least of all by normal rabbit brain. (f) It can be passed through Berkefeld (British) and Sietz (EK) filters.

The writer desires to thank the clinicians and pathologists at the Royal Infirmary of Edinburgh and of Glasgow, and at other institutions in Scotland and England, who so willingly co-operated in the investigations. He is greatly indebted to Drs. J. Duncan White and C. M. Scott for their assistance in connexion with the x-ray experiments, and to Professors Mackie and Drennan for their valuable advice and helpful criticism.

BIBLIOGRAPHY

- Friedemann and Elkeles: *British Medical Journal*, 1933, ii, 1116.
Gordon, M. H.: *Rose Research on Lymphadenoma*, London, 1932;
British Medical Journal, 1933, i, 641.
Medlar, F. M.: *Amer. Journ. Path.*, 1931, vii, 499.
Ogilvie, R. F., and van Rooyen, C. E.: *Lancet*, 1933, ii, 641.
Van Rooyen, C. E.: *British Medical Journal*, 1933, i, 50; *ibid.*, 1933, i, 644; *ibid.*, 1933, ii, 562.
Twort, C. C.: *Journ. Path. and Bact.*, 1930, xxxiii, 539.

A new edition of the *Official Guide Book of Medical Post-Graduate Work in Hungary* has just been issued by the Hungarian Medical Post-Graduate Committee (VIII, Mária-utca 39, Budapest). This excellently illustrated volume contains full details in English of the various hospitals and clinics where all kinds of medical post-graduate work can be undertaken. It is stated that all the professors and chief physicians speak English, French, or German. In addition to its main office in Budapest, the Post-Graduate Committee has subcommittees in the other university towns, and arrangements for study can be made wherever desired. Much modernization of the existing institutions has been effected in the last few years, and several new medical buildings have been erected. The *Guide Book* contains also information about places of historic interest in Hungary. There are now in that country four medical faculties, with 4,520 beds available for medical and post-graduate training, as well as 21,534 beds in the large public hospitals.

THE USE OF 2:4-DINITROPHENOL AS A METABOLIC STIMULANT

BY

D. M. DUNLOP, B.A., M.D., F.R.C.P. Ed.*

(From the Clinical Laboratory, Royal Infirmary, Edinburgh)

It has been known since 1885¹ that nitrated naphthols can stimulate metabolism, and during the war attention was called to their toxic effects owing to the incidence of poisoning among workers in munition factories. A review of these effects was made by Perkins,² and they were more recently commented on by the Council of Pharmacy and Chemistry of the American Medical Association.³ Only incomplete investigations of the pharmacological action of such compounds were, however, made till 1928, when Heymans⁴ and his co-workers revived interest in the subject by a series of publications which showed that certain nitrophenols are powerful stimulators of metabolism, causing a greatly increased oxygen consumption. When a considerable dose is taken the endogenous heat production may be so stimulated as to cause a rise of temperature, and death from a lethal dose occurs during a hyperpyrexia. The lethal dose of dinitrophenol for rats has been shown by Anderson, Reed, and Emerson⁵ to lie between 30 and 50 mg. per kilo of body weight, but doses as small as 5 mg. per kilo of body weight may produce pyrexia in man, and it has been stated that the margin between the febrile and fatal dose is narrow.

During the last two years Magne, Mayer, and Plantefol,⁶ and Cutting and Tainter,⁷ have published reports on the main pharmacological actions of dinitrophenol. All these workers are agreed that the action of the drug in stimulating the metabolic rate is peripheral, due to an increased oxygen consumption in the tissues, and is independent of nervous and glandular action. In considering the source of the fuel for the increased metabolism they are also agreed that the body proteins are not broken down to any appreciable extent. The French workers, however, observing in the experimental animal under the influence of dinitrophenol a marked decrease of the carbohydrate content of the body, particularly in respect of the liver glycogen, and a corresponding rise in the blood sugar, argued that the excess metabolism was mostly at the expense of carbohydrate. The experimental and clinical studies of Cutting and Tainter, on the other hand, failed to reveal any difference between the excess metabolism due to dinitrophenol and that occurring normally. The latter workers, using this drug in doses of 3 to 5 mg. per kilo of body weight, have recommended its use in the treatment of obesity, and have recently published encouraging results from extended clinical trials in which an average daily oral dose of 0.3 gram (5 grains) of the drug was administered to 113 consecutive cases of obesity without drastic dietetic restrictions. No severe cumulative or toxic effects were produced, though most of the patients noticed a sense of increased warmth and increased sweating, while in 7 per cent. of them a skin rash occurred, and in 5.3 per cent. there was a loss of taste. These side actions cleared up quickly, without sequelae, on discontinuing the medication. Anderson, Reed, and Emerson⁵ have also treated fourteen cases of obesity, using similar doses of the drug, and obtained some slight loss in weight without much dietetic restriction. In one patient, however, they obtained a serious allergic skin and joint reaction. This patient suffered from chronic articular rheumatism, and it is suggested that individuals suffering from this complaint have a lessened resistance to the agent. Indeed, Perkins,² in his review of the poisonous effects of dinitrophenol on

* In receipt of part-time grant from the Medical Research Council.

munition workers, reported that cases of chronic rheumatism, alcoholic addiction, diabetes mellitus, tuberculosis, and renal and hepatic insufficiency were particularly sensitive to it.

In addition to dinitrophenol, a related compound, dinitro-*o*-cresol, has been reported on by Dodds and his co-workers.⁸ They claim it to be considerably more active than dinitrophenol, and stress, as other workers have done in the case of dinitrophenol, that neither the pulse rate nor the blood pressure is raised in any way proportionately to the height of the metabolism. Dodds further states that toxic symptoms are occasioned by dinitro-*o*-cresol when the metabolic rate is raised by its means to over 50 per cent. above the patient's normal. He mentions particularly sweating, lethargy, headache, loss of appetite, and a greenish-yellow tinge in the conjunctivae. This latter symptom has also been noted by Tainter, using dinitrophenol, but neither worker discovered any excess bile pigments to be present in the blood of such cases; and it must also be remembered that the drugs themselves are dyes producing much the same colour as bile pigments.

The fact that drugs of this type have specific powerful effects in raising metabolism, without at the same time causing tachycardia, combined with their cheapness and availability, might strongly recommend them as superior to other metabolic stimulants in general therapeutic use. On the other hand, Dodds⁸ has suggested that in spite of their effects on metabolism such drugs do not act as a substitute for thyroid in hypothyroid states, except in so far as they may reduce excess body weight. Further, it has yet to be demonstrated that they are as safe and efficient for weight reduction in human beings as other methods in common use. It may indeed be argued that so many toxic reactions have been produced in the relatively small number of cases treated that the use of such compounds is not as yet clinically justifiable on a large scale, and that their popularization as weight reducers might well be disastrous. It is therefore of importance that careful pharmacological investigations and cautious clinical trials of these new and powerful products should be made before their widespread application is undertaken.

METHOD

The effects of 2:4-dinitrophenol on human beings, when administered orally in gelatin capsules, were studied over a considerable period of time under carefully controlled conditions in hospital. The subjects were three obese women. In Cases 1 and 2 the patients had normally mildly reduced basal metabolic rates, while Case 3 presented the typical features of advanced myxoedema. The drug was given to Case 1 in single doses of 2 mg. per kilo of body weight, several days being allowed to elapse between each dose. Metabolic readings were made before the drug was given, and at intervals of a quarter of an hour afterwards for two hours, and thereafter every morning until the metabolism had for some days returned to its normal base line. This procedure was repeated on four occasions. Case 2, after a considerable control period, was given dinitrophenol in doses rising from 1 to 3 mg. per kilo of body weight, the metabolism being allowed to reach a constant maximum for each quantity of the drug before the dose was increased. The effects were contrasted with those produced by a daily dose of 6 grains of thyroid. Case 3, after a similar control period, was given a daily dose of 3 mg. per kilo of body weight, and the effects again contrasted with those produced by 6 grains of thyroid daily, and also with those occasioned by 50 mg. of di-iodo-tyronine daily, a synthetic preparation reported on by Anderson, Harrington, and Lyon.⁹

Throughout their stay in hospital the patients had their diets kept constant in respect of total calories and in respect of the content of fat, carbohydrate, and protein. With the object of giving the patients a diet just sufficient to maintain their weight while leading a sedentary life, without supplying material for luxus consumption, the diets for the three

individuals varied between 1,800 and 2,000 calories. Fluids were not limited. The patients were weighed daily at the same hour. The basal metabolism and respiratory quotients were determined daily, early each morning, using the Douglas bag and Haldane gas analysis apparatus, and all the determinations were made in duplicate. Twenty-four-hour specimens of urine were collected and measured daily, and were then examined for abnormal constituents, their total nitrogen content being estimated by the micro-Kjeldahl method. The pulse and blood pressure were noted daily under basal conditions, and the blood urea, sugar, cholesterol, and icteric index were frequently determined. A four-hour oral temperature chart was kept, and in Case 2, on three occasions, a continuous temperature chart, galvanometrically recorded by means of an electric thermo-couple strapped into the axilla, was kept for two hours before, and for twenty-two hours after, the administration of dinitrophenol.

BASAL METABOLIC RATE

In each case dinitrophenol was found to have a powerful effect in raising metabolism and in increasing oxygen consumption. The absorption of the drug was exceedingly rapid, a noticeable effect being produced on the metabolism a quarter of an hour after the oral administration of a single dose, and a maximum effect for the day being produced in an hour's time. This effect would last almost unimpaired for twenty-four hours, but in forty-eight hours the metabolism had invariably fallen to a level only slightly above its original value.

TABLE I.—Effect on Four Occasions of 2 mg. per Kilo, of Body Weight of Dinitrophenol on the Metabolism of Case 1

	I	II	III	IV
Basal	- 16	- 9	- 14	- 15
½ hour after dinitrophenol	- 3	+ 7	± 0	- 3
1 hour " " "	+ 2	+ 11	+ 10	+ 2
1 hour " " "	+ 7	+ 21	+ 16	+ 7
1½ hours " " "	+ 4	+ 21	+ 14	+ 4
24 hours " " "	+ 7	+ 8	+ 8	+ 7
48 hours " " "	-	- 8	+ 1	-
72 hours " " "	- 9	- 12	- 5	- 9

With the daily administration of the drug the metabolism rose rapidly on the first day, and on subsequent days continued to rise slightly. A maximum level was reached about the fourth day, at which point it remained, fluctuating within very narrow limits, till an increased dose sent it up still further, or the withdrawal of the drug brought it rapidly to normal. For all practical purposes the effect on the metabolism, even after prolonged administration, had worn off within seventy-two hours of the withdrawal of the drug. The rapidity with which the action of the drug on the metabolism wears off, and the rapidity with which its effects become manifest, are thus in marked contrast to the slow onset and slow subsidence of thyroid action, the effects of which only become apparent some three to four days after its administration is started, and continue for five to six days after it has been withdrawn.

The action produced by dinitrophenol was found to be fairly proportional to the dosage employed. In Case 1, where single doses of 2 mg. per kilo of body weight were given, the metabolism twenty-four hours later was invariably found to be increased by almost exactly 23 per cent. In Case 2, where different doses were employed, 1 mg. per kilo of body weight produced an average maximum rise in metabolism of 12 per cent., 2 mg. of 25 per cent., and 3 mg. of 35 per cent. In Case 3, where 3 mg. per kilo of body weight were given, an average maximum rise of 42 per cent. was produced.

URINARY NITROGEN AND RESPIRATORY QUOTIENT

Dinitrophenol exerted no significant influence on the excretion of urinary nitrogen. This contrasts with the very considerable increase in nitrogen excretion observed

TABLE II.—Effect of Dinitrophenol and Thyroid on the Excretion of Urinary Nitrogen

Average Urinary Nitrogen Excretion in Grams per Day.

	Case 1	Case 2	Case 3
Control period ...	9.44	8.56	7.89
Dinitrophenol period ...	9.00	9.09	8.61
Thyroid period ...	—	12.15	11.91

in patients undergoing treatment with thyroid, in which respect the cases under consideration were no exception. It is apparent, therefore, that the excess metabolism due to dinitrophenol is not conducted at the expense of exogenous or endogenous protein to any appreciable extent,

tion in the respiratory quotient, though our previous experience suggests that on the average the effect of thyroid is to raise the respiratory quotient slightly.¹⁰

These results would seem to indicate that the excess metabolism produced by dinitrophenol is conducted at the expense of fat rather than at the expense of carbohydrate or protein, though this interpretation is subject to the criticism that the method of approach is an indirect one. From the fact that no ketone bodies were ever discovered in the urine, it would seem that any fat used was completely and satisfactorily broken down.

PULSE AND BLOOD PRESSURE

No important increase in pulse rate or change in blood pressure was produced by dinitrophenol, a 40 to 50 per cent. increase in metabolism being associated with a pulse rate raised by less than ten beats per minute. These observations are in remarkable contrast to the well-known effects of thyroid on the circulation, which so often contraindicate its use in cases of obesity. In Case 3,

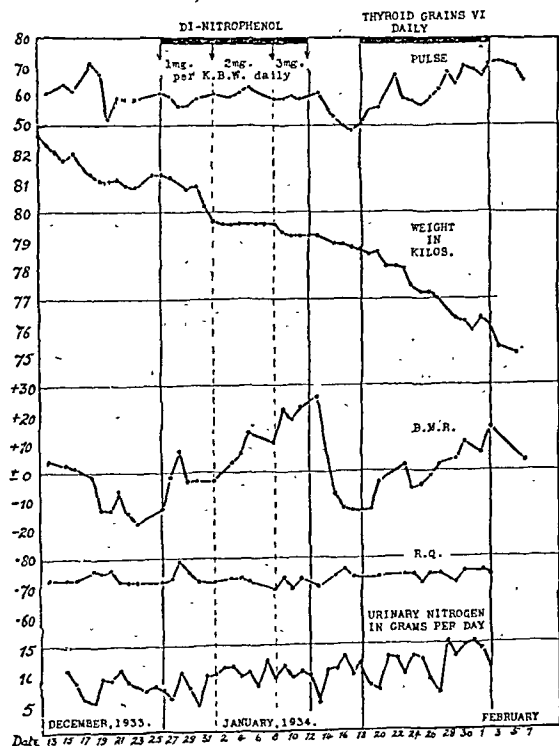


CHART I.—Effect of dinitrophenol and thyroid on Case 2.

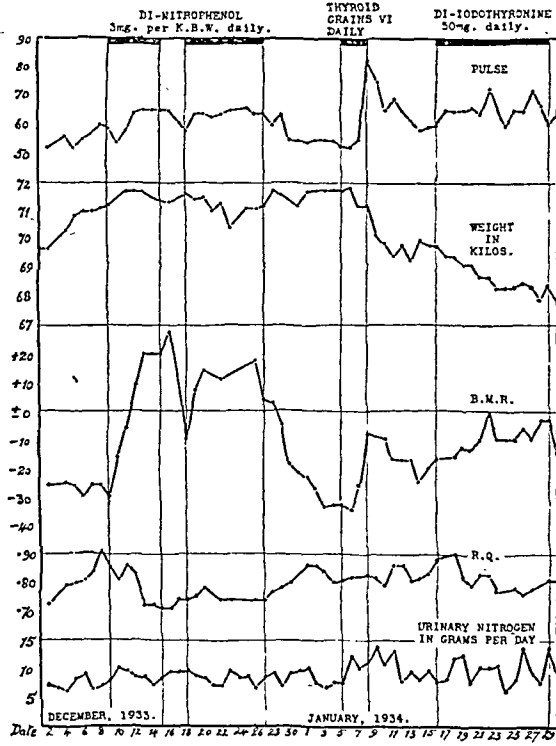


CHART II.—Effect of dinitrophenol, thyroid, and di-iodothyronine on Case 3.

whereas a small but significant part of the excess metabolism produced by thyroid is due to protein.

Reference to Chart II shows that a considerable fall in the respiratory quotient occurred during the period of dinitrophenol administration to Case 3, the average basal respiratory quotient for the control period being 0.84, while on dinitrophenol the average was 0.74. Again, in Case 1, where frequent determinations were made during the two hours following the administration of single doses of dinitrophenol, a tendency for the respiratory quotient to fall was usually noted, and there was never a significant rise. In Case 2 the respiratory quotient remained remarkably low throughout the control period, and remained low during the whole period of dinitrophenol administration (see Chart I). In the present series of experiments the exhibition of thyroid caused no very significant varia-

for example, a metabolic increase of only 20 per cent. induced by thyroid resulted in the pulse rate being accelerated by twenty-four beats a minute, and caused the patient to complain of palpitation. This constitutes a distinct advantage of dinitrophenol over thyroid extract or thyroxine, but in one respect it is a drawback, since no conception of the extent of the metabolic increase can be gauged from the state of the pulse; and the only methods of evaluating the metabolism under dinitrophenol are by resort to the somewhat cumbersome procedure of determining the basal metabolic rate, or by relying on the subjective sensations of the patient, which may on occasion give an erroneous impression. Di-iodothyronine, which in all other respects appears to produce the same metabolic and endocrine effects as thyroid, seems to have a less severely disturbing influence on the circulation.

WEIGHT

TABLE III.—Average Effect of Dinitrophenol and Thyroid on Weight in Kilos per Week

	Case 2	Case 3
Control period	Loss of 0.70	Gain of 1.33
Dinitrophenol period ...	Loss of 0.84	No change
Thyroid period	Loss of 1.47	Loss of 2.10
Di-iodothyronine period ...	—	Loss of 0.77

It will be seen that the weight loss produced by dinitrophenol was exceedingly disappointing, and that the great increase in metabolism which it occasioned was associated with a loss of weight quite insignificant in comparison with that produced by thyroid, in spite of the fact that the metabolism was not raised to anything like the same extent by the latter. This disparity in results can only be explained by the fact that thyroid exercises a marked effect on the partition of water in the body, whereas dinitrophenol is ineffective in this respect, in spite of the considerable sweating which it induces. Indeed, the actual loss of weight under dinitrophenol approximated closely to the loss calculated from the metabolic results on the basis that no change in water balance occurred. A comparison of the percentage of average urinary output to intake during the control, dinitrophenol, and thyroid periods gives suggestive results.

TABLE IV.—Effect of Dinitrophenol and Thyroid on the Average Percentage of Urinary Output to Fluid Intake

	Control Period	Dinitrophenol Period	Thyroid Period
Case 2	66 per cent.	62 per cent.	83 per cent.
Case 3	87 ..	74 ..	102 ..

In a previous comparison of the therapeutic effects of diet and thyroid in the treatment of obesity we have shown that approximately 9 grains of thyroid daily are required to cause a fall in weight equivalent to that produced by treatment with a diet of 1,000 calories¹¹—a dosage seldom tolerated by the obese patient. Since thyroid is itself, apparently, a very much more efficient weight-reducer than dinitrophenol, it would appear that exceedingly toxic or even lethal doses of the latter would be required to ensure the same effect as that produced by diets of 1,000 calories.

OTHER EFFECTS

As long as the metabolic increase effected by dinitrophenol was not more than 30 per cent. above the patient's normal the subjective sensations experienced were not unpleasant. Indeed, with small increases in metabolism a rather pleasurable sensation of comfortable warmth was produced. With a greater elevation, however, uncomfortable symptoms of heat and sweating were experienced, and with a rise of over 40 per cent. the patients were considerably distressed by these effects, and complained of lethargy and exhaustion. Notwithstanding this, no significant elevation of the temperature was noted on any occasion, even when this was continually recorded over a period of twenty-four hours by a sensitive electric thermo-couple strapped into the axilla. Apparently it was therefore possible, with the doses used, for the endogenous heat production to be satisfactorily dissipated.

Apart from the symptoms mentioned, no toxic effects were occasioned by dinitrophenol, and the palpitation, invariably experienced by the patient in Case 3 when given thyroid, was noticeably absent while she was receiving this drug. An insignificant increase in the blood sugar occurred under dinitrophenol, while there was a similar insignificant increase in the blood urea under thyroid medication. The blood cholesterol and icteric index were unaffected, and no abnormal contents were produced in the urine.

In spite of its effects on metabolism dinitrophenol is apparently no substitute for thyroid. Case 2 was just as

myxoedematous, with a basal metabolism of +18, the result of nearly three weeks' treatment with dinitrophenol, as she was previously with a basal metabolism of -30. On the other hand, small doses of thyroid, thyroxine, or di-iodothyronine, sufficient to raise the patient's metabolism to a figure no higher than -10, speedily improved her myxoedematous symptoms and appearance.

CONCLUSIONS

Dinitrophenol is a powerful and rapidly acting stimulant to oxidative metabolism, which does not at the same time upset the pulse rate or the blood pressure. The excess metabolism, which subsides rapidly when the drug is withdrawn, is conducted largely at the expense of fat. In doses of 3 mg. per kilo of body weight it may increase the metabolism to as much as 50 per cent. over its original level, though the average increase is usually less than this amount. No serious toxic effects were produced by such a dose in the present investigation, though such are recorded in the literature. Uncomfortable sensations of excessive warmth, sweating, and lethargy may, however, be complained of, which may necessitate the average dose being less than 3 mg. per kilo of body weight. In such doses dinitrophenol is likely to be singularly ineffective in lowering excess body weight, and even in maximum therapeutic doses it does not compare, as a weight reducer, with thyroid, and still less with dietetic restriction. It is no substitute for thyroid in myxoedematous states.

I am indebted to Professor D. M. Lyon for the opportunity of carrying out this investigation.

REFERENCES

- ¹ Caseneuve and Lépine: *C. R. Acad. des Sci.*, 1885, ci, 1167.
- ² Perkins, R. G.: *Pub. Health Report*, 1919, xxxiv, 2335.
- ³ *Journ. Amer. Med. Assoc.*, 1933, ci, 210.
- ⁴ Heymans, C., and Brouhaert, J. J.: *Arch. Int. Pharm. et de Thérap.*, 1928, xxxv, 63; van Uytvanck, P.: *Ibid.*, 1931, xli, 160; Moraes, A., and Cosier, H.: *Ibid.*, 1933, xlv, 113.
- ⁵ Anderson, H., Reed, A. C., and Emerson, G. A.: *Journ. Amer. Med. Assoc.*, 1933, ci, 1053.
- ⁶ Magne, H., Mayer, A., Plantefol, L., et al.: *Ann. de Physiol.*, 1931, vii, 269; *Ibid.*, 1932, viii, 1.
- ⁷ Cutting, W. C., and Tainter, M. L.: *Proc. Soc. Exp. Biol. and Med.*, 1932, xxix, 1268; Tainter, M. L., Boyes, J. H., and De Eds, F.: *Arch. Int. Pharm. et de Thérap.*, 1933, xlv, 235; Tainter, M. L., and Cutting, W. C.: *Journ. Pharmacol. and Exp. Therap.*, 1933, xlviii, 410; *Ibid.*, 1933, xlix, 187; Hall, V. E., Field, J., Sahyun, M., Cutting, W. C., and Tainter, M. L.: *Amer. Journ. Physiol.*, 1933, cvi, 432; Cutting, W. C., Mehrrens, H. G., and Tainter, M. L.: *Journ. Amer. Med. Assoc.*, 1933, ci, 193; Tainter, M. L., Stockton, A. B., and Cutting, W. C.: *Ibid.*, 1933, ci, 1472; Cutting, W. C., and Tainter, M. L.: *Ibid.*, 1933, ci, 2099.
- ⁸ Dodds, E. C., and Robertson, J. D.: *Lancet*, 1933, ii, 1137, and 1197; Dodds, E. C., and Pope, W. J.: *Ibid.*, 1933, ii, 352.
- ⁹ Anderson, A. B., Harington, C. R., and Lyon, D. M.: *Ibid.*, 1933, ii, 1081.
- ¹⁰ Lyon, D. M., Dunlop, D. M., and Stewart, C. P.: *Journ. Biochem.*, 1932, xxvi, 1107.
- ¹¹ Lyon, D. M., and Dunlop, D. M.: *Quart. Journ. Med.*, 1932, xxv, 331.

The Import Duties (Drawback) (No. 2) Order, 1934, issued by the Treasury on March 8th on the recommendation of the Import Duties Advisory Committee, provides, under Section 9 of the Finance Act, 1932, for the allowance of drawback of customs duties for a period of twelve months in respect of castor seed used in the manufacture of exported castor oil. Following the imposition in March, 1932, of the general *ad valorem* duty on castor seed there has been a great reduction in the imports of foreign seed into the United Kingdom, and it is represented that the removal of the British buyer from the market has materially contributed to the fall of the world price of foreign seed to a level which gives the foreign seed crushers an advantage over British crushers in the export markets for castor oil. The granting of drawback will substantially restore to the British crushers economic freedom in the choice of seed required for their export trade in castor oil, which in 1933 amounted to nearly £250,000. A White Paper containing the Treasury Order and the Advisory Committee's recommendation is published by H.M. Stationery Office (Cmd. 4532).

HEREDITY AND VARICOSE VEINS

BY

CONSTANCE OTTLEY, B.M., F.R.C.S.

ASSISTANT SURGEON, NEW SUSSEX HOSPITAL FOR WOMEN

It has long been recognized that heredity is one of the factors in the causation of varicose veins. It is, however, a matter of particular difficulty to obtain exact evidence of its influence in a given case. Varicose veins are so common, and the symptoms to which they give rise are often so trivial, that they are less prone to attract attention than are rarer hereditary conditions. This applies especially to the older generations; among younger people, as a result of present-day fashions in dress, sport, etc., varicose veins are much more likely to be noticed and treated. For this reason a positive family history, especially as regards the older members of the family, is of greater weight than a negative one; and it must not be concluded that a hereditary factor is not present

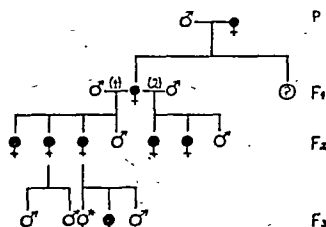


FIG. 1.

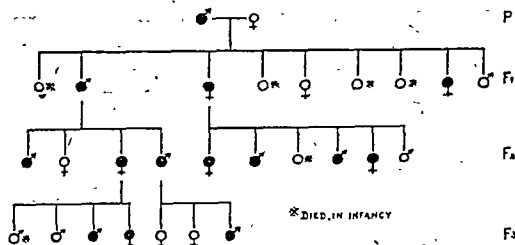


FIG. 2.

because a patient thinks that none of his ancestors had varicose veins.

The comparatively uninteresting character of the complaint, and the difficulty of obtaining evidence of its hereditary nature, may account for the fact that the literature of the past ten years contains but scanty reference to the subject. Nobl and Remenowsky¹ emphasize the importance of a hereditary factor, but give no examples. F. Curtius² gives one family tree extending over four generations, and including seventeen sufferers among a total of fifty-eight individuals, and two other less striking pedigrees. Jensen³ questioned 354 patients suffering from varicose veins, and obtained from 56 per cent. the statement that some other member of the family was also affected. No detailed pedigrees are given.

This paper is based on a series of fifty cases under treatment for varicose veins. Of these patients fourteen stated that they knew of no other cases in their respective families. The remaining thirty-six patients can be divided into two groups.

1. The inheritance of varicose veins appeared to be of a simple dominant type in twenty-six families, of which three instances may be given (Figs. 1, 2, and 3).

2. In ten families varicose veins had occurred in one or more members of a sibship, and the parents were believed to have been unaffected. In all these cases the testimony of the parents themselves was not available, owing to death or other reasons. In the cases where only one member of a sibship was affected, and in several other instances (four families in all) one or more uncles or aunts had varicose veins. In two of these families the condition had appeared in one of the grandparents—that is, it had skipped a generation.

There are two possibilities here. Either a recessive factor is concerned, or the more usual dominant type of inheritance is masked by the failure of the disease to become manifest—owing to absence of some other essential condition—in a predisposed individual.

The ten families above mentioned included eleven sibships (there were two sibships in one of the families) in which cases of varicose veins occurred, the parents being unaffected. The total number of individuals in these sibships was eighty-two, of whom twenty-three had varicose veins and fifty-nine were unaffected. This gives a percentage of affected persons of 28—a higher figure than would be expected if the defect were a recessive one—but the numbers are too small to carry much weight.

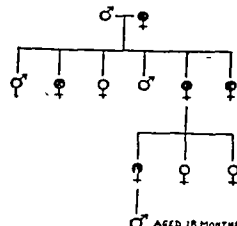


FIG. 3.

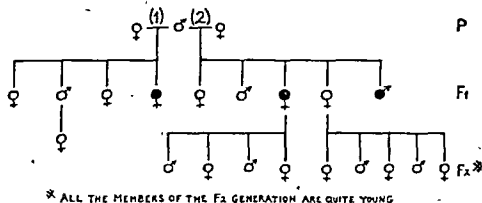


FIG. 4.

One of these pedigrees is given in Fig. 4.

Here, if the defect is a recessive one, it is necessary to assume that both wives in the P generation, as well as the man, were bearers of the recessive factor. This seems an unlikely assumption, especially as the wives are not known to have been related to one another. It appears much more probable that the predisposition was present in the father of the family, but failed to become manifest.

REFERENCES

- ¹ Nobl and Remenowsky: *Wien klin. Woch.*, 1925, xxxiv, 35.
- ² Curtius, F.: *Deut. Arch. klin. Med.*, 1923, cxix, 194.
- ³ Jensen, D. R.: *Ann. of Surg.*, 1932, xcv, 738.

Two new series of brochures, numbering 316 to 323 and 324 to 332, have been issued by the International Labour Office. The former deals with parasites, petroleum and lubricating oils, phosgene, photographic industry, plaster, plastic earths, printing trades, and quinine; and the latter with rice-field workers, scavengers and road makers and menders, silicon, silk, skin diseases, social welfare, soldering, etc., soot, and sport (hygiene and physiopathology). Subscribers desiring to bind their brochures are informed that these issues complete the subjects coming under the letters "P," "Q," and "R."

MEDICAL ASPECTS OF METHYL CHLORIDE

BY

ARTHUR P. GORHAM, M.B., CH.B.

HONORARY SURGICAL REGISTRAR, BRISTOL GENERAL HOSPITAL

British medical literature contains few references to methyl chloride, and only brief mention is made of it in textbooks on toxicology. This substance is of interest to the medical profession for several reasons: (1) on account of its toxic properties; (2) the symptomatology of poisoning by it is varied and liable to be overlooked and to be ascribed to other causes; (3) it has an extensive use as a refrigerant: it has been so used for many years, chiefly on the Continent and in America. Owing to the recent extension of the use of domestic refrigerators in this country methyl chloride is now in common use here. On land, installations are to be found in hospitals; hotels, and in a large number of shops, more especially in those of butchers, fishmongers, and grocers. In one new building in London over seventy machines are in use. One firm among several manufacturers of these plants has supplied over seven thousand installations in this country. It is therefore possible that toxic cases may be more frequent than formerly. The object of this paper is to set out the available information and to place on record a fresh case of poisoning.

Methyl chloride was discovered by Peligot and Dumas in 1835; it has the chemical formula CH_2Cl_2 , with a molecular weight of 50.474. It is a non-corrosive gas, and is usually supplied compressed into cylinders. It is colourless both in the gaseous and in the liquid state. The boiling point is -24°C . It possesses only a very faint, sweet, chloroform-like odour, and is non-irritating to the eyes and to the respiratory tract.

REFRIGERANT PROPERTIES

In medical practice it is used as a local analgesic in cases of neuralgia and neuritis, when it is sprayed on the affected part, producing intense cold by evaporation. Its inhalation causes narcosis, and this property was investigated in 1879 by a committee of the British Medical Association, who used an alcoholic solution, and reported a mild narcotic effect.

Commercially, as stated above, it has extensive use as a refrigerant, and it is reported from America that there are 75,000 domestic plants in use in one city. It was used as early as 1895 in the French Navy, and is now to be found in a great number of British mercantile ships. It may be of interest to enumerate some of the advantages this substance possesses as a refrigerant as compared with the more usual agents such as CO_2 , SO_2 , and NH_3 , from a list made by J. B. Churchill.

(a) It is non-corrosive to metals used in refrigerating systems, and does not decompose into a corrosive when it comes into contact with moisture accidentally introduced.

(b) It does not form an explosive mixture with air under ordinary conditions, and is stable at any temperature in the system.

(c) It is only moderately inflammable, and is of relatively low toxicity compared with some other refrigerants.

(d) It decomposes when in contact with an open flame, but yields no toxic substance.

(e) It is non-irritating to the eyes and lungs, enabling servicing of equipment to be carried out without annoyance to persons occupying premises where it is in use.

(f) It does not injure foods, flowers, or textiles when they are exposed to its vapour by leaks.

These properties account for the popularity of methyl chloride as a refrigerant. The dangers of fire or explosion

are small. The main consideration is the danger to the life and health of human beings. This arises (apart from the question of exposure during manufacture incurred by workers in the industry) from leaks in domestic or other plants, owing to the fact that its odour is so slight as not to be noticeable. In this connexion it is interesting to note a proposed patent in which aldehyde shall be added so as to produce a lachrymatory effect, thus indicating slight leaks.

TOXIC EFFECTS

Toxic effects are produced usually by unnoticed leaks taking place in enclosed or ill-ventilated places. If the leak is a slow one and the gas becomes diffused and diluted in the atmosphere its existence may never be appreciated; but at higher concentrations toxic symptoms arise. A concentration of 10 to 20 per cent. is said to be anaesthetic. The gas is slowly excreted, so that the effects of small amounts may become cumulative and cause symptoms only after some days.

It is considered by one German observer that individual susceptibilities occur. The following is the report of a case which came under my own observation.

On October 26th, 1932, several men were working in the cold store in the fore part of a ship. A small supply pipe of the methyl chloride refrigerating plant was accidentally broken across, allowing the escape of gas for about thirty minutes before the break was seen and plugged. No ill-effect was noticed by any of the men until five hours later. F. A., aged 40 years, felt sick and giddy, and noticed a mustard-like taste in his mouth. He went home, and was violently sick all night. The following day he was admitted into a local hospital in a state of collapse, with pallor and slight cyanosis. He felt giddy, and had a burning sensation in his mouth and throat. The pulse was 80 and the temperature normal. Vomiting ceased in twenty-four hours, and in three days he was discharged, normal in all respects. He resumed work, and is now in good health. The space in which these men were working was an enclosed one, ventilated by an open-top hatch with no through current of air. One other man had slight sickness and giddiness, but did not cease work.

In recent years nearly a hundred cases have been reported from abroad. Gerbo, in 1914, gave a record of two cases in ice machinists, and in 1923 Roth reported a further ten cases from Germany. In 1921 Schwartz recorded one fatality in ten cases among workers in the industry. Baker notes twenty-one cases with no deaths from America; and in Chicago, since 1928, twenty-nine cases are reported with ten deaths. Several isolated cases have been noted from European countries, with one fatality. The onset of symptoms is gradual in the milder cases; but in those of greater severity unconsciousness may be present at the commencement, and is usually accompanied by convulsions and delirium.

CASES ILLUSTRATING A MILD ATTACK

I am able to record four cases reported to me from this country illustrating the symptoms of a mild attack.

Case 1.—A young man while doing research work inhaled concentrated gas in an enclosed chamber. His main symptom was violent vomiting. As he developed nothing further he returned to work after a week, and is now in good health.

Case 2.—A fitter liberated a large amount of gas into an unventilated space in which he was working. He became violently sick with nausea, but returned to work in three days, having recovered.

Case 3.—A workman on a ship, while repairing some leaking joints, remained tightening them up for several hours in a badly ventilated space. He had violent sickness and nausea, and was well in six days.

Case 4.—While a vessel was at sea an engineer liberated most of the charge into a confined space without ventilating it, and had severe vomiting, but made a good recovery.

SYMPTOMATOLOGY

The symptoms as collected from various records may be stated to be as follows.

The onset is one of progressive drowsiness and apathy, going on to stupor, with nausea, vomiting, and abdominal pain. Muscular tremors may be present, and may be followed by tonic convulsions with marked cyanosis. Ocular signs and symptoms may be prominent. The pupils are usually dilated. Ptosis and nystagmus have been noted, also amblyopia. The temperature nearly always rises, and deaths with high pyrexia have occurred. The pulse and respiration rates are increased.

Renal Symptoms.—Anuria lasting twenty-four to forty-eight hours is usual in the more severe cases, and albuminuria occurs in about 50 per cent. The urine has always been found to be acid, and acetone and diacetic acid may be present. Baker observed formic acid in his cases, but other observers have not found this to be the universal rule. Hyaline and granular casts are sometimes seen.

The blood pressure is lowered, and the blood picture is one of primary anaemia, with a moderate leucocytosis. The cause of death is apparently respiratory paralysis. Sequelae have been noted, and chiefly affect the nervous system: ataxia, insomnia; vertigo, and dim vision, which persist for some months. Post-mortem examinations were performed on the fatal American cases, and the main findings consisted of petechial haemorrhages in the pleura, epicardium, and endocardium. Marked congestion of the lungs and kidneys was found, as well as early fatty changes in the liver. Chemical examination was negative.

DIFFERENTIAL DIAGNOSIS

The diagnosis rests on a history of exposure to the gas and on the symptoms detailed above, the predominating symptoms being nausea and vomiting, with drowsiness and a confused mental state of several days' duration.

The condition has chiefly to be distinguished from food poisoning, in which diarrhoea might be expected to be a more prominent symptom, and, in the case of botulism, consciousness to the end. The case recorded by me was thought to be one of coal-gas poisoning. Carbon monoxide poisoning shows a subnormal temperature, and has the spectroscopic bands of carboxyhaemoglobin in the blood. Poisoning by the heavy metals must be considered, and the evidence sifted in the absence of a clear history. Certain diseases of the nervous system, particularly encephalitis and meningitis, enter into the differential diagnosis. In this connexion it is of interest to note that the cerebro-spinal fluid in methyl chloride poisoning is fairly normal, especially the cellular content, but has been found under pressure in a few instances.

TREATMENT

The treatment of the condition consists, first, in getting the patient into the fresh air and in commencing the early administration of oxygen. Alkalis should be given freely. It may be necessary to control convulsions, but on no account should chloral or chloroform be used for this. As a powerful cardio-respiratory stimulant coramine in large doses is indicated. The patient should be kept in bed until the temperature and pulse are normal and all acute nervous symptoms have abated. The anaemia may have to be treated. The gas is oxidized slowly, and the aim of the treatment is to hasten oxidation.

SUMMARY

1. Attention is drawn to the increased use of methyl chloride as a domestic refrigerant.

2. The signs and symptoms of poisoning and observations gathered from several observers are described.

3. A case occurring in this country is placed on record and the different diagnosis is discussed.

A bibliography is appended from which further information can be derived.

BIBLIOGRAPHY.

- British Medical Journal*, January 4th, 1879, February 22nd, 1930, March 1st, and April 19th, 1930.
Martindale's Extra Pharmacopoeia, twentieth edition, i, £67.
Industrial and Engineering Chemistry, June, 1932, p. 623.
Bull. Nav. M.A. Japan, February, 1932, p. 8.
Journ. Indust. Hyg., October, 1931, p. 237.
Journ. Amer. Med. Assoc., January 24th, 1931, p. 270; April 19th, 1927, p. 1137; August 3rd, 1929, p. 353.
Internat. Med. Digest, October, 1929, p. 242.
Amer. Journ. Pub. Health, March 3rd, 1930, p. 291.
Schweiz. Zeit. f. Unfallkunde, 1923, xvii, 169.
Soc. of Chem. Industry Reports, 1932, xvii, 17.
Dictionary of Applied Chemistry (Thorpe), iv, 310; vi, 635.
C. R. Soc. de Biol., January, 1928, p. 225.
Public Health Report 45, May 9th, 1930, p. 1057.

Clinical Memoranda

RELATION BETWEEN EPILEPSY AND
CONGENITAL SYPHILIS

The following is a report of a pedigree which appears to be of some interest from the point of view of the much-discussed relation between epilepsy and congenital syphilis. Much has been written on the subject, and very divergent views expressed. Some authors go so far as to say that all cases of "idiopathic" epilepsy are ultimately traceable to syphilis, while others suppose, on the other hand, that there is no connexion whatever, and that any apparent relation is merely a coincidence. Mott,¹ for instance, says: "Because there are stigmata of syphilis on the body of a juvenile epileptic it does not necessarily follow that there is a causal connexion . . . it may be coincidence." He says also: "The question whether syphilis of the parents can modify the germ-plasm so as to render it biologically unstable, whereby a slight excitation suffices to produce a fit . . . is one that cannot be satisfactorily answered."

The weight of opinion is in favour of the view that congenital syphilis may result in pathological and local changes in the brain responsible for epileptic attacks, and that it may also so influence the germ-plasm that epilepsy results, even when the affected individual shows no other signs of congenital syphilis.

DESCRIPTION OF PEDIGREE

First Generation (I):

1. Male, 60 years. Denies syphilis. Has history of phthisis. Wassermann and Meinicke negative.
2. Female, 58 years. Wife of above. Had course of injections six years ago. No history of infection. Wassermann and Meinicke strongly positive.

Second Generation (II):

1. Male, 32 years. Always healthy. Has hypospadias, otherwise normal. Married six years; no children. Wassermann and Meinicke negative.
2. Wife of above. Healthy.
3. Male, 30 years. Always healthy. Married four years; one child; no miscarriages. Wassermann and Meinicke negative.
4. Wife of above. Healthy.
5. Male, 28 years. Always healthy. Married seven years, one child; no miscarriages. Wassermann and Meinicke negative.

6. Wife of above, 26 years. Always healthy. Wassermann and Meinicke negative.

7. Male, 25 years. Congenital syphilitic, with definite stigmata and much scarring of throat following ulceration of palate. Has had epileptiform convulsions since the age of 16 years. Wassermann and Meinicke strongly positive. Spinal fluid normal.

8. Female, 23 years. Always healthy. Wassermann and Meinicke negative.

9. Female, 20 years. Has received treatment by injection for congenital syphilis. Now in sanatorium for phthisis.

10. Male. Died at birth. Cause unknown.

Third Generation (III):

1. Female, 12 months. Child of II 3 and II 4. Healthy.

2. Male, 6 years. Child of II 5 and II 6. For the past year has had attacks of petit mal daily, with less frequent convulsive seizures. Has become increasingly difficult to manage. No signs of congenital syphilis. No neurological signs. Wassermann and Meinicke negative. Spinal fluid negative.

DISCUSSION

Case II 7 shows a combination of congenital syphilis and epilepsy; the relation of the two presents the same problems as other reported cases. But in this pedigree the child in the next generation, III 2 (a nephew), suffering from epilepsy alone, throws additional light on this case. III 2, though the grandson of a syphilitic, is born of parents who show no sign of the disease. While the occurrence of third-generation syphilis seems fairly well established (see the work of Nabarro² on the subject), all three generations appear always to be undoubtedly affected. Hence, there seems no reason whatever for considering this child a congenital syphilitic. An additional point in favour of this view is the likelihood that the grandmother contracted syphilis *after* the birth of the child's father (II 5).

To return to the second generation. We have here two congenital syphilitics (possibly II 10 also); one of them is an epileptic as well. That congenital syphilis is in any way an important factor in the causation of epilepsy in the last case is unlikely, in that it does not necessarily result in epilepsy in this family, nor is it necessary for its occurrence, as the case of "idiopathic" epilepsy shows. It seems justifiable to assume, therefore, that this pedigree provides a case in which the occurrence of congenital syphilis and epilepsy is certainly a coincidence.

I wish to thank Dr. Mapother for permission to use cases at the Maudsley Hospital.

REFERENCES

- ¹ Mott: *A System of Syphilis*, iv, 441, London, 1910.
² Nabarro: Address before the Medical Society for Study of Venereal Diseases, January, 1933.

W. H. DE B. HUBERT, M.R.C.S.,
Medical Officer, Maudsley Hospital.

A VERY RARE CAUSE OF SUDDEN DEATH

Below are given particulars of a case of scarlet fever complicated by measles, in which the child was completely convalescent from these diseases, having been three months in hospital, and then suddenly collapsed and died. The cause of death is, I believe, so exceedingly rare as to be perhaps unique in such a case, and I hope that this notice will elicit from superintendents of other fever hospitals comment as to similar cases they may have seen.

J. B., a girl aged 5, was admitted to the Woodbridge Isolation Hospital, Guildford, on November 20th, 1933, as a case of scarlet fever. She had commenced illness on the 17th with a sore throat and a temperature of 103° F., and

had a rash on the 19th. On admission there was a faded rash, mottling of the skin and flanks, tongue slightly papillated, and fauces slightly red. On admission 5 c.cm. B.W. scarlet fever antitoxin was given intramuscularly. On December 6th she had a rise of temperature to 99° and a well-marked typical general scarlet rash. The temperature was normal on the following day. On December 16th it went up to 100.8°; the child having developed an acute cold in the head. Temperature was maintained until the 21st, when a right cervical adenitis developed. On December 25th it rose to 102°, and all signs of measles developed. (This infection was due to a cross-infection arising in the ward.)

By December 31st the temperature had dropped, and conditions seemed satisfactory. On January 3rd right otorrhoea developed, and on the 5th the left ear commenced discharging, as did the nose. Nose and ears continued to discharge profusely for some time. On January 23rd the nose was dried up and the ears discharged less. On January 27th swelling and fluctuation developed at the back of the right ear, the skin was incised, and some superficial pus evacuated. This caused a rise of temperature to 100° for one day. The temperature immediately subsided on the pus being let out.

The child had been up and about since January 10th, and was only kept in bed on the 26th and 27th for the rise of temperature due to the superficial pus. Progress then appeared entirely satisfactory, the ear incision healing well, and the discharge from ears lessening. The onychia of the left thumb, which had caused some trouble, was also healing well. On February 10th she was playing about all day, but vomited once in the evening. This was thought to be due to some cake she had eaten. At 4.30 a.m. on the 11th the child appeared to be sleeping normally; an hour later she was collapsed, unable to lift herself, and complained of a headache. She was completely conscious—eyes normal, no sign of paralysis—but the pulse was imperceptible. She died at five minutes past six.

POST-MORTEM EXAMINATION

The post-mortem examination was made by Dr. R. C. Matson, pathologist, Royal Surrey County Hospital, Guildford, who reports as follows.

Head and Brain.—The dura is stretched tightly over the hemispheres, and on incision there is an escape of excess of cerebro-spinal fluid, which is obviously under tension. On reflecting the dura the vertex of the brain is very oedematous, and the vessels are markedly congested and injected. The brain substance actually "pits" on pressure, and there is slight though definite thickening of the pia-arachnoid on the vertex and also at the base of the brain. *No pus is to be found anywhere.* There is a small plaque of loose bone from the outer table just external to the auditory meatus. A large portion of the right petrous part of the temporal bone was removed, but no dead bone is found. The base of the brain is very congested and also oedematous. No meningitis.

Thorax and Viscera.—Oesophagus and trachea are normal. No enlarged glands in the thorax at all. Heart shows no abnormalities; nil in pericardium. Lungs show some congestion at each base behind, but this is probably only hypostasis, and is not pathological. No pleurisy or pericarditis.

Abdomen and Viscera.—Liver is rather congested, but substance is pale. Kidneys both quite normal. Spleen slightly enlarged, with prominent Malpighian corpuscles. No perisplenitis. Stomach and duodenum are normal. Gall-bladder normal, no stones anywhere.

Conclusion as to Cause of Death.—Acute cerebral oedema, mostly at vertex, but extending on to base of brain and to a lesser extent into the cerebellum. Fourth ventricle somewhat dilated, but lateral ventricles are not. This caused considerable increased intracranial pressure (vide the tightness of the dura), with involvement of the respiratory centre in the nature of a paralysis. It is possible that there had been some oedema and increased vascularity for a little time, and the sudden rise in pressure was the final act. There was remarkably little to show that the otorrhoea had anything to do with it.

F. A. BELAM, M.D.,

Medical Superintendent, Guildford, Godalming,
and Woking Joint Hospital Board.

Reviews

ARTHROPLASTY

Professor ERWIN PAYR of Leipzig reminds us, in the introduction to the first part of his grandly planned work on Stiff Joints and Arthroplasty,¹ that books have their destinies. He intended, when he first began it, to write on the technique of operations for the relief of stiff joints, but soon found himself constrained to do a great deal more, so that it has come about that the 880 large octavo pages of the volume now under notice constitute only the "First Part," and are taken up with consideration and discussion of the pathology and biology of joints, the pathogenesis and pathological anatomy of ankylosis, clinical considerations, diagnosis, and indications for treatment.

Many years' occupation with ankylosis and everything connected therewith taught the author that the preliminary subjects treated in this volume are extraordinarily attractive, and in particular is it necessary to work out the indications for treatment, for in the right selection of cases lies mostly the secret of good results. We have to occupy ourselves with the definition of ankylosis, with its results, especially as regards disorders of growth in the young. Study of muscle tone and its influence on joint pathology must be worked out on modern lines. Relapse or loss of a part of the mobility gained, whether through incomplete regeneration or otherwise, is a problem by itself. The material furnished by operations is continually increasing, and as far as it gives anything new it must be introduced into this work. Moreover, it is necessary to distinguish sharply between ankylosis caused by trauma in an otherwise healthy subject, and the result of systemic disease such as arthritis, the treatment advisable in the two categories being widely differentiated. Professor Payr gives clear definitions of ankylosis and of arthroplasty, and insists on the importance of the distinction between obstacles to movement such as bony prominences and true ankylosis. The failures of arthroplasty may vary between fail-joint and re-formation of ankylosis. Among the ankyloses of various parts of the human frame those of the vertebrae are in a class by themselves.

In his opening chapter Professor Payr gives a brief outline of the history and development of arthroplasty, which, he says, is a century old. The manifold attempts made are indications of the difficulties of the pre-antiseptic days. Early operations were both bloodless (that is, subcutaneous) and bloody. The first for ankylosis of the hip was the subcutaneous osteotomy of William Adams of London, but small joints had been attacked much earlier—for instance, that of the lower jaw by Berard in 1838. Dieffenbach excised a wedge, as did Rochet, Esmarch, Rizzoli, and Humphry. For twenty years this remained the method of choice. In 1880 Julius Wolff introduced his operation of arthrolysis, freeing the joint subcutaneously with a chisel, and afterwards maintaining movement. He reported four cases of fibrous and five of bony ankylosis. His cases were mostly in the elbow, but he showed thus the possibility of restoring motion. Verneuil recommended the use of a cap of muscle over the divided bone in a case of stiff jaw, but the decisive stroke was struck by Helferich in 1893, when he performed such an operation, and in 1905 he carried out what Payr calls a real arthroplasty. After that "stroke upon stroke" was struck by Nelaton, Duval, Murphy, and Hoffa, using pedunculated muscle, aponeurosis, or fat flaps. Murphy of Chicago made a new departure, especially in arthroplasty of the knee. His first knee case was done in 1902. He made many experiments

on animals, and went deeper than his foregoers into biology, anatomy, and physiology.

Payr claims to have been the first in Europe (in 1910) to attain a fully satisfactory result in a knee-joint, with movement to a right angle and full and secure function. He generally improved technique. His work included biological researches, and he showed in animals that there was an astonishing power of regeneration of joints and such parts as capsules and ligaments. Payr's pupil, Sumita, carried such investigations further on a large scale. Many attempts at transplantation of joints have been attempted on animals, but only in the case of small joints has success been attained (Ochlecker). The material offered by the World War was ample, but on the other hand it was generally infected. During recent years there has been a tendency to revert to simple arthrolysis. Professor Payr insists on the importance of publishing full details of all cases of arthroplasty, whether successes or failures. Sure conclusions cannot be drawn from a few cases, but only a few surgeons have much experience.

Surgeons of all nations have taken part in building up arthroplasty. The Americans, French, and Germans have made good beginnings. The Americans particularly have made researches on animals. The English have been remarkably backward, and so also the Italians, with the exception of Putti and his school. "The Germans have done most. It can be denied with difficulty that the Germans have struck the decisive blows." This display of surgical chauvinism is not surprising in a people who are anxious to reassert themselves, and its injustice to the claims of some other nations will no doubt be passed over by the countrymen of Murphy and Willis Campbell and McAusland.

We have dealt at some length with the first chapter on account of its historical interest. In the remaining nine chapters of this first part Professor Payr discusses in considerable detail the history of development and comparative anatomy of joints, classification of ankyloses and pathology, and physiology of the same, biology of nearthroses, arthroplasty in animal experiments, the clinical aspects of ankyloses, the diagnosis of their causes, the research methods in the service of diagnosis, such as x rays, and indications for operations and treatment. There are many illustrations, some of them in colour. If the second volume is to be on the same scale, we shall have a very full statement of Professor Payr's opinions and experiences and what should be a valuable guide to the practice of arthroplasty.

RADIUM AND X RAYS IN GYNAECOLOGY

The application of radium and x rays to the treatment of malignant disease aroused great hopes, many of which were incapable of fulfilment, and thus caused at the same time a certain amount of disappointment and distrust. Patients already have that little knowledge about radiotherapy which may be so dangerous, and the practitioner is not infrequently doubtful whether or not treatment by radium or x rays should be advised. Dr. MALCOLM DONALDSON has given him much help in a very useful little handbook² wherein he sets out simply, lucidly, and authoritatively the present position occupied by the various radiological methods of treatment for the diseases peculiar to women. Dr. Donaldson starts with some introductory remarks on the physics of radium and x rays. These are so clearly set out that any reader can follow them and most readers will profit from them. He continues with a survey of the effect of radium and x rays on living cells, steering his way effectively through the conflicting theories which are still held on this subject.

¹ *Gelenksteifen und Gelenkplastik*. Von Professor Erwin Payr. Erster Teil. Berlin: J. Springer. 1934. (Pp. 880; 240 figures. R.M.120; geb., R.M.124.80.)

² *Radiotherapy in the Diseases of Women*. By Malcolm Donaldson, M.B., F.R.C.S. London: Hodder and Stoughton, Ltd. 1933. (Pp. 131; illustrated. 7s. 6d. net.)

The third chapter explains the various methods by which radium can be applied and the factors concerned in dosage. Dr. Donaldson is an earnest believer in periodical examinations, and he pleads eloquently for the education of the public about cancer and its treatment. He has had bitter experience of cancer terror and of that extremely foolish attitude in medical men which ridicules a patient for suffering from such a fear. He argues that education in tuberculosis and the significance of cough and haemoptysis has played a large part in the improved statistics of pulmonary tuberculosis and has certainly done the population no harm.

The author then sets out the various morbid conditions, malignant and non-malignant, of the uterus and its appendages, explaining briefly the pathology and diagnosis, and deals with the treatment of each of them. Although he is an enthusiast for radiological methods, he holds the scales very fairly, and admits that certain conditions cannot be treated by these means. He points out the enormous advantage gained by a patient whose disease can be treated either while she goes about her work, or at most with a week in bed, over another patient with the same condition who has to face the terrors and horrors of a major surgical operation with confinement to her room for several weeks. Granted that the results of radiotherapy are as good, there seems no doubt that it is the preferable method. Dr. Donaldson gives a number of statistics to show that in cancer of the cervix and other lesions surgery can claim no advantage in results.

The book is very pleasantly produced; it is light to handle and the type is clear. There are a number of diagrams in the text and some plates; a coloured illustration shows the practitioner the warning red spot on which he should at once suspect cancer of the cervix at a stage when it can be effectively eradicated. Dr. Donaldson's style is clear and easy to read. The text is conveniently divided by side-heads, and there is an excellent index. We cordially recommend this useful little work to every general practitioner and medical student.

PROGRESS IN PSYCHIATRY

It is gratifying to find that one of the best of Messrs. Churchill's Recent Advances Series¹ has met with such a widespread appreciation that a second edition is called for within a comparatively short space of time, when it is remembered that psychiatry is a subject which cannot appeal to the whole of the medical profession. The first edition has already been favourably noticed in these columns, so that it is only necessary to draw attention to the improvements and additions, opportunity for which has been afforded to Dr. HENRY DEVINE in the present volume.

On the subject of germinal inheritance in the psychoses, attention is properly drawn to the errors of Mott's conclusions with regard to anticipation in the light of more thorough examination of the material. The conclusions as to the influence of heredity upon psychoses are somewhat conflicting, but there seems no doubt that it is important, especially in regard to the manic-depressive reaction. The type of psychosis transmitted, although frequently similar, is not always so, and there seems to be a tendency for the dementia praecox type to appear from any tainted stock. The apparent constitutional affinity between psychosis and tuberculosis is discussed, also the relationship of pernicious anaemia to psychoses is dealt with, and the conclusion comes to is that the former acts as a precipitating or aggravating agency rather than in strict causal relationship. Reference is

made to the interesting recent work on deficient oxygenation of cerebral and other tissues in relation both to narcosis and to dementia praecox. This comprises the actual new matter in this edition, but other sections are brought up to date by reference to new statistics and investigations in various branches, especially in relation to the toxic psychoses and to malaria therapy.

An interesting review of recent literature on the subject of the application of psycho-analysis to the psychoses confirms the generally held opinion that, however interesting a study this may afford, its therapeutic value is slight. With regard to the analysis of children, while not accepting all the conclusions of Melanie Klein, there can be no doubt as to the importance of investigation of the very earliest stages of the psychoses, and therefore an investigation of abnormal psychological reactions in the first decade of life ought to be encouraged. All those in any way interested in psychiatry who do not possess this book should certainly acquire the present edition, and those who are already acquainted with it will find much of additional use in its expanded and rearranged form.

POISONOUS FUNGI

In a monograph entitled *Le Poison des Amanites Mortelles*² R. DUJARRIC DE LA RIVIÈRE describes agaric poisoning in all its aspects. A full botanical description is given of the various toxic species of the agaric fungi, of which the best known is fly agaric (*Amanita phalloides*). The description is amplified by some beautiful coloured plates. The author describes in sequence the chemical properties of the poison, its pharmacological action, and both the clinical symptoms and the pathological signs of intoxication. He then takes up the medico-legal aspect of agaric poisoning, and this part of the book includes a full description of the histology of the spores of twenty-nine species of fungi, this description being amplified by a series of plates. Finally, the author discusses the treatment and prophylaxis of intoxication.

In this country few persons venture to eat fungi other than the common edible mushroom (*Agaricus campestris*), but on the Continent, and particularly in France and Italy, a wide variety of edible fungi are consumed regularly, and owing to this variety the risk of making dangerous mistakes is much greater. For example, it is stated that in Italy in 1925 there were seventy deaths due to this form of poisoning. The monograph gives an excellent summary of all aspects of knowledge regarding its subject, and concludes with a bibliography of thirty-three pages. Special mention deserves to be made of the fact that the volume, though it contains twenty-four plates, of which four are coloured, is sold for the very moderate price of sixty francs.

LECTURES ON MEDICAL HISTORY

These lectures on the history of medicine³ were given between the years 1926 and 1932 at various universities in the United States under the auspices of the Mayo Foundation. They vary in excellence, but are all full of information to those members of the medical profession who are interested in the history of their craft. Incidentally, they contain much that is useful to bibliographers. Colonel Fielding Garrison contributes three lectures which are well worthy of consideration. The last deals with the life and work of Dr. John Shaw Billings, whose father kept a little store on a country road, ran a

¹ Recent Advances in Psychiatry. By H. Devine, O.B.E., M.D. Second edition. London: J. and A. Churchill. 1933. (Pp. 364. 12s. 6d.)

² *Le Poison des Amanites Mortelles*. Par R. Dujarric de la Rivière. Paris: Masson et Cie. 1933. (Pp. 182; 24 plates. 60 fr.)
³ *Lectures on the History of Medicine*. 1926-1932. London: W. B. Saunders Company. 1933. (Pp. 516; illustrated. 25s. net.)

shoemaker's shop, and acted as village postmaster. His only son, at the age of 5, was troubled about predestination—or, as his mother preferred to call it, "foreordination." He became a surgical consultant during the civil war, built up the Surgeon-General's Library at Washington, and originated the *Index Catalogue*, which is the envy of medical bibliographers throughout the world. He was responsible, too, for the successful launching of the Johns Hopkins Hospital at Baltimore, for the staff was chosen on his recommendation; and he occupied himself later in life with organizing the New York Public Library and its great network of branch libraries. It is right that an accurate record of his work should be kept, and it is well done both by Colonel Garrison and by Surgeon-General Merritt W. Ireland in his lecture on the Medical Corps of the United States Army: There are also excellent accounts of Ambrose Paré, by Dr. Francis R. Packard; of Renaissance midwifery, by Dr. Joseph L. Miller; of the discovery of the mammalian ovum, by Dr. George W. Corner; of the first American medical journals, by Dr. John M. Armstrong; and of the first American *Materia Medica*, by Dr. Joseph Miller, who tells of "Joyfull newes out of the new-found Worlde." It was written in Spanish in 1565 by Nicolas Monardes, the learned physician of Seville, and Englished by John Frampton in 1577.

The lecture placed last in the book is an intimate sketch of Rudolf Virchow by Dr. William Bartlett, assistant professor of clinical surgery at Washington University, St. Louis. He was a trusted assistant in Virchow's laboratory during the years 1895-7, when the master was verifying Charcot's explanation of cerebral apoplexy. It was Bartlett's duty to prepare the brains, and to show Virchow the millary aneurysms in the arteria lenticulo-striata. It is only possible to indicate a few of the subjects of the lectures, but all are well worth reading, and the Mayo Foundation more than justifies its existence as a promoter of historical studies.

Notes on Books

The official *Medical Register* for 1934 has just been published.* It appears from the table printed in the introductory pages that 1,543 names were added last year—two less than in 1932. New registrations numbered 809 in England, 388 in Scotland, 179 in Ireland, and 167 on the Colonial and Foreign lists. The total number of names on the *Register* at the end of the year was 56,741, representing an increase of 645. The number of names removed from the *Register* during 1933 was 962, as against 1,112 in the previous year. Of these, 820 were deleted on evidence of death, 136 for failure to comply with the inquiries of the Registrar as to cessation of practice or change of address, and six were struck off under the disciplinary powers conferred by Parliament upon the General Medical Council.

Volume liii of the *Transactions of the Ophthalmological Society of the United Kingdom*† contains the communications brought before the society in the session 1932-3; the papers read at the Oxford Ophthalmological Congress in 1933, including the Doyne Memorial Lecture; and the transactions of the North of England and Irish Ophthalmological Societies. This survey of outstanding work during the year is arranged on the usual lines. After the president's speech at the annual congress last May comes the record of a valuable discussion on hereditary eye diseases, three papers on lens diseases, and a report of two cases of carcinoma of the lachrymal sac. Three contributions on retinal diseases, two on neurology, four on radium and ultra-violet therapy, and some miscellaneous articles complete the reporting of the Ophthalmological Society of the United Kingdom. The Doyne Memorial

Lecture last year dealt with investigations on the "aftermath" of cases of intraocular foreign body, and other subjects considered at the Oxford Ophthalmological Congress included gonioscopy, the constitutional factor in diseases of the eye, and diathermy in ophthalmology. The affiliated societies' reports occupy the last sixty pages of the book, and consist largely of clinical notes.

The modern American method of getting together a large association to study a wide subject, appointing a number of committees, each with several directors, to deal with different aspects of it, sending out questionnaires to all sorts of people who may be presumed to be interested in it, and tabulating conclusions, with somewhat elaborate statistics and formulation, in a series of publications, is well exemplified by No. 5 of the School Health Research Monographs, issued by the American Child Health Association.‡ Here, as seems commonly to be the case following on such methods, the main conclusions reached are similar to those already established in this country by a much more modest procedure, though results here would seem to be definitely more favourable. These conclusions are not unimportant, as far as they go, but they seem hardly commensurate with the machinery elaborated and the trouble taken. They are: (1) that teachers have knowledge of only a small proportion of cases that are in need of medical attention; (2) that the proportion is higher where the teacher and school nurse or home visitor act in conjunction; (3) that much of the work of history recording and measurement is best done by the teacher or nurse; (4) that both teacher and nurse require more knowledge and instruction.

For the seventh edition of his *Handbook of Medical Jurisprudence and Toxicology*§ Dr. W. A. BREND has overhauled the letterpress and statistical material. The three recent statutes that have called for most revision of this popular little volume are the Mental Treatment Act of 1930, the Dangerous Drugs Act of 1932, and the Pharmacy and Poisons Act of 1933.

Dr. SIGWALD has written a brochure¶ on the use of sugars, chiefly glucose, in a series of booklets on new therapies (*thérapeutiques nouvelles*). He mentions most of its uses, from its obvious value in hypoglycaemia to its problematical use in tetanus and tubercle. Indeed, he refers to most conditions in which it has ever been tried, and leaves us with no critical opinion as to its possible advantages. The booklet is flimsy, and is weighted neither with a theoretical basis nor with practical facts. It is also unsatisfactory to find many names quoted as responsible for unexpected facts without mention of any published references.

Messrs. George Allen and Unwin, Ltd., are publishing a cheaper edition of Professor Pavlov's *Lectures on Conditioned Reflexes*, translated by Dr. W. Horsley Gantt in collaboration with Dr. G. Volborth, with an introduction by Dr. Walter B. Cannon. The original English translation of this important work was discussed in a leading article in our issue of May 25th, 1929. For the new edition (price 12s. 6d.) the book has not been abridged in any way, and it is illustrated as before.

The report of the joint conference of the National Institute for the Deaf and the Counties Associations for the Deaf, held last December, has now been published, and copies may be obtained from the National Institute's office at 2, Bloomsbury Street, W.C.1 (price 2s. 6d., post free). Subjects discussed in it include the report of the late Dr. Eichholz on the deaf, dumb, and deafened; Circulars 1337 and 1337a of the Ministry of Health; the appointment of a permanent advisory committee on the welfare of the deaf; the need for special legislation in connexion with deafness; and the place of the Counties Associations for the Deaf in the national scheme of welfare work for the deaf.

* *An Evaluation of School Health Procedures*. By R. Franzen, Ph.D. School Health Research Monographs No. 5. New York: American Child Health Association. 1933. (Pp. 144. Paper binding, 90 cents; cloth binding, 1.15 dollars.)

† London: C. Griffin and Co., Ltd. 1934. (Pp. 325. 10s. 6d. net.)

‡ *Le Sucre: Agent Thérapeutique*. Par Dr. J. Sigwald. Paris: J. B. Baillière et Fils. 1934. (Pp. 67. 6 fr.)

* *The Medical Register, 1934*. Printed and published under the direction of the General Council of Medical Education. London: Constable and Co., Ltd.

† London: J. and A. Churchill. 1933. (Pp. 652. 30s. net.)

THE HEALTH OF THE NAVY

REPORT FOR 1932

The statistical report of the health of the Royal Navy for the year 1932¹ is divided into three sections: a general summary of the statistical information; remarks on certain diseases as they affect the total Force and the various stations; and articles on hygiene, pathology, surgery, medicine, and dentistry. For comparison, the average figures for the five years 1927-31 have been inserted, and the figures for 1932 are also compared with those of the preceding year. The total number of cases of disease and injury entered on the sick list was 39,284, an increase of 6.12 per 1,000 in comparison with the five-year average, but a decrease of 19.82 on the figure for 1931. The average number of sick men daily was 1,624.76, being 0.82 less than in 1931, and 0.54 below the five-year average. The total number of days' sickness on board and in hospital was 594,665, which represents an average loss of service of 7.14. The total number invalided was 1,266, a decrease of 1.77 as compared with the five-year average. Many of these were men temporarily invalided from foreign stations, and able eventually to rejoin the active Force. The total number finally invalided—denoting the "waste" of the Service during the year—was 1,013, a ratio of 12.16 per 1,000. Of the 1,266 invalidings, disease-accounted for 1,166. The total number of deaths was 268, a ratio of 3.21 per 1,000, representing slight increases on the 1931 figure and the five-year average. Of this number 131 were due to disease and 137 to injury.

DISEASES AND INJURIES

Four cases of typhoid fever and eight of paratyphoid occurred during the year; there were forty-five cases of dysentery, ten being relapses, and none fatal. In only one of the typhoid cases was a history obtained pointing to infection by food or drink. One patient appeared to have been infected by a friend who lived in a street in Chatham where several cases of typhoid fever occurred during the summer. Of the eight paratyphoid cases, four were recorded by the Mediterranean Station, one by the America and West Indies Station, two by the Home Station, and one by the China Station. The incidence of malaria fell, there being 255 cases in 1932 as compared with 279 in 1931. The China Station reported 100 cases; in fifty-three of these the infection was contracted in or near Hong-Kong. In Africa there were forty-nine cases; Port Harcourt and Fernando Po are considered the principal centres of infection. Opinions differ in West Africa as to the prophylactic value of quinine, but there is some ground for believing that the onset of an attack is thereby delayed, and that cases in which the disease eventually develops respond more readily to treatment. In H.M.S. *Delphinium* all the ratings received 5 grains of quinine in solution on five days a week, and 10 grains on two days a week; in forty selected cases 1/6 grain of plasmoquine simplex was combined with this medication. No fresh infections occurred in this sloop. The opinion is expressed in the report that the anti-malarial campaign organized by the Naval authorities must contribute in no small measure to the low incidence of cases on a station such as this, where malaria is so prevalent. The disease is endemic within the limits of the East Indies Station, but in 1932 there were only thirty-eight cases, whereas in 1929 the figure was 200.

There were 792 cases of influenza, as compared with 2,213 in 1931. The incidence of acute meningococcal infections also fell; the mortality rate was lower and the recovery rate higher. Good results were obtained by frequent lumbar puncture combined with rectal hypotonic glucose solution. Lumbar puncture and the intrathecal injection of serum were performed twice a day in the early stages, maximal quantities of fluid being given by mouth and rectum. After the first four days it was usually possible to perform thecal drainage once a day, and to continue the injection of serum until the cerebro-spinal fluid became clear. If the patient showed toxic signs, such as a rash, intravenous serum was given daily.

¹ H.M. Stationery Office. 1934. (2s. 6d. net.)

Doses up to 40 c.cm. were tolerated. Pulmonary tuberculosis was responsible for 206 cases, as compared with 179 in 1931, most coming from the Home Station and the Mediterranean. There were twenty-four cases of non-pulmonary tuberculosis. In the previous histories of these 230 cases of tuberculosis a definite family infection was traced in eleven; seventy-five patients had seen tropical service of varying periods during the previous five years, five had had malaria, and in fifty cases there was a medical history of predisposing diseases, such as repeated catarrh, bronchitis, and pleurisy. Three cases of undulant fever were reported from the Home Station and twelve from the Mediterranean. During the summer of 1932 the disease was more than usually prevalent in Malta, but the source of infection could not be traced in any instance. The question of pasteurization of goats' milk is being considered. The number of fresh venereal infections fell again in 1932, there being 4,638 as compared with 4,962 in the previous year. Gonococcal infection was lessened, by 237 cases, syphilis (first record) by twenty cases, and chancroid by sixty-seven. Diseases of the respiratory system fell by 2,232 as compared with 1931, the total being 7,256; the majority were catarrhs. The figure for general injuries was 328, as compared with 235 in 1931; this figure includes cases of multiple injuries, burns, and scalds, heat-stroke, drowning, suffocation, and compressed-air disease.

SPECIAL DEPARTMENTS.

Mention is again made of the occasional evidence of contamination of Plymouth water by gulls. The introduction in 1930 of Dick tests and active immunization against scarlet fever in the boys' training establishment St. Vincent has proved encouraging: 90 cases per 1,000 in 1928, and only 4.8 in 1932. Further research on undulant fever has been conducted at Malta, where Huddleson's (1928) haemagglutination test has proved reliable as a bedside aid to the diagnosis of Brucella infections, and a modified method of preparing the antigen for it has been designed. Examination of the melitin test showed that the reaction seldom became positive until the later stages of the disease, and was therefore useless in the diagnosis of acute cases. It was found, also, that when the reaction had once become positive it remained so for many years. The test proved useful in distinguishing between old and very early cases, and might be the only means of recognizing certain chronic febrile cases. It is suggested, further, that since *melitensis* cases seldom show a positive melitin reaction until they begin to improve, this test may have a prognostic significance. If it is performed during the early stages of the disease and a severe constitutional reaction follows, although the local reaction remains negative, this is very strong evidence in favour of the diagnosis of undulant fever.

Further research into the effect of active prophylactic immunization against diphtheria of the boys at Greenwich Hospital School was undertaken at the Royal Naval Medical School. During the autumn term there were eighteen cases of diphtheria, and, finding that some of these patients had lost their immunity and become Schick-positive, the whole school was retested, forty-eight out of 734 boys being found thus to be Schick-positive in some degree. Of the forty-eight nine had joined the school naturally immune, while the remaining thirty-nine had been immunized by inoculation subsequent to joining. It was confirmed that the stimulus provided by the Schick test had sufficed to restore the Schick immunity of all but one of the nine boys who had joined the school naturally immune, but of the thirty-nine artificially immunized only four responded to the stimulus of the test to a degree sufficient to raise the circulatory antitoxin above the Schick level. A small outbreak of diphtheria occurred in the last quarter of 1932, but only four of the eighteen cases were clinically recognizable, and three of these had not had time to develop immunity. The infective agent was the C diphtheria "gravis type"—previously known as the cause of the severe and intractable cases of the Leeds epidemic three years ago. The school epidemic was so mild, on the contrary, that in several instances no antitoxin treatment was required. For new boys joining the school during 1932 the Moloney, or Canadian, intradermic test was used to eliminate those likely to give undue reactions after prophylactic doses of toxoid. Boys who were Moloney-negative and Schick-positive were immunized with toxoid without unduly

severe reactions. Boys who were positive to both tests were immunized with toxin-antitoxin floccules.

A follow-up system for contrasting the end-results of the different types of operation for inguinal hernia has been instituted, but it is as yet too early to define the relative merits. In the acute stage of gonorrhoea hexamine has come back into favour at Chatham as compared with alkalis. A vaccine containing strains of gonococci and secondary organisms appears to have lessened complications. This vaccine proved useful also in chronic cases and metastatic sequels. The improvement in the dental health recorded in 1931 was continued in 1932, the volume of prophylactic and conservative treatment increased, and fewer cases needed root treatment.

MEDICAL PROGRESS IN FIJI

The earliest records of British colonization in the islands of the Western Pacific show that administrative and medical authorities have always agreed that the best way of bringing up-to-date medical aid to the native inhabitants is to train native medical practitioners. A native medical school has been in existence for more than fifty years at Suva in the island of Vitilevu, and, during the last six, special efforts have been made in the new Central Medical School to provide a more adequate and practical scheme of instruction. The establishment of this new school for native students from the various island administrations arose out of the co-operation of the Rockefeller Foundation in a survey of health problems, and already many native practitioners are at work in islands where before there was but little medical treatment. Isolated places are now being helped in this way, and a determined campaign against ignorance and superstition is being carried on. The local Branch of the British Medical Association has taken great interest in the school, presenting to it equipment of different kinds and awarding a gold medal in surgery. It holds its clinical meetings in the school buildings. A journal of practical medicine has been brought into being; the first issue of *The Native Medical Practitioner* appeared in November, 1930; the second in April, 1931; the third in March, 1932; and the fourth in February, 1933. Fijian medical practitioners are contributing to its columns in increasing numbers, and its value to them in keeping their knowledge up to date is obvious. Its inception was largely due to Dr. T. Clunie, honorary secretary of the Fiji Branch of the B.M.A. Mainly devoted to practical clinical topics relating to diagnosis and treatment, it serves to instruct and encourage native doctors in very isolated situations, and to link them together and with their school. At the beginning of 1932 there were forty students in residence, this being the maximum number the dormitories could accommodate; they represented eight different native groups, varying much in such respects as amenability to discipline, ability to learn, and readiness to accept responsibility. The course lasts now for four years; there is an entrance examination, and a certificate is awarded when the final examinations have been passed.

THE COLONIAL WAR MEMORIAL HOSPITAL

A milestone in the history of Fijian medicine was reached at the end of 1923 with the opening of this institution. In his annual medical and health report for 1932 Dr. A. H. B. Pearce, chief medical officer to the Fiji Legislative Council, states that this large and well-equipped hospital is being increasingly patronized by Europeans, many of whom in the past would have gone for treatment to New Zealand or Sydney. The work was much heavier than in the preceding year—every bed occupied and a long waiting list. The number of in-patients treated was 2,345, and of out-patients 20,049, as compared with 2,303 and 14,041 for the previous year. In the in-patient theatre 635 operations were performed, and 590 minor operations in the out-patient theatre. The medical superintendent, Dr. T. Clunie, reports

that the third- and fourth-year students from the Central Medical School act as dressers and male nurses, in addition to undergoing training periods in the dispensary, eye department, and post-mortem room. Post-graduate courses are conducted by local practitioners of at least five years' standing. Clinical meetings have been arranged from time to time at the medical school. During the year under review the x-ray department was reorganized, and such procedures as intravenous pyelography and cholecystography were introduced. Attempts are being made to build up a blood transfusion service, and a study of blood groups in the Pacific is proceeding.

CHILD WELFARE WORK

Since the inauguration of a scheme of child welfare work in 1927 in the province of Tailevu, this activity has rapidly extended to nearly every district in Fiji. At the beginning of 1932 there were six qualified European child welfare nurses working at centres, while Fijian women's committees were operating in districts where there were no centres. The natives are showing a growing appreciation of this work, and in several provinces the wives of chiefs and officials are taking an active interest in it. In a native suburb of the town of Suva, where there is a considerable Fijian population, a committee of women has arranged for the daily inspection of children, regular visits being paid to the homes with the object of improving sanitary conditions. Monthly meetings are held by the assistant secretary for native affairs and the medical officer of health. In connexion with this work an ante-natal clinic has been opened at the Colonial War Memorial Hospital, with sessions at fortnightly intervals. Its work is limited to Fijian natives, but it is hoped to extend these services to Indians should application be made. Dr. Clunie is convinced that such a clinic could be of immense value in saving many lives annually, as well as in avoiding much ill-health for mothers and prospective mothers.

GENERAL HEALTH MEASURES

The mass inoculation of the population with T.A.B. vaccine is being continued, and 15,000 injections were given in 1932. The incidence of enteric fever is steadily decreasing, as also is that of amoebic dysentery, which had been previously both widespread and severe. The port health authorities are using every means to prevent the introduction of the anopheles mosquito into the Colony, very strict regulations being enforced in the case of ships arriving from malarial ports. The bad sanitary conditions reported in 1930 in Suva have now been remedied, but it is held that a system of house-to-house inspection is still necessary if further needed improvements are to be effected in water supply, surface drainage, and disposal of house refuse.

CONTROL OF LEPROSY

The Central Leper Hospital at Makogai reports that the number of cases in need of treatment is increasing. Dr. C. J. Austin, its medical superintendent, is convinced that there are still many undetected cases. He remarks that in such a centre as Makogai, where there are patients of so many different races, it should be a matter of inquiry how far the racial factor affects the degree of resistance to infection and of response to treatment. Careful examination indicated the Indians as being more liable to the cutaneous than to the neural type, while in the Fijians the liability was reversed. Indians responded more readily to treatment, but this apparent anomaly is probably due in part to the Indians taking greater care of themselves, and being more willing to undergo treatment so as to rejoin their relatives outside hospital. The Fijians, on the other hand, find themselves comfortable, have no particular fear of the disease, and do not exert themselves to get well. All patients are encouraged to take chaulmoogra oil by mouth to the limit of tolerance, 0.5 per cent. iodine being added to render the drug more palatable. The iodized (0.5 per cent.) ethyl esters of hydnocarpus have been found to be the least irritating and the most popular. In controlling developed reactions the three most useful drugs are held to be ephedrine by mouth, antimony and sodium tartrate intravenously, and the ethyl esters of calophyllum (dilo) intramuscularly.

British Medical Journal

SATURDAY, MARCH 24th, 1934.

AN INVESTIGATION OF MATERNAL MORTALITY

An inquiry undertaken by the New York Academy of Medicine into the maternal mortality of that city has yielded results of great interest and importance.¹ The director of this investigation, Dr. Ransom S. Hooker, after referring to the failure of previous inquiries in New York to achieve results, describes the plan which was eventually evolved by the Public Health Relations Committee of the Academy, in consultation with an Obstetrical Advisory Committee, consisting of men of great experience and distinction. They decided to conduct a continuous inquiry, limited to New York City, over a period of three years, weekly reports of all maternal deaths being received in order that the investigation should run concurrently with the deaths, and the inquiries be made while the circumstances were still fresh in the minds of the attendants. The task of collecting the material was entrusted to two medical women, who personally sought all the information, with the assistance in respect of midwives' cases of a registered nurse-midwife. All persons who had been in attendance upon the patients at any time were interviewed. The material thus obtained was reviewed monthly by the Obstetrical Advisory Committee in consultation with the investigators themselves. The alternative method of eliciting facts by questionnaire had been tried before and shown to be unreliable. The authors believe that their method of direct personal inquiry by selected investigators is much more likely to yield accurate data, an opinion in which all who have had experience of the answers received to a questionnaire will concur. The data thus obtained were analysed, classified, and correlated by the Advisory Committee before conclusions were drawn. In all 2,041 maternal deaths were passed in review.

The maternal mortality rate for New York City (5.76 per 1,000 in 1931) is admittedly high, though considerably below that for the whole registration area of the United States, which was 6.6 per 1,000 in the same year. In the cosmopolitan character of its population, and in the existence of large slum areas, the conditions do not differ materially from those of London.² The presence, however, of a negro population, estimated at 248,000, forms a complication of which we have no experience in this country. During the period covered by the inquiry the maternal mortality rate was 11.5 per 1,000 for negro women as against 5.5 per 1,000 for whites. The high maternal mortality rate prevalent among negroes is widespread in the

United States, and formed a subject of comment in a report of the White House Conference reviewed in these columns on January 13th (p. 69). The first concrete result which emerged from the inquiry was that the returns published by the New York State Department of Health considerably underestimated the true extent of the maternal mortality. The investigations of the committee made it possible to check the published figures, with the result that the maternal mortality rate for 1931 was shown to be, not 5.76, but 6.12, and the rate for septicaemia alone was shown to be, not 1.58 as published, but 2.36 per 1,000 births. The cases judged to have been wrongly certified were not reported in all instances by independent practitioners; some were hospital cases, for which, however, expert obstetric diagnosis was not available. It is not suggested that underestimation was wilful, but the extent of the inaccuracies, amounting in respect of septicaemia to nearly 50 per cent., is certainly surprising.

The committee determined that one of its most important objectives should be to pick out the deaths which could have been avoided, and throughout the report a classification of deaths as "preventable" or "non-preventable" has been followed. The principles upon which classification was based are not susceptible of brief statement, but they emerge fairly well from the illustrative cases recorded in the report. In the result 65.8 per cent. of the total deaths were judged to have been "preventable"; in the case of deaths from septicaemia this figure rises to 75.1 per cent. Out of forty-seven deaths from therapeutic abortion two-thirds were held to have been preventable, and out of 117 deaths following post-partum haemorrhage no fewer than ninety-three were thus regarded. There were 310 deaths after Caesarean section, and of these 246 were judged to have been "preventable." In reading the comments on these cases one cannot escape the reflection that after all preventability is relative, and should be estimated with regard to the degree of obstetric skill which the average doctor and midwife may fairly be assumed to possess, together with the facilities which are available for obtaining expert assistance and advice. These considerations have clearly been in the minds of the committee, for it is not suggested that fatalities classed as preventable necessarily carry an implication of negligence or of incompetence. The committee has endeavoured to push the question of preventability a stage further in allocating responsibility to the physician, the midwife, or the hospital in the case of certain groups of maternal deaths. It appears probable, however, that in a proportion of cases ineffective co-operation between the different elements of the maternity service was mainly responsible. To the lack of co-operation between physicians and midwives the committee makes regretful reference. A remarkable feature, which illustrates this point, is that out of 898 deaths from causes other than sepsis, 259 patients died undelivered—that is, a proportion of 28.8 per cent. There were in all 231

¹ *Maternal Mortality in New York City, 1930-1932.* By the New York Academy of Medicine Committee on Public Health Relations. London: H. Milford, Oxford University Press. (8s. 6d. net.)

² The comparable figure for the Administrative County of London was 3.68.

patients who died from albuminuria and eclampsia, and of these ninety-one died undelivered—a proportion of 39 per cent. In view of the abundant hospital provision available for midwifery in New York, this regrettable feature can only be attributed to defective organization.

During the period of the inquiry 70.7 per cent. of all confinements occurred in hospital, a proportion very much higher than could be found in any English city. In all countries operative deliveries are relatively more frequent in hospital than in domiciliary practice, for reasons which are well recognized. The calculation made by the committee from various data is that while in hospital operative deliveries constituted 24.3 per cent., the proportion for the whole city reached the astonishingly high figure of 20 per cent. Upon this estimate is based the further estimate that the over-all mortality rate was 10.5 per cent. for operative as against 2 per cent. for spontaneous deliveries. It is, however, open to question whether any useful purpose is served by setting up a comparison between spontaneous deliveries, on the one hand, and, on the other, a group of widely differing operative procedures—for example, low forceps and Caesarean section. There can be no true basis for comparison between them. The rapidly increasing frequency with which Caesarean section was performed is the subject of stern comment in the report. At the New York Lying-in Hospital this operation was performed in 4.98 per cent. of all private cases, and in 3.28 per cent. of all cases in the open wards. Many of the operations were done “on request.” The data required for calculating the mortality rate for all Caesarean operations were not available, but it is ominous that 50 per cent. of the reported deaths were due to infection. The conclusion of the committee is that “the indications for Caesarean section need restatement and limitation to really valid causes”; and, further, that “only those with adequate training in abdominal surgery should be considered suitable operators.”

The committee regarded it as important to consider the “type of medical attendant” in relation to mortality, and the details were actually obtained for all the 115,621 births which occurred in 1931. The great majority could be classified as obstetricians, general practitioners, surgeons, or midwives. The remainder formed a heterogeneous collection of thirteen different kinds of specialist, of whom the paediatricians were the most in favour, and psychiatrists the least. The midwives come out best, with a mortality rate of 1.4 per 1,000, the surgeons being far behind them at 9.9 per 1,000, due largely, it is believed, to the predilection shown by them for Caesarean section. The veil is not lifted upon the results obtained by the group of “miscellanies.” It would appear that re-education of the New York public in the exercise of its right of free choice of doctor is one of the urgent needs of the moment. The American attitude towards midwives is changing rapidly. The report declares that “the midwife’s results are as good as those obtained by the

physician . . . under comparable circumstances and for comparable cases.” In view of these results the opinion is expressed that the relative advantages of hospital and domiciliary midwifery in New York City demand reconsideration. We welcome this approach to the position which has so long been held in this country. The report closes with a chapter of conclusions which shirk no issue and are characterized by a high courage and an entire frankness which cannot be too warmly commended. And it must be admitted that our New York colleagues have shown us a better way of studying maternal mortality in the mass than we have been able to evolve for ourselves.

AUTOPHARMACOLOGY

Sir Henry Dale chose the title “Progress in Auto-pharmacology” for the Dohme Memorial Lectures which he delivered last year in Baltimore. These lectures have now been published,¹ and they give an interesting review of an important new development in physiology and pharmacology. Claude Bernard discovered that the liver supplied sugar to the blood by breaking down its glycogen, and this process he named “internal secretion.” He realized the dominant importance of the composition of the fluids bathing the body cells (*milieu interne*), and conceived the general idea of this medium being modified in innumerable ways by the activity of organs. The sensational discoveries of endocrinology diverted interest from this wide conception, and focused attention on the activities of the small glands which specialize in the internal secretions. It has now become clear that the vital functions, and in particular the circulation, are largely regulated by a whole range of substances formed by tissues which are not so specialized. The regulation of respiration by carbon dioxide tension is a classical illustration of this process, but in recent years many new examples have been found.

The investigations of Dale and his collaborators into the nature of the active principles of ergot revealed the presence of the two interesting substances, histamine and acetylcholine. For many years these were looked upon as pharmacological curiosities, but it was gradually realized that they were of great physiological significance. The importance of histamine was established by two discoveries: first, that large doses resulted in a condition very similar to that of shock, and, secondly, that traces of histamine occurred in certain organs. Magnus and his school demonstrated that the activity of the gut was regulated by the presence of acetylcholine, whilst Loewi showed in 1920 that the vagus nerve acted on the heart by liberation of acetylcholine. This work provided a new conception of the mode of action of autonomic nerves, and also established the fundamental physiological importance of acetylcholine. In recent years a series of other natural constituents of body tissues have been identified and found to produce powerful pharmacological actions. Adenosine

¹ Bull. Johns Hopkins Hosp., 1933, lvi, 297.

phosphate was shown by Drury and Szent-Györgyi to bring about a powerful vaso-dilator action, and also to cause heart-block. In addition, a number of other vaso-dilator and vaso-constrictor substances have been partially identified. Unfortunately, work in this field is of quite exceptional difficulty, for the active principles are numerous, they occur together as a rule, and are easily inactivated by chemical treatment. For these reasons it usually takes many years to determine with certainty the identity of an active principle present in organ extracts, and after this has been achieved it may prove an even longer task to decide the probable role of the substance in normal physiological processes. Often the evidence available is so contradictory that it does not even indicate probabilities to anyone who has not extensive experience of the technique involved.

Sir Henry Dale has presented in his lectures a masterly account of an intricate and confused subject. Discoveries in this field have already modified our fundamental physiological conceptions and have been of some service in therapeutics. It seems probable that the subject will be of far greater importance in the future. Sir Henry Dale summarizes the present position in the following words: "... it already seems possible to state that the whole of the control of the activity, not only of the blood vessels, but of all the involuntary muscle and gland cells in the body, is effected by a series of chemical, pharmacodynamic agents. These may be liberated by impulses in sympathetic or parasympathetic nerve fibres, including with the latter the axon-branches of sensory fibres to blood vessels; or they may be formed in endocrine organs, and distributed by the blood to produce their effects simultaneously on all cells responsive to their action; or, finally, they may be widely distributed in tissues having no special endocrine function, and their liberation to produce local pharmacodynamic effects may be independent of any nervous control. Already we can write whole chapters of this story in terms of exact chemistry, and there can be little doubt that others will follow."

WATER SUPPLIES

The long-continued drought is over for the time being, but it will need much more rain than we have already had this month to remove anxiety about next summer's water supply. Most of the urban authorities have withstood remarkably well the strain of an exceptional period of dry weather, but many rural areas have suffered hardship. On February 21st the Ministry of Health issued a circular and memorandum to local authorities and waterworks companies, calling upon them to scrutinize their position with an eye not merely to the needs of the moment but to possible difficulty in the future. "They should have plans for economizing consumption and for augmenting supplies ready to put into operation if the drought continues and further measures become necessary." It was pointed out that inconvenience to the consumer is a less evil than the grave shortage and more drastic restrictions which it sets out to avert. In a speech last Friday the Minister said that the recent rain was helping the dried-up rural areas, but had not made

much difference yet to the water situation in the towns, and the outlook for the summer was still one of difficulty. Among the matters on which the Ministry's Memorandum of February 21st (178 W) gave guidance was the risk of pollution. "Wherever the purity of the water is threatened special means of purification should be undertaken. The readiest of these is chlorination. Chlorination should be employed only under expert supervision, and with the precautions necessary to secure that the process is properly and efficiently carried out." A further Memorandum (179 W) has now been issued on the treatment of water with chlorine as a means of rapid and effective sterilization. The great thing about chlorination is that if it is adequately carried out water which could not in the ordinary way be used without risk to health can be safely brought into service, thus making available new sources of supply in time of shortage. While the welcome showers of the past two or three weeks have eased the situation, only a continuance of wet weather can make up for the abnormally low rainfall since March, 1933. So far as public health is concerned, it has to be kept in mind that where surface gathering grounds are subjected to heavy rains following a drought a larger proportion of impurities may find its way into the reservoirs, and so call for special methods of purification.

DINITROPHENOL FOR REDUCING WEIGHT

The recent death of a young professional dancer from poisoning by a nitrophenol compound (dekrysil) has given publicity to the dangers of taking allied compounds for the purpose of "slimming," and we would draw the attention of readers to an article by Dr. D. M. Dunlop in our current issue (p. 524), in which a useful summary is given of present knowledge on these drugs, with the results of experimental work. It has been known for some time that the nitrophenols are powerful stimulators of metabolism, causing a marked increase in oxygen consumption. A few years ago workers in Heymans's laboratory demonstrated the potent effect of dinitrophenol in raising the basal metabolic rate: it was found that doses of about 0.1 gram could cause an increase of about 50 per cent. Dodds and Pope have shown¹ that another compound, dinitro-*o*-cresol, is about five times as potent as dinitrophenol. Recent work in America² indicates that dinitrophenol acts by stimulating the metabolic activity of the cells by increasing their oxygen consumption, and that its action is independent of nervous or glandular activity. Dr. Dunlop's conclusion that the increased metabolism is mainly at the expense of fat confirms the observation of other workers. The fact that administration of dinitrophenol is accompanied by no significant change in pulse rate or blood pressure was thought to give this drug an advantage over thyroid in cases in which reduction of weight is considered to be necessary. The danger of this, however, is that the practising physician is deprived of these clinical means of observing the effect of the drug, which are of great value in thyroid medication; and, as Dodds and Robertson³ point out, it would appear that the action of the drug should be checked by determination of the basal metabolic rate: estimation of this

¹ *Lancet*, 1933, ii, 353.

² *Journ. Amer. Med. Assoc.*, 1933, ci, 2122.

³ *Lancet*, 1933, ii, 1137.

by Read's formula would of course be unreliable. Dinitrophenol is no substitute for thyroid in myxoedematous states. If the drug is pushed too far it causes a rise of temperature which may end in a fatal hyperpyrexia, and it seems that the margin between the febrile and the fatal dose is small. Dodds observed that sweating, lethargy, headache, loss of appetite, and a greenish-yellow conjunctiva appeared as toxic effects if the basal metabolic rate exceeded +50 after administration of dinitro-*o*-cresol, and Wassermann and Goldsmith,¹ who report one fatality in eighteen cases treated by dinitrophenol, also noticed a yellowish discoloration of the skin and conjunctiva, remarking that this drug is "unpredictably toxic" to some patients. The dangers of drugs of this potency are obvious, but clinical evidence suggests that they can be safely employed for short periods provided they are given under the strictest medical supervision. The grave risk incurred by uncontrolled self-medication has been brought home to the public in a tragic manner, and it would appear desirable that more extensive trial of these drugs should be made under institutional conditions before they are widely used in private practice. Dr. Dunlop points out that, considering the great increase in general metabolism, the loss of weight following the employment of dinitrophenol is disappointingly small, and he sounds a note of caution when he says: "It has yet to be demonstrated that they are as safe and effective for weight reduction in human beings as other methods in common use."

PHYSICAL TRAINING IN SCHOOLS

Not many medical men realize the great debt that they and the whole community owe to the Board of Education for its enterprise and skill in the organization and development of physical training in the schools of the country. Fifty years ago physical training was an unsatisfactory affair of dumb-bells, strained muscles, and violent stamping, carried on indoors in heavy clothes. The official handbook² recently produced by the Board of Education shows the great changes that have taken place. This should be bought and studied carefully by everyone who is interested in the physical training of children, for it is one of the most practical and detailed textbooks that have appeared, and its methods are as sensible and effective as careful research into scientific physical training can make them. It is mainly concerned with children between the ages of 5 and 11, but it includes a section dealing with an extension of the training to ensure continuity with the older groups. The Board proposes to issue separate syllabuses for senior boys and girls between 11 and 15. After discussing the fundamental principles that underlie all physical education, and teaching methods suitable for children in general, it gives some splendid advice on organizing games, dancing, and swimming, and a series of exercises for every part of the body, illustrated with attractive line drawings and photographs. The instructions are so detailed that the teacher of very moderate inventiveness will be able to keep his or her class amused on a whole succession of cold days with only the slightest forethought. The general remarks on posture show more than anything

the immense strides physical education has made, and the sympathetic intelligence with which it is taught. A section which has a counterpart in hardly any manual of the kind is that on training leaders, one of the most vital duties of every teacher. It is enough to say, by way of praise, that the book will make all middle-aged people envious of the school children of to-day, and that if young officers had possessed this book during their struggles to train recruits in the war, it would have made the difference to them between chronic anxiety and effortless achievement.

WORK OF A RHEUMATISM CLINIC

The work of the British Red Cross Society's Clinic for Rheumatism in Peto Place, Regent's Park, continued to expand in 1933. The extent of routine investigation and the range of treatment have widened, while several researches are being made in the attempt to elucidate some of the problems presented by the various rheumatic diseases. During the year 2,719 new patients were seen in the general out-patient department, and 644 in the private department. The average number of attendances in the former was 25.95, while in the latter the average was only 12.9. This striking difference has been attributed to the generally less advanced rheumatic condition of the private patient seeking treatment, and to the greater proportion of those attending the general out-patient department who are employed in heavy manual, exposed, or outdoor occupations. Another possible factor is that a number of persons of limited means cease their attendance on the private floor after obtaining a certain measure of relief, on account of the financial strain entailed by protracted treatment and the time and distance involved in coming to the clinic. The medical board points out that although the importance of referring early cases of rheumatism for treatment is gradually becoming more and more appreciated, advanced cases are still sent to the clinic. A large number of such patients who might have had a reasonable prospect of returning to their normal work if treatment had been begun earlier are thus condemned to a life of more or less permanent invalidism, and any treatment given is, at the best, only palliative. Emphasis is therefore laid on the need for attending as soon as symptoms indicative of rheumatism have made their appearance. Reference is again made to the number of grave pathological non-rheumatic conditions sent up for investigation and treatment. The prestige of the clinic depends to a large extent on the fact that it has the facilities available for detailed examination and investigation of an obscure and difficult case in order to make a correct diagnosis, and the figures quoted in the report show the need for making a thorough routine examination of every patient coming for consultation. In attempting to assess the results of treatment of the rheumatic diseases all figures must be accepted with a certain amount of reserve, since so many factors modify any interpretation and deduction based on statistics. Bearing all these factors in mind, the following figures represent the results of the investigation into the effect of treatment on patients discharged from the Red Cross Clinic. During last year 957 men and 1,615 women were discharged, but of these 196 men and 419 women did not complete treatment, and 43 men and 54 women were discharged on account of intercurrent disease.

¹ Journ. Amer. Med. Assoc., 1934, cii, 523

² Syllabus of Physical Training for Schools, 1933. London: H.M. Stationery Office, 1933. (Pp. 352. 1s. 6d. net.)

The results of treatment expressed in percentages of the remaining 718 men and 1,142 women are as follows:

	Men	Women	Men and Women
Cured	26.0	13.2	18.3
Considerably improved	25.9	27.6	26.8
Definitely improved	32.5	36.6	35.0
Slightly improved	2.2	3.8	3.2
Unchanged	12.1	17.8	15.6
Worse	1.3	1.0	1.1

Thus the percentage of men discharged as cured is almost double that of the women. Almost the same results were experienced in 1932, when the explanation advanced was that this was due to the fact that a larger percentage of men attending the clinic were suffering from some non-articular form of rheumatism, and that a man, being usually the chief wage-earner of the family, is more likely to come for treatment when his rheumatism is in a less advanced stage, owing to the serious economic results of prolonged disability. The proportion of patients whose condition was either unchanged or worse is definitely higher in the case of women. The results of treatment show that a greater percentage of both men and women derived benefit from their attendance at the clinic in 1933 than in 1932, and this may possibly be due to the fact that patients are now presenting themselves when their rheumatism is less advanced. The extent of the collaboration of the physician with the different special departments is referred to in some detail in the report, because it is believed that collective work upon the problem of efficient treatment will yield valuable results.

ST. DUNSTAN'S

The nineteenth anniversary of the foundation of St. Dunstan's, the organization that looks after all blinded ex-Servicemen from the British Empire, falls on Monday next. It took its name from Mr. Otto Kahn's house, St. Dunstan's, in the Outer Circle of Regent's Park, lent for the purpose, and there, on March 26th, 1915, the late Sir Arthur Pearson really began the work with sixteen war-blinded patients. Before that a few cases had been treated at a house in the Bayswater Road, but with the removal to St. Dunstan's the work of the organization may be said to have begun. The first case of war-blindness was that of a Belgian soldier, whose plight came to the knowledge of Sir Arthur Pearson at about the same time as he heard of that of three British soldiers, whereupon he conceived the idea of starting a hostel to teach blinded soldiers and sailors and airmen to "learn to be blind." By 1918 the numbers had increased to 1,500, and since then they have risen to 2,000. There were twenty-seven new cases during the last recorded period of twelve months. Now St. Dunstan's looks after about 2,000 war-blinded ex-Servicemen and 5,000 of their dependants. As a result of the work of the settlement and after-care department, originally started by Captain Ian Fraser, M.P., now chairman in succession to Sir Arthur Pearson, the great majority of these men are installed in their own homes and carrying on the occupations they have learned since being blinded. In 1920 St. Dunstan's moved to quarters in the Inner Circle of Regent's Park, where its administrative headquarters are still housed. A number of "bed" cases are looked after at St. Dunstan's at Brighton, which is also used as a convalescent and holiday home.

INTERNATIONAL SOCIETY OF SURGERY

The next Congress of the International Society of Surgery will be held in Cairo from December 28th to 31st, 1935, under the presidency of Professor A. von Eiselsberg of Vienna. The subjects selected for discussion are: (1) surgery of the parathyroids; (2) surgery of the lumbar sympathetic; (3) surgery of the colon (cancer excepted); and (4) the surgical complications of bilharziasis. Members of the society who wish to take part in any of the discussions should send their names to the secretary-general, Dr. L. Mayer, 72, Rue de la Loi, Brussels, or to the British delegate, Professor Grey Turner of Newcastle-upon-Tyne. It is hoped that some of the surgeons taking part in the Annual Meeting of the British Medical Association at Melbourne in September, 1935, will be able to attend the Cairo congress on their way home.

BIOLOGICAL ASSAY

The eighth annual report of the Pharmacological Laboratories of the Pharmaceutical Society contains a record of a wide variety of work. It is interesting to note that research workers from all parts of the world have come to the institute in Bloomsbury Square during the past year to study methods of biological assay. This fact is evidence of the increasing importance of these methods, which the laboratories have done so much to advance. One of the most interesting lines of investigation on the pharmacological side is the development by the director, Professor J. H. Burn, of a hypothesis relating asthma to adrenaline deficiency. The nutrition department has evolved various technical improvements in methods of vitamin assay. Biochemical advances are causing rapid changes in this subject, and in this respect it is worthy of note that the antiscorbutic activity of 1 mg. of the pure principle, ascorbic acid, has been estimated at 7.4 units, which is equal to 0.74 c.cm. of lemon juice. The amount of vitamin C needed by a mammal is therefore relatively small, though it is true that this quantity is more than one thousand times as great as the corresponding quantity of calciferol.

HYPOCHONDRIASIS

Few lectures given to a purely professional audience have had wider—or, on the whole, more intelligent—notice in the newspapers than Dr. Robert Hutchison's address on hypochondriasis published in the *British Medical Journal* of March 3rd. Among the many editorials for which it has served, so to speak, as a text may be mentioned particularly a leading article headed "The Return of Fear" in the *Church Times* of March 16th. In this the editor discusses, from the point of view of national and social well-being, "the thesis which this wise physician applies to the conditions of physical health."

We regret to announce the death in Peking, at the age of 49, of Dr. Davidson Black, F.R.S., professor of anatomy at the Peking Union Medical College, whose name is known throughout the world of science in connexion with his work in human palaeontology, and in particular with the discovery five years ago of the fossil *Sinanthropus pekinensis*.

MEDICAL RESEARCH COUNCIL

REPORT FOR 1932-3

In a leading article in the *Journal* of March 10th we drew attention to some of the general features of the Annual Report of the Medical Research Council,¹ and in this and a subsequent issue it is proposed briefly to summarize the accounts therein given of research work carried out under its auspices.

INFLUENZA AND VIRUS DISEASES

In the *Journal* of July 15th, 1933 (p. 115), we commented on the work done on influenza by Laidlaw, Andrewes, and Wilson Smith, who, using the ferret as an experimental animal, came to the conclusion that the primary infective agent in influenza is a filter-passing virus. Discussing this work in its present report, the Council points out that the experimental approach to the problem of influenza had for long been held up, not for lack of material resources, but because no laboratory animal was known to be susceptible to the disease. The brilliant investigation into canine distemper (a disease probably due to a virus) in which it was found that the ferret had a high susceptibility to the disorder, led to the use of this animal for experimental purposes during the influenza epidemic at the beginning of 1933. The fact that ferrets developed a febrile reaction and a nasopharyngeal catarrh after nasal instillation of filtered washings from the nasopharynxes of human beings suffering from influenza, and the serial transmission of the disease from ferret to ferret, from filtered material, strongly pointed to a filter-passing virus as being the primary infective agent. The relation of this virus to that found by Shope in "hog-influenza" has already been remarked upon.² The swine virus produced in the ferret a condition indistinguishable from that caused by the human virus, and the ferret recovered from either infection has an immunity to the other (partial to the swine virus on recovery from the human, and complete for the converse). "At this early stage," the report states, "no claim can be made without cautious reservation as to the need for repeating experiments and of confirming results; and, in any event, the prospect of practical application is still remote."

Work continues on the unit dimensions of viruses, and the correspondence between the measurement of viruses by Dr. Elford's method of differential filtration and those obtained by Mr. Barnard's ultra-violet photomicrographs strengthens the evidence for the identity of the optically demonstrable particles with the virus. Comparative measurements of this kind have been made for the viruses of vaccinia, fowl-pox, ectromelia, canary disease, Borna disease, and vesicular stomatitis of horses and cattle. Dr. Elford's experiments suggest that the diameter of the infective units of the last-mentioned disease is somewhere between 70 and 100 millimicrons (1 millimicron = one millionth of a millimetre). Mr. Barnard has identified minute particles in the fluid from the vesicles in this disease. As such units (70 to 100 millimicrons) must be close to the limit of critical resolution with the shortest ultra-violet wave-length that can be used with present-day optical apparatus, the correspondence of measurements by filtration and by photomicrography has been extended to the lowest limits of detection. The cultivation of viruses under artificial conditions continues to present considerable difficulties. Attempts have been made to grow viruses in cultures of tissues from susceptible animals. Dr. Burnet has been carrying on researches on the classification of bacterio-

phages. Experiments go to show that bacteriophages are independent transmissible agents analogous to the viruses. Their properties have several points of resemblance to those of the visible bacteria, and recent work has strengthened the conception that bacteriophages are infective agents organized into extremely minute particles. The photodynamic inactivation of viruses by means of methylene-blue in the presence of light and free oxygen has been turned to practical account by Drs. Perdrau and Todd, who have used the virus of canine distemper, inactivated in this way, as a vaccine, with the successful immunization of ferrets and dogs.

BACTERIOLOGY

Professor C. H. Browning, at the University and the Western Infirmary, Glasgow, with the help of various assistants, carried out, at the request of the Council, a useful investigation into the problem of chronic carriers of enteric infections. It appears that human beings are the sole source of the specific organisms, and that chronic carriers play an important part in the maintenance of enteric diseases. The medical treatment of carriers is, unfortunately, highly unsatisfactory, but surgical measures in cases in which the gall-bladder has been shown to be the reservoir of infection have been successful enough to justify their employment. Another bacteriological problem of importance to the public health that has been the concern of the Council is bovine tuberculosis. Dr. L. Jordan of the Hannah Dairy Research Institute has published a report on a large-scale experiment, promoted by the Council, in the eradication of tuberculosis from herds in an area of nine square miles in Ayrshire. Thirty farms were included in this experiment. The farmers were provided with free tuberculin testing and free expert advice, on the understanding that they would try to eliminate tuberculosis from their herds by isolation methods. Twenty of these farms were free from infection at the end of the experiment, as compared with eight at the beginning, and the results show that eradication of tuberculosis from heavily infected herds is by no means an impossible matter. The Council states in its report:

"It is, nevertheless, important to note that, unless and until absolute eradication be accomplished, efficient pasteurization of milk remains an essential second line of defence in safeguarding human health. . . . Pasteurization, moreover, gives protection against other diseases derived from cattle, preventing the transmission of bovine streptococcal infection and that of undulant fever. It may be added that the Council are not aware of any trustworthy evidence that pasteurization, if properly carried out, has any seriously damaging effect upon the nutritive qualities of the milk."

RESEARCH ON VITAMINS

One of the most significant advances made in vitamin studies is the recent identification of vitamin C as an exact chemical substance. In 1924 Dr. S. S. Zilva, working for the Council at the Lister Institute, discovered that active concentrates of the vitamin had a strong affinity for oxygen. Later, the Hungarian worker Dr. A. Szent-Györgyi observed that the properties of a substance he had isolated from the suprarenal cortex—hexuronic acid—were similar to those Zilva had shown were associated with vitamin C. In 1932 it was shown by Professor Tillmans in Germany that Zilva's "associated principle" and Szent-Györgyi's hexuronic acid were identical with the vitamin itself. This has been confirmed by Szent-Györgyi, and his substance, now known as ascorbic acid, is generally accepted as being pure vitamin C. Dr. S. S. Zilva, working at the Lister Institute, and in conjunction with the staff of the Low Temperature Research Station, Cambridge, has shown that Bramley's seedling apples keep their vitamin C

¹ Report of the Medical Research Council for the Year 1932-3. London: H.M. Stationery Office, 1934. (2s. net.)

² *Lancet*, 1933, ii, 66.

activity at long periods when stored at -20°C .; when stored at higher temperatures the apples progressively lose this activity. It has been shown by other workers that the vitamin C activity of apples is inversely related to their nitrogen content, and it is also related to the number of the nuclear chromosomes of this fruit. Dr. J. Gough and Dr. Zilva have found the anterior lobe of the pituitary gland to be especially rich in ascorbic acid, as is the suprarenal cortex. The view that the suprarenal cortex might synthesize vitamin C is disproved (by work at the Dunn Nutritional Laboratory, Cambridge) by the fact that adrenalectomized rats are still able to form the vitamin. Dr. L. J. Harris and Dr. E. W. Fish have produced experimental evidence that the first effect of vitamin C deficiency on tooth structure is to cause loss of function and degeneration in the formative tissues. In the bones such deficiency results in degeneration of osteoblasts and cessation of formation of new bone.

Mrs. Mellanby's work on dental caries has recently been reviewed in the *Journal*: "The Council regard this work as of much promise for the substantial reduction of the present scourge of dental caries." In last year's report reference was made to the chemical investigations into the structure of the sterols, including calciferol (pure crystalline vitamin D). It was shown that they were

related to such physiologically important substances as the bile acids and sex hormones; to these may now be added carcinogenic substances isolated from tar. Mr. Webster, investigating the distribution and fate of vitamin D in the body, has found that, in contrast to vitamin A, it is distributed almost uniformly in the fats present in the major organs—with the exception of the brain. Attempts to extract the natural vitamin D from the sterol fraction of cod-liver oil have so far failed, and work has also been done on the origin of vitamin D in the liver of the cod, which is a deep-sea dweller. A small but constant amount of the vitamin has been found in the copepods, which are the principal food supply of this fish in spring and summer.

Dr. Parks (U.S.A.) has assisted at the Dunn Nutritional Laboratory in studies on the way in which vitamin D promotes the assimilation of calcium and phosphate. As opposed to the theory that this vitamin acts by stimulating the parathyroid glands, it was found that the latter have no effect in increasing the absorption of calcium and phosphorus in rickets. Dr. Moore has shown that carotene can be utilized in the body as efficiently as vitamin A itself, but it has not yet been found possible to convert carotene into vitamin A outside the body.

(To be concluded)

Ireland

Irish Medical Dinner in London

On St. Patrick's Day about seventy members and guests of the Irish Medical Schools' and Graduates' Association dined together at Claridge's Hotel. Colonel G. A. Moore, C.M.G., D.S.O., presided over the function, and the principal guests were the Earl and Countess of Iveagh and Lieut.-General J. A. Hartigan, C.B., C.M.G., D.S.O., the new Director-General of the Army Medical Services. During the evening the chairman of council of the association, Mr. W. McKim McCullagh, announced the presentation of the Arnott memorial medal, first awarded in 1900, to the late Mr. E. Canny Ryall. He explained that this was a medal awarded only to Irish medical men who had brought distinction to their profession and their country, either by some act of heroism or by some outstanding medical achievement. Mr. Canny Ryall's claim to the distinction was his foundation of a hospital in London, All Saints', in 1911; last year it moved into more spacious quarters than the other hospitals, St. Peter's and St. Paul's, devoted to the same specialty. Before his death Mr. Ryall learned, and expressed pleasure in the fact, that the association had decided to award him the medal. Mr. McCullagh then handed the medal to the president for presentation to Mr. Ryall's widow, and the company drank a silent toast. Sir William de Courcy Wheeler, in proposing the health of the guests, said that Lady Iveagh had been invited as the guest of honour as a small tribute to her work during the meeting of the British Medical Association in Dublin last July. In spite of some preliminary anxieties, the meeting proved one of the most successful in the hundred years' history of the Association, and "did more for Ireland in one week than the statesmen had done for seven years." This was due not a little to the fact that Lord and Lady Iveagh threw themselves heart and soul into its hospitalities, even placing their mansion on St. Stephen's Green at the disposal of the ladies' club. As for the other distinguished guest, Lieut.-General Hartigan, who came from Limerick, Irishmen rejoiced in the fact that one of their race again was at the head of the Army Medical Services,

remembering what was done for those services by another great Irishman, Sir Alfred Keogh of Roscommon, before and during the war. In a charming response, Lady Iveagh, M.P., after remarking that she, herself, was only one-quarter Irish, said that all the things she had found best worth having in life had come from Ireland—including her husband. She professed her lifelong interest in hospitals and in medicine, though she realized that an interest in things medical should not lead the lay person to do any amateur diagnosing, and for her own part she knew just enough of medicine to know that she knew nothing at all. For family reasons, she owed a debt of gratitude to the medical profession. Lieut.-General Hartigan proposed the health of the association, whose president, he said, was a very old and esteemed friend and brother officer. As Director of the Army Medical Services he could not forget that the Irish medical schools had always given the Services the most loyal support. The association was founded in 1878 for the dual purpose of maintaining the status of the profession and of promoting social intercourse among those holding Irish medical qualifications. It was more years than he cared to count since he had had any direct connexion with the Irish schools and hospitals. The hospitals, when he knew them, were always in a state of precarious finance, but no doubt their various chancellors of exchequer were now more at ease owing to the success of the newest Irish industry! Colonel Moore, in response to the toast, delighted the company with a genuine piece of Irish oratory, which any attempt to put on paper would only spoil.

Sir William Whitla's Bequests

Sir William Whitla, past President of the British Medical Association, who died at his home in Belfast on December 11th, 1933, left personal estate in Great Britain and Northern Ireland valued at £85,473. His bequests include £10,000 to the Methodist College, Belfast; his house to the governing body of Queen's University, Belfast, with the earnest wish that it may be used as a residence for the vice-chancellor of the university; and £500 to the Medical Institute, Belfast, the income to be used for payment of the ground rent of the premises in College Square. Subject to other bequests Sir William

Whitla left the residue of his property to Queen's University, Belfast, the income to be devoted towards the fund for the erection of a hostel for male students attending the university, or for the erection of a ceremonial or common hall within the university. The Medical Institute building in Belfast, it may be recalled, was erected, equipped, and presented to the Ulster Medical Society by Sir William Whitla thirty-two years ago.

Scotland

Heredity and Health

An address on recent researches into the question of heredity and health was delivered by Professor F. A. E. Crew of Edinburgh University on March 13th in the M'Lellan Galleries, Glasgow. Professor Crew said that in the past medicine had concerned itself almost entirely with attempts to prevent and control diseases due to environmental causes. For this reason bacteriology had achieved a great development during the last half-century, and it might be assumed that, in the future, prevention of disease due to these causes would become more and more complete. As a result of this, defects and derangements of genetic origin would attain greater importance. For example, diseases of the respiratory system, which were responsible for a greater number of deaths than diseases of any other system, were being prevented, and controlled, so that many persons would in future survive, ultimately succumbing to diseases that occurred much later in life. The increase in the incidence of cancer was partly due to this cause, for cancer was essentially a disease of late middle age. An examination of the causes of death with reference to age showed that diseases of infancy and adolescence were mainly environmental in origin, whereas diseases of middle age and senescence were constitutional and genetic. Therefore, in a population with increasing average age medicine would become more concerned with the problem of preventing and treating constitutional or genetic disorders. From the point of view of society defects of the mind were more important than defects of the body, and one of the greatest problems confronting society to-day was that concerned with mental defect.

Glasgow Hospital for Sick Children

At the annual meeting of the Royal Hospital for Sick Children, Glasgow, the Earl of Home intimated from the chair that £40,000 had been subscribed in response to a special jubilee appeal for funds for the development of orthopaedic work at the hospital. Mr. Robert F. Barclay, chairman of directors, stated that for a considerable time they had been pressed by doctors and health authorities to develop orthopaedic work on modern lines. The Central Council for the Care of Cripples in Great Britain had sent a representative from London to interview them on the matter. The object of orthopaedic treatment was to convert into healthy, capable, and useful men and women children who suffered from such conditions as rickets, infantile paralysis, congenital dislocation of the hip, curvature of the spine, knock-knee, club-foot, and other diseases that entailed disablement and deformity. Under the scheme the hospital would provide accommodation for out-patients as well as wards for in-patients, and there would be operating theatres and special appliances. It was proposed also to make provision for paying patients. Of the sum necessary to enable the hospital authorities to proceed with the scheme

£10,000 was still outstanding. Sir Robert Bruce said that in the hospital and its country branch 7,200 cases had been treated during the past year, while the attendance of out-patients at the hospital and dispensary had reached the figure of 102,466. The hospital was crowded, and there was a long waiting list. The finance of the hospital had been satisfactory, and the general subscriptions had been well maintained. It was remarkable that the sum of £4,094 received from public works showed a diminution of only £87 as compared with that for the previous year. A modern x-ray installation had been provided at a cost of £2,000 by Mr. Robert Barr.

Rowett Research Institute

Dr. R. C. Garry has been appointed to the post of senior physiologist at the Rowett Research Institute near Aberdeen in succession to Dr. H. E. Magee. Dr. Garry graduated M.B., Ch.B. at Glasgow in 1922, when he gained the Brunton Memorial Prize. After a year as resident physician and surgeon in the Western Infirmary, Glasgow, he took up research work at the Institute of Physiology in that city, and in 1924 became assistant to the late Professor Noel Paton. In 1925 he became lecturer and Muirhead demonstrator in experimental pathology, and in 1929 was appointed lecturer in physiology at Glasgow University. In 1933 he gained the degree of D.Sc. for research in physiology. His work in Glasgow was concerned with the physiology of nutrition, especially the functions of the digestive organs. Dr. Garry has published a number of papers on his research work.

Edinburgh Dispensary for Skin Diseases

At the annual meeting of the Edinburgh Dispensary for Skin Diseases Lord Wark referred to the useful work that this institution had done. During the past year 643 patients had been treated, of whom 603 belonged to Edinburgh, the number of attendances being 1,789. The institution had managed to pay its way, but, like other charitable organizations, it must continue to appeal to the public for assistance. Dr. Robert McLaren, honorary medical officer of the Dispensary, pointed out that more than half the cases were those of children under 14.

England and Wales

London Hospitals and Medical Services Committee: Medical Members

In the allocation of members of the new London County Council to the various committees full advantage has been taken of the presence of the many medical men and women on the council in arranging the membership of the Hospitals and Medical Services Committee, which carries on the principal tasks of the former Central Public Health Committee. Of the seventeen members appointed by the council from among its own number seven are medical members—namely, Dr. C. W. Brook, Dr. S. Monckton Copeman, Mr. Somerville Hastings, Dr. S. W. Jeger, Dr. F. Barrie Lambert, Miss E. Rickards, and Dr. Henry Robinson—while among seven non-members of the council a further two medical members have been appointed by the council—namely, Mr. H. L. Eason and Dr. H. Winch—and there remains one vacancy. The Housing and Public Health Committee includes at present only one medical member, Dr. J. A. Gillison, though there are some vacancies to be filled. Dr. S. Monckton Copeman and Dr. Henry Robinson have been appointed

to the Mental Hospitals Committee, and it is gratifying to note that among the others, not members of the council, whom the council has appointed is Dr. Adeline Roberts, a former member. Mr. Somerville Hastings and Dr. F. Barrie Lambert are members of the new Public Assistance Committee, and Dr. C. W. Brook is to be chairman of the Committee on the Welfare of the Blind. On the other hand, among the thirty-eight members of council and the twelve non-members appointed to the new Education Committee there does not appear to be a single medical man or woman.

Norwich Health Congress

This year's congress of the Royal Institute of Public Health will be held at Norwich from Tuesday, May 15th, to Sunday, May 20th. The scientific proceedings have been arranged in five Sections. The presidential address in the Section of State Medicine and Industrial Hygiene will be delivered by Dr. S. Monckton Copeman, F.R.S., on the scientific investigation of small-pox and vaccination. There will be discussions in this Section on the problems relating to milk and the slums; the first will be opened by Dr. T. Ruddock-West, county medical officer of health for Norfolk, and the latter by Dr. C. Killick Millard, medical officer of health for Leicester. Lady Barrett, president of the Section of Women and Children and the Public Health, will deliver an address on the role of the medical practitioner in the care of mother and child. Three discussions have been arranged in this Section, the subjects being the crippled child, the rural midwife, and the difficult child problem. In the Section of Tuberculosis Dr. S. Vere Pearson will open a discussion on the arrangement of institutions in public tuberculosis schemes. The president of the Section of Pathology and Bacteriology, Dr. G. P. C. Claridge, will give an address on bacterial carriers. Film demonstrations will be given on the destruction of living cells by invisible ultra-violet rays, the present position of diphtheria immunization, and the Holborn diphtheria immunization clinic. In each Section a number of independent papers will be read on various topics, including the control of industrial rheumatism; the sanitation of holiday camps; eugenics and sterilization; noise and the public health; the organized treatment of motor accidents; the problem of the child with otorrhoea; parentcraft; the management of the young delinquent; early diagnosis of tuberculosis in infancy and childhood; vitamins from marine sources; pasteurization as a means of safeguarding the milk supply; the canning of fresh fruit and vegetables in relation to health; dental lesions as the first sign of a disturbance of physiological function; serological observations from cases of cancer under treatment; and great epidemics of the Middle Ages, with special reference to Norwich and Norfolk. The congress is open to any who are interested in public health questions; membership fee one guinea. Further information may be obtained from the Secretary, Royal Institute of Public Health, 23, Queen Square, W.C.1.

The Leeds Workpeoples' Hospital Fund

The forty-seventh annual meeting of this fund was held recently at the Town Hall under the chairmanship of Mr. Harold Collinson, one of the honorary surgeons to the Infirmary. The history of this fund, which has been previously referred to in these columns, is full of interest and of encouragement. The leading spirit in the initiation of the scheme was the late Mr. Fred. Spark, and by him the foundations were well and truly laid. The main source of income is derived from the weekly contributions of the workpeople of the city. This is also the most reliable source, and its steady increase shows the real progress of the fund. At first the weekly subscriptions

came only from the works within the city boundary, but of late there has been an increase in the collecting area, and this has been given expression to in the new title of the fund—namely, "The Leeds and District Workpeoples' Fund." The income for the past year reached the record total of £66,572, of which upwards of £60,000 came from the regular weekly subscriptions from works, shops, and offices. The following grants were made to the various charitable institutions:

	£
General Infirmary at Leeds	35,000
Public Dispensary and Hospital	5,350
Hospital for Women at Leeds	4,350
Leeds Maternity Hospital	2,300
Leeds District Nursing Association	1,450
Children's Convalescent Fund	200
Poor Children's Holiday Camp Association	100
Invalid Children's Aid Society	100

Besides many smaller donations to other institutions.

An indication of the growth of the fund is shown by the amount of the grant to the Infirmary in the two years 1911 and 1933, for in the former it was £5,250 and in the latter it reached £35,000. These figures reflect the greatest credit on the organization, and on the enthusiasm of the many workers whose co-operation has been secured.

Central Midwives Board

At the March meeting of the Central Midwives Board for England and Wales reports were received from the Royal College of Surgeons, the Queen's Institute of District Nursing, and the Society of Medical Officers of Health, that Mr. Victor Bonney, F.R.C.S., Mrs. Elena Richmond, and Dr. J. J. Buchan had been respectively re-elected as representatives on the Board for the year commencing next April. The Standing Committee reported a letter from the medical officer of health for Norwich, stating that his Maternity and Child Welfare Committee had requested the Board "to consider the desirability of framing a more definite rule (Rule E.1) that certified midwives shall regularly examine patients ante-natally and stating the minimum amount of ante-natal work to be demanded from certified midwives." It was agreed to reply that the Board was revising the rules in Section E and that the rules, as revised, would require midwives to see their patients during pregnancy as often as necessary, and also that with the rules, as revised, would be issued a comprehensive leaflet on ante-natal care, a knowledge of the contents of which should make quite clear to midwives their duties in this matter. Approval as lecturer was granted to Dr. Isabella Margaret Currie, York Maternity Hospital, and Dr. Doris Onions, Middlesbrough Municipal Maternity Home. It was reported that a large number of replies had been received to the Board's inquiry as to the attendance of pupil midwives at venereal disease clinics, with the object of obtaining instruction on venereal diseases. In the majority of cases it appeared that either the pupil midwives were attending venereal disease clinics or hospitals at which such cases were taken, or that arrangements for them to do so would be made.

Maternity and Child Welfare Propaganda

The National Baby Week Council offers for annual competition silver challenge shields and other awards for the most novel and effective maternity and child welfare propaganda conducted during the year. In 1933 Northampton secured first place among the great towns for which the "Astor (1931)" shield is reserved. As Northampton won this trophy in 1932, and under the regulations is ineligible to hold it for two years running, it will be held for the present year by Rothwell (Yorks), the next in order of merit. Northampton's success has

been recognized by presentation of a special certificate of merit. The "Kettering" shield, the second award for the large towns, has been won by Sunderland. For areas of population of 15,000 and less the "William Hardy" shield has been awarded to Bungay (Suffolk) for its excellent campaign during 1933, and Buckhurst Hill (Essex) is second in order of merit, thereby winning the "Gwen Geffen" Rose Bowl. Gloucester, Middleton (Lancs), Darlington, Wealdstone, Forton (Gosport), Lane End (Bucks), and East and West Molesey were all highly commended. The awards were presented at the annual meeting of the National Baby Week Council on March 14th.

India

Public Health Commissioner's Report for 1931

In this report, which has been recently received, Major-General J. D. Graham, I.M.S., Public Health Commissioner with the Government of India, insists on India's need of an organization which shall be capable of framing and conducting a public health policy for the country as a whole. Such a Ministry of Health, he adds, is found in Canada, Australia, and South Africa, and is none the less necessary in India because the executive control of public health has been transferred to the Provinces. A census was taken in February, 1931, and the vital statistics for the year can be more accurately estimated than in the nine previous years, the last census having been taken in 1921. The birth rate for the year in British India was 34.3 per mille, as compared with 33.4 on the estimated population for 1930, and 35.7 for the previous quinquennium (based on the 1921 census). The general death rate was 24.8 per mille, and the death rate for infants under the age of 12 months per 1,000 live-births was 178.8, as compared with 180.8 in 1930 and 177.6 in the previous quinquennium. Out of every 190 deaths recorded, forty-three occurred in children below the age of 5, and forty-eight in those below the age of 10. The infantile death rate for British India was nearly 2½ times that for England and Wales and South Africa; more than double that for Germany; and nearly 5½ times that for New Zealand. Countries in which the figures compare more closely with those of British India include Rumania, Hungary, Japan, Italy, Egypt, and Soviet Russia. The three main causes of infantile mortality are given as congenital and developmental defects, alimentary disturbances, and infective disease, the first accounting for nearly all stillbirths and deaths in the first seven days of life, while the two latter affect the older children. Sanitary improvements have operated against the two latter causes, but not against the first, and in the production of these defects prematurity plays an important part, resulting from chronic infections such as syphilis, constitutional weaknesses, acute diseases, accidental causes, and obstetrical emergencies. The conclusion is drawn that, in order to lower the present high infantile mortality rate, the maternity services must be rendered much more skilful. Antimalarial campaigns continued during the year under review, including cinchonization schemes where funds permitted. Tuberculosis is believed to be generally on the increase, especially in some of the larger and more overcrowded cities, such as Peshawar, Delhi, and Calcutta. The anti-tuberculosis campaign has not proceeded very far as yet, but the disease is now notifiable in the Punjab, the Central Provinces, Madras, Baluchistan, and in municipal areas in Assam and the Upper Provinces. In Bombay Presidency, out of every 1,000 deaths recorded in 1931, 43.6 were ascribed to pulmonary tuberculosis; the corresponding figure in 1930

was 39. Recent stimulus to the closer study of this disease in India has been afforded by the programme of the King George Anti-tuberculosis Fund, which is concerned chiefly with the organization of local associations, propaganda, and education. In 1931 there was a huge fall in the incidence of cholera in British India, apart from the Presidency of Bombay, but high mortality curves were present in Bengal and Bombay. The death rate for plague was, however, twice that in 1930, although lower than that in 1929, the Upper Provinces suffering most, as usual. A series of simple leprosy surveys, which had been continued during three and a half years, were ended in 1931. They showed that leprosy was much more prevalent in India than was formerly supposed; probably one million cases would not be an overestimate. The disease was found to be most common among semi-aboriginals or aboriginals, who left their tribal seclusion and hired themselves out to agriculturists or industrial concerns. Infection of the more advanced classes of the community was in the first place largely attributable to the employment of servants in an infectious stage. Once the infection had entered a family it tended to spread in that family, and was often transmitted to friends and acquaintances. It was also concluded from these surveys that leprosy is probably very widespread, but only develops into clinically or bacteriologically recognizable cases in a small fraction of those infected, the natural resistance of the remainder being sufficient to prevent the disease from developing. When leprosy does develop it indicates either hyperinfection or—probably more commonly—lowered resistance. This lowered resistance appears to be due chiefly to various factors affecting the general health, among which are diseases such as syphilis and filariasis, improper diet, and unhealthy habits and surroundings. Movements of the population, which have increased on account of better education and transport in recent years, are a potent factor in spreading the disease and infecting new areas. As this is General Graham's last annual report as Public Health Commissioner, he briefly reviews his decennium in that office, and indicates the more salient advances. He feels that, while an All-India Hygiene Institute should be able to supply highly trained officers for directional work, the backward state of rural hygiene, which is one of the most serious problems in India, can only be approached hopefully by an alliance of medical practitioners with administrators, sociologists, and plain citizens. A commission to take stock of the health position of India might pave the way for some more permanent system of economic advancement. With the coming of a federal constitution, General Graham concludes, a federal health organization worthy of India must soon take shape.

All-India Medical Licentiate's Conference

At the twenty-sixth session of the All-India Medical Licentiate's Conference, held in Bombay last December, Dr. U. B. Narayanrao delivered an address of welcome in which he appealed for more support of their association, suggested some reforms, and pleaded for a greater unity of medical practitioners in India. After emphasizing the importance of post-graduate training in promoting and maintaining clinical efficiency he said that the curriculum of the medical student was cumbersome, and inadequate attention was being paid, therefore, to some of the more important practical sides. A system of polyclinics might succeed as well in the villages as in the towns, and would serve to protect medical work from interference by un-instructed laymen. Dr. Narayanrao deplored the fact that out of about 20,000 Indian medical licentiates only 2,500 were members of their own association. Until that failure to co-operate was overcome, attempts to remedy unsatisfactory conditions must remain feeble.

Reports of Societies

RESULTS OF TREATMENT OF CANCER OF THE UTERUS

At a meeting of the Medical Society of London on March 12th, with Sir JOHN THOMSON-WALKER, president, in the chair, a discussion took place on "The Results of Treatment of Cancer of the Uterus."

Mr. VICTOR BONNEY said that surgical practice in regard to carcinoma of the cervix had been for many years a settled affair, and therefore the results also were constant. Up to the end of 1928 he had performed Wertheim's operation for this condition 366 times, and the five-year cure rate was 40 per cent. if the patients who had been lost sight of and had died of other diseases before five years were included, or 41 per cent. if they were not. Up to the end of 1923 he had performed this operation 266 times, with a ten-year cure rate of 30 or 34 per cent., according to whether the patients who had been lost sight of or had died of other diseases before ten years were included or not. Ten years' freedom from recurrence could be claimed as an absolute cure. His operability rate was reckoned as 63 per cent. The results of surgery in carcinoma of the cervix were best expressed by saying that it succeeded in keeping cancer-free for five years two out of every five patients operated on, and one out of every four patients seen; and in absolutely curing—taking as the basis of cure a ten-year freedom from recurrence—one out of every three patients operated on and one out of every five patients seen. These results had now been constant for many years. He gave figures showing how much better the prognosis was in the cases in which the regional glands removed at the operation were found to be free from growth. His five-year cure rate for "gland-free" cases was over 50 per cent., while for "gland-invaded" cases it was only 21 per cent. His operative mortality for the last 200 cases he had treated was 10 per cent.

In any discussion on the relative values of operation and radiation, Mr. Bonney continued, the real comparison was not between the results of operative treatment and the results of radiation treatment, but between the results obtained, on the one hand, by operating on a proportion of the cases and radiating the remainder, and, on the other hand, by radiating all cases. Of the patients on whom a surgeon could not operate a certain number could be salvaged by radium, and the number of these had to be added to the number of operative cures in assessing the total achievement. A surgeon operating on a proportion of his patients and radiating the remainder should obtain from thirty to thirty-one five-year cures out of every hundred unselected patients who presented themselves. A direct comparison between operation and radiation founded on the surgeon's operability rate and the number of so-called "operable cases" (Class I and II) treated by the radiologist was useless. A better way was to contrast the results obtained from similar percentages of the total number of patients seen, though even this method had its inaccuracies. The difficulty of comparing surgery and radium might be likened to an attempt to assess the relative values in war of high-velocity guns and trench mortars respectively; they were weapons with different ranges. The truth of the matter probably was that, if only there were sufficient understanding, cases of carcinoma of the cervix would be divided into four classes—namely, those in which a cure could be effected (1) only by operation; (2) only by radium; (3) either by operation or by radium; and (4) those in which a cure was impossible by either method. When a way was discovered whereby invaded glands and cellular tissue on the wall of the pelvis could be cured by radiation, radiation treatment applied to all patients would give better results than to operate on a proportion of them and apply radiation to the remainder.

THE CASE FOR RADIOTHERAPY

Dr. MALCOLM DONALDSON said that he disagreed entirely with Mr. Bonney. He first took up Mr. Bonney's

point regarding an operability rate of 63 per cent. The average number of cases operated on by Mr. Bonney in hospital worked out at seventeen per year; therefore Mr. Bonney, notwithstanding his fame for this operation—a fame justly earned—only saw twenty-seven cases a year. This number surprised the speaker when contrasted with the much larger number seen at institutions where radiation treatment was applied. The report of the Ministry of Health on cancer of the uterus declared that the operability rate varied in different districts, and from year to year in the same district according to the practice and judgement of the individual surgeons and the nature of the treatment employed. In discussing the results of radium therapy, he said that unfortunately in England there were not at present any mass statistics as to the five-year survival rate, but in a few years' time he thought figures would be available which would startle even Mr. Bonney. The best statistics were those from the Madame Curie Hospital at Hampstead, where, during the period 1926-32, 171 patients had been treated, of whom 141 were alive at the end of 1932. In institutions devoted to radiotherapy the cases were divided into four stages, according to the extent of the growth, and these figures appertained to the first two of these stages, the first being one in which the growth was strictly limited to the cervix, and the uterus was mobile; and the second, one in which there was some spreading of the lesion, though there was still a certain amount of mobility of the uterus. At University College Hospital between 1921 and 1931 the number of cases of the disease in these two stages treated was 101, and forty-eight patients were alive at the end of 1931. At Mount Vernon Hospital, which only started in 1930, fifty-eight patients had been treated, and thirty-nine were alive at the end of 1933. He fully realized that these statistics were too small and recent to be of real value in making a comparison, but they gave promise for the future. In addition to these there were a number of "inoperables" alive, though it was difficult to talk in percentages, because one institution would send away cases which obviously could not be cured, although they might be made more comfortable, while another would treat practically every case.

Dr. Donaldson added that when he started radium therapy at St. Bartholomew's the technique was one in which the needles were inserted all round the cervix, but about 1929 he realized that this technique was not the best, and he gave it up. Actually at St. Bartholomew's there were 113 patients classified as belonging to the first two of the four stages, and forty-one were alive in 1933. There were, of course, other points to consider besides statistics. The fear of a big operation deterred a number of people from seeking advice, and that fear would disappear to a large extent on the adoption of radiotherapy. Again, it required a surgeon of exceptional skill and experience to do a first-hand hysterectomy, but once the best technique for radiotherapy was worked out people could be trained by the hundred to follow it. Mr. Bonney had stated that one of the great disadvantages of radiotherapy was in the treatment of glandular invasion, and that radium in the vagina could not deal with carcinoma in the internal iliac glands. On looking at Mr. Bonney's figures, however, it appeared that in 57 per cent. there were no glandular metastases, and of these 10 per cent. died as a result of the operation. Surely it was fair to suggest that most of these cases might have been cured by radiotherapy. Mr. Bonney had not mentioned that every radiological institute was now treating the glands by means of x rays, and one could not help believing from the figures—figures from foreign sources, he admitted—that there must be some value in such treatment. It was the Stockholm technique, with some modifications, which was chiefly used in this country. It consisted of placing radium into the cervix and body of the uterus (roughly 40 to 50 mg.) and into the vagina (60 to 70 mg.). This was done on three occasions, and the original Stockholm technique was twenty-two hours on each occasion, with an interval of one week between the first and second application, and of three weeks between the second and third. He had modified that at Mount Vernon, where a week's interval was given between the

first and second, and a week's interval also between the second and third. The same filter was used—namely, 1.5 mm. platinum—and a further modification was to have a special pessary for holding the radium rather than simply packing it by means of gauze. On this question of treatment he added that it was not only a matter of getting radiation to the glands. There were many parts of the body where it was quite easy to get a very big intensity of radiation to the glands, but even then it was found difficult to "knock out" the carcinoma cells. There were two possible explanations: one that the glands actually encouraged the growth, and the other that the glands, being radio-sensitive in themselves, were "knocked out" before the carcinoma cell. As for carcinoma of the body of the uterus, he believed the right treatment was surgery, followed by deep x-ray therapy.

THE PERSONAL FACTOR

Mr. V. B. GREEN-ARMYTAGE began by paying a tribute to Mr. Bonney for his skill in this operation; he had "out-Wertheimed" Wertheim. The question that worried him was as to the likelihood of any of the younger generation of surgeons acquiring anything like Mr. Bonney's degree of experience and dexterity. The number of cases which went to a London hospital per annum was very small, so that the younger surgeon was not likely to see many of these cases, and would be denied the opportunity of achieving the completeness in technique that Mr. Bonney had exemplified. That being so, was it not rather dangerous for a surgeon to try to copy Mr. Bonney? Surely his results were likely to be very poor, and the chances of recurrence considerable? The speaker asked what would be the reaction of any of those present in a case in which a member of their own family was concerned when the alternative was a Wertheim operation, not done by a master like Mr. Bonney, but by a general surgeon, an operation having an immediate mortality of 15 per cent., and a cure rate of 40 per cent., and involving months of invalidism and pain, as contrasted with radium treatment, which had practically no immediate mortality, no pain, and in which the end-result showed about the same cure rate. He believed that radium or x rays at 800 kilovolts was likely to displace operation. After having visited Vienna on several occasions, he was astounded on going there in 1931 to find that "the shadow of the wings of Wertheim had practically disappeared from the wards of the Vienna clinics." There were practically no Wertheim operations being done in the large hospitals of Vienna, where radium therapy had displaced operation.

Mr. STANFORD CADE said that it was logical to assume that if a case which was advanced and was not suitable for operation still yielded some small percentage of success, even to complete disappearance for five years, to radium treatment, radium would be proportionately efficacious in a much larger number of early cases. With regard to the lymphatic glands, the medical profession had become quite convinced that glands which were the seat of secondary deposits were very radio-resistant. He himself had treated a very large number of necks with malignant deposits in the cervical glands, and it was his experience that it was quite possible, by means of radiation, to cause shrinkage of glands with secondary deposits, and for the patient to remain free from recurrence for many years. He had in mind one case which had been free for eleven years. The lay person could not possibly compare treatment by means of a Wertheim operation, which in the hands of an average surgeon—not Mr. Bonney—presented a grave risk to life, with treatment by radium, which should present no immediate risk to life. The position must be borne in mind of patients who, although affected by carcinoma of the cervix, would like to live for a few years longer, and not to pass out through the portals of surgery. There were, of course, certain dangers in radiation, especially burns, which came on insidiously, manifesting themselves months after the treatment. But he felt convinced that by a combination of x rays and gamma radiation a much wider number of patients could be reached, and by such a combined method a greatly increased dose, up to 50 per cent., could be

delivered than by either of these weapons alone. In the future there would be no such thing as radium treatment and x-ray treatment of carcinoma of the cervix, but a combined treatment, and by a combination of the two methods a very much higher intensity could be achieved and better results might be anticipated.

Dr. J. E. A. LYNHAM said that when he was in Stockholm about six years ago a kind of review of a very large number of patients with carcinoma of the cervix treated by radiation methods was presented, and he was deeply impressed by the courage of the clinicians, who put forward not only the groups of patients who had been cured, but the much larger groups of whom it could not be said that the disease had been eradicated, though they were leading useful and comfortable lives. These people had been treated either by radium or by radium and x rays both. In all these varieties of treatment there was a very great personal factor. Operation in the hands of one surgeon was a phenomenal success and in another was a failure, and the same was true of radium and x rays and every form of therapy. He himself began in the early days of the Radium Institute in London in 1911, when nothing was known about the possibilities, although tremendous hopes were entertained. The cases sent to the Institute were the disasters of the medical profession, cases in which there was no possibility of any sort of cure. But among these, as a result of careful and painstaking treatment, there were a number who were restored to an ordinary social existence, relieved from pain, haemorrhage, and discharge, and made to lead useful lives for many years. Among them were a few absolute cures. He could quote a small number living to-day who were regarded as far back as 1913 as surgically inoperable. He passed in review the successive techniques which were employed. It was early realized that while results could be obtained within a short range of the radium applicators, the disease in a great many cases spread beyond the limits of their treatment. In his personal experience these cases fell into fairly definite groups. There was the group where the disease was essentially local, and he did not think that up to date there was anything to offer in opposition to the claims of surgery in the treatment of such cases. Then there were cases which were just beyond the range of local operation, where the broad ligament was involved, or the glands could be felt, or the disease had spread to the pelvic wall. Here he thought radium, as well as surgery, was of service. Again, there were cases which had ascended beyond that range, where the glands extending up into the abdomen were involved, and for such cases he did not think either surgery or radium would be successful; he believed that they should first have a radium treatment, based more or less on the Stockholm technique, and subsequently be given x rays with a view to irradiating the glands of the abdomen. One had to try to visualize the pathological process at work, and to direct the radiation so as to give doses which might help the natural conservative forces of the body—surgery first, radium next, then perhaps the two combined, and, for cases which had gone beyond those limits, the x rays also.

Mr. ARNOLD WALKER said that after some experience of using the Stockholm technique he thought that for operable growths results could be achieved comparable with those of surgery, and a certain number of "hopeless" cases were saved. But when it came to the borderline type of growth, the Class II and III cases, one was up against the appalling problem of the lymphatic glands, and although it was rare to see a local recurrence, the frequency with which the masses were found attached to the side wall of the pelvis was very distressing. In the London County Council radium centre they were now starting to combine radium treatment with x rays.

OPERABILITY RATES

Mr. VICTOR BONNEY, replying on the discussion, said that so far as his experience went he had never known a recurrence after ten years. He would not say that it could not occur, but it occurred so rarely that if a person lived for ten years the case could be regarded as a cure;

that was not so with carcinoma in other situations—as, for example, in the breast. The operability rate was a very vexed question. In the old days the cases with carcinoma of the cervix at a general hospital would be an unselected series; nowadays, when an institution became associated with the treatment of carcinoma of the cervix, there was a tendency for cases to be sent there, and that disturbed the balance, so that it did not follow that the figures from, say, Mount Vernon, were representative of cases at large. He gave reasons for stating that his own operability rate was 63 per cent. In one group of cases—namely, those whom he saw in his own private consulting room—he could be still more precise. He had operated on 78 per cent. of all these cases which he had seen in his consulting room between the years, he thought, 1910 and 1929, and these were selected cases in the sense that they had been sent to him by practitioners in the hope that by his own method of treatment he could do something for them. In about 40 per cent. of these cases there was glandular involvement. While the operability rate to the surgeon was a well-ascertained figure, he could not say the same of the radiological operability rate; he maintained that there was no relation between the two at all. The radiologist's operability rate was founded on an opinion which varied immensely with the person giving it as to the class to which the case belonged. He was, of course, absolutely convinced that good radium was better than bad surgery, but it should be recognized that surgery had never had the advantages that radium had had in the shape of a national organized effort. Such effort as had been made was by individuals working independently and unassisted. He was not in the least antagonistic to radium; on the contrary, he had tried to hold the balance as evenly as possible. It was in the "gland-involved" cases that surgery came into its own and passed radium, but once radium could deal with the glands he agreed that surgery would be out of it without any doubt at all.

Dr. MALCOLM DONALDSON, also in reply, said that the operability rate was next to impossible to get, and even when it was arrived at there was no use for it except to illustrate how very few cases came forward for treatment at an early stage. Mr. Cade had mentioned the danger of radium burn. At the Madame Curie Hospital an investigation had taken place on this point, and he thought that 7 per cent. of the cases showed some reaction on the rectum in treating carcinoma of the cervix. The other danger in late cases was that of sepsis; it did not arise in the early cases.

ANOREXIA

At a meeting of the Manchester Medical Society held on February 7th, with the president, Dr. C. PAGET LAPAGE, in the chair, Dr. J. A. RYLE read a paper on "Anorexia."

Dr. Ryle prefaced his remarks with a brief consideration of the importance of subjective phenomena in disease, quoting Dr. John Brown, who had said: "Symptoms are universally available; they are the voice of nature; signs, by which I mean more artificial or refined scrutiny, . . . are not always within the power of every man, and with all their help are additions, not substitutes." It was not enough, said the speaker, to be familiar with the names of symptoms and their chief associations; we should seek to appreciate their intimate physiology. Anorexia was a negative symptom, a withdrawal of the normal or healthy function of appetite. The value of appetite as an index of health, and of loss of appetite in its varying degrees as an index of disease, could scarcely be overstressed. Clinical observation had, perhaps, provided more information concerning the appetite sense than experimental physiology. Appetite was different from hunger, which had been exhaustively analysed by physiological experiment, especially at the hands of Carlson. After discussing the differences between these two sensations he suggested as a definition of appetite that it should be regarded as "in part a memory process and in part a local manifestation of efficient and anticipatory alimentary tonus induced by the memory stimulus,

or by the more direct stimulus of seeing, smelling, or tasting food, or by some combination of these several factors." The commoner clinical causes of anorexia were next reviewed, and special attention was drawn to the very complete anorexia which often proclaimed a diffuse carcinoma of the stomach—a condition in which tonic adaptability of the gastric musculature was destroyed. The influence of general infection, and the local effects of gastritis and of psychological factors, were in turn considered. There was no good evidence that the appetite sense was directly related to the secretory activities of the stomach. Special attention was drawn to the lessons which could be learned from cases of anorexia nervosa, illustrative examples of which were furnished. In a series of thirty-eight cases which had come to the lecturer's notice, thirty-five were women, most of them young. Approximately one-quarter of these cases had developed subsequently to a physical illness or operation. Two-thirds of the cases were psychoneurotic, and in some of these "slimming" had initiated the illness. The remaining cases were psychotic. The rational therapeutics of anorexia were finally discussed. In connexion with the frequent association of nervous dyspepsia and poor appetite, fussy and unnecessarily strict dietaries, for which medical men were sometimes responsible, were condemned. Poor appetite in childhood was frequently an expression of negativism, and a healthy appetite reflex could then be reconditioned by a better understanding and sensible handling on the part of the parents. Medical aids to appetite were of a subsidiary value only, and their action was probably by suggestion and not direct physical action.

SWEDISH APPROACH TO DIABETES

At a meeting of the Medical Women's Federation, held on February 20th, with Professor M. F. LUCAS KEENE in the chair, Dr. ANDREA ANDREEN-SVEDBERG opened a discussion on the Swedish approach to the problem of diabetes.

She said that the first thing she did with her diabetic patients was to tell them that they were not ill, but that theirs was a condition which developed into illness if they failed to follow certain rules. One result of telling them this was to make them realize that they were meant to be useful members of society, and could be educated, could work, and earn a living just about as well as anybody. Dr. Svedberg had begun to use the clinical laboratory of the Board of Health of Stockholm as an out-patient clinic for diabetics, she said, in order that the patients should not have to spend hours in waiting at mixed clinics, with the loss of wages and perhaps employment. The clinic was opened in 1925, and in 1927 all the patients attending, with the exception of a few very old ones, were at work. Now, of course, few of the males were in work except boys under the age of 18, who received lower wages. Most of the women were employed, but as a group these patients were hard hit by unemployment, because they were not first-class material. Diabetic children should be allowed to take part in sports and gymnastics. Although they were not ill, diabetic patients must be reminded of certain weak points. They were liable to become infected early, and often severely, and infections tended to make the diabetic condition worse. The beginning of diabetes could not generally be traced, but sometimes it clearly started in connexion with an acute infection, and was associated with pains of pancreatic origin. It was well to insist that a diabetic patient should go to bed for a couple of days when he had a cold. A diabetic patient attacked by a severe infection like pneumonia was seriously handicapped; it was necessary, therefore, to prevent infections as far as possible. The importance of cleanliness had to be emphasized; special care should be taken of all small wounds and abrasions, particularly of the feet, and affected teeth should be attended to. Cases of diabetes were rarely discovered at the clinic; usually the patient or his friends became suspicious of his increased thirst or of other symptoms. A number of milder cases associated with pruritus and eczema occurred in middle-aged women, and were detected by the skin specialist. If the urine

of a patient contained sugar but no ketone bodies, Dr. Svedberg told him to return the next morning, fasting, and with a sample of urine collected over twenty-four hours, for fuller investigation. She generally started mild cases with a fast-day. This often worked miracles in cases with itching eczema and a high blood sugar. The patient spent the day in bed, and drank as much water, tea, or coffee as he wished, and a little broth. She did not use this method in severe cases, or for children or young patients, who would easily get acidosis. Severe cases should not receive ambulatory treatment at the beginning. In treating cases of intermediate severity it was often possible to arrange for a nurse to visit the patient and give the insulin injections until he had mastered the technique. Some observers considered that the blood sugar fluctuated according to a "liver rhythm," rising in the morning and falling in the afternoon. They thought that insulin should be given in accordance with this rhythm, which must be determined for each patient. The evidence had not withstood close criticism, and the most that could be said was that the blood sugar of mild diabetics and normal people fell during the night and the blood sugar of severe diabetics rose, owing to the prolonged fast. It was therefore advisable for severe diabetics to take their morning insulin as early as possible, an hour or two before they took any food. Otherwise insulin could be given just before a meal.

DETAILS OF TREATMENT

In arranging the diet the aim was to keep the urine sugar-free, because sugar secretion meant that the hormonal capacity of the patient was strained to its limit. But a secretion of 0.5 to 0.7 per cent. in the twenty-four-hour specimen could scarcely be avoided in severe cases. She told patients to use the Benedict test, and if there was a change of colour to pea-green, but no further, she considered that the amount of sugar present was sufficiently small to be ignored. Before the diet was laid down the patient was weighed and measured to find out whether his weight was appropriate to his height. A patient weighing 60 kilos and doing light work needed about 1,800 calories a day. As a rule, it was wise to undernourish diabetics a little, because their weight tended to rise under treatment. Dr. Svedberg considered that the standard diet for a healthy man of 3,700 calories a day, recently discussed in England, was unnecessarily high, except in a few cases of extremely heavy work. The upper limit of the intake of carbohydrates was governed by the patient's ability to use them; the lower limit by his needs, by the antiketogenic/ketogenic ratio of carbohydrates to fats, and by the stimulating effect of carbohydrates on the insulin mechanism. It was generally agreed that the dosage of insulin should be kept down as much as possible—large amounts of carbohydrate and insulin meant dangerous fluctuations in the blood sugar. The carbohydrate in a diabetic diet did not usually exceed 100 grams. The protein intake was generally about 1 gram per kilo of body weight, and the upper limit was set by the facts that fully half the amount of protein taken meant sugar in the body, that the amino-acids were to some extent ketogenic, and that carbohydrates were utilized better when the diet was low in protein. Restriction of carbohydrates and protein meant that about two-thirds of the diabetic diet consisted of fat. In 1909 the practice was to give diabetics a diet consisting largely of protein; later, just before the discovery of insulin, the diet was mostly fat. Nowadays we were giving a combination which approximated more closely to an ordinary diet, with a reasonable proportion of carbohydrate. Obese patients with mild diabetes did not readily develop ketosis, and could be given relatively more protein and less carbohydrate and fat. They could take about 1.5 grams of protein per kilo of body weight. Intelligent patients could be told how much carbohydrate, fat, and protein they were supposed to take in a day, and might be left to compose their own menus with the help of a food-table. It should be made clear that nothing was forbidden, provided they kept within the daily amount allowed of each of the three constituents. They should be warned that it was better to make

liberal use of the vegetables with a low carbohydrate content, and to use bread and potatoes sparingly. Less intelligent patients preferred to have a diet planned out for them. The aim was to keep the urine sugar-free in such a way that the patient enjoyed life and used as little insulin as possible. Joslin in America was particularly successful in keeping down the insulin dosage, and claimed that out of 2,000 patients under his care only ten had 60 units daily. This was probably because he was able to persuade his patients to take no bread. A diabetic did well if he was intelligent, methodical, and firm, or if, lacking these qualities, he worshipped his physician. The intelligent ones could shift for themselves, but most diabetics needed control, and should be seen every two or three months, or oftener. Professor Haldane had said that insulin had "saved a few intelligent people, that is all," but Dr. Svedberg considered this view to be too pessimistic. Poverty was a hindrance to insulin treatment. In Denmark the insurance scheme found the cost of insulin for all who could not afford it. In Sweden the larger cities provided the cost when necessary, and in twenty out of twenty-five provinces the cost was met by the central administrative committee; in the other five the old age pension was given in advance to cover the cost of insulin. Statistics on diabetes were so far unsatisfactory, but the diabetic mortality rate had fallen since the discovery of insulin, and diabetic patients now died at a later age.

Dr. CICELEY PEAKE recalled Joslin's dictum that diabetic children should be given a small dose of insulin at night, and wondered whether he still held to it. Dr. S. R. EASTWOOD said she had obtained better results with obese patients, she thought, by cutting down the fat in the diet and giving extra carbohydrate. The patient's sense of well-being seemed to be increased. Dr. SVEDBERG replied that she had not tried this plan with obese patients, but that she would do so. She agreed that a larger proportion of carbohydrate made the diet pleasanter to take, but found it difficult to see why the change should benefit the patient otherwise. Dr. G. H. WAUCHOPE remarked on the sensible change which had occurred in the diet of diabetics during recent years. Why should not their diet approximate as nearly as possible the diet of the normal person? It was probably better, she thought, for a patient to pass a little sugar once or twice in the day than to be kept on the verge of hypoglycaemia. She asked whether Dr. Svedberg found that her patients ever developed hypoglycaemic symptoms. Dr. SVEDBERG replied that she had never used diets with a very high proportion of carbohydrates. She seldom saw a case of hypoglycaemia.

NERVOUS COMPLICATIONS OF THE ACUTE FEVERS

At a joint meeting of the Section of Neurology and the Section for the Study of Disease in Children, held at the Royal Society of Medicine on March 15th to discuss the nervous complications of the acute fevers and exanthemata, Dr. S. A. KINNIER WILSON, who took the chair, said that this subject was "one of the growing points of neurology."

Dr. J. D. ROLLESTON read an opening paper, mainly clinical in character, based on observations in the London fever hospitals, and dealing mainly with diphtheria. He said that estimates of the frequency of diphtheritic paralysis varied, but among 2,300 cases of diphtheria which he had seen 20 per cent. developed some form of paralysis. Much lower estimates made by others were probably due to mild forms having escaped attention. Paralysis and loss of impairment of reflexes were more frequent in children than in adults. For the majority of diphtheritic palsies the term "paresis" was more appropriate than "paralysis." The frequency and severity of diphtheritic paralysis bore a direct relation to the character of the initial angina. Paralysis was rare after purely nasal, laryngeal, or cutaneous diphtheria, and after relapses. Before the time of antitoxin early treatment could not cut short the disease or prevent or modify the paralysis,

whereas early injection of antitoxin jugulated the disease and diminished the frequency and severity of subsequent paralysis. No account of diphtheritic paralysis was complete without mention of the rare condition of diphtheritic hemiplegia, which differed from ordinary diphtheritic paralysis in being primarily a vascular lesion—namely, cerebral embolism due to cardiac thrombosis caused by mural endocarditis. Several cases had been reported of recent years, but diphtheritic hemiplegia was a very unusual event. Prognosis as regards survival was good; but unfavourable as regards complete recovery of function. With regard to reflexes in diphtheritic paralysis, Dr. Rolleston said that knee-jerks were more frequently affected than ankle-jerks. Superficial reflexes were only lost in severe cases of generalized paralysis, and such loss was usually of short duration. Babinski's sign was occasionally present in the acute stage of diphtheria. Complete recovery in diphtheritic paralysis was the rule and death the exception. The existence of chronic diphtheritic paralysis was doubtful; he was inclined to think that the chronicity in such cases depended upon some other cause than the diphtheria. The prognosis depended on the age of the patient, the situation of the paralysis, and the date of onset. Prophylaxis by early injection of antitoxin, and rest in bed for periods varying with the severity of the initial attack, was more effective than curative treatment. The treatment of paralysis by antitoxin was of doubtful value; it was strongly recommended by French clinicians, but the success of the method was due less to a specific action than to psychotherapy. Summarizing the principal nervous complications of other acute exanthemata, Dr. Rolleston said that those of scarlet fever consisted of serous meningitis, suppurative meningitis (usually secondary to otitis media), cerebral or cerebellar abscess, and hemiplegia. In measles, although a great deal of attention had been given to encephalitis, nervous complications of any kind were, in his experience, extremely rare. They were rare also in rubella (none had come under his notice, but examples had been recorded), and in varicella and small-pox. Nervous affections were also rare in enteric fever, and some at least of the cases of peripheral neuritis in typhoid fever were really examples of alcoholic neuritis—of therapeutic origin!

Dr. W. G. WYLLIE classified the four commonest varieties of nervous complications following acute fevers and exanthemata as: (1) symptoms suggestive of multiple focal lesions, involving the cortex, basal ganglia, cerebellum, and spinal cord; (2) a myelitic type; (3) a hemiplegic or single focal type; and (4) an ataxic type, sometimes associated with tremor or choreiform movements. The first two varieties were the usual forms of complications following small-pox, vaccination, and measles. Measles, however, was more protean in its nervous complications, and might be followed by any of the four varieties. The morbid anatomy in the majority of cases following these three fevers showed a striking similarity. The same clinical and pathological features were further presented by the cases of acute disseminated encephalomyelitis of spontaneous onset. Clinically and pathologically there was evidence to suggest that the complications of chicken-pox and German measles might also be included in this group. The hemiplegic or single focal type of nervous complication was commonest following scarlet fever and whooping-cough. In either case, up to recently, the importance attached to haemorrhagic lesions, embolic or thrombotic, had been grossly exaggerated. Recent histology much more often pointed to toxic-degenerative changes affecting either the capillaries or the parenchyma. The fourth, the ataxic variety, had been recorded as following several of the fevers—measles, chicken-pox, scarlet fever, diphtheria—and had its counterpart in the spontaneous cases of acute ataxy in young children. The nervous complications of mumps—meningo-encephalitis—were best considered separately. There was apparently a direct connexion between the virus of mumps and the nervous complications. He hoped that some other speaker would deal with the psychotic side, which was not uncommon after acute fevers.

Dr. J. G. GREENFIELD confined his remarks to the pathological aspect of only a few of the nervous complications. He pointed out that in some cases two or more of the pathological conditions occurred together. In measles, for example, acute perivascular myelinoclasia ("acute encephalomyelitis") might occur in association with other nervous complications. The subject was no more simple from the pathological point of view than it was from the clinical. Acute disseminated encephalomyelitis, sometimes complicated by toxic degeneration of nerve cells or haemorrhagic encephalitis, had been shown to follow variola, measles, chicken-pox, rubella, and influenza. In such cases the pathological changes could not be distinguished from those of post-vaccinal encephalitis. Whooping-cough, the nervous manifestations of which had been known and studied for many years, and mumps produced their own types of meningitis or meningo-encephalitis. There was evidence that in mumps an attack of meningo-encephalitis might replace the typical parotitis. Typhus fever also affected the brain with its specific lesions. Toxic changes in nerve cells were specially common in scarlatina and other streptococcal infections, and were also sometimes found in measles. The affected nerve cells might die and disappear. Meningism was a clinical term, and its pathological basis might vary; it might be due to a sudden lowering of the blood chlorides or to anaphylactic oedema of the nervous tissues. Anaphylaxis was a comparatively rare cause of meningism, but well-authenticated cases were on record. Finally, he touched on sinus thrombosis leading to death of cortical nerve cells or to a temporary increase of intracranial pressure; cerebral embolism might also follow acute febrile conditions. Spasm of the small cortical arteries had been suggested as an explanation for the eclampsia of whooping-cough, without positive evidence.

Dr. W. GUNN said that the occurrence of encephalomyelitis in the course of infectious diseases was of extreme rarity, and the cases that had occurred had possibly received a prominence and attracted an attention which was more than they deserved, to the neglect of other neurological complications of the disease, some of which were more amenable to treatment. There seemed to be a definite relation between the severity of the original disease and the subsequent attack of encephalomyelitis, though an exception to this was found in small-pox, where nearly all the cases of encephalomyelitis occurred after the very mild variety. He had had a small series of cases of whooping-cough which went to necropsy. These cases showed the clinical manifestations, from convulsions to coma, of acute disseminated encephalomyelitis, but on an examination of the brain the characteristic changes were found in none of the cases. The changes were simply vascular, congestion, and certain toxic changes which might be secondary to the vascular changes. In none of these cases was the morbid process found which was associated with acute disseminated encephalomyelitis. The question of the aetiology of these diseases was more than an academic one, because it had a direct bearing on treatment. If the hypothesis was true that these encephalitic occurrences were due to the virus of the primary disease, which had a neurotropic property, it postulated that there must be some variation in the soil as well as in the seed, because, in conditions following vaccination, for instance, there was no succession of cases from the same batch of lymph. The more commonly accepted explanation was of a specific virus causing all forms of encephalomyelitis, the infectious disease merely activating this virus, or at least lowering the individual resistance to the virus, enabling it to attack the brain and meninges. If it was true that the virus of measles or variola could attack the brain then a valuable therapeutic effect might be expected from an immune serum for measles or for variola. If a specific virus was responsible, then no therapeutic effect was to be expected from the use of immune sera in general, but only from a serum obtained from a recovered or convalescent case of encephalitis, and whether the case of encephalitis followed measles, rubella, or mumps, as the case might be, that serum should be equally efficacious. Unfortunately, the number of cases reported so far was too few to warrant any conclusion as to the

value of immune serums. The onset of encephalomyelitis was usually so sudden, its evolution so swift, either in the direction of rapid death or complete recovery without any treatment, that it was doubtful whether in such treatment immune serum would ever find a place.

Dr. L. J. M. LAURENT said that there could be no doubt that the severity and frequency of diphtheritic paralysis bore a relation to the severity of the initial toxin, and in cases of comparatively mild attacks of diphtheria where paralysis had followed it had been his invariable experience that either the antitoxin was given too late or was given in inadequate doses. Diphtheritic hemiplegia was a very rare condition; he happened to see two cases twelve years ago, and he had not seen another case since. Both cases recovered, but some spastic paralysis remained. He had never seen in diphtheria a loss of pupillary reflex to accommodation; the paralysis seemed to be one entirely of the ciliary muscle. There was no doubt that encephalomyelitis was a very serious complication indeed, but from the point of view of those who had to treat infectious fevers every day this complication played a very small part. The number of cases showing such complications must be very small. On the question of whooping-cough, he desired to point out that the convulsions were often due to tuberculous meningitis. This condition, as well as generalized tuberculosis, occurred after whooping-cough more often than after any other infectious fever, not excepting measles, and time after time he had seen in the cerebro-spinal fluid tubercle bacilli, proving tuberculous meningitis, when this had not been previously suspected. It was a remarkable fact that the onset of the convulsions of whooping-cough coincided frequently with the onset of bronchial pneumonia, with increase of consolidation in the lung, and many of these convulsive attacks diminished in frequency or severity as a result of prompt administration of oxygen. He hoped that one day there would be a specific antitoxin as a means of treating whooping-cough.

Dr. W. RUSSELL BRAIN said that he found difficulty in accepting what he might call the unitarian theory or the opposite theory. Although these disorders seemed to have a common pathological basis, there were certain distinctive features about them. Dr. Wyllie had mentioned the differences in the mortality and recovery rates, and others might be mentioned—for example, in small-pox, the tendency for curious speech disturbances to develop, and, in chicken-pox, the high percentage of patients with acute cerebellar ataxy, and the very low mortality rate. If all these disorders were due to a common factor, then such factor must be modified or directed in a surprising way against different parts of the nervous system by the predisposing cause. On the other hand, if the primary virus was responsible for these complications, then that exhibited a curious and unexpected selectivity in its effects and in its mortality rate and the incidence of sequelae. Therefore both hypotheses carried with them their own difficulties. A point of some interest was certain recent experimental work on louping-ill, a disease of sheep; it had been discovered that if sheep were infected with the virus of louping-ill alone they developed a generalized illness, but not nervous symptoms, and in order that the nervous symptoms might develop it appeared to be necessary for them to be infected simultaneously with another disease, called tick-borne fever. If that work was confirmed it was of importance, because it was the first example on record of a virus being rendered neurotropic by coincident infection with another virus. It seemed to him quite plausible, *a priori*, that if nervous complications were due to the primary disease, they should be expected to respond to specific serotherapy, but if due to a secondary virus directed against the nervous system by the primary one, on relieving the primary condition by serotherapy the other condition might be expected to subside. He had recently seen a chicken-pox encephalitis in a man aged about 30, who developed his symptoms on the fourteenth day after infection, and went through all the phases, including acute-mental confusion, with bilateral weakness of one leg. He made a good recovery and returned to work, but the plantar reflex was still extensor after three or four weeks.

Dr. J. P. MARTIN said that he had been very much struck by the mental changes in these patients. The physical signs were often relatively slight. They began at first with severe physical manifestations, but when the child had passed the stage of convulsions and came to the stage of coma there might be very little in the way of abnormal physical signs. When the child began to move its limbs the tendon-jerks were perhaps rather depressed and the plantar reflex in a number of cases quite indefinite. There might be signs which were less difficult to be sure about—for instance, as to whether the child saw and heard. In a very early stage after convulsion he had seen several cases in which he was satisfied that the child neither saw nor heard. But when the child ceased convulsions it was his experience that it showed no interest in anything going on around it. It might remain in that stage for several days, or even a week, and then he had seen several children that had passed into a state of peculiar whining, making an unceasing cry all the time they were awake. That might persist for the best part of a week, after which it gradually diminished. That was the first sign in some cases of returning consciousness on the part of the child. After that it began to show some other signs of taking notice, but even for weeks one might have the fear that the child was going to be left an imbecile. He had two cases in which the speech was the last thing to recover. Dr. E. STOLKIND mentioned nervous complications following paratyphoid fever; these, he said, were found in many cases, as in typhoid fever.

Dr. KINNIER WILSON, in summing up the discussion, asked what, after all, they had been trying to classify. In any fever, if it was a diffused condition, one might get any complication. There could be nothing significant in having occasional nervous symptoms. Dr. Rolleston had emphasized the extreme rarity of these phenomena. Why did they not occur more often? If one had a diffused condition of any kind the nervous system could only react with what it had got—namely, its own relatively few tissues. He was delighted that Dr. Wyllie should have made an attempt at a pathological description, and even more delighted that the pathologist who followed him refused to accept it, because the first thing that Dr. Greenfield did was to point out that these were not diseases at all, but merely pathological processes, and that more than one pathological process could exist in the same condition. That was true of the various forms of encephalitis. A remarkable feature of the discussion had been that not a single question had been addressed to the three openers, and therefore there was no need to call upon them to reply.

IRRADIATION OF GROWTHS

At a meeting of the Devon and Exeter Medico-Chirurgical Society, held on February 22nd, Dr. C. WROTH read a paper on "Types of Growth which are Suitable for Irradiation." Dr. Wroth said that an x-ray department should not refuse the treatment of any case so long as there was a possibility of cure, however meagre that possibility. As an instance which encouraged one not to give up hope he quoted the case of a growth originating in a retained testis and offering a particularly bad prognosis. A secondary growth had appeared in the remaining testicle, and metastases were disseminated all over the abdomen. Yet here was a man, almost moribund in 1925, who had responded so well to x-ray therapy that he was now, to all outward appearances, in a sound condition of health. As regards the mode of action of x rays and radium the stimulating effect on a growth was, in his opinion, so slight as to warrant ignoring it for all practical purposes, although certain rare cases did arouse suspicion. To the destructive effect of irradiation had been assigned two modes of action: (1) direct, by modifying the activity of the individual cell; and (2) indirect, by action on the stroma, and thus limitation of the blood supply. The consensus of opinion gave equal importance to each of these actions. Strangeways of Cambridge had shown that with heavy irradiation only a few cells could

be killed. Canti and Donaldson, with cinematograph films of cultures, with exposures taken at intervals of one hour, traced the cells most damaged by irradiation, and found that they were those immediately about to divide. A direct selective action found proof in experiments, one of which was the action on ram's testicles when, three months after exposure to irradiation, the general health of the animal was good, the testicles sound, and the ram virile, although lacking in spermatozoa. Dr. Wroth then showed radiographs of a growth in the femur, secondary to one in the mamma, where selectivity was manifest in the rapid shrinkage and final sclerosis of the tumour. The destructive effect, as observed with experiments on chick embryos, was more powerful after life had been established for six days than it was at twenty-four hours, and this might be explained by the strangulation of vessels by fibrous tissue.

Radio-sensitivity affected normal tissues in the following diminishing order: (1) lymphoid tissue, (2) leucocytes, (3) ovary and testis, (4) skin, (5) salivary glands, (6) digestive glands, (7) central nervous system and nerves, and (8) connective tissue. The type of patient, whether with a moribund appearance or non-cachectic, gave no particular guide as to prognosis, nor was there any true relation between sensitivity and curability. Rapidly growing tissues were more radio-sensitive than the reverse, and secondary growths in glands were more resistant than the primary tumour. Discussing the reasons that could be adduced for the resistance experienced in treating "recurrences at site," Dr. Wroth mentioned: (1) that the tumour bed was damaged already, and that little, if any, further action could be expected on the blood vessels of the area; (2) selective action had been completed already, and resistant non-sensitive tissues represented the remaining activity; and (3) situation was also a factor—for example, a carcinoma of the palate had been seen to disappear, whereas a similar type of growth in the fauces was more resistant. Again, a carcinoma of the cervix was more sensitive than one on the vulva. The lower lip was radio-sensitive, although the growth was slow. Secondary infection had a marked influence in reducing the activity of a growth, and experiments were being directed on the action of dyes. As regards types of tumours, a carcinoma of the breast was not especially sensitive or responsive, but, on the other hand, the secondary growth was occasionally responsive, and in the U.S.A. a few doses of irradiation had been found useful when given in advance of the operation with the idea of discouraging metastases. In Stockholm 40 per cent. non-recurrences were claimed by this means.

Dr. Wroth then touched briefly on the technique of the application of x-ray therapy and radium. With radium the time factor was important, and one-half the total dose given in thirty-eight days had proved more effective in producing sterility than an intensive dose, which was liable to produce necrosis. It was generally agreed that it was worth while following up the treatment of inoperable growths of the uterus with x rays after local treatment with radium. With the tongue radium had given good results, but it was a question as to the advisability of glands being dissected out surgically in association with local treatment. Growths of the lip might prove radio-resistant, and were otherwise easy of removal by surgical means. While the palate responded well to radiotherapy the throat and fauces were resistant in the same measure. So-called "radium seeds" were used in treating growth of the tonsil, fauces, and bronchus, but were inactive after twenty days. Poor results were experienced with the pharynx, and they were poorer still with the extrinsic larynx. Radiotherapy of the rectum had been practically abandoned owing to the persistent radio-resistance experienced. Rodent ulcer responded well to radiation (gamma rays), tumours of the skin being radio-sensitive as a rule. Bad results attended radiotherapy of the bladder and kidney. Tumours of the prostate were likewise resistant. The embryonic round-celled sarcoma responded well to treatment, while, on the other hand, sarcoma of bone was very resistant. Seminoma of the testis was very radio-sensitive, but the pituitary body was not responsive; in eosinophilic adenoma of the latter one might attain arrest with

cessation of headache, but more than that one could not expect. Dr. Wroth had seen an unexpectedly good result follow x-ray therapy in cerebral glioma. In his experience tumours of the thyroid responded very badly if the treatment followed an attempt at surgical extirpation in the first instance, and he advocated radiation of the virgin tumour, or not at all. Cavernous naevi, warts, etc., were radio-sensitive, and good results could be expected if the growths were taken early. Turning to tumours of the chest, an endothelioma of the pleura had proved sensitive, but carcinoma of the bronchus offered a very poor outlook. He then showed radiographs illustrating the treatment of malignant stricture of the oesophagus, and contrasted the hopeful results now obtained by the new method of large doses of x rays, as compared with the disheartening effects of previous methods.

The PRESIDENT remarked that the Royal Devon and Exeter Hospital (where the society had met together) was one of the very first institutions to install plant for deep x-ray therapy, and that in addition the hospital was in possession of a good supply of radium.

Mr. WAYLAND SMITH also emphasized the paramount importance of a working liaison between the radiologist and the surgeon. He agreed that growths of the oesophagus had proved a bugbear to all concerned in their treatment in the past, but hoped that the recent advances mentioned by Dr. Wroth would prove the means of materially bettering the prognosis. In keloid growths, resulting from burns of severe degree, he had seen good results from superficial x-ray treatment, or from removal of the keloid surgically and then treating the scar area, whilst paying due regard to the tissue lying beneath that area.

Mr. CHARLES CARROLL mentioned a case of nasopharyngeal fibromata which had proved obstinate to radiotherapy and all attempts to obliterate them surgically. Recently, they had recurred, and sprouted through the hard palate. Mr. A. L. CANDLER asked what was happening, and what should be our further course, when severe constitutional symptoms followed deep x-ray therapy. He also asked if the associated symptoms were rendered more severe when an artificial menopause was produced by radiotherapy in a case of fibromyomata. In his reply Dr. WROTH said that the condition mentioned by Mr. Candler could be accounted for by shock and toxæmia. He added that the menopause so produced was an effect on the ovary and endometrium, but that irradiation had no direct result on the fibromyoma itself. The associated symptoms were likely to be more severe if the menopause was produced at an abnormally early age. The case quoted by Mr. Carroll seemed to be an example of a condition stimulated by irradiation.

PYURIA IN THE PUERPERIUM

At a meeting of the Edinburgh Obstetrical Society, held on February 14th, with the president, Dr. OLIPHANT NICHOLSON, in the chair, Dr. DUGALD BAIRD read a paper on "Pyuria in the Puerperium."

Dr. Baird began by stating that, following parturition, infection of the urinary tract occurred frequently. In a series of 717 women, in whom the urine was sterile before delivery, gross infection of the urine developed in seventy-nine cases (11 per cent.). After spontaneous delivery the incidence was 5 per cent., and after complicated delivery 25 per cent. Where the pyrexia was notifiable the incidence of pyuria was much greater. In the analysis of a series of 3,600 consecutive deliveries it was found that infection of the urinary tract accounted for about 12 per cent. of all cases of puerperal pyrexia. Exact diagnosis of the cause of the pyrexia was very difficult in some cases. About half the cases of pyrexia of urinary origin were due to exacerbation of chronic pyelitis of pregnancy or to continuation of pyrexia of acute pyelitis of pregnancy. The rest resulted from infection occurring in women in whom the urine was sterile before delivery. In thirty-six cases the pyrexia was septicæmic (8.1 per cent. of the total cases of pyrexia), and of these eighteen were due to coliform organisms. In this latter group the urine usually became infected

and the symptoms were those associated with pyelitis of the puerperium—namely, remittent fever, rigors in 56 per cent. of cases, urinary symptoms in 38 per cent., usually very slight and of short duration, and abdominal discomfort and distension. Predisposing factors were difficult delivery and albuminuria of pregnancy. In 52 per cent. of cases the time of onset was before the third day, and in 34 per cent. the eighth day or later. In over 50 per cent. of cases an organism, identical to the one in the blood, could be isolated from the faeces. It seemed likely that the organism usually spread to the vagina over the perineum and by means of lacerations to the blood. These cases had been termed septicaemia, because the organisms were demonstrated repeatedly in the blood stream, and as soon as the blood cultures became negative the temperature fell. Stasis was rarely found in the ureters in these cases, and the urinary infection which was produced cleared up quickly. Pyelitis of the puerperium could be differentiated into two groups: (1) exacerbation of a pre-existing infection, and (2) primary infection in the puerperium. As a rule, in Group 1 the pyrexia occurred just after delivery and settled down quickly. In Group 2 the pyrexia usually came on later in the puerperium. Seventeen per cent. of puerperal women were found to have residual urine, which might have become infected, and result in ascending infection.

Blood Pressure and Decubitus

Dr. BARCLAY DICKSON read a paper in which he said that while carrying out a certain treatment on women in the later months of pregnancy it was noticed incidentally that the blood pressure taken with the patient lying on her back was appreciably higher than with the patient lying on her side. Neither treatment nor time had anything to do with the difference, as the two pressures were taken within a couple of minutes of each other, immediately after treatment. The preliminary investigation was done on two patients suffering from pre-eclamptic toxæmia. It now remained to find out if the same difference in the two pressures, back and side, occurred in all cases, pregnant or non-pregnant, man or woman. A series of thirty cases was examined in the Royal Maternity and Simpson Memorial Hospital, Edinburgh, the series including two males. The rest of the series was taken indiscriminately from the wards. The total average difference in the systolic pressures was 10.9 mm. Hg, and the total average difference in the diastolic pressures was 12.15 mm. Hg, in both cases the side pressure being the lower. Since a difference in the two pressures was obtained whether pregnancy was present or not, the cause of the difference could not be solely a mechanical one, due to the compression of the aorta by the pregnant uterus. It was therefore thought to be due to a stimulation of the sympathetic plexuses connected with the thoracic and abdominal arterial system by the weight of the viscera—heart, lungs, and gastro-intestinal tract. This stimulation would naturally come into force only when the patient lay on her back, and would cease on her taking up the side position. That injurious stimulation did not occur was indicated in nocturnal incontinence of urine and nocturnal emissions. Both conditions occurred mostly when the patient was lying on the back, and both conditions had been cured when the patients were forced to sleep on the side. There was evidence to show that in hyperpiesis the diastolic difference—the difference between the back and side diastolic pressures—was very small; in one case quoted it was only 4 mm. Hg, and the patient died later from cerebral haemorrhage. The average diastolic difference in the above series was 12.15 mm. Hg. Dr. Dickson wondered if it might be possible to use the diastolic difference as an aid to immediate prognosis in any given case of hyperpiesis of whatever origin.

Corrigendum

In our report last week (p. 499) of the discussion on haematemesis, at the Royal Society of Medicine, the remarks of Mr. John Morley of Manchester were attributed in error to Mr. A. S. Morley.

CORRESPONDENCE

Silicosis and South Wales Colliers

SIR,—In your issue of March 10th (p. 452) Professor J. S. Haldane suggests that the importance of silicosis, as a disease of South Wales coal miners, is greatly exaggerated, and rejects the "great majority of the diagnoses of the medical boards."

In 1930, writing on coal-miner's lung, in the *Journal of Pathology and Bacteriology*, we published figures of the pathological, histological, and chemical findings in thirty-four persons, divided into three clinical classes as follows:

Class A.—Twelve coal miners dying of chronic pulmonary disease after long disablement.

Class B.—Sixteen coal miners dying from causes other than chronic pulmonary disease and not known to have any pulmonary disablement.

Class C.—Six other industrial workers as controls.

The "total silica" values for these groups, as set forth in our table, may be summarized as follows:

	Total Silica in Grams	Silica percent- age of Dried Lung	Silica perc nt- age of Ash of Lung	Ratio of Combustibles to Silica
Class A ...	9.4	2.36	27.1	38 to 1
Class B ...	4.4	1.24	16.3	71 to 1
Class C ...	0.29	0.13	2.4	720 to 1

It will be seen that the lungs of coal miners, as a group, contained a very much greater amount of "total silica" than those of the "other industrial workers," the advanced cases in Class A that had lived on to the dyspnoeic stage showing figures entirely comparable with those of fatal cases of silicosis in South Africa, while the colliers who had died of intercurrent causes before reaching the dyspnoeic stage still exhibited a markedly abnormal amount of "total silica" in their lungs. From the clinical point of view the reports of cases of silicosis in the South Wales coalfield by Dr. N. Tattersall (*Journ. Indust. Hyg.*, 1926, viii, 466) and of the medical staff of the King Edward VII Welsh National Memorial Association (*ibid.*, 1931, xii, 19) appear to establish the existence of a condition corresponding to silicosis in South Wales. That the inhalation of coal dust alone, even in its hardest variety, anthracite, fails to produce any serious degree of lung fibrosis is rendered probable through specimens and analyses in our possession, and has recently been established, on radiological grounds, by the report of the Industrial Lung Committee (*British Medical Journal*, February 3rd, 1934, p. 198).

While medical boards are not infallible, it must, we think, be admitted that the inhalation of the stone dust to which the coal miner is exposed in South Wales is capable of leading, in many cases, to a state of lung fibrosis which, depending as it does on silica, free or combined, is most conveniently described as "silicosis." Whether the silica causing this condition is "free" or "combined" remains an important question for future investigation, but does not matter much to the working collier. Professor Haldane considers that "if there were actually a large number of cases of real silicosis . . . among South Wales colliers their phthisis death rate would be considerably increased above a normal figure." To this we would reply that Professor Haldane himself has pointed out that "it is difficult to resist the conclusion that, in some way, the inhalation of the dust in coal mines tends to prevent phthisis." It is to some such preventive action of coal dust that the low tuberculosis death rate in colliers may yet prove to be due, and we cannot accept

unreservedly the proposition that silicosis inevitably must terminate in obvious tuberculous phthisis.

We think that Dr. W. R. Jones has made out a very good case for the role of sericite in the production of "silicosis," and his views, if confirmed, will explain many points now obscure in connexion with the aetiology of the disease.—We are, etc.,

S. LYLE CUMMINS (Cardiff),
Professor of Tuberculosis, Welsh
National School of Medicine.

A. F. SLADDEN (Swansea),
Director of Beck Laboratory,
Swansea General Hospital.

March 13th.

Sudden Circulatory Failure in Diabetic Coma

SIR,—The recent letters of Drs. Fuller and Himsworth (p. 405), Douthwaite (p. 353), and Towers (p. 456) rightly emphasize the importance of treating circulatory failure in diabetic coma. Admittedly, as Dr. Towers states, the myocardium may be functionally impaired in severe diabetes, yet available evidence points strongly to peripheral vascular rather than cardiac failure in diabetic coma. Low blood pressure, pallor, coldness, small contracted veins, and a concentrated blood indicate vasomotor paralysis and loss of fluid from the circulating blood volume, with consequent failure of the venous return to the heart.

The correct treatment of this peripheral vascular failure should consist of warmth, elevation of the foot of the bed, intravenous injection of fluid, and vaso-constrictors. Warmth is best provided by a hot air bath or electric blanket. As Dr. Graham has pointed out, estimation of the haemoglobin is the best index of concentration of the blood and of the need for fluid, which should be administered slowly by the intravenous route in the form of saline or hypertonic glucose. Ephedrine 1/2 grain or not less than 1/12 grain of strychnine injected may improve vascular tone. The importance of the horizontal posture, with elevation of the foot of the bed, has been adequately stressed by your correspondents.—I am, etc.,

London, W.1, March 12th.

D. EVAN BEDFORD.

Colonic Irrigation

SIR,—A letter on this subject by Miss MacManus in your issue of March 10th (p. 459) certainly calls for remark by our profession. Personally, I feel deeply gratified that an authority of such eminence among our nursing colleagues has delivered such an exhortation. It prompts me to contribute the following.

After receiving a three-pint Plombières douche in the morning, an elderly subject was taken with abdominal pains the same afternoon. These persisted, and pyrexia, with an increased pulse rate, followed. Three days later a gangrenous appendix was removed.

A patient was admitted by a house-surgeon as suspected acute intestinal obstruction. He ordered a turpentine enema, which, when I operated a few hours later, had found its way into the peritoneum. This was obvious from the odour and character of the free fluid present. Obviously, the route of entry was through the perforated gangrenous diverticulum of the sigmoid colon. I have no doubt that the enema had seriously hastened the woman's end. In another fatal diverticulitis case, on which I operated a fortnight ago, I cannot escape from the feeling that the same pitiable sequence of events ensued.

Not rarely do patients who have had a colonic resection receive rashly administered saline injections or enemata within a few hours or days of operation on the bowel. Such have led to fatal leakage. In this connexion, an article by Petty, in the *Journal* of September 9th, 1933

(p. 491), is a pointed illustration. This contains a careful study of two cases of appendicectomy, followed by death, where enemata were suspected to have been responsible for leakage at the appendicular stump, about which site virulent peritonitis was found to have developed after operation. Further, relevant too is the reference to the article by Rayner (*British Medical Journal*, 1932, i, 419), wherein are ably described the misadventures possible even by the insertion of a nozzle into the rectum. Grave results and even death have ensued therefrom.

The recital of such disasters makes a formidable array of dire dangers, founded on fact, coming instantly to the mind of one surgeon. Let this be multiplied by the wider experience of the whole profession, and it will be understood how readily I seized the opportunity afforded by Miss MacManus's letter. It is vital to voice the feelings of a surgeon that not only should such valuable therapeutic and diagnostic measures be kept strictly to the trained nurse, but that still more careful instruction should be given to our nursing and medical students in this sphere of their work.—I am, etc.,

A. WILFRID ADAMS, M.S., F.R.C.S.

Bristol, March 13th.

A Milk Ration for Children

SIR,—Dr. R. L. Kitching (March 17th, p. 505) asks me for the source of the figures quoted by me in my letter to the *Times* of March 5th. They were derived from a brochure with the title "The Nation's Milk Supply," published by the United Dairies Laboratory Department last July, with an introduction by Professor W. W. Jameson, director of the London School of Hygiene and Tropical Medicine. This brochure has been widely circulated among members of Parliament. I was abroad at the time of writing my letter, and had no opportunities of confirming its statements by independent inquiry. The pertinent sentence runs as follows:

"Out of a series of 43 herds (that is, the super-herds of the country coming under the grading and licensing authority of the Ministry of Health), samples of certified or Grade A tuberculin-tested milks were reported upon; 33 of the samples, that is, 76 per cent., contained haemolytic mastitis streptococci, and 27 of the 43 samples, that is, 62 per cent., revealed the presence of the *Brucella abortus* bacillus."

Further data with which I have been furnished since my return to London confirm my conviction that protection against other infections than tubercle is not in any way secured by the preparation as at present practised of certified and Grade A (T.T.) milk. That was the argument of my letter and the explanation of the amendment which I moved at the meeting of the Children's Minimum Committee, without, however, securing its adoption. You, Sir, in your admirable leader of February 24th, supported my contention. You wrote:

"That a large amount of disease is carried by raw milk is no longer an opinion; it is a fact—a fact as well attested as any in the domain of medical science. The recommendation, therefore, that milk should be consumed in the raw state is equivalent to the support of a measure which must result in the occurrence of sickness and death among a proportion of those affected by it."

Incidentally, I must differ from Dr. Kitching when he says that "it is the duty of the medical authorities to prescribe what is best [that is, certified milk] regardless of cost." That would surely be a futile gesture on the part of the medical profession. At the present time less than 1 1/2 per cent. of the milk consumed in this country is of this quality. The figures quoted by me dealt with this section only. Does Dr. Kitching really suggest that the Bill which may come before Parliament as a result of the present agitation for supplying milk to school children should insist upon the milk being of "certified" quality? Much unwitting

harm is done by facile philanthropists who demand action without any consideration whatever of its cost or its ultimate repercussions. It is forgotten, for example, that an increase of the dole, which is now being pressed upon the Chancellor of the Exchequer, must result in increase of taxation, and increase of taxation automatically produces an ever-widening circle of unemployment, thus defeating the whole purpose of the pressure.

I think I sufficiently answer Dr. Kitching's points by the statement, which I submit is implicit in your leader, that under present conditions milk can only be rendered safe by some form of heat treatment. Clearly it is desirable and even essential to supply a clean milk. Indeed, I see no reason—and this is the opinion also of the largest milk producers in this country—why the supply of what Dr. Kitching calls "ordinary ungraded filth" should not be made a penal offence, just as the supply of unwholesome food is a penal offence. The grading system, by offering a premium for "clean" milk—a premium which, indeed, is so high as to render it available only to a minute fraction of the population—seems to me to attack the problem from the wrong angle. It has been demonstrated that with comparatively little expenditure the quality of milk can be improved to a marvellous degree by exercising surgical cleanliness in production and distribution. I am convinced that advance lies upon these lines rather than upon reliance upon the very expensive present procedure, which in practice offers little or no real protection.—I am, etc.,

House of Commons, March 19th.

E. GRAHAM-LITTLE.

The Milk Question

SIR,—I am surprised that no comment has appeared in reference to the leading article in your issue of February 24th on the milk ration for children. This week there is a note that the Minister of Agriculture proposes to devote certain funds for the provision of pasteurization plant, and under "Ireland" appear some facts in regard to tuberculous infected milk, the most significant points being that in Scotland 2.8 per cent. of pasteurized milks contained living tubercle bacilli, and that in a number of samples of Certified and Grade A (T.T.) milk a percentage of 0.14 was found.

In your leader it is stated that to agree in the consumption of raw milk is to support a measure which is bound to cause sickness and death, and that the only means to ensure a safe milk is treatment by heat—either pasteurization or boiling. If it had been stated "raw milk as it is produced to-day" I would agree, but as it stands the statement is a gross exaggeration, and that the only way to render milk safe is heat treatment is by no means a fact. Considering the thousands of gallons of raw milk that are consumed, and that a very high percentage (say over 80 per cent.) is contaminated, the relative amount of disease directly traceable to milk is small. It is surely reasonable to assume that if the contamination was reduced by, say, 90 per cent., the amount of disease would not only be correspondingly reduced but would practically disappear, as, under present conditions, the actual origin of a fairly high percentage of disease attributed to milk infection is only presumption, and not actually proved. Every case of bovine tuberculous disease does not necessarily arise directly from milk infection.

I am certain that the first, and indeed the only, public health consideration in the matter is not pasteurization but the application of conditions and methods which will ensure a clean raw milk. It has been repeatedly shown that these conditions and methods can be carried out at practically no expense to the producer, and they

certainly do not entail more being done than the manufacturers of foods much less liable to the contamination than milk are called upon to do. The large cities already obtain milk which is of fairly good standard, and pasteurization is carried out only for commercial reasons. Anyone acquainted with the process knows that a high degree of purity is essential in the raw product to ensure efficient pasteurization, but still better productive measures would reduce the pathological organisms to such a degree that it would be extremely difficult to prove that any sample actually caused disease. The country districts require the greatest consideration, as it is practically impossible to pasteurize all the milk consumed in them; compulsory legislation could only be applied, therefore, in the large urban areas, and we cannot conceive of legislation which would discriminate in a matter of public health dealing with the purity of food between one part of the population and another. It must be remembered, too, that even if it were applied in urban areas pasteurization would not ensure that the inhabitants will always drink treated milk—thousands of families migrate to the country every year, and make a special point of drinking milk straight from the cowshed. As for boiling milk, despite the efforts of generations of doctors, few families practise it, and in the country districts it is safe to say that none at all do.

It may be contended that only the milk ration is being mentioned, but here is the opportunity of dealing with the whole question which may never occur again, and it must be grasped. In regard to tuberculous infection I am convinced that the tubercle bacillus enters the milk in the vast majority of cases not directly from an infected animal, but indirectly from contamination with dung, etc.; 99 per cent. of other pathological germs gain entry from the same source, and all are preventable by the easiest of means. To mention epidemics is misleading—these can only be regarded as accidental, as in the case of water supplies—and if milk is so dangerous why do we not have more epidemics than we do? Tuberculin-reacting animals and their milk should be dealt with by the method advocated by Dr. Savage. The protagonists of raw milk are concerned with much more than vitamins, and there are many good reasons why we should be able to obtain clean raw milk. At the same time, I am not decrying pasteurization *per se*; but to advocate compulsory measures without primarily insisting on clean milk is an error of the first magnitude.—I am, etc.,

Hounslow, March 12th.

W. S. FORBES.

Prevention of Influenza

SIR,—Dr. J. Torrens's paper in the *Journal* of February 17th (p. 274) has renewed interest in the disease known as influenza, but I am writing this because it seems to me that the origin of the disease has been lost sight of, and the efforts to find protective measures have been carried in the wrong direction.

If you refer to the older works on medicine you will find the disease was spoken of as "Russian influenza"; and this because in the earlier epidemics it always appeared first in Russia, so far as Europe was concerned. Later epidemics made their first appearance in the South of Europe. This points to the disease originating in the Far East, the infection in the earlier epidemics travelling by the trade routes across Asia, and in the later ones, coming more speedily by boats through the Suez Canal. You will recall that the epidemic of 1918 was popularly known as "Spanish influenza," because in Europe it appeared first in Spain. This variation was due to the fact that the Suez Canal was not so much used during the war, and the boats were arriving from the East via the

Cape. The disease was spreading in South and West Africa before it reached Europe. All these points support the theory of the Oriental origin of the disease.

In the autumn of 1889 we read in the papers accounts of the floods in China caused by the overflowing of the Yellow River (Hoang-Ho), and it was soon after the subsidence of these floods that we heard of the epidemic commencing in China. In 1918 the papers were too full of war news to say much about floods in China, but I ascertained that such had occurred in the early part of the year. Now the Yellow River, as we all learnt at school, has earned its name by the circumstance that it brings down large quantities of yellow mud. This is held in suspension in the upper reaches, where the current is strong, but as the river widens towards its mouth the current is slower and the mud is deposited, so that a bar is gradually built up. Then comes the time when the river is in spate, the current is obstructed by the bar, and a vast flood results. Presently a channel is washed out, the floods subside, and all goes well until another bar is built up. It seems likely that the infection is contained in the mud left deposited on the land, and on drying up is scattered in the form of dust. Here we have the explanation of the fairly regular recurrence of the epidemics some twenty-eight or twenty-nine years apart; and one can predict that the next visitation may be expected about 1946 or 1947. I see that Dr. Torrens puts it between 1945 and 1955.

It seems curious that in the case of such a widespread and common disease all research has been very unsuccessful. But, after all, suppose the research were highly successful, and produced a perfect protective vaccine, how much good would result from it? You cannot protect the whole world—you cannot protect even this country—by such means. Any attempt to do so would be met at once by the usual opposition of the "anti" party, and if left to voluntary initiative would be neglected until too late to make any real difference. Protection, to be of any use, must go further back and strike at the origin. The dredging of the river would seem to be the solution of the problem. It is a big river; and it would be a big job to keep it clear, but not too big for modern engineers to accomplish. The cost, too, would be big, but, after all, it is one to which the whole world should contribute. What is the cost of an epidemic to each country in lives, in loss of working days, and for years after in pulmonary and nervous diseases that follow in its train? A comparatively small amount from each of the Great Powers would be enough to carry out the work, and, I think, would prove to be a sound investment. But we cannot rely on having more than about twelve years before the next epidemic arrives, so that if anything is to be done in the way indicated a start should be made without delay.—I am, etc.,

London, W.1, March 5th.

HOWARD WISE.

Rupture of the Liver in the Newborn

SIR,—In your issue of March 17th (*Epitome*, para. 225) it is stated: "Eva Holmberg (*Finska Läkarsällskapets Handlingar*, November, 1933, p. 1067) notes that, before 1918, when Hedrén published in a Swedish journal his paper on fatal injuries to the abdominal organs in the newborn, no systematic study had been made of rupture of the liver." May I point out that more than twenty-seven years before Hedrén's communication, in a paper read before the Obstetrical Society of London and published in vol. xxxiii of that Society's *Transactions* (1892, pp. 203-296), I made such a systematic study of injuries to the liver and other viscera in

the newborn, and illustrated the injuries by drawings? Among the 150 newborn foetuses there were three cases of rupture of the liver, in two the rupture being confined to the capsule and giving rise to extensive haemorrhage into the peritoneum; in addition, there were thirty-seven subcapsular haemorrhages (illustrated). In Hedrén's "over 1,000 necropsies" three ruptures occurred; in Holmberg's "over 1,000 necropsies" ten ruptures and thirty-seven subcapsular haemorrhages were observed. The author, in a bibliography of the literature "to which she had access" (i den mig tillgängliga litteraturen), does not mention my paper. May I once more call the attention of obstetricians and gynaecologists to the value of the complete index published in the forty-ninth volume of the *Obstetrical Transactions* in providing references to work done in the last forty years of last century?—I am, etc.,

London, W.1, March 18th. HERBERT R. SPENCER, M.D.

Toxins and Emulsions.

SIR,—In reply to the letter of Dr. G. Norman Myers, published in your issue of March 17th, we were totally unaware of any thesis on this subject submitted by Dr. Myers to the Board of the Faculty of Medicine of Cambridge University, and we had no knowledge that Dr. Myers was engaged on this work, which he says he began three years ago, in collaboration with the late Professor W. E. Dixon. Since the appearance of his letter we have obtained the abstract of his thesis, which we find is entitled "Experimental Investigations on the Action of Digitalis and other Drugs in Toxaemia"; it was published in August, 1933. The only reference in the abstract of his thesis having any bearing on emulsions is the following:

"Olive oil, when mixed with aqueous solutions of superlethal doses of diphtheria toxin so as to form an emulsion, protects animals from the lethal effects of the toxin when the emulsion is injected subcutaneously. Olive oil also protects against the effects of superlethal doses of the toxins of *B. tetanus*, *G.G. welchii*, and the *Vibrio septique*. Liquid paraffin has a similar protective action against lethal doses of these toxins, but cream of cow's milk affords no protection."

The observation, that superlethal doses of toxins mixed with finely divided emulsions were non-toxic when injected subcutaneously, was first made by us in 1928, and the whole of the experimental evidence quoted by us in our paper was completed in this laboratory in 1930. Before beginning our clinical investigations this observation was confirmed by workers at the Lister Institute and by Dr. A. B. Porteous at St. Mary's Hospital in 1930. Three years ago one of us (V. G. W.) communicated these results to the Medical Research Society at its meeting in the Pathological Institute of St. Mary's Hospital, when the apparatus for the production of the finely divided emulsions used in this work was also demonstrated, and reference was made to specific adsorption of toxins, which work had been carried out in conjunction with Dr. Grist. In 1930, on the evidence we had obtained showing that toxins were adsorbed and rendered non-lethal when mixed with finely divided emulsions, Sir Leonard Rogers requested that a supply of hydnocarpus emulsion should be dispatched to workers in India, which was done. At the same time Professor Lyle Cummins was supplied with cod-liver oil emulsions for some work on tuberculosis, which has since been published.

It is clear that Dr. Myers unwittingly repeated experiments with emulsions which had already been completed before he began his work.

Dr. Myers states in his letter: "The oils and fats were mixed with aqueous solutions of lethal doses of the toxins so as to form emulsions, which were injected subcutaneously into animals." A solution of toxin in water does not form a spontaneous emulsion with oil, so that Dr. Myers's phrase "so as to form an emulsion" must mean mechanical agitation. As Dr. Myers has mixed his toxins with the continuous phase prior to the formation of the emulsion, which must entail agitation, we suggest that his non-toxic results were due more to destruction of toxin, through oxidation than any other cause. This source of error we meticulously avoided.

Dr. Myers also writes: "I have also established that these toxins have a greater solubility or affinity for water than for the oil, even when they are mixed in the form of an emulsion," and previously he says in his letter that emulsions protected against 24 m.l.d. of toxin. It follows, therefore, that there were more than 12 m.l.d. of toxin in the water unless the emulsions contained more than 50 per cent. of oil. If the animals injected did not die under these conditions his results certainly border on the miraculous. Apart from this we cannot agree with this statement, for we claim this phenomenon to be one of physical adsorption and not a question of solubility. It is for this reason that coarse emulsion—or, as Dr. Myers points out, "cream from cow's milk"—affords no protection, as sufficient adsorption does not occur with such large particles.

Another of Dr. Myers's statements reads: "My results have definitely shown that the oil of these toxin-oil emulsions is very slowly absorbed from the tissues after subcutaneous injection, accompanied by a slow liberation of the toxin." Does Dr. Myers wish us to believe that the large amounts of toxin, which he says are present in the water, are also slowly absorbed? If so, this is contrary to all the experimental knowledge of the absorption of substances in solution from the tissue fluids. We would further like to point out that Dr. Myers does not state either in his abstract or in his letter the percentage of fats contained in his emulsions, or the amount of emulsion injected with his lethal dose of toxin.

The adsorption of toxin by $1\frac{1}{2}$ c.cm. of 3.5 per cent. olive oil emulsion *in vitro* suggested the possibility of adsorbing circulating toxins in the body by increased dose and concentration of olive oil emulsion injected intravenously. During the last four years work has been carried on both experimentally in this laboratory and in various clinical centres both in this country and in India. We are investigating the use of emulsions intravenously in toxæmia of infective, biochemical, and traumatic origin in adults and in infants, and our results, which will shortly be published, are distinctly encouraging. In addition, we might point out that during the last four years clinical experimental work has been in progress whereby tuberculin and other vaccines have been given with our finely divided emulsion with a view to rendering them non-toxic. Further, bacteria of all varieties have been brought into solution, thereby rendering their toxins capable of being adsorbed on to finely divided emulsions.

In conclusion, we definitely assert that, quite apart from the fact that our experiments were concluded and publicly discussed before Dr. Myers began his investigation, the phenomenon referred to by Dr. Myers in his thesis can be very largely explained by the well-known destruction of toxin by oxidation. It is thus clearly apparent that Dr. Myers's experiments deal with an entirely different subject from that of physical adsorption of toxin on to already formed fine emulsions discussed

in our paper. We cannot under any circumstances admit, as Dr. Myers suggests in his letter, that our paper confirms his earlier findings, nor do we admit that the statements made by Dr. Myers in his letter or in the abstract of his thesis in any way confirm what we have demonstrated.—We are, etc.,

Physiology Department, St. Mary's
Hospital Medical School,
March 19th.

V. G. WALSH.
A. C. FRAZER.

SIR,—With reference to your correspondent's letter on toxins and emulsions, the work quoted on this subject by Drs. V. G. Walsh and A. C. Frazer in the *British Medical Journal* of March 10th was conducted in my laboratory and completed in 1930.—I am, etc.,

Physiology Department, St. Mary's
Hospital Medical School,
March 19th.

B: J. COLLINGWOOD.

Hypochondriasis

SIR,—The instructive and also humorous lecture on hypochondriasis (*Journal*, March 3rd) by Dr. Robert Hutchison well merits consideration. Under the heading "The Crank" (p. 365) we read: "It will be time to deal with the laity when we have purged our own profession of faddery," apparently an indefinite postponement of the time when the laity shall be instructed on this matter. This is emphasized by the writings of a well-known psychologist, who expresses his opinion in these words: "The problems of physical health and the education of the general public in matters of hygiene would seem to involve, first of all, the conversion of doctors as a whole to a new attitude of mind, based upon a knowledge of motive and the principles of psychopathology, rather than upon the more material foundations of anatomy, physiology, and pharmacology." Is this "conversion" taking place, and is it desirable? The interests of our patients surely claim a reply in the affirmative.

A busy practitioner may only too possibly, in the rush of work, arrive at the stage of giving the "placebo" without applying the excellent advice with which Dr. Hutchison forestalls his suggested treatment of the "general hypochondriac" (p. 365)—namely, listen patiently, examine thoroughly, etc. In the instance given under "Filial Hypochondriasis" (p. 367) surely "father" is aware of his liability to bronchitis, his cardiac disability, his tendency to undue excitement at his evening games, but does not use his strength of will to overcome his desire for these, presumably, harmful procedures: an all too common experience of humanity. Would not the solicitous efforts by persuasion of some member of his family be of actual help to him? Without undue temerity, I hope, might one suggest that, while being aware of the activities of "faddery," we do not include in that term the ascertained results of scientific research regarding diet, sunlight, ventilation, etc., each of them valuable aids when correctly applied—in other words, that we do not "tip out the baby with the bath water."

If by drawing attention to Dr. Hutchison's lecture, with its sound sense and reasonable ideal, some appreciation and practice of the meaning expressed in his last paragraph could be induced, then Sir George Newman's dictum "Health is won by a way of life rather than by a bottle of medicine" would often be verified. Perhaps this, too, needs the "conversion of the doctors"—I am, etc.,

W. W. SHRUBSHALL, D.P.H.

Burgess Hill, Sussex, March 12th.

SIR,—Dr. Hutchison's address (March 3rd, p. 365) is most stimulating, but why is he so pessimistic as to the possibility of treatment? Why is it "useless" to "attempt to cure" the general hypochondriac? Dr. Hutchison begins by defining hypochondriasis as "over-anxiety"—about health. Well, Sir, are the anxiety states so difficult to treat if we recognize what is the *real* cause of the anxiety? But is it usually at bottom health about which the patient is really anxious? I venture to suggest that it is not, and that the health propaganda which Dr. Hutchison deplors merely serves as a convenient channel for the expression of anxiety due to other causes.

The mention of the "antiseptic baby" recalls the patient described by, I think, the late Dr. Rivers—a lady who, during the war, expressed no fear for her husband at the front, but found no precautions too elaborate to protect the health of her two children. When, however, the news came that her husband was killed the nursery routine went back to normal. Dr. Hutchison would presumably call this a case of vicarious hypochondria; but is it not obvious that the fear which she refused to admit for her husband had transferred itself to the children?

If the real cause of anxiety is not usually to be found in the sphere of health, where are we to look for it? The middle-aged man who has given up business, or the colonel who has retired from the Army, is not occupying as important a situation or receiving as much attention as he did formerly; moreover, the colonel is up against the fact that he has finished his Army career without having attained to the rank of general, and the business man is hardly likely to have been a captain of industry if he retired in middle age. So the hypochondriasis secures them attention and serves as an excuse for their not having achieved greater success in life, both of which also help to keep off their feeling of inferiority. The crank "who believes that health is only to be attained by following some special rule of life" holds the same views about health as many of his predecessors of the last century did about religion: both set up a difficult standard to which few are likely to attain; hence the superiority of those that do. The parents that lay down such detailed and devastating rules for their children, whether in the nursery or the preparatory school, are attempting—generally unconsciously—to dominate their children; and the children (probably the same ones, grown up) who will not let father smoke, or mother play bridge, are retaliating by trying to dominate their parents. Does anyone desire to demonstrate his superiority unless he feels doubtful about it?

So all the various hypochondriacs have one thing in common—a sense of inferiority or insecurity—and in so far as we can treat this we can relieve them not only of their symptoms, but of their disease.—I am, etc.,

Wandsworth, March 19th.

F. GRAY.

Hypochondriasis. Labour. and Analgesia

SIR,—Dr. James W. Hamilton's letter in the *Journal* of March 17th (p. 505) represents very well the opinion of some fifty years ago. Our fathers usually maintained that it was most improper for men and boys to be given nitrous oxide for dental extractions. They were more generous to women, however, as they allowed gas for dental extractions, and even chloroform in confinements (very ably administered, too). Dr. Hamilton's "lay scheme to provide anaesthesia in labour" obviously refers to the National Birthday Trust, a body of most able

and disinterested people, with a profound knowledge of their subject. I suggest that he gets in touch with them and really learns what they are doing. As to "chloroform bombs," these dread weapons are 20-minim capsules of chloroform produced by a consulting obstetrician with a long record of distinguished work. Can we not credit this gentleman with some knowledge of his subject?

Dr. Hamilton, I think too, is unduly pessimistic in feeling that we are bent on teaching modern woman that intervention in some form is indispensable in labour, as those of us who have had experience of nitrous oxide analgesia in labour find that instrumental deliveries are less common where this form of analgesia is used than when no relief is given. Let Dr. Hamilton study the work of British women in all branches of industry and science to-day, and then I think he will find that his fears as to the future of the race are unfounded.—I am, etc.,

New Barnet, March 18th.

JOHN ELAM.

SIR,—It is my bounden duty to answer Dr. James W. Hamilton's letter in your issue of March 17th on hypochondriasis. Doubtless someone more qualified to deal with his second point will do so. I am only concerned with his third reason for the opinion that woman is becoming more unfitted to carry through an unaided labour.

England is aware of the advance that has been made by the use of chloroform capsules. For some time I have been engaged—with the aid of a loyal band of assistants—in research work on a new form of analgesia, which has proved successful for the parturient woman. I cannot, therefore, but be impressed that one of two things has happened: either those who hold the opinions of Dr. Hamilton have never seen the relief obtained by the methods of analgesia in midwifery practice such as these, or no pity can exist in their hearts. I would like to pay the highest tribute of gratitude to the National Birthday Trust Fund for its encouragement and assistance to workers in this subject, who, thank God, do not share the views of your correspondent.—I am, etc.,

Liverpool, March 19th.

R. J. MINNITT, M.D.

Acute Thyroiditis following Teeth Extraction

SIR,—I was interested in Dr. Ian Thorburn's case (March 10th, p. 428) because he suggests that the "thyroiditis" was due to infection, and because a month ago I saw a similar case.

My patient was a well-developed young woman of 28, with a swelling of the thyroid, a pulse of 134, and a blood pressure of 168/80. There was a suggestion of exophthalmos. Her illness also began in August, 1933, but after removal of tonsils. In spite of everything she married in the following December (1933). In her case the same cause had been assigned; she had been told that her condition was due to a poison getting into her system from the tonsils, said to have been septic.

I am not going to attempt here a discourse on the aetiology of disease; but why does Dr. Thorburn attribute the "thyroiditis" in his case to infection? He offers no proof that it was so, except that it followed extraction of seven teeth. The cervical lymph glands were unaffected.

Why suppose all disease is due to infection? When I go to the cinema, and by ill luck see a melodrama presented, and my pulse goes up to about 150, is that due to infection? The thyroid enlarges in pregnancy: when

Graves's disease already exists, pregnancy may make it worse. Is this due to infection? Some people may think that pregnancy itself is an infection, since they assign the metabolic aberrations so often occurring in it to what they call "toxins." A man gets pneumonia: marked albuminuria develops; without any ado it is attributed to infection. Judgement is made without considering all the evidence; it is enough to know that on the heels of the "infected" state—a carious tooth, an enlarged tonsil, a pregnant uterus, an inflamed lung—appeared the metabolic aberration.

Is it not time to ask, Whither medicine? Is not the tendency a return towards the superstition of the Middle Ages, with its correlated therapy, as depicted in *Macbeth*, Act IV, Scene i? Surely, we want more efficient brakes. We want even to stop and look round—even to think. Otherwise the word "infection" will lose its connotation. —I am, etc.,

Rugby, March 10th.

R. H. PARAMORE, F.R.C.S.

Tonsillectomy: Complete or Partial

SIR,—In reply to the question asked by Dr. Freer in his letter in the *Journal* of March 3rd (p. 406), I would like to say that I am in entire agreement with what Dr. T. B. Jobson states in his letter in your issue of March 17th (p. 506).

Diseased tonsils should be completely removed, and in the young up to the age of 8 to 10, and sometimes 12, they can be perfectly enucleated by the guillotine, by the Whillis-Sluder method. It is purely a personal matter whether the one method (guillotine) or the other (dissection) is done, but in experienced hands—and they *must* be experienced—the guillotine method is quicker, and produces less trauma and less shock to these young patients. Convalescence is also shortened. For adults, and for those over 10 to 12 years of age, dissection is the only reliable method.—I am, etc.,

A. MACKENZIE ROSS, M.B.,

Poole, Dorset, March 18th.

Ch.B., D.L.O.

Collective Suggestibility

SIR,—The Occult Committee of the Magic Circle, of which I am chairman, is collecting and analysing the evidence for the rope trick. I need hardly say that this is of the weakest nature. Every claim to have seen it breaks down on investigation. The last resource of a number of these people is that they were hypnotized. My committee would be most grateful if some of your readers, who are experts in hypnosis would give us their assistance. I have endeavoured to read up the subject, and can nowhere find the slightest reason to believe that any man has the power to induce hypnosis in a number of people gathered round him and at some distance from him, without their co-operation and without the opportunity of hypnotizing them individually and by the use of ordinary methods. The contention that the onlookers are so effectively hypnotized that they cannot get up and walk to the edge of the veranda on which they are seated in order to settle simply and easily what has happened to the boy at the top of the rope strikes me as absurd.

It may be said that this is not hypnotization, but suggestion. I find it very difficult to believe that normal, healthy-minded people can, under the influence of suggestion, believe anything so grotesque as that a rope is

thrown into the air and stays there erect, defying the laws of gravity, that a boy climbs it and disappears, etc. It seems much more probable that the people who come forward with such stories have a morbid desire for the limelight. I do not suggest that in all cases they are deliberately uttering falsehoods, though in some cases it is difficult to exclude this possibility. I think that some of them actually believe the stories they tell.

It will not, I think, be hard to trace to their source and lay for good and all the absurd stories about photographs that have been taken without result of any kind. I call them absurd, because I am convinced that the rope trick, as usually described, is never attempted. It is a sheer myth, but I should greatly value the opinion of some of your readers as to this idea of collective hypnotism or collective suggestibility. I am not challenging that a good speaker or a good actor can suggest all sorts of things to an audience, as, for instance, when a conjurer, after throwing up a ball a number of times, palms it, drops it out of the way, and following what would have been its flight with his eye, mystifies his audience as to what has become of the ball. This is a comparatively simple thing to do, but that he could "put across" the same thing with the rope trick appears to me absurd. I think it is a duty incumbent on those who have the knowledge and the experience to show up the flimsy basis on which so many of these so-called scientific experiments rely.—I am, etc.,

London, W.1, March 10th.

R. H. ELLIOT, M.D.,

Lieut.-Colonel, late I.M.S.

Chilblains

SIR,—Dr. Ingram, in the *Journal* of December 23rd, 1933, writes to suggest a treatment for chilblains. He tells us what he considers the cause—namely, sluggish peripheral circulation—and claims that the treatment he suggests is therefore rational. I am not wishing to deny it, but to my mind he is rather like Naaman, who preferred Abana and Pharpar, rivers of Damascus, etc., to the humble Jordan.

I would suggest as my "Jordan" a method of treatment advocated by my teachers in Edinburgh, and one which I have personally found very effective in practice. An elastic band, half an inch or so in width, is applied round each wrist sufficiently tightly to cause just enough venous congestion to render the hands faintly blue. This is left on for ten to fifteen minutes. When removed the hands should be held above the head for a minute or two till the colour returns to normal. (For practical purposes a convenient routine to suggest to the patient is to apply the bands on rising from bed and wear them till he, or she, has finished dressing.) This is done daily for several weeks, and in addition to being most effective in preventing trouble in the susceptible, is also remarkably efficient in those with established lesions and even cracked, chapped hands as well.

My most successful case was an elderly gentleman of over 70, who had had much trouble with his hands every winter for years. He had tried much medication, including calcium. He employed the above treatment as soon as the cold weather began, and throughout the winter had not even a suspicion of a chilblain. It would seem to me that this method is just as rational as the thyroid medication advocated by Dr. Ingram, and has this advantage, in addition, that it is less expensive.—I am, etc.,

GORDON C. GILLISON, M.B., Ch.B.

Hankow, China, January 26th.

EPSOM COLLEGE ELECTIONS

At their meetings in February last the Conjoint Committee and the Council of Epsom College Royal Medical Foundation elected the following to pensions as from April 1st, 1934:

Dr. Hugh Alston, Dr. John Good, Mrs. Sophia Blott, and Mrs. May Walker, Ordinary and "Dr. Strong" pensions of £40 a year.

Dr. Asher Lyons Altman, a "France" pension of £42 a year.

Miss Margaret A. C. Keene, a "Cheyne" annuity of £40 a year.

Miss Margaret A. R. Goodinge, a "Henry Duncalfe" annuity of £30 a year.

Miss Maud Dawson, an "S. H. Tait" annuity of £16 16s. a year.

Miss Lydia M. Braidwood and Mrs. Eunice C. Nelson, the senior pensioners on the list, were each awarded an extra "Da Silva" pension of £20 a year.

Isabel Shoolbred Rowat was awarded a "St. Anne's" scholarship of £120 a year.

Obituary

SIR WILLIAM NORMAN, K.C.B., F.R.C.S.Ed.

Surgeon Vice-Admiral and formerly Director-General of the Medical Department R.N.

We regret to announce the death, on March 16th, of Surgeon Vice-Admiral Sir William Norman, who was Medical Director-General R.N. during the last eighteen months of the war.

William Henry Norman, son of Fleet Paymaster W. H. Norman, R.N., was born on December 13th, 1855, and, after school days at Plymouth, studied medicine at King's College Hospital, London. He obtained the diploma of M.R.C.S.Eng. in 1878, and the L.R.C.P.Ed. three years later. Following the family tradition he entered the Royal Navy in 1882, joining up at Haslar as a surgeon. At the end of ten years' service, mainly afloat, during which he was mentioned in dispatches for "skilful surgery in trying circumstances" in an action with a slave dhow off Zanzibar, he was promoted to the rank of staff surgeon. In 1895 he served with the Naval Brigade under Admiral Rawson, and after returning home was appointed to H.M.S. *Boscawen*, the training ship for boys at Portland. In 1908 he was promoted deputy inspector-general, and in 1913 surgeon general. Throughout the first three years of the war he was at Plymouth in medical charge of the naval hospital. In June, 1917, he was appointed Director-General of the Medical Department at the Admiralty, with the rank of surgeon vice-admiral, and held this post for two years, when he retired from service on attaining the age of 65, and went to live near Launceston in Cornwall.

Sir William Norman received many well-deserved honours. He was created C.B. in 1916, and K.C.B. two years later, and was appointed an honorary surgeon to the King in 1920. His foreign decorations included the Grand Cordon of the Sacred Treasure of Japan, Commandership of the Legion of Honour, of the Grand Order of Belgium, and of the Star of Rumania, and the distinguished service medal of the United States. He was a Knight of the Order of St. John of Jerusalem, and a Fellow of King's College, London. The Royal College of Surgeons of Edinburgh elected him an honorary Fellow in 1919, and in the same year he received the honorary freedom of the Apothecaries' Society of London.

Sir HUMPHRY ROLLESTON, Bart., who was temporary surgeon rear-admiral during the war, sends the following tribute:

Many, and perhaps in a special degree those who were temporary surgeons in the Royal Navy during the war, will hear with very deep regret of the death of Surgeon Vice-Admiral Sir William Norman, who was Medical

Director-General during the eventful years June 1st, 1917, to June 1st, 1919. After a painful fight for life, prolonged for two months, with more than one abdominal operation, he died in the Royal Naval Hospital, Plymouth, which he had so successfully and happily managed as surgeon general from 1913 to 1917. It is difficult to imagine that he ever made an enemy; he certainly had innumerable friends, and to meet him was a tonic like the fresh air of a sunny day in spring. A fine figure of a man with the healthy complexion and all the qualities of a genuine sportsman; he loved the country more than official power, thoroughly enjoyed the retirement, far in the heart of Cornwall, he so well deserved, and leaves behind him pleasant and affectionate memories.

SIDNEY REGINALD DYER, M.D.

Late Commissioner of Prisons for England and Wales

The death of Dr. Sidney Reginald Dyer, in his seventy-fourth year, occurred on March 14th, after a short illness. The son of the late Joseph Dyer of Chiswick, he was educated privately and at the Middlesex Hospital. He qualified M.R.C.S.Eng. and L.S.A. in 1883, and became a Licentiate of the Royal College of Physicians in 1884. He obtained the M.D.Brussels degree with honours in 1888, and the D.P.H. of the English Conjoint Board in 1891. He was called to the Bar at the Middle Temple in 1896. At the Middlesex Hospital he served as house-physician to Dr. W. Cayley, and after a house-surgeoncy at the County Hospital, Huntingdon, joined the Prison Medical Service in 1885. He served at Wandsworth, Stafford, Dartmoor, and Brixton Prisons, and in 1917 was appointed Medical Inspector of H.M. Prisons, England and Wales. In 1921 he was further promoted, and became a Commissioner of Prisons and Director of Convict Prisons, and retired in 1923. During the war he acted as Home Office medical referee to the German internment camps. He was a member of the Medico-Legal Society, and served on the council of the Central Association for Mental Welfare. He was also a member, and at one time vice-president, of the Devonshire Archaeological Society, and held a commission as captain in the 1st London Volunteers, Royal Engineers. On retirement he sat for many years as a justice of the peace for the county of Somerset.

Throughout his career Dyer set an example of single-minded devotion to duty to all those who had the privilege of working with him, and was a particularly loyal, unselfish, and generous colleague. During the years 1909-17, as senior medical officer of Brixton Prison, he was constantly in attendance in the criminal courts in London and the adjacent counties, and the judicial authorities and members of the Bar soon learnt to appreciate the value of his opinion and the unbiased manner in which his evidence was presented. His sympathy, humane understanding of the frivolities and passions of others, and kindness of thought were accountable for much of the success he achieved as an examiner into the mental condition of prisoners awaiting trial. His equanimity and sincerity stood him in good stead when under prolonged examination in the witness-box. It is probably true to say that the years at Brixton Prison, although exacting and often harassing, were particularly satisfactory to Dyer, for the preparation of his cases for the criminal courts and attendance at the courts appealed strongly to both his medical and his legal training. A man of such wide sympathy might easily have become disheartened and depressed at the tragedies which daily passed before him, had he not possessed a strong sense of humour. As medical inspector his visits to the various prisons were always welcomed by the medical staffs, who looked upon him as a personal friend as well as an official adviser. His talents and wide knowledge were given full scope when

he became a Prison Commissioner, and his decision to retire, in 1923, was accepted with great regret by his colleagues.

Dr. Dyer was for many years a member of the British Medical Association, and served on the Representative Body at the Annual Meeting at Exeter in 1907. He married in 1898 Rose, daughter of Captain Talbot Price, R.N., and leaves one son.

THE LATE DR. A. A. MONTAGUE

We have received from Suva some further appreciations of the work and character of Dr. Aubrey Montague, late chief medical officer, Colony of Fiji, of whom an obituary notice appeared on February 10th.

Dr. T. CLUNIE, honorary secretary of the Fiji Branch of the B.M.A., writes:

Dr. Montague had great experience in the colony, and his advice was often sought in matters quite outside his department. He rendered



valuable service in connexion with education and other matters, and attended the Imperial Conference in 1926. Two institutions which benefited by his great experience, his keen insight, and administrative ability were the Central Medical School and the Makogai Leper Asylum. The Native Medical School of Fiji had come into being about 1885, but its pupils were native Fijians, and its activities were limited to the Colony of Fiji. The

activities of both the medical school and the leper asylum were greatly extended during Dr. Montague's tenure of office. To-day natives from all the Pacific groups may attend the Central Medical School, while the Leper Asylum receives patients from most of the groups and from New Zealand. As chief medical officer, Dr. Montague was consulting physician and surgeon to the Colonial War Memorial Hospital. He was a practised surgeon and an able clinician. Of a quiet and retiring disposition, yet possessing great charm, he was indeed "The Beloved Physician." He had been a good tennis player, and latterly was a keen golfer. In social life he is perhaps remembered best as a good bridge player, who never lost his charm, and as a very able after-dinner speaker. The late C. E. Montague, novelist, and once of the *Manchester Guardian*, was a brother. A surviving brother, Frank Montague, is an Oxford don.

Dr. S. M. LAMBERT, Director in the South Pacific, Rockefeller Foundation, writes:

One of the greatest influences on my life was my intimate association with Dr. Montague through the period of his chief medical officership in Fiji. I never knew him to do an underhand thing during that time or ever go back on his word, not alone in his dealing with me, but in his conduct of his office, of which I knew a great deal. He was one of the three ablest men I have known in the South Pacific in the last fifteen years, and not the third by any means. The impression he left with one whom this shy man considered worthy of a closer intimacy was one of great intellectuality well controlled. He was a man of high culture, but well balanced, with good practical judgement. Dr. Montague's leadership was responsible for the Central Medical School in Suva, Fiji, in which eight South Pacific groups co-operate to train natives in simple medicine to care for their own people; he was responsible for the enlargement of Makogai

Leper Hospital in Fiji; so that South Pacific groups co-operate there in the care of their lepers, and this institution was brought, under his care, to a high point of perfection. His administration of his office was most economical, and each pound of Government money was spent with scrupulous care, though it was not parsimony, as during his term the medical department had its largest expansion, especially along lines of preventive medicine. His protection of Government funds was refreshing in these days. On matters outside of his department his advice was often sought and taken by Government on account of his sagacity and clear view-point; and it was a great shock to me when this man, who had given thirty years of outstanding loyal service to the Empire, was allowed to retire without suitable honours, which he had so richly deserved. His work had been done so unobtrusively, and he was so lacking in self-seeking, that only when he retired was the great gap caused by his absence realized. I shall never see his like again.

Universities and Colleges

UNIVERSITY OF LONDON

At a meeting of the Senate on February 21st it was resolved to institute, in accordance with the regulations on University Titles (*Calendar*, 1933-4, pp. 235-46), a University Readership in Bacteriology tenable at St. Bartholomew's Hospital Medical College, and a University Readership in Morbid Anatomy tenable at University College Hospital Medical School.

The regulations for the M.B., B.S. Examination for Internal Students (*Red Book*, 1933-4, p. 219) were amended by the transference of the last sentence of the fourth paragraph under the heading "Details of Examination" to the end of the fifth paragraph, and by the substitution therefor in the fourth paragraph of the following:

"Registered medical practitioners who pass in one group only of the M.B., B.S. Examination will be eligible to enter for the other group at any time on payment of the proper fee."

The regulations relating to the Third Examination for Medical Degrees (*Blue Book*, September, 1933, p. 265) were amended (a) by the transference of the last sentence of the third paragraph under the heading "Details of Examination" to the end of the fourth paragraph; and (b) by the addition of the following sentence to the end of the third paragraph:

"Registered medical practitioners who pass in one group only of the M.B., B.S. Examination will be eligible for the other group at any time on payment of the proper fee."

Dr. R. A. Young has been appointed representative of the University at the Twentieth Annual Conference of the National Association for the Prevention of Tuberculosis in London in June.

A Carpenter Medal, together with a money prize of the value of £20 in all, will be awarded by the Senate in 1934 for work of exceptional distinction in statistical, genetic, comparative, or experimental psychology, including the functions of the central nervous system and special senses, for which a doctor's degree (other than the Ph.D. Degree) has been awarded during the period of three years ending on May 31st. No award will be made, however, unless in the opinion of the Senate work of sufficient merit has been presented. Candidates, who may be either internal or external students, must forward their applications not later than June 10th to the Academic Registrar, from whom further particulars may be obtained.

Studentships

The Geoffrey E. Duveen Travelling Studentship in oto-rhino-laryngology, of the value of £450, will be awarded annually. The tenure shall, in the first instance, be for one year, part of which will be spent in study abroad, in accordance with a scheme approved by the Geoffrey E. Duveen Studentship Board, but it may be extended for one or two years, and during the extended period the student may be allowed to undertake research at the Royal Ear Hospital, or some other laboratory approved for the purpose. Grants for promotion of research in oto-rhino-laryngology, or in any part thereof, may also be made by the Trust Fund. Full particulars can be obtained from the Academic Registrar, South Kensington, S.W.7, and prescribed forms of application must reach him not later than June 11th, together with a statement of the nature of the research proposed and a scheme of study for the approval of the Board.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons will rise for Easter on March 29th and resume on April 9th. The Budget will be introduced on April 17th. This week the House of Commons discussed Scottish Bills, the co-ordination of the Defence Services, and unemployment in the distressed areas.

Import orders were approved. Additional Import Duties (No. 8) Orders, laid on the table of the House of Commons on March 19th, provide for the removal of the additional duty on dried foliage, dried flowers, and the like of the kinds used solely for the manufacture of drugs or medicine.

The India Pay (Temporary Abatements) Bill, the Mining Industry (Welfare Fund) Bill, and the Rural Water Supplies Bill were read a first time in the House of Lords on March 14th. On the same date the Lords read the Wirral Joint Hospital District Bill a second time. The Dyestuffs Importation Bill was read a second time by the Lords on March 13th. On March 20th the Rural Water Supplies Bill was read a second time.

Mr. Oliver Stanley, the Minister of Transport, received a deputation on March 20th, which came to advocate statutory compensation to hospitals' and medical practitioners for aid given after road accidents. The deputation, which had been appointed by a meeting called by the Parliamentary Medical Committee, was introduced by Sir Francis Fremantle and consisted of the Earl of Iveagh, the Earl of Kinnoull, Lord Luke, Lord Moynihan, Sir Arnold Wilson, Colonel T. C. R. Moore, and Dr. A. B. Howitt. The speaker emphasized the urgent need for compensation for services rendered and for material loss resulting from the treatment of road accident cases. The deputation suggested that in the forthcoming Bill to deal with road accidents there should be incorporated provisions on the lines of the Road Traffic (Emergency Treatment) Bill, which had passed through all its stages in the House of Lords. The Minister, in reply, expressed his sympathy for the position of hospitals and medical practitioners in connexion with road accidents, and promised to give careful consideration to the views put forward by the deputation. The Government Bill on the subject is to be introduced before Easter.

Defence Medical Services

B.M.A. and Schemes for Recruitment

In the House of Commons, on March 15th, Mr. DUFF COOPER made the annual statement on the Army Estimates.

Sir FRANCIS FREMANTLE dealt with the Medical Services. He said the report of the investigation into the Medical Branches of three Fighting Services by a committee, of which Sir Warren Fisher was chairman, had been issued last summer. On the Army Medical Services that committee reached a conclusion which in general was accepted by the medical profession, including the British Medical Association. This concerned the continued lack of recruits for the Medical Services, and how to meet the competition of civil life when appealing to young qualified medical men of about 26. The material prospects of the Services hitherto had been good enough for the young man, but burdensome when he married and had a family, and still more so when he retired. The committee suggested improvement in meeting the desire of men to devote themselves to the profession, and said it was possible, by adjustment and upgrading, to give better prospects to individuals, who could obtain promotion earlier, continue longer in the Services, and make a career. On the other hand, there should be a short service, so that those who entered for five years might retire, with a grant of £1,000, to civil life and practice. This would give a great opportunity of getting sufficient recruits for the Services. The House had not yet the decision of the Government on the project. The British Medical Association received the other day the reply that the Army Council found it necessary

to discuss the recommendations of the Fisher Committee with the India Office, which had to communicate with the Government of India. Could Mr. Duff Cooper indicate when these matters would be dealt with? Meanwhile, the difficulty remained, and could not be treated lightly. In the fifteen years after the war the Army had gone on with a diminishing number of recruits for medical officers, and with a number of elderly officers assisted by civilians, who would not be able to proceed to the higher ranks. The whole Service was disorganized, and the Army was heading for disaster, such as resulted at the beginning of the South African War, from the deliberate starvation of the Medical Services by the War Office and the indifference of Parliament. Not only the Medical Services, but the British Dental Association was concerned. That Association had a definite scheme. He hoped the War Office would get a scheme of recruitment for the men who were wanted in the Medical Services.

In reply, Mr. DUFF COOPER said he hoped the Warren Fisher Report would be adopted, and that the difficulties with regard to the Indian position would not prove insuperable. The report dealt with three Services, all of which were anxious it should be adopted. Only from the point of view of the Army in India was it being held up.

The House then went into committee and carried the Army Estimates for men, pay, half-pay, pensions, and other charges. The strength of the Army in 1934-5 was authorized at 149,500, all ranks.

Housing Progress

Replying to Sir A. Sinclair, on March 14th, Sir GODFREY COLLINS said the numbers of State-assisted houses under construction by local authorities and private enterprise in Scotland at the end of last October, November, December, and January were 20,238, 19,259, 18,856, and 18,694 respectively. The numbers of houses approved for subsidy but not begun at the same dates were 5,008, 4,794, 4,609, and 3,441 respectively. Only one guarantee scheme under Section 3 of the Housing (Financial Provisions) (Scotland) Act, 1933, had been submitted, and this was now under consideration.

Sir HILTON YOUNG stated, on March 14th, that the housing measure announced in the King's Speech would include provisions for combating the evils of overcrowding. Assistance from public funds would be available for this purpose subject to certain conditions. In addition there would be provisions dealing with reconditioning.

In reply to Mr. Chorlton, on March 15th, the Minister said that the Manchester Town Council had not yet submitted to him any order in connexion with the Collyhurst slum-clearance area. Until that had been done the date of the inquiry could not be fixed.

Contraceptives Bill

In the House of Lords on March 20th Lord DAWSON OF PENN moved the third reading of the Contraceptives Bill. He said that he wished to make clear that the measure did not interfere with the sale of contraceptives in any shop to any person of any age. It did not prevent them being exhibited in shop windows, nor did it prevent notices being put up that such sale took place within. What the Bill did was to control the public exhibition of drawings and diagrams, and the sale of contraceptives in streets and other public places by means of hawking and automatic machines. Lord Dawson once more expressed his conviction that the best way to exorcise evil was to promote good, and that the best way of dealing with contraception was to remove the atmosphere of falsity surrounding it. If a ballot were taken of married people under the age of 40 throughout the country he thought that three-quarters or seven-eighths of them would desire to be in a position to regulate the numbers and spacing of their families. How otherwise could they explain the steady fall in the birth rate and the increasing intervals between children? Contraceptives were used by all classes. There was a feeling, however, that the knowledge available to the rich was being withheld from the poor. He appealed to the Ministry of Health to permit a wider discretion to local authorities, so that birth control instruction might be given to married women. That would direct the sale into regular channels, and save newly married women medically unfit for pregnancy from endangering their lives. After the

generous reception which their lordships had given to this Bill he hoped that the Government would look benevolently on the measure. The Bishop of London said that the Bill was a very restricted measure, and he had received evidence that day which showed some of the mischief which it was designed to prevent. Three shops had been investigated. One shop in London was mainly patronized by unmarried men. Another shop in a Midland town had a slot machine outside, from which contraceptives were sold for a shilling, and even for sixpence. In a barber's shop in a little country town contraceptives were displayed in the windows. These facts showed that those who thoroughly disapproved of contraceptives could vote for this Bill, just as Lord Dawson and his friends could also vote for it. He (the Bishop) hoped the Government would see its way to assist the passage of the Bill. The Bill was read the third time and passed.

Conditions in Offices

In the House of Commons, on March 16th, Mr. THORNE moved the second reading of the Offices Regulation Bill. He said similar Bills had been introduced in 1926 and 1928. He spoke of the number of offices, even Government ones, where employees worked underground in places badly lit and badly ventilated. The Bill provided that offices, and rooms used as such, must be whitewashed once in fourteen months. It laid down that 500 cubic feet must be allowed for every person working in a room, or if the room was used night and day, at least 1,000 feet. Cubic space provision did not apply to a room more than 12 feet high. Clause 9 of the Bill laid down that no person under 16 should work in any office. Mr. LEONARD, in seconding the Bill, pointed out that the Shops Bill, introduced lately in the House of Lords by the Government, would protect clerical workers who worked in association with retail trades.

Mr. HERBERT WILLIAMS moved the rejection of the Bill. He admitted that many offices ought to be improved. Those of London, in general, were much better than those of some provincial towns. In a great deal of the building recently done the standard had been raised enormously. Section 91 of the Public Health Act gave power to deal with premises which were a nuisance or injurious to health, and also with "any house or part of a house so overcrowded as to be dangerous or injurious to the health of the inmates." His impression was that an office was a "house," and would also come under the term "work place" in the same Act. The bulk of the declaratory parts of Clause 1, Subsection 1, of the Bill were covered by existing legislation, though the provisions about the lighting and water supply of offices were not. The standard laid down in the Bill for cubic air space per person was more ample than that observed in the House of Commons. The Public Health Act of 1890 anticipated another of the proposals in the Bill by securing that every building where persons were employed in a trade or business should be provided with sufficient and suitable sanitary conveniences. Mr. LEVY seconded the rejection of the Bill. The existing Public Health Acts, he said, gave full power to local authorities to deal with premises injurious to health. Mr. RHYS DAVIES surmised that about 1,000,000 persons were employed as clerks in the United Kingdom. Even when local authorities adopted the health provisions of the 1875 and 1890 Acts medical officers of health universally declared they had not sufficient powers now to deal with unhealthy offices, shops, and workshops.

Mr. DOUGLAS HACKING, for the Home Office, said the Bill did not content itself with matters within the scope of the Public Health Acts—sanitation and ventilation. It dealt also with overcrowding, rest-rooms; restriction of periods of employment, periodical returns of persons employed, doors being made to open from the inside, safety apparatus, and other matters, which could only be dealt with properly by the Home Secretary. The Bill was a restrictive measure, and Mr. H. G. Williams's criticism of it, though harsh, was fair. Mr. Rhys Davies was wrong in saying that the Health Acts were not compulsory. The Act of 1875 was compulsory, and under it the local authority was compelled to take notice of a nuisance. There was no doubt that the words "premises" and "house" in that Act included offices. The official view was that "work place" in that Act did extend to offices. Some local authorities did not accept that statement, and no test case had ever been

brought. In the report for 1928 of the Chief Medical Officer of the Minister of Health, Sir George Newman said that most of the medical officers of health consulted doubted whether systematic inspection was necessary. Sir George drew attention to the need of special consideration being given to basements, but reported no evidence of abuses which would justify the present Bill. The Bill disregarded the recommendations of the Select Committee on Shop Assistants which reported in 1931, and of which Mr. Rhys Davies was a member. The proposal in the Bill about air space was far in excess of anything found in factory legislation. So were the prohibitions on the employment of young persons. He assured the House that the Government had sympathy with the intentions of Mr. Thorne, and this had been borne out by the Shops Bill. Mr. Hacking submitted that local authorities had to-day adequate powers to undertake systematic inspection of offices.

Sir FRANCIS FREMANTLE said that for eight years he had brought to the notice of successive Ministers of Health the need for legislative or administrative action in regard to the evils the Bill sought to remedy. There was reason for disquiet about the health of those who worked in some offices. He had gone very thoroughly into the matter with the life tables in the census of 1921. Clerks at some ages showed a worse mortality, both for phthisis and general mortality, than the figures for all occupied and retired males. In the higher ages, from 35, the mortality of clerks, both phthisis and general mortality, was considerably better than that for all occupied and retired males. The figures for clerks of banks, insurance offices, and railways were better than for all occupied and retired men, those for commercial clerks were considerably worse. In good offices health was as good as anywhere else. It might be very bad in old factories and workshops which had clerical offices fitted in somehow. A basement could be healthy, but it had to be made so by attention to ventilation, lighting, and so on.

Mr. HICKS said that the Trades Union Congress, the Clerks' Association, and the Women Clerks' and Professional Workers' Association were not satisfied that the grievances they suffered could be adequately dealt with under the present laws.

Dr. O'DONOVAN said that office workers were exposed to strain on health no less than factory workers. The work done in the modern factory in health records, welfare work, health supervision, prevention of accidents, and following-up of absentees was an astonishing piece of preventive medicine in which the Home Office, the trades unions, and the employees co-operated. Yet in London these lessons in hygiene were neither remembered nor put into practice. In London many insanitary small houses were now offices. The medical care of office workers was the next line along which public health measures should be developed. Nothing but good to the public health would follow if the system of "appointed factory surgeons" could be introduced within the offices of the country. All the preventive work of the Bill could be carried on with little inspection. The possibility of a surprise visit would keep a neighbourhood in good order for months on end. He welcomed the Bill as an attempt to check the ill effects of the over-urbanization of life.

Mr. ARTHUR GREENWOOD said every local authority knew the powers under the Public Health Act of 1875 were utterly inadequate. Any body of medical officers of health knew this was true. The death rate among clerks was almost double that in agriculture.

Mr. THORNE moved the closure. This was rejected by 60 to 40, and the question that the Bill be read a second time was not put.

Silicosis.—On March 13th Mr. E. Brown, replying to Mr. E. Williams, said that the problems of the causation and diagnosis of silicosis were being investigated under the direction of the Industrial Pulmonary Diseases Committee of the Medical Research Council and in other quarters. This he believed to be the best method of attacking the problem of this disease, and at the present stage of the investigations he did not think that to set up a committee to inquire into the effect of stone dusting as a contributory cause of silicosis, as suggested by Mr. Williams, would serve any useful purpose. At a later stage, however, he would take the suggestion of the hon. member into consideration. Mr. T. SMITH asked whether there was any evidence of stone dusting being a contributory

cause of silicosis, and whether it was regarded as such. Mr. E. BROWN: Not that I know of. Mr. TURTON asked if it would not be simpler to make silicosis an industrial disease under the Workmen's Compensation Act. Mr. BROWN: No; there are many other causes involved.

Health of Elementary School Children.—On March 13th, in reply to Sir W. Jenkins, Mr. RAMSBOTHAM said that the percentages of children in public elementary schools in England and Wales found on routine medical inspection to require treatment (excluding cases of uncleanness or dental disease) at the age of 5 or at entry to school were: 22.3 in 1925; 19.8 in 1930, and 18 in 1932. The percentages at the age of 8 were: in 1925, 26.1; in 1930, 22.5; and 1932, 20.3. At the age of 12 the percentages were: in 1925, 24; in 1930, 20.7; and 1932, 18.3. In further reply to Sir W. Jenkins, Mr. Ramsbotham said that there were at present fifty-eight nursery schools recognized by the Board of Education. All those schools were in England. Children might be admitted at the age of 2, and usually left at the age of 5. The children were submitted to periodical medical examination, and the defects discovered were similar to those found in children attending public elementary schools. No information was available as to the percentage of children suffering from defects on leaving these particular schools. They were all subject to the usual examination on entering the ordinary public elementary schools.

Boiler Scalers in Docks.—Sir J. GILMOUR, replying on March 13th to Dr. O'Donovan, who asked if he would take steps to obtain power to supervise the health and working conditions of boiler scalers in docks as he did for those in factories, said that that point had been noted for legislation when opportunity arose, but he saw no prospect of this during the present session. He understood that conditions had improved during the last few years, and he would consider what more could be done without legislation.

Health Publications by Local Authorities.—Replying, on March 13th, to Mr. Groves, who asked if the Minister had authorized the distribution by the Ipswich Public Health Committee of a pamphlet in favour of vaccination, Sir HILTON YOUNG said that any local authority might arrange for the publication in its area of information relating to health or disease, and might defray the whole or part of the expenses incurred. His approval was not required. He was informed that the cost to the Ipswich rates of distributing a pamphlet on vaccination through the vaccination officers was approximately 36s. per annum.

Medical News

A course of post-graduate lectures on urology will be given at St. Paul's Hospital, Endell Street, W.C., on Wednesdays, at 4.30 p.m., from April 18th to May 30th. The course is free to registered medical practitioners and students.

An intensive course in laryngology, rhinology, and otology will be held at the Central London Throat, Nose and Ear Hospital, Gray's Inn Road, W.C.1, from April 16th to May 12th. The course, which is especially suitable for D.L.O. students, will include an anatomy and physiology, and operative surgery classes, a practical course in peroral endoscopy, and a course in pathology and bacteriology.

The Fellowship of Medicine announces a further lecture-demonstration, on purpura, by Dr. Clark-Kennedy, at 11, Chandos Street, on March 27th, at 2.30 p.m. There will be no lecture-demonstration on April 3rd. An all-day course in proctology will be given at St. Mark's Hospital from April 9th to 14th. An afternoon course in infants' diseases will be given at the Infants Hospital from April 9th to 21st, and a course in rheumatism, on Tuesdays and Thursdays, at 8.30 p.m., at the British Red Cross Clinic, from April 10th to 26th. The Southend General Hospital has arranged a week-end course in general medicine and surgery on April 14th and 15th. Six lectures, on the diagnosis and treatment of chronic diseases of the chest in general practice, will be given by Dr. P. Ellman, at 11, Chandos Street, on Wednesdays and Fridays, at

8.30 p.m., from April 11th to 27th. Demonstrations for candidates for the M.R.C.P. have been arranged during April, and particulars may be had from the secretary of the Fellowship, 1, Wimpole Street, W.1.

An international congress on lymphatism will be held at La Bourboule on June 9th and 10th. The papers and discussions will relate to the aetiology and pathogenesis, forms and varieties, diagnosis, and treatment of this condition. Among those taking an active part in the proceedings will be Professors Marfan, Nobécourt, Lereboullet, Cruchet, and Giraud, of France; Professors Martínez-Vargas and Suter of Spain; Professors Tailens of Switzerland, Gorter of Holland, Moro of Germany, and Comba of Italy; and Dr. Alan Moncrieff from Great Britain. In connexion with this congress there will be a banquet on June 9th, a special excursion on June 10th, and various motor car drives on June 11th. The subscription for membership is 100 francs. Further information may be obtained from Dr. H. Diffre, Federation of the Health Resorts of France, Tavistock House North, Tavistock Square, W.C.1.

The sixth Congress of the International Union of Midwives will be held from May 25th to 29th at the Midwives' Institute, 57, Lower Belgrave Street, S.W.1. The subject for consideration is the training and education of midwives. Particulars may be had from the International Congress Secretary at the above address.

The nineteenth Congress of French Speaking Medical Jurists will be held at Lille, from May 27th to 30th, under the presidency of Professor J. Leclercq of Lille, when the following papers will be read: "Blood Groups in Legal Medicine and Anthropology," introduced by Dr. Lattes of Italy, and R. Dujarric de la Rivière and N. Kossovitch of Paris; "Painful Sequelae of Trauma and their Indemnification," by Héger-Gilbert and De Laet of Brussels; and "Contradictory Mental Expert Evidence," by Raviart and Vullier of Lille. Further information can be obtained from Dr. Müller, 14, Rue de Friedland, Lille.

The first International Congress of Endocrinology will be held at Marienbad from May 24th to 26th, under the presidency of Professor Julius Bauer of Vienna. The subjects for discussion, among others, will be hormones and vitamins, association of hormones, endocrine regulation of growth, carbohydrate metabolism, myxoedema, hyperthyroidism, and treatment of endocrine disturbances. Further information can be obtained from Professor Bauer, Mariannengasse 15, Wien IX.

A series of cinematograph films showing the technique of certain major abdominal operations is being prepared at the Royal Waterloo Hospital in Waterloo Road, London. The films are intended for use in the post-graduate teaching of surgery and for instructional purposes in general. The operations are being performed by surgeons attached to the hospital, and complete cinematographic records have already been obtained showing the removal of a stomach for cancer and of a spleen for uncontrollable bleeding in a child.

Dr. Luke Gerald Dillon, O.B.E., J.P., has retired after practising for fifty years in Seaham, where he had held the appointments of medical officer of health, physician to the Seaham Harbour Fever Hospital, and medical officer to the railway and post office. During the war he was in charge of the Seaham Hall Auxiliary Hospital. He was presented last month by the local urban district council with an inscribed silver cigarette case in commemoration of his forty years of connexion with it as medical officer of health and by the officers of the council with a gold-mounted walking-stick.

All antivaccination societies in Prussia have recently been dissolved by an order of the Minister of the Interior, who has also forbidden any public antivaccination demonstrations.

A severe epidemic of influenza has recently occurred at Tokyo, where 30 per cent. of the population has been attacked and 150 deaths have occurred daily.

Dr. Karel Friedrich Wenckebach, formerly professor of medicine at Vienna, has recently celebrated his 70th birthday.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1. on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is **EUSTON 2111** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

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QUERIES AND ANSWERS

The Pox Doctor's Clerk

Dr. PHILIP GOSSE (Steyning) writes: The other day a friend of mine was out hunting, and four foxes were found in the small withy-bed, when a farm labourer exclaimed to the master: "As lucky as the pox doctor's clerk." Can any medical historian explain this surprising saying? What is a pox doctor, why had he a clerk, and why was he lucky?

Callosities

Dr. J. M. CRAIG (High Wycombe) writes: In reply to "Perplexed" (March 17th, p. 515), I would suggest that he tries a "Jones" bar nailed obliquely across the boot or shoe behind the heads of the great and little metatarsals. This will relieve the pressure on the callosities. The callosities can be softened by putting on a patch of elastoplast strapping. In my experience these callosities are prone to occur in elderly diabetics. This bar of leather should be one-half to three-quarters of an inch deep on the inside to one-quarter to one-eighth deep on the outside, and about three to four inches broad.

Income Tax

Salary—"Economy Cuts"

"C. T.," whilst employed by the L.C.C., received a salary which was subject to "economy cuts." Is he liable on the nominal salary or the net amount received?

* * On the net amount only.

LETTERS, NOTES, ETC.

Greenstick Fracture at Age 27

Dr. LEONARD BARBER (Bristol Mental Hospital, Fishponds) writes: The following case may be of interest in view of the fact that Dr. R. Salisbury Woods has reported a similar case in a male, aged 21, in your issue of March 3rd. A man, aged 27 years 10 months, while playing Association football in October last, fell on his hand with his arm extended. He complained of severe pain in his forearm and acute tenderness over the centre of the radius. He was unable to pronate or supinate his hand without a good deal of pain, and he had little or no grip. The forearm was considerably swollen and tense. In the absence of any evidence of a fracture a diagnosis of strained flexor tendons of the forearm was made. The condition was treated with lotio plumbi & opio, firm bandaging, and massage at frequent intervals. The swelling quickly subsided and the pain became less acute, but pronation and supination of the hand was still painful and the grip weak. Three weeks after this accident the patient had the misfortune to have his injured arm jammed against a doorpost, the force of the blow being applied immediately over the site of the

previous injury. Again there was no deformity or any symptoms to suggest a fracture, but it was deemed advisable to have an x-ray examination of his arm. The skiagram showed a greenstick fracture of the radius situated about the middle of the bone. There was a definite crack in the anterior surface of the radius extending about half-way through the bone, and here the bone had split longitudinally to the extent of a little over a quarter of an inch on either side of the base of the crack.

Jubilee of the word "Tabloid"

March 14th was the fiftieth anniversary of the registration of "Tabloid" as a trade mark. "Tabloid" is a coined word, registered in 1884 by Burroughs Wellcome and Co., successors to Brockedon, who originated compressed medicaments in the form of biconvex disks under the designation of "compressed pills." Thirty lines are devoted to it in the *Oxford English Dictionary*. The ease with which the word "tabloid" comes to the tongue and the universal recognition of the high standard of quality of all products issued under this trade-mark has entailed a very diligent guardianship of the owners' rights. Until 1903 the owners' exclusive right to the word remained unchallenged, but in that year a successful action against "passing off" was brought in the High Court of Justice. "Tabloid," as a result of these proceedings, was certified under Section 77a of the Trade Marks Act, 1883-8, and Burroughs Wellcome and Co. were awarded damages and costs. Time and again since then injunctions against infringement have been granted in courts of justice both in the British Empire and in the United States of America. Even a foreign pharmacopoeia has been required to publish a correction in regard to misuse of the word in the text.

Definition of Terms

"M.B.Oxon" writes: In the *British Medical Journal* of March 10th (p. 454), and in the previous week's issue (p. 401), various writers express conflicting views on menstruation and ovulation not always in very decorous language. At the present time, when so much is written not only in professional papers but in the lay press about birth control, it is very confusing to find that there seems to be no very great certainty about even the meaning of such technical terms as "menstruation." It would be helpful if someone who can speak with authority on the subject were to summarize the present position, distinguishing what is generally admitted from what is speculative. As things are, many medical men must feel that the ground is slipping from under their feet.

How to Expedite Settlement

A correspondent in South India sends us a copy of a letter from an Indian doctor to the son of one of his patients. "I came across it," he says, "during some official correspondence and took a copy, as I thought it might be of interest to your readers." The letter runs as follows:

Dear Mr. —

Herewith I enclose, as per your desire, my bill for having so far attended on your dear mother. She has passed through a very great crisis, and, at such an advanced age as hers, it is only by God's grace that she has been spared to us. Praying that she may enjoy a long lease of life,

I remain, yours sincerely,

P.S.—I request that you will expedite the settlement of the bill as much as possible.

Increased Intraocular Tension as a Cause of Severe Frontal Headache

A Correction

In a letter referring to his article on this subject, in the *Journal* of January 20th, Flight Lieutenant R. L. Raymond points out that on page 103, col. 2, line 8, the sentence, beginning "In this case . . ." should read: "In this case note the previous unavailing course of salines and A.P.C., and the complete withholding of A.P.C. while in hospital." The point is emphasized that in Case 4 relief of increased intraocular tension was obtained by the use of eserine instillation alone.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 38, 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 120.

THE VALUE OF EYE SYMPTOMS IN THE DIAGNOSIS OF GENERAL DISEASES*

BY

HARALD G. A. GJESSING, M.D.

DRAMMEN, NORWAY

It is often said that the ophthalmologist is merely a specialist. This, however, I hope to be able to contradict. He is and must be—if he really wishes to fill his place—a general physician just as much as the general practitioner. Sir Archibald Garrod impressed this upon us in his speech at Oxford in 1927. His subject was the connexion between internal medicine and ophthalmology.

"What is the difference between a specialist and a quack? Just one little thing. The real specialist thinks always in a general way. He therefore is able to understand the medical process in question. The quack knows merely the symptoms, and is therefore in danger of becoming a symptomatician."

Even if the eye is the most differentiated organ of the body, it is nevertheless merely a single, although a very important, part of the united organs constituting the animal body. In my lecture I hope to prove that a series of symptoms in the eye are due to diseases somewhere else in the body. Thinking of the histology of the eye, it must be evident that the pathology of the central nervous system is rich in eye symptoms. The visual fibre system forms a continuity of axons from the ganglion cells of the retina to its ending in the pole of the occipital lobe. On its way it is in touch with a lot of very important nerve nuclei. Because of this any pathological process here is sure to show itself in the visual organ. In passing, I must call attention to the transient pareses of the eye muscles—especially of the abducens—in tabes, lues cerebri, encephalitis, and disseminated sclerosis. Still more important as a very early symptom in late syphilitic disease is the Argyll Robertson pupil reaction. I think this is the first ocular eye symptom the young medical student is taught when entering a general medical ward. It is superfluous to mention that an exact examination of the pupil reaction may often prevent the overlooking of tabes in recurrent attacks of colic and vomiting.

DISSEMINATED SCLEROSIS

Charcot taught that the cardinal symptoms of disseminated sclerosis were scanning speech, intention tremor, and nystagmus. No greater obstacle to the early diagnosis of this common disease could be met with than a reliance on this statement. This "classical" triad is found complete, according to Marburg, in only about 15 per cent. of all cases. Most of them are immature, "*formes frustes*." In the *Nordisk Medicins Tidsskrift* (1929) I published a paper about the eye symptoms of this affection. I emphasized therein that if we still were to accept a diagnostic triad this ought to be: (1) pronounced fatigue following insignificant body exercises and at the same time accentuation of symptoms already present (I hold that the symptom of Uhthoff—passing reduction of vision after a short but quick walk—must come in this class); (2) increase of the tendon reflexes; and (3) passing eye symptoms, frequently with a recurring tendency. W. A. Adie reaches the same conclusion in his excellent work in the *British Medical Journal* (1932). Acute scotomatous retrobulbar neuritis is the most important eye symptom in this disease. Traquair characterizes this neuritis, in his noteworthy Doyne Memorial Lecture in 1923, in the following way. It commences quickly, and is of a changing tendency during its run, ending almost with complete cure of the initial attack. However, it is apt to recur. As a rule it is one-sided, although in my experience I have fre-

quently found it to be bilateral. Not uncommonly this neuritis appears years before the other symptoms of this insidious disease: in the literature there are cases up to eighteen years. The scotoma in this neuritis is always central. In this it differs from the intoxication amblyopias, where the scotomas always commence paracentrally. It may arise not only in an acute but also in a subacute and insidious chronic form. Authors differ widely as regards its percentage of incidence. The lowest figure I have found is 13 per cent., the highest 70 per cent. Personally, I believe 50 per cent. to be the right figure.

Passing palsies of the eye muscles not uncommonly appear, either isolated or together with other symptoms, in multiple sclerosis. They are stated to occur in 25 to 45 per cent. of cases. They may be one-sided or bilateral. Most frequently we find paralysis of the abducens, not uncommonly coupled with paresis of the facial nerve. The nuclei of these nerves are located, as you remember, below the floor of the fourth ventricle. Their root fibres run together with the pyramidal fibres through the pons, which is the common site of selection of the sclerotic plaques. Therefore we frequently notice phenomena from these. Any facial palsy, where all the chief branches are engaged, should always make the physician think of a possible disseminated sclerosis as the underlying cause. Without doubt, a lot of the so-called "rheumatic" facial and abducens palsies are due to this disease in its earliest stages. At least such an origin ought to be kept in mind in all cases of passing eye-muscle paralyses, especially when they are coupled with "rheumatism" somewhere else in the body. Again, we must never forget tabes as a cause. The oculomotor and trochlear nerves are less often attacked by the multiple sclerosis. Their nuclei are situated below the bottom of the aqueductus Sylvii, and thus are above the pons. Recurrent ptosis, however, is often observed together with paresis of the internal rectus muscles. In tabes an isolated paresis of the fourth nerve is not uncommon as a very early symptom.

EYE SIGNS IN SYPHILIS

Argyll Robertson pupils were previously considered as a sure indication of an earlier metaluetic infection. At the present time we know that this phenomenon may arise in the different varieties of encephalitis. This disease is itself characterized by a number of eye symptoms: ptosis, nystagmus, and paralysis of the accommodation are particularly common, and these eye symptoms may make the diagnosis infinitely easier. Time does not allow me to go more fully into details of the pupillary symptoms in general diseases. I merely note that, according to Uhthoff, in more than 80 per cent. of tabetic cases and in general paralysis in about 70 per cent. there is the characteristic reaction of Argyll Robertson. With lues cerebro-spinalis, however, it is comparatively seldom noticed. In this disease an internal ophthalmoplegia, combined with palsies of other cerebral nerves, is more often found. Defects of the field of vision—mostly hemianopic—are also commonly seen in cerebral syphilis. A distinct anisocoria is always bound to attract the attention of the physician to a previous infection with the *Spirochaeta pallida*, or—as Sir William Macewen showed so early as 1884—if this is excluded, to an increasing brain pressure, especially a growth in the temporal lobe. On the contrary, an insignificant difference of the pupils with normal reaction is not rare. Probably this is brought about by traumata

* Lecture delivered on January 5th, 1934, in Manchester, at the request of the North of England Ophthalmological Society.

during birth. Irregularities of the pupillary margin—without synechiae—have in earlier days been considered important for the diagnosis of cerebral lues. The importance of this has been overrated, except when it is coupled with disturbances of the pupillary reaction.

Spinal miosis in tabes is frequently noticed owing to affection of the sympathetic in the spinal medulla. It is caused by secondary contraction of the sphincter pupillae, and may be very pronounced. As a rule it is one-sided. In this way it differs from the contraction observed in certain chronic cases of poisoning—especially morphinism. In this latter, however, there is always a normal pupil reaction. In cases of one-sided miosis Horner's syndrome must always be remembered. As you know, this is associated with tumours in the cervical region or even lower—for instance, aneurysm of the aorta—causing paralysis of the sympathetic.

EYE SIGNS IN INFECTIONS

Not only in lues cerebri and metaluetic diseases is the pupillary reaction of great diagnostic importance, but also in a number of other brain diseases. The same is the case with an ophthalmoplegia interna. With a febrile patient a paralysis of the pupil reaction as well as the accommodation may be the single sign of a commencing meningitis. In most of such cases, however, other cerebral nerves will also be affected. These pareses we find most often in luetic and tuberculous inflammation, and more seldom in otogenic meningitis.

I have already mentioned that in certain chronic cases of poisoning—such as morphinism—the size of the pupils may be altered, while their reaction remains normal. In a number of acute toxæmias in febrile diseases there may be paralysis of the pupil. Especially well known is the post-diphtheritic paralysis of accommodation. After an influenza the same occurs, but not so commonly. Both conditions give rise to a bilateral palsy. Cyclitis is not infrequently observed after influenza. Here I may mention that a number of acute infectious diseases, during their febrile stage, are accompanied by a more or less pronounced conjunctivitis. During a measles epidemic, conjunctivitis is a most important diagnostic feature. It may be the first prodromal symptom. Botulism, and meat and fish poisoning, may all be followed by paralysis of the pupil and of other eye muscles. This is also the case with grave gastro-enteritis and paratyphoid fever. The picture is similar to the one seen in acute general atropine poisoning.

METABOLIC DISTURBANCES

It is well known that diabetes mellitus during its progress may be accompanied by passing myopia as well as by transient hypermetropia. Every sixth diabetic has, as a rule, eye complications. Iritis with hypopyon occurs seldom. It is, as regards the general condition, a very severe symptom. All cases of iritis ought, therefore, to be examined for sugar. Sigurd Hagen is probably the first to have emphasized strongly that a transitory hypermetropia never arises in the case of an untreated diabetic. On the other hand, a transitory near-sightedness is not infrequently the very symptom causing the detection of a previously overlooked diabetes. Of special interest is the following case. The myopia reached here the highest figure I have noticed, afterwards completely passing away.

On June 19th, 1920, a gentleman, 67 years of age, called on me to get spectacles. With + 3.5 the vision was 6/4 both eyes. On October 12th, 1921, he returned again, because for the last eight days the vision had faded for distance. With his spectacles for near vision he was just able to read. Used + 6.0. Upon examination normal externa and interna were found. The left eye showed emmetropia, the right - 1.5 myopia. A pronounced positive sugar reaction was found in the urine—also traces of albumin. He was advised to see a diabetes

specialist. During a short space of time a psychosis developed with sensations of inferiority. He died two years afterwards from apoplexy. In the meantime, the myopia had entirely disappeared, and he grew hypermetropic again.

Time does not allow me to enter into the different theories about these passing anomalies. With reference to the myopia I refer to the work of Ask, published in the *Biochemische Zeitschrift* (1913). As to the transitory hypermetropia, I draw attention to Granström's great work in the *Acta Ophthalmologica* (1933). He seeks to prove that a sodium chloride retention is to be found in the lens in diabetics, causing a retention of fluid and alteration of the index. Generally speaking, chemical alterations of the blood—speaking broadly—may be followed by eye symptoms. Of the greatest importance to the general practitioner is, I think, chronic conjunctivitis. Without using tonics we often are not able to cure this type of eye trouble, and there is no doubt that many an eye doctor would have better results in his treatment of conjunctivitis if he were to investigate the colour index of the blood. A remarkable symptom caused by anaemia in chronic conjunctivitis, as well as the fairly common asthenopia, is a slight oedema of the lids. This is mostly pronounced in the morning, disappearing later in the day. This peculiarity is probably caused by the massage effect of repeated blinking.

During the last decade a great many works have been published on the subject of alteration in the blood as an underlying cause of eye diseases. By using the Reid Hunt acetonitril reaction it has been held that certain eye troubles (for example, glaucoma) are due to a hyperiodaemia. This might be of great practical consequence. We should in such cases be most careful in the use of iodides and thyroid extract or other hormone preparations in our treatment of hypertonia and arteriosclerosis. Lagrange is the first to have declared that glaucoma is no local disease, but merely an evidence of a constitutional state. Magitot and Angelucci have formed the opinion that all glaucoma patients are people with diseased vessels. They term such a person "*un vasculaire*," an individual with a disturbed capillary circuit. Others, such as Eppinger, Leube, von Hesse, and Meller, have sought the cause in a disturbance of the equilibrium between the sympathetic and the parasympathetic. They support the opinion by the fact that psychic disturbances aggravate an existing glaucoma, also that glaucoma sometimes, like ophthalmic migraine, improves considerably when the patient is put on a salt-poor diet and gets sufficient exercise to develop free perspiration.

CHANGES IN THE RETINA

Taking the diseases of the retina, we find that in no small percentage they are due to general disease, not uncommonly a disease of the blood. An orbital haemorrhage in infants and with black-red discoloration of conjunctiva and exophthalmos is not infrequently the first sign of a Möller-Barlow's disease, scurvy, or haemophilia. An ophthalmoscopic examination will very often disclose a retinal haemorrhage. All things considered, every haemorrhagic diathesis will tend towards bleeding in the external as well as the internal parts of the eye. Haemorrhages of the retina often appear with purpuric diseases, generally taken. From daily life we know that persons exist who are liable to haemorrhages into the skin after small traumatism. For this reason many a young girl at a dance resents what she considers too brutal a grip from her partner! However, if such a tendency is present in the retinal vessels the results are likely to be much more serious.

Pernicious anaemia is the typical blood disease generally associated with retinal alterations, in contrast to the secondary anaemias. These almost never lead to such. Here

I except the very rare amauroses and amblyopias following in the wake of heavy losses of blood. They are generally seen after abortions and haematemeses—much more infrequently after a normal birth. Their clinical picture is the same as that of embolism of the central artery of the retina. At the peak of pernicious anaemia retinal haemorrhages are very rarely lacking. White degenerative spots are also commonly noted in the oedematous retina. The finding of these alterations is not only of diagnostic but also of prognostic importance. They may disappear without trace when the patient recovers by the use of the liver diet of Minot. In leukaemias—both the myelogenous and the lymphatic—there may be characteristic alterations of the eye. In the lymphatic type as well as in pseudo-leukaemia we may have orbital tumours of lymphatic tissue. For this reason all orbital tumours demand an exact examination of the blood. As you know, the retina often reveals in leukaemia a characteristic light colour, thus contrasting with polycythaemia and congenital heart failure. Any fever of doubtful origin calls for ophthalmoscopy. I just mention the diagnosis of septicaemia, which is so very often difficult. Septic retinitis will, in these cases, make the diagnosis absolutely conclusive. According to the literature it should be observed in about 35 per cent. of all cases. More than one case of malignant endocarditis has been diagnosed by aid of the ophthalmoscope.

DIABETES AND NEPHRITIS

Two very common diseases in which the finding of retinal haemorrhages and exudative spots is of the greatest importance—not only in the diagnosis but also as regards prognosis—are nephritis and diabetes. The double-sidedness of the affection is characteristic of the retinal picture. As a rule it is more developed in one eye than in the other. The papilla shares in the affection to a greater or less extent. In the retina are to be seen oedema, scattered haemorrhages, and spots of white exudates. These last are often arranged like a star in the macular region. The retinitis in nephritis and diabetes is often without any symptom in its earliest stages. In this regard it is different from the usual optic neuritis, where the vision fails very rapidly on account of a central scotoma. Therefore ophthalmoscopy is of such great importance in any case of nephritis, and especially in the chronic cases. In particular, the retinitis in pregnancy may for a long time lack subjective symptoms. Upon examining 8,400 pregnant women Ingolf Schiötz found forty cases of retinitis gravidarum. Of these twenty-seven had chronic nephritis. Several of these had no subjective symptoms. Their vision was 6/6 or about 6/6. The prognosis in retinitis gravidarum, he found, is good, or at least fairly good. The alterations of the retina generally disappear entirely after birth or when an evacuation of the uterus has taken place. On the contrary, a usual retinitis albuminurica is a very bad prognostic sign. Elaborate statistics from large clinics have shown that only 10 per cent. of the affected patients are still alive more than two years after the appearance of the retinitis. And the prognosis is even worse the younger the individual is. According to Ascher the same may be said about the retinitis in diabetics. This, like the iritis, appears only in grave cases.

I must point out that even if the diagnosis of such a neuro-retinitis is easy in some cases, it may in some present very great difficulties. The papillitis may be so developed that the displacement of the papilla may be equal to the choked disk in a cerebral tumour. As these cases not uncommonly may show a star figure at the macula, even the most expert ophthalmologist may go wrong. As in both cases albuminuria may be present, and this periodically even may be absent in granulated kidney, the diagnosis may prove more difficult. Regard-

ing the differential diagnosis, a very exact functional examination is of vital importance. In a real choked disk the vision is, to begin with, less reduced than would be expected in view of the very pronounced ophthalmoscopic picture. With inflammation of the optic nerve the vision is quickly reduced on account of a central scotoma: "The pseudo-neuritis of hypermetropia must always be kept in mind. There is no reduction of vision and no central scotoma. Bleedings in the actual pupillary tissue and the surrounding retina speak for choked disk and against pseudo-neuritis.

I cannot here enter further into a description of embolism and thrombosis of the central retinal vessels; I just want to point out that in more than one case the disease apparently starts with these affections. The ophthalmologist often chances on this condition in an elderly patient calling to obtain reading glasses. An exact examination of his urine, heart, and blood pressure is required in such a case. It cannot be emphasized too strongly that an optic neuritis must never be taken for a *morbus sui generis*. This also applies to choked disk, in which latter condition we must remember that more than 80 per cent. are due to an intracranial growth.

HEMIANOPIA

Although hemianopia has been known for a period of about 150 years, its true significance has only been realized since 1855. Barthelmeo Panizza of Padua then proved clinically, pathologically-anatomically, and experimentally that the location of the vision centre is the cortex of the occipital lobe. I cannot here enter into the importance of the interpretation of the different types of hemianopias with reference to a local diagnosis; I am merely going to mention that the bitemporal hemianopic scotomata are a very early sign of tumours of the hypophysis. I take the occasion to call attention to the excellent work of Traquair, regarding the interpretation of such scotomata. I must, however, be permitted to mention, very shortly, two cases from my own practice, where an exact scotoma investigation decided an otherwise difficult diagnosis.

A very hypochondriacal business man in his sixties had for a number of years been a worry to his doctor. One day he came to me telling me that he—*mirabile dictu*—was unable to read types of ordinary size, while, on the contrary, he could read the smallest print just as well as before. He dated his troubles from a passing blindness lasting for about one minute three weeks before. Normal external and internal conditions were found. Vision 6/4 O.U. The peripheral field completely normal. Examined with the scotometer of Hiltz a right-sided wedge-shaped hemianopic scotoma was found. It was about 5° degrees in length, and lay with its edge only one degree from the fixation point. It was absolute for colours and relative for white. Upon letting the intelligent man read from right to left, he did so to his own great astonishment.

Here we have a case of the macular hemianopic reading disturbance of Wildbrand. Larger retinal pictures—in this case printed matter—are covered by the scotoma. Small retinal pictures are recognized between the fixation point and the edge of the scotoma facing them. The case shows how careful one must be with the diagnosis of neurasthenia and hypochondria. But for the field examination—with small objects—the fresh complaints of the patient might easily have been indexed among his usual "nervous" ones. In this case, I think, a punctate bleeding was really present in the left cuneus. A few months later he suffered from a new passing amaurosis, showing considerably greater hemianopia.

In the next case I am going to mention mental disease might easily have been diagnosed but for the examination of the ophthalmologist.

A painter, 54 years of age, was sent to me by a country colleague in March, 1920. It was stated that he had had hallucinations for a period of fourteen days after a short

unconsciousness. He imagined he saw the left part of the room filled with a number of people, whom he knew well and could name. He himself had, however, an idea that the whole thing was a "delusion"! He admitted abuse of spirits but denied lues. Upon investigation the eyes were normal, externally and internally. Vision with +1.5, 6/6 O.U. Tension 5/5.5 O.U. By perimetry a typical homonymous hemianopia was found. The entire left half of the fields had disappeared, with only a large rest for the macula left.

The cause of the hemianopia, as well as of his well-developed hallucinations, is one and the same: a focus of some kind in the right temporal lobe. This brain lesion must be subcortically located. It must be so placed that it produces a state of irritation both of his optical centre of memory as well as of his association province. It is further necessary that the cortex cerebri must be undamaged, as it is able to transfer the hallucinations to the consciousness of the patient. Before passing from the subject of the diagnostic value of the hemianopias I must merely mention that quite a few authors (for example, Ingolf Schiötz and Bauer) have demonstrated that passing homonymous hemianopias may arise in a number of auto-intoxications, especially the nephritis in pregnancy.

NYSTAGMUS

In the beginning of my paper I mentioned nystagmus as a link of Charcot's triad in the diagnosis of disseminated sclerosis. Marburg holds that real nystagmus, however, is only seen in at most 12 per cent. of all cases. Nystagmoidal tremblings are, according to Bárány, seen in 60 per cent. of normal people when looking extremely sideways. But even if this symptom is of no especial importance in the diagnosis of the above-mentioned disease, it is, however, as expressed by the Belgian Coppez, "*Une importance considérable en otologie, en neurologie et en hygiène générale.*" When he does not add "*en ophthalmologie*," although it is an eye symptom, it is in my opinion to emphasize that the specialist must never be one-sided! He must never lose sight of the organism in favour of the organ. The otologist Adrian de Kleijn of Utrecht is probably the man who has done the most valuable work on nystagmus next to Robert Bárány and Mario Camis. He meant to have a good reason for sacrificing two years in the study of ophthalmology before becoming purely an otologist.

This is not the place to enter upon the large subject of general medicine. I merely mention that in this domain the British surgeons have produced works of the highest lasting value. Thus the English doctor Gillot, in Sheffield in the year 1858, described "miner's nystagmus"—that is, three years ahead of the Belgian ophthalmologist Deconde. As we in Norway have no coal mines I have not personally seen this disease. Later on, very important studies on this subject were published in different countries. From the German side I only mention Johannes Ohm; from the British, Maitland Ramsay, Priestley Smith, sen., Elsworth, Stanley Percival, and Maurice Bartholomew. Every one of them has held that it is connected particularly with bad mine hygiene. In this connexion Percival's statement regarding blue-blindness preceding the nystagmus is of the utmost hygienic importance. That shock releases a latent nystagmus was demonstrated during the world war by Elliot and Stirling. Priestley Smith has shown that certain poisons (for example, iodoform and morphine) may play a part. This also indicated that the cerebrum must have some nystagmogenous influence. The fact that it is also seen in febrile diseases points in the same direction. Before leaving nystagmus I cannot but mention the great credit due to Bárány by the finding of caloric nystagmus in the diagnosis of a number of brain diseases, especially acoustic tumours. I also call your attention to the fact that Igersheimer and Heine have found that in not a few cases of congenital nystagmus the Wassermann reaction is positive. They

hold that vigorous antisyphilitic treatment has influenced this nystagmus in a favourable direction.

EYE SYMPTOMS IN POISONING

Time prevents me from entering into the eye symptoms which follow a number of poisonings. I merely mention a few points about santonin poisoning. Here the ophthalmologist may happen to fill the important role as legal-physician. In the case of such poisoning—as also with misuse of digitalis—xanthopsia not infrequently appears. Less well known to most of you may possibly be that Bruneche has described hallucinations of red vision, rhodopsia, with this poisoning: "Everything is floating in blood"! At the same time the poisoned person describes terrible murder scenes!

Acute poisoning from methyl alcohol is well known in the so-called "dry" countries. Acute gastro-enteritis supervenes—often some little time after the drinking. In addition to this a rapidly developing amaurosis, resulting from an acute degeneration of the ganglion cells of the retina, and a secondary atrophy of the optic nerve, is often observed. In the most pronounced cases an amaurotic loss of the pupil reaction is seen. The extrinsic eye muscles are always intact. In this respect this poisoning differs from the similar picture in meat poisoning. Less well known is perhaps that clinical picture described by Louis Ziegler in 1920. In Philadelphia society a number of young society women were attacked by an insidious atrophy of the optic nerve. Over a long period they had taken eau-de-Cologne poured on pieces of sugar. The American scents at that time contained 25 per cent. of methylated alcohol. These infinitesimal doses were not sufficient to produce the common poisoning picture. Where the Wassermann reaction is negative and tumour may be excluded in a chronic optic atrophy, it may therefore be of interest to examine for formic acid in the blood and urine. It is also necessary in cases of chronic retrobulbar neuritis to think of poisoning with lead or carbon disulphide, especially in cases of concentric shrinkage of the field. I pass over the acute quinine amaurosis in women endeavouring to cause abortion.

DEFICIENCY DISEASES

Hemeralopia must of necessity be connected with a retinal nutritive disturbance—not yet quite detected. Here I exclude anatomical retinal diseases such as retinitis pigmentosa or siderosis. Only during the last few years has the cause of this rather obscure condition been found. It is due to a lack of vitamin A. This circumstance explains why cod-liver oil has such a good effect, and why the spring fast-time predisposes to the outbreak of the sickness. Such night-blindness is followed, more or less, by xerosis conjunctivae. Suitable diet cures the trouble.

Much more dangerous is keratomalacia in infants. It was the great paediatric star of Breslau, Czerny, together with Keller, who introduced the term "Milk-nährschaden." By this is meant that the infant is supernourished on carbohydrates. It is all right for three to six months, or even longer. Then a conjunctivitis suddenly appears. To begin with it does not look dangerous. But an observant surgeon will even then notice the white spots near the limbus, described by Bitôt. This xerosis rapidly spreads, and if the case is not properly treated necrosis of one or both corneae may occur. In Norway this disease is seldom observed. In Denmark it was relatively frequent during the war. Here it was described by Professor Block and Edmund Jensen. But its real cause was first found by Siunte, and later studied by Rønne and Blegvad. Supported by the findings of Monrad they have demonstrated the almost magic effect of sweet milk together with carrots and a little cod-liver oil. It may, though seldom, attack adults living on a diet poor in vitamin A. The aetiology of the phlyctenule is greatly disputed.

Some, such as Maitland Ramsay, hold entirely too bigoted a view that it is caused by a chronic digestive disturbance. Others hold, quite as certainly, that the singular cause is scrophulo-tuberculosis. One thing is sure. Bad hygiene plays a great part in its pathogenesis by preparing the soil. Wessely has emphasized that patients suffering from phlyctenular kerato-conjunctivitis are liable to catch catarrhs because of being supersensitive. However, the diagnosis of phlyctenular conjunctivitis must always remind the doctor that the child does not belong to a robust type.

OCULAR TUBERCULOSIS

A uveitis must always be regarded as a sign of a general disease when no external infection can be found. Because of that a uveitis—and also the much more infrequent scleritis—is always reason enough for a close internal examination. There is hardly any general disease which may not be the cause of it. But tuberculosis and syphilis are the predominant causes. The investigations of the last few years by Schieck and Werdenberg seem to have proved that ocular-tuberculosis must not be regarded as a disease *sui generis*. It is to be considered as a metastasis in the eye. As a rule the glands at the hilus are the starting-point. As we do not know for certain what "rheumatism" really is, it is very probable that a number of cases of so-called "rheumatic" uveitis are of a tuberculous origin. The entire chapter of "rheumatism" has now to be recast. I may recall that a disease such as erythema nodosum was regarded as "rheumatismus acutus mitis cutis." Probably the general opinion is that it is a toxic skin affection in a tuberculous patient, of the same kind as von Pirquet's skin reaction. It is held that it appears simultaneously with the manifestation of a previously latent tuberculosis of the bronchial glands. But, on the other hand, we must remember that in a certain percentage the reaction of von Pirquet is negative. It is advisable to maintain the old cause in those cases. In the same manner we must still believe in "rheumatic" uveitis in a not insignificant percentage. In this group we also include the gonorrhoeal cases, and these must be considered as due to metastatic inflammation. Thus any violent iritis in an adult—especially combined with pain in the joints—ought always to direct the physician's attention towards a Neisser infection as the cause.

This is not the place to go into the differential diagnosis between tuberculous and syphilitic iritis. The Wassermann reaction has greatly facilitated the diagnosis as regards syphilis when the clinical picture is typical. On the other hand, it may be more difficult in all cases to be quite sure about the origin of a tuberculous iritis. Axenfeld and Stock particularly deserve the greatest praise for their minute experimental investigations of uveal tuberculosis. By injecting attenuated tubercle bacilli into the ear veins of rabbits tuberculous nodules were developed. The retina remained histologically free, just as in military tuberculosis. They showed also how the not uncommonly recurring haemorrhages in the corpus vitreum in young—especially male—persons were caused by a periphlebitis. Often they succeeded in thus demonstrating directly a tuberculous process. In others they had to suppose as cause a toxic effect. The most recent explanation by Meller, in regard to sympathetic ophthalmia, is that it is due to attenuated tubercle bacilli. He has supported this clinically as well as experimentally.

MISCELLANEOUS CONDITIONS

During later times the importance of the internal secretory disturbances in aetiology and pathogenesis have been minutely studied. The description of these examinations would call for an entire evening. I must restrict myself to mention of the vast importance of eye symptoms in the diagnosis of tumours in the region of the hypophysis. In diseases here the ophthalmologist will be the

best helper, not only to the physician, but also to the surgeon. An examination of the field of vision is always strongly called for where amenorrhoea exists without any "physiological" reason, or in impotence of a too early appearance. It is hardly too much to say that but for his ophthalmological helper Harvey Cushing would not have been able to build up his splendid technique as a brain operator.

It is still disputed whether the syndrome osteop-sathyrosis idiopatica—fragilitas ossium—is due to an inherited endocrine disturbance. This ailment is characterized by the triad: persistent blue sclera, fragility of the bones, and early labyrinth deafness. In any case the school physician finding a pupil with blue sclerae must later on have his attention directed towards the ears and bones.

The importance of trauma as a releasing factor with luetic parenchymatous keratitis is still *sub judice*. At least so much is certain, that it is not merely the vagrant spirochaetes in the lymph streams in the corneal tissue which are the cause. If so, it would be supposed that an energetic antisyphilitic treatment would prevent an attack of the keratitis in the second eye. On the contrary, this is rather the exception than the rule. There must therefore be an unknown *x*. Supported by a very minute investigation, clinically as well as serologically—after the method of Abderhalden—Zederkreutz, Johanson, and Enroth have attempted to prove that an endocrine disturbance may be found in more than 60 per cent. of all cases of luetic parenchymatous keratitis. Investigations—particularly German ones—have demonstrated that about 90 per cent. of all cases of deep keratitis are due to lues, especially congenital. According to von Michel tuberculosis is the cause of the remaining 10 per cent. In our time of accident insurance it is certainly correct to accept Schieck's and von Szilly's opinion as to questions about the importance of trauma in keratitis parenchymatosa. Parenchymatous keratitis is due to two factors which act together—infection + disturbed metabolism. An incidental cause—such as a trauma—releases the disease. Before finishing my remarks on the disturbances of metabolism and consequent eye symptoms, I merely mention the great diagnostic value they have in Graves's disease.

M. Piani (*Thèse de Paris*, 1934, No. 29) states that in spite of the excellent climate, temperate winters, and mild autumns Corsica suffers considerably from three serious epidemic diseases—namely, malaria, undulant fever, and tuberculosis. The almost complete absence of hygiene, due to the poverty and lack of education of the native population, is to a large extent responsible for their spread. Malaria has always been prevalent in Corsica, especially on the east coast, where it has assumed alarming proportions. The average parasitic index for the whole of Corsica is 18.56, and the splenic index 38.84. These figures, however, do not represent the true state of affairs, as they are merely the result of investigations carried out in certain parts of the island. Undulant fever is also remarkably prevalent. In 1929 the annual average number of cases was estimated at 200, while in 1932 600 cases were notified. Corsica is one of the French departments which pay the heaviest tribute to tuberculosis. During the period 1925 to 1930 the deaths from the disease have more than doubled (140 deaths in 1925 and 291 deaths in 1930). The principal causes of the spread of tuberculosis are the almost complete absence of anti-tuberculosis services, the yearly return of a large number of Corsicans who have contracted tuberculosis in France, the ignorance of the most elementary rules of hygiene, and the failure to diagnose numerous cases which are mistaken for undulant fever or malaria. Seasonal diseases such as pneumonia and pleurisy are not uncommon, owing to lack of precautions against changes in the winter. As regards mental diseases, constitutional states such as idiocy, imbecility, and cretinism are the only conditions which are at all frequent.

THE AUTONOMIC NERVE SUPPLY OF THE DISTAL COLON

AN ANATOMICAL AND CLINICAL STUDY

BY

E. D. TELFORD, B.Ch., F.R.C.S.

PROFESSOR OF SYSTEMATIC SURGERY, UNIVERSITY OF MANCHESTER

AND

JOHN S. B. STOPFORD, M.D., F.R.S.

PROFESSOR OF ANATOMY, UNIVERSITY OF MANCHESTER

It appears certain that the effective treatment of some diseases of the distal colon, such as Hirschsprung's disease and some forms of constipation, lies in the performance of a sympathectomy. This noteworthy advance in surgery, based as it is on the foundation laid by Gaskell, Langley, and Anderson, is due to the work of many surgeons within recent years. Important contributions have been made by Wade, Trumble, Learmonth, Royle, Rankin, Adson, and others.

While there is general agreement that the treatment of such diseases of the colon as we believe to depend on autonomic imbalance must be by sympathectomy, there exists a great diversity in the methods and technique of the operation. There are wide differences in the views of surgeons as to the mode of attack, and these differences are reflected in the variety of operations which have been employed. Excision of the lumbar sympathetic cord, ramisection of the medially directed rami of the cord (lumbar splanchnic nerves), resection of the presacral nerve, and perivascular sympathectomy of the "aortic" plexus and of that around the inferior mesenteric artery have all been employed either singly or in various combinations. Moreover, some surgeons have reported cases in which their operation has been restricted to the left side, a method which, although success has been reported, is obviously incomplete. The distal colon must on embryological and anatomical grounds derive a symmetrical supply from the autonomic system.

Although good results have been claimed for all these operations it is much to be desired that a standard method be found; such method should be, as far as is possible, physiologically sound, easy, and safe of execution. It is unlikely that all of the above methods fulfil these postulates, and indeed some of the routes are open to the criticism that they may involve destruction of sympathetic and parasympathetic fibres alike; a result which, if our present view of autonomic function be correct, is plainly undesirable.

It is evident, therefore, that any inquiry into the best route must begin with a consideration of the course by which the sympathetic and parasympathetic fibres reach the distal colon. The ultimate distribution of each is mainly, probably entirely, by a perivascular course along the inferior mesenteric artery and its branches, but the route by which each approaches the artery is not the same. There is general agreement as to the sympathetic supply.

ANATOMICAL SECTION

It is convenient first to review the arrangement of the sympathetic fibres in the lower part of the abdomen and pelvis, since this investigation has confirmed a number of points.

Sympathetic Supply

Extending downwards from the coeliac plexus and its extensions on the antero-lateral aspects of the aorta, on each side, are usually one, two, or three fine bundles of nerve fibres, to which the name intermesenteric nerves

has been applied. These nerves are joined laterally by rami from the upper lumbar ganglia, or adjoining parts of the lumbar sympathetic cord, of their own side. Trumble¹ figures two rami on each side, but although this seems to be the commonest arrangement, the number was found to be variable, like the number of lumbar ganglia. Sometimes as many as four rami are to be observed on one side, and they do not as a rule in man converge upon the inferior mesenteric artery as shown in Trumble's figures, but join primarily the intermesenteric nerves in front of the aorta. These rami are not infrequently referred to as the lumbar splanchnic nerves, and it is evident from both dissections and surgical experience that, when three or four are present, it is the upper two on each side which are principally concerned with the innervation of the distal colon. On the right side the lumbar splanchnic nerves approach the intermesenteric nerves from behind the inferior vena cava. There are usually two or three slender strands of nerve fibres passing across the aorta to connect the intermesenteric nerves of the two sides; these strands are often to be seen both above and below the point of origin of the inferior mesenteric artery. The fibres which connect the intermesenteric nerves of the two sides do not form a plexus, and our observations support the view recently emphasized by Davis² that a true aortic plexus does not exist.

The inferior mesenteric plexus is formed by a number of sets of fibres arising from the medial sides of the right and left intermesenteric nerves, and these fibres form a dense network around the inferior mesenteric artery about half to three-quarters of an inch beyond its origin. It is clear from the dissections that the inferior mesenteric plexus receives sympathetic fibres from both sides, as is to be expected on developmental and other grounds. It is also evident that the source of these fibres is the upper lumbar ganglia, and not to any important extent from the intermesenteric nerves descending from the coeliac plexus. From the dense plexus around the stem of the inferior mesenteric artery perivascular fibres can be traced along all the branches of this vessel.

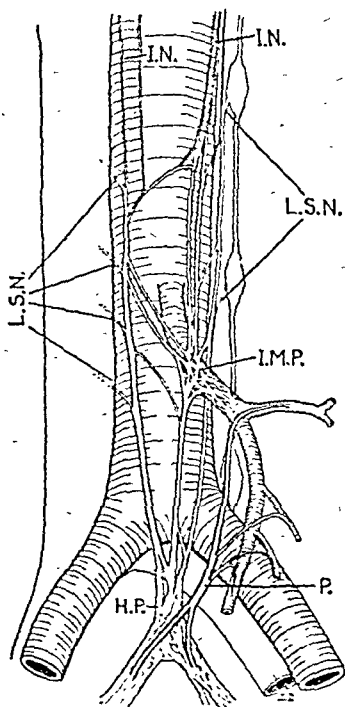
Below the origin of the inferior mesenteric plexus three descending bundles are usually to be found, which converge to form the hypogastric plexus. The two lateral trunks are direct continuations of the intermesenteric nerves after they have contributed fibres to the intermesenteric plexus. The left lateral trunk passes down behind the inferior mesenteric artery or its branches. The intermediate or middle trunk has more complicated connexions. It is commonly connected with the intermesenteric nerves of the two sides, and, in addition, communicates directly with the inferior mesenteric plexus. Careful dissection shows that some of these fibres are definitely descending through the inferior mesenteric plexus, but the arrangement of others suggests that they are ascending to the plexus. Dissection cannot definitely decide the origin of these fibres, and several possibilities must be considered.

1. They might be sympathetic fibres from the sacral or lowest lumbar ganglion ascending to the plexus.
2. It is possible for them to be parasympathetic fibres, from the sacral splanchnic nerves (nervi erigentes), which pass up to the colon through the hypogastric plexus.
3. Fibres from both the above sources may be represented.
4. It seems more probable that they are really descending fibres arising from the ganglion cells in the inferior mesenteric plexus, and that the arrangement suggesting that they are passing up to the plexus is misleading.

The most important question from a clinical aspect is whether these fibres are parasympathetic or not. At the outset of this investigation we thought it probable that the parasympathetic supply to the distal colon reached the

inferior mesenteric artery through the hypogastric plexus, but the fibres under discussion appeared to be insufficient for such an extensive distribution, and, furthermore, it was impossible to trace any connexion between them and the sacral splanchnic nerves. While it is impossible to exclude the hypogastric plexus as a path for a few parasympathetic fibres to the colon, it is clear from subsequent investigations that this is not the main source, and it can only supplement to some extent the chief path which is to be described. If the middle trunk of the hypogastric plexus conveys sympathetic fibres to the inferior mesenteric plexus it is also certain that this source is quite unimportant compared with the much larger supply from above through the upper lumbar splanchnic nerves of the two sides.

It is unnecessary to refer further to the hypogastric plexus, as our findings agree so closely with those recently



To show the sympathetic and parasympathetic supply to the distal colon: I.N., intermesenteric nerves; L.S.N., lumbar splanchnic nerves; I.M.P., inferior mesenteric plexus; P., parasympathetic fibres for distal colon; H.P., hypogastric plexus.

published by Elant¹ and Davis.² Inferiorly the hypogastric plexus divides, and each division becomes continuous with the pelvic plexus which is joined by the pelvic splanchnic nerves (parasympathetic). We have not attempted to define the sacral roots from which the parasympathetic fibres arose in each of our dissections.

The Parasympathetic Supply

It is when we come to consider the parasympathetic innervation that we find our knowledge to be much more vague. Only by more exact information of the course of the parasympathetic fibres can we ensure their safety at operation, and it was with this object that the present inquiry was undertaken.

Many anatomical textbooks merely mention that the distal colon receives parasympathetic fibres, and none appears to give any accurate information on this subject. Quite recently Maclaren Thompson³ has stated with reference to the superior and inferior mesenteric plexuses: "It is not yet established whether these sympathetic plexuses in man are joined by parasympathetic fibres

from the vagi (cranial outflow), from the pelvic splanchnics (sacral outflow), from both, or from neither." In adjoining paragraphs he wisely indicates that the arrangement in different animals has been found to be "far too variable to be applied indiscriminately to man."

As just stated it has not yet been proved in man whether the parasympathetic supply for the distal colon comes from the vagi (cranial outflow) or from the pelvic splanchnic nerves (sacral outflow). Nevertheless it seems highly improbable, from our knowledge of the distribution of the vagi within the abdomen, and our own dissections, that the cranial outflow provides the parasympathetic supply to the distal colon. In the first place, the number of vagal fibres which pass from the stomach to the coeliac plexus is quite inadequate for such a possibility; and secondly, the only path by which such fibres could travel to the distal colon seems to be the intermesenteric nerves, which contribute few, if any, fibres to the inferior mesenteric plexus. A third point is the evidence submitted below, in which it is shown that a definite contribution to the distal colon comes from the pelvic splanchnic nerves. Although absolute proof of a sole supply of parasympathetic fibres from the sacral outflow is lacking, there seems to be no doubt that the main supply is from this source.

It has been noted previously that at first sight it would appear likely that the parasympathetic fibres from the sacral outflow would extend upwards through the hypogastric plexus to the inferior mesenteric plexus. The possibility of this course for a few parasympathetic fibres has been discussed, and it cannot be eliminated, but the number of fibres which could take this route seems inadequate for such an extensive distribution, and another path must be sought.

In the first case this obviously more important path was discovered accidentally, but its constant occurrence and arrangement has been verified by a number of subsequent dissections. On examining closely the lower part of the hypogastric and pelvic plexuses a small bundle of fibres can be seen on their ventral aspect on each side. The two bundles are easily separated from the main plexuses and can be traced upwards; where they converge to meet and fuse to the left side of the hypogastric plexus. The small trunk, formed by the fusion of the two bundles, can be followed upwards and to the left over the left common iliac artery to the inferior mesenteric plexus, which it joins about one to one and a half inches distal to the origin of the artery from the aorta. On joining the inferior mesenteric plexus the fibres mix with the sympathetic fibres, but with care it can be seen that these parasympathetic fibres extend as a perivascular plexus mainly on to the left colic artery and its ascending and descending divisions. Near the point where the main parasympathetic trunk crosses the left common iliac artery a leash of fibres arises from its left side, and can be traced to the sigmoid and superior haemorrhoidal branches of the inferior mesenteric artery. These fibres are evidently for the supply of the pelvic colon and rectum, and can be followed to these parts of the alimentary canal. In the case of the rectum it appears probable that these fibres provide only a supplementary parasympathetic supply, since the main source is more direct, and comes from the pelvic plexuses as described in anatomical textbooks.

The fibres travelling upwards in this way to accompany various branches of the inferior mesenteric artery to the distal colon have been described as parasympathetic, and this statement can be confidently made, since it is possible, by means of a careful dissection, to follow the fibres centrally through the pelvic plexuses and to demonstrate continuity with the pelvic splanchnic nerves. In the course of the dissections it was found best to isolate the

parasympathetic fibres at first below as they lie upon the pelvic plexuses, and from this point to trace them upwards. If the dissection is made in the reverse direction it is easy to damage the fibres or to fail to find them. Thus it seems quite clear that the main path for the parasympathetic fibres to the distal colon is independent of the presacral nerve, and consists of a small but definite trunk, which comes from the pelvic splanchnic nerves of the two sides and, after piercing the pelvic plexuses, ascends on the left side of the hypogastric plexus.

CLINICAL APPLICATION OF THESE FINDINGS

Several surgeons have attempted sympathetic denervation of the distal colon by operation on the presacral nerve, and/or a perivascular stripping of the origin of the inferior mesenteric artery carried for a distance along this vessel, which ranges, in different descriptions, from a half to one inch.

Apart from the very important fact that presacral neurectomy should not be done for this purpose in males, it is further evident that the operation might involve section of the parasympathetic supply of the distal colon. This undesirable sequel might happen if the surgeon were to carry out the excision too generously in a lateral direction or, conversely, if by any chance the parasympathetic fibres were running more medially than normal. Further, if a perivascular stripping of the inferior mesenteric artery be pushed too far along the vessel the parasympathetic supply will be destroyed.

A second method, which has been followed by other workers, is the excision of the lumbar sympathetic cords. This gives excellent results in cases of Hirschsprung's disease, and in this respect our experience has been in entire accord with the results of other and older workers. But it is at least open to question whether the beneficial results are not due entirely to the section of the lumbar splanchnic nerves, which must be divided if the excision of the sympathetic cord is carried to a proper height. It is, we think, sufficient to divide only the lumbar splanchnics; a method first suggested by Wade, who, however, at least in his earlier cases, attacked only the left side, and laid stress on the division of the white (preganglionic) ramus from the first lumbar nerve.

It is often urged, and with some justice, that sympathectomy, as at present performed is unnecessarily destructive. That this is so is due to the want of more exact anatomical knowledge. The surgeon is driven to do more than is requisite and necessary in order to ensure that enough is done. With increasing knowledge and experience deliberate ramisection should tend to replace the cruder methods of cord ganglionectomy.

It may be possible to denervate the arm of its sympathetic supply without presenting the patient with an unwanted and disfiguring Horner's syndrome. Similarly, a simple deliberate section of the lumbar splanchnic rami will, we believe, prove sufficient to cure cases of Hirschsprung's disease without involving the unwanted by-product of a permanent vaso-dilatation of the lower extremities.

This anatomical inquiry is, we think, a definite contribution to our knowledge of the innervation of the distal colon, since it has not only displayed for the first time some exact information about the parasympathetic supply, but has thrown further light on the safest and surest route by which the sympathetic supply may be cut without endangering any fibres of the parasympathetic.

REFERENCES

- 1 Trumble, H. C.: *Med. Journ. of Australia*, 1931, ii, 405.
- 2 Davis, A. A.: *Journ. Obstet. and Gynaecol. British Empire*, 1933, xi, No. 3, 481.
- 3 Flann, L.: *Surg., Gynecol. and Obstet.*, 1932, lv, 581.
- 4 Thompson, MacLaren: *The Practitioner's Library of Medicine and Surgery*, 1932, vol. 1.

A STUDY OF HYSTERECTOMY BASED ON THE AFTER-HISTORIES OF 112 CASES*

BY

PETER McEWAN, M.A., M.B., F.R.C.S.Ed.

HONORARY SURGEON, BRADFORD ROYAL INFIRMARY, AND HARTLEY HOSPITAL, COINE

This investigation was undertaken with a view to finding out how far these patients were satisfied with the result of their operation; how severe their menopausal symptoms were; whether the removal of the ovaries along with the uterus was justifiable; how far sex relationship and sexual feelings were altered; and whether obesity frequently followed. Some other findings of interest are recorded. One hundred and ninety-five consecutive cases of hysterectomy operated on in hospital by the writer during eight years received a single invitation to attend in the spring of 1933; of these 112 attended—a fairly representative number, considering change of address, weather, sickness, etc.—and were submitted to a questionnaire with their old notes in front. The analysis of the tabulated facts is as follows.

Indications for Operation

Carcinoma of cervix uteri...	...	...	...	1
Malignant disease of corpus uteri	...	...	...	2
Fibroids	...	...	...	37
Post-menopausal haemorrhage	...	...	...	2
Placental mole	...	...	...	1
Double pyosalpinx	...	...	...	1
Double retroperitoneal cysts	...	...	...	1
Endometritis, salpingo-oophoritis, and endometriosis	...	...	...	67

Nature of Operation

Vaginal hysterectomy	...	...	...	4
Subtotal hysterectomy	...	...	...	98
Panhysterectomy	...	...	...	10
Both appendages removed	...	...	...	91
Neither appendages removed	...	...	...	12
Appendages of one side removed	...	...	...	9
Appendix removed	...	...	...	65
Appendix not removed	...	...	...	12
Appendix removed previously	...	...	...	15

Age Incidence

20-25	...	...	2	40-45	...	...	31
25-30	...	...	5	45-50	...	...	14
30-35	...	...	19	50-55	...	...	11
35-40	...	...	28	55-65	...	...	2

Successful and restored to work	...	...	...	109
In indifferent health	...	...	...	3

Menopausal Phenomena

Negligible or non-existent	...	...	...	29
Slight	...	...	...	17
Moderate or mild	...	...	...	27
Severe	...	...	...	35
Post-menopausal cases	...	...	...	4

Nature of Menopausal Symptoms

Flushings and sweatings	...	...	...	83
Headache	...	...	...	30
Dizziness	...	...	...	10
Irritability	...	...	...	7
Nervousness	...	...	...	11
Mental upset	...	...	...	1
Miscellaneous	...	...	...	7

In 11 cases only one of the above symptoms was present; in 32, two only; in 20, three only; in 6, more than three; in 29 the symptoms were negligible; and 4 were beyond the menopause.

Effect on Weight

Stationary	...	...	...	25
Slight increase	...	...	...	50
Considerable increase	29
Loss of weight	8

Married or Not

Married or widow	...	100	Unmarried	...	12
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* Read before the North of England Gynaecological Society, February 23rd, 1934.

Sexual Relations (80 Possible Answers)

Discontinued	20
Indifferent	5
Normal	55

Sex Feelings (64 Possible Answers)

Increased	3
Unchanged or normal	34
Diminished	11
Disappeared	16

Backache

Symptom of note before operation	37
Completely cured	30
Improved	3
Unaffected	4

Leucorrhoea

Present before operation	50
A leading symptom before operation	26
Cured	45
Uncured	5

Frequency of Micturition

Completely gone	28
Uncured	2

Dyspareunia

A leading symptom	16
Cured	9

INDICATIONS FOR OPERATION

The precise indications for hysterectomy vary according to the point of view of the surgeon. In this series, for example, there is only one case of cancer of the cervix uteri; nearly all cases during those eight years were treated with radium. Some uncomplicated cases of severe menopausal haemorrhage were also treated with radium. Certain cases of fibroids were treated by myomectomy instead of hysterectomy. On the other hand, the group of cases classed as endometritis, salpingo-oophoritis, and endometriosis is perhaps relatively large, and calls for explanation. It is drawn from women who present themselves in fair numbers at the out-patient department. Their health is being steadily undermined by pelvic pain, dysmenorrhoea, and menorrhagia; backache, leucorrhoea, frequency of micturition, and dyspareunia (if inquired about) being often added to the picture. The menstrual period has become a burden; each period is a blow to their physical and nervous energy, and they recover incompletely before the next blow arrives. They drift steadily towards ill-health, and become debilitated, unhappy, and neurotic. To these women, in selected cases, hysterectomy is a tremendous boon, and restores them to comfort and fairly sound health.

Care must be taken to exclude the neurotic woman who has centred her neurosis upon her pelvic organs, and to exclude cases in which less drastic treatment may be effective. Hysterectomy must not be resorted to without the intelligent consent of the patient, and, if married, of her husband, and the co-operation of her doctor. The fact that these cases are far commoner in hospital than in private work shows how greatly the conditions of life react upon pelvic symptoms; no doubt a sea voyage and an easy healthy life would relieve many. Hysterectomy is regrettable, but the verdict of almost every woman in this group of sixty-seven cases was unhesitatingly, often enthusiastically, in praise of the operation. Many of them have had one or more children, and date their troubles from infection at childbirth. Not a few have had one or more operations, and are in danger of "post-operative neurasthenia."

The pathology of the condition is complicated. Most of the specimens were microscopically examined, and hyperplasia of the uterine mucosa, small-cell infiltration of the uterine wall, and endometrioma of the ovaries were among the conditions most frequently reported. It may

be argued that where the uterus is not greatly enlarged an artificial menopause induced by x rays or radium would suffice, but, as Green-Armytage¹ points out, the difficulty of exact diagnosis between endometrioma, malignant disease, inflammatory conditions, and fibroids, is an argument of weight in favour of operative treatment. When the uterus has fulfilled its essential function of child-bearing or ceased to be capable of producing children, and the pelvic organs have become a tax on a woman's physical and mental well-being, hysterectomy is an invaluable method of restoring health, and should not be delayed until prolonged pelvic trouble has inflicted serious permanent damage on the nervous system.

TYPE OF OPERATION

Much discussion has recently centred on this subject. Vaginal hysterectomy, though largely in disuse, gave in the four cases a speedy convalescence; it is apt to throw more strain on the surgeon than on the patient. Subtotal hysterectomies numbered ninety-eight: panhysterectomies ten; where the cervix was badly torn panhysterectomy was preferred. It may be noted that leucorrhoea was cured in forty-five out of the fifty cases where it was complained of, and its cure did not seem to depend on whether the cervix was removed or not. The appendix was always removed if still present, unless there was reason for haste; to leave it as a routine procedure seems to me a serious and, I might almost say, a culpable omission.

The question of whether ovarian tissue should be left or not when hysterectomy is performed may be regarded as still *sub judice*, although the trend of recent opinion is distinctly in favour of conserving ovarian tissue. In this series the menopause was severe in seven cases out of seventeen (41 per cent.) in which ovarian tissue was left, and in twenty-eight cases out of ninety-one (32 per cent.) in which both ovaries were removed. Obesity occurred in eight cases (48 per cent.) in which ovarian tissue was left, and in twenty-one (23 per cent.) in which both ovaries were removed. So far as this series of cases is concerned, the conservation of ovarian tissue did not appear to influence for good the severity of the menopause, the occurrence of obesity, or the loss of sexual feeling. In many cases of hysterectomy where the ovaries are not removed, it appears that the latter, their main objective the uterus being gone, atrophy sometimes at once, often within a year or two, sometimes later. I have seen a woman of 50, who had undergone hysterectomy twelve years before, have a secondary menopause begin as late as at 48, and continue still very troublesome two years later. This small series of cases does not support the view that ovarian tissue should be conserved at the operation of hysterectomy.

MENOPAUSAL SYMPTOMS

It would be unfair to expect in a series such as this, where the condition of the patients was such as to lead to the performance of hysterectomy, that the artificial menopause would be nearly as uneventful as in an equal number of average healthy women. I believe that the woman who has lived a healthy life, physical and mental, passes through the menopause with comparatively little discomfort.

In this series the menopause was found to be negligible in 27 per cent., slight in 16 per cent., moderate in 25 per cent., severe in 32 per cent. There was one very constant feature in the cases where the menopause was severe; these patients had suffered repeated trauma to the nervous system, often for years, either from severe dysmenorrhoea, or a hard and overwrought life, or other cause (sometimes

marital) of chronic nervous exhaustion. Anaemia, even a high degree of anaemia, did not *per se* favour a stormy menopause. No other common factor was found to exist in these cases, and there seems good ground for concluding that the essential cause of a severe menopause is an exhausted nervous system.

OBESITY AFTER HYSTERECTOMY

The figures show that obesity is by no means a necessary sequel of this operation, a considerable increase in weight occurring only in twenty-nine cases (25 per cent.). A further analysis showed that obesity had no relation to the severity of the menopause, the persistence of sex feeling, or the conservation of ovarian tissue. The menopause was severe in ten cases (34 per cent.), moderate in six (22 per cent.), slight in five (17 per cent.), negligible in eight (27 per cent.). Sexual feelings were normal in seven out of seventeen (41 per cent.), lessened in six out of seventeen (35 per cent.), and disappeared in four out of seventeen (24 per cent.). Obesity occurred in eight of the twenty-one cases in which ovarian tissue was left (38 per cent.), and in twenty-one out of the ninety-one "clean sweep" operations (23 per cent.). But it occurred in twenty out of the fifty-four cases under 40 years (37 per cent.), and in nine out of the fifty-eight cases over 40 (15 per cent.). So that patients under 40 were more than twice as liable to obesity as those over that age. In certain cases the cessation of the debilitating menstrual period, apart from any specific action of the reproductive hormones, may tend to an increase in weight. Dr. Margaret Sharp informs me that at the Eldwick Sanatorium patients almost always lose weight during menstruation, even as much as 2 lb. during a menstrual period of a week's duration. I believe that if one of the well-known "slimming" diets were put in the hands of those patients, many of them could thereby compensate for the change in metabolism, and would willingly take the trouble to do so.

HYSTERECTOMY AND SEX INSTINCT

My interest in this aspect of the subject was aroused ten years ago, when, after I had recommended hysterectomy for a fibroid, a friend of the patient said: "I am sorry you have suggested this operation, because ever since you did it for me I have lost my sex feelings." I then became interested to know in what proportion of cases these were lost. It was not, of course, possible to ask all the patients, the unmarried ones, widows, etc. In the sixty-four cases in which an answer was possible, these feelings remained unchanged or normal in thirty-four (53 per cent.), increased in three (5 per cent.), diminished in eleven (17 per cent.), and disappeared in sixteen (25 per cent.). I am not acquainted with any figures relating to the effects of the normal menopause, but I doubt if they would be better than these. Simply from the point of view of sex, the disadvantage of an early menopause may be thus stated: that in those women who are destined to lose their sex feelings at the change of life it is a matter for regret to antedate this loss by five, ten, or twenty years, but it is certain that no such loss need necessarily occur.

Is a woman unsexed by hysterectomy? In order to reply we must ask what constitutes a woman? If it be the capacity to bear children, seeing that in the great majority of these cases this capacity is lost before operation, it cannot be said that hysterectomy unsexes them. If the power to consummate marriage be the test, they are not unsexed, since many women after the "clean sweep" operation retain their sex feelings and marital relationships as before. I had occasion to perform a

hysterectomy for fibroids with removal of both appendages in a woman of 53. Her husband came specially to ask me if the operation would rid her of her amorous tendencies, which greatly embarrassed him. She was the mother of six children. Two years later he informed me that she was unchanged in this respect.

It is natural to think that a complete set of ovaries and the associated endocrine glands is necessary for the building up of the complex emotional nature of woman, although in the hermaphrodite this view is difficult to maintain. A male pseudo-hermaphrodite came to consult me because she wanted to get married, and was aware (never having told anyone) that she was part man and part woman. I removed a rudimentary penis and a gland from the right "labium," shown by the microscope to be a testis, and so made her a fairly presentable female. Pelvic examination showed that she possessed neither uterus nor ovaries; but she had the emotions and sex attractions of a woman, and soon after she married. It is hard to explain this case, or the fact that removal of uterus and ovaries abolishes the sex instinct in some women and not in others. That femininity can develop without uterus and ovaries, and can remain after their removal, appears certain, and it must therefore be concluded that hysterectomy does not unsex a woman.

NEUROSIS AFTER HYSTERECTOMY

Hysterectomy is peculiarly exposed to the charge of setting up a post-operative neurosis. It is performed often at the time of the menopause, the unstable period of a woman's life, and in any case brings about an artificial menopause. The subjects are unhealthy, sometimes physical wrecks, and the conditions of life to which they return, as regards work, poverty, family cares, etc., are often unfavourable to a proper convalescence.

Certain types of neurosis may be referred to. Morbidity owing to loss of the reproduction organs should be prevented by careful explanation before operation. Hysterectomy is the most important operation that can be performed upon a woman, and calls for the full and informed consent of the patient, and her husband (if any), and the co-operation of her doctor. To the patient it means the cessation of the menstrual flow, a definite landmark often regarded as separating youth from age, and one of which she is reminded month after month. It means the loss of the capacity to conceive. The maternal instinct (represented by Epstein as Genesis) is the guiding spirit of woman, and consciously or unconsciously, moulds all her feelings, emotions, and actions, and the giving up of the power to reproduce the race is to most women a definite act of renunciation. The husband ought to be consulted. Legally, indeed, he has no right either to compel his wife to have an operation or to prevent her. Actually, he is entitled to a full explanation. In some of the cases of this series, patients who have lost their sex feelings have said: "But I have a good husband, and he really doesn't care; he is so pleased to see me well." The family doctor must be in accord; it is wrong to remove both ovaries if he disapproves. The convalescence after hysterectomy is necessarily longer than after the average operation, and the patient more open to the influence and suggestions of the family doctor; it is therefore more than usually important that the operation should have his full approval.

Good operative technique and post-operative care assist in eliminating subsequent neurosis. Patients should be warned that it may take a year or more for them to reap the full benefit of the operation, and that for a time they will suffer from menopausal symptoms. Convalescence should be carefully graduated up to complete restoration

to health. Patients are often told not to "do too much." This elusive phrase really means that they must not incur more fatigue in any one day than they can completely recover from by virtue of the rest of the succeeding night—an important principle in any convalescence. The cutting down of social duties, the abolition of late nights, a period of complete rest lying down in the middle of the day, and a change of air facilitate an early cure. Here are some types of the neurotic condition that may follow hysterectomy.

Case 1.—A married woman, aged 49, a midwife in active practice, had a hysterectomy for menopausal haemorrhage. A few months later she was readmitted to hospital, and a very careful house-surgeon investigated her case with much detail. She remained seven weeks without benefit. At the end of a year she was a chronic invalid. One day her doctor said to her: "Mrs. A, I have had more than enough of this. I am satisfied you have nothing at all wrong with you. You have had your surgeon and myself at your tail for long enough. I shall attend you no more unless you are really ill. Get another doctor if you like. My advice is 'Get along, and do your work. Good-bye.'" From that day, now ten years ago, she has worked and is in good health.

Case 2.—A single woman, aged 26, had hysterectomy performed for an extreme degree of anaemia due to menorrhagia, which was threatening her life. She recovered slowly, but remained dull, listless, and apathetic. A few years after, her sister had a child, and with her interest in her sister's child she lost her neurosis and regained her youth.

Case 3.—A doctor's wife, aged 39, had suffered from severe dysmenorrhoea and menorrhagia for years, and became so ill that her husband was afraid, and not without reason, that she would not survive another period. After hysterectomy, for fibroid, with removal of the appendages, she gradually recovered, despite occasional attacks of tonsillitis, and mild rheumatic symptoms. Every three months she was able to recognize her periods from the old depression and malaise, and an exacerbation of flushings and sweatings. Several ovarian extracts had been tried without benefit. Four years after operation ovarian epilettes (Parke, Davis and Co.) were given, and at once improved her nervous tone and general health, and the old periods became unrecognizable.

Some years ago I was invited to lecture to the Chartered Society of Massage and Medical Gymnastics on "hysterectomy." This choice of subject surprised me. I was told that so many cases of hysterectomy were referred to them for massage that they wanted to know the surgeon's point of view; they stated they believed that a certain degree of neurosis was an inevitable sequel of all abdominal operations, excepting perhaps an uncomplicated appendicectomy. Such a criticism ought to stress the methods of preventing neurosis underlined in this paper. It must be borne in mind, however, that neurosis, and even mental upset, may exist apart from operation or at the menopause.

Four cases of mental upset of varying degrees occurred in this series. One began six months before operation, which was in itself beneficial. Another patient had mucous colitis and fits before operation, and remained somewhat neurotic. A third developed fainting attacks with loss of consciousness at rare intervals after an operation otherwise successful. The fourth developed an anxiety neurosis two or three months after operation; this is still improving after eight years. These last three cases are classed above as in indifferent health.

LEUCORRHOEA, BACKACHE, FREQUENT MICTURITION

The high cure ratio of these common and very distressing symptoms was remarkable. Leucorrhoea was cured in forty-five out of fifty cases (90 per cent.); backache cured in thirty and relieved in three out of thirty-seven cases (90 per cent.); frequency of micturition cured in twenty-eight out of thirty cases (93 per cent.). I have

no data by which to interpret this curiously high percentage of cure. It is interesting to note that in the treatment of the "gynaecological" backache Young² finds that repair of the torn cervix is very effective, whereas in nearly all these cases the cervix was left.

ADDITIONAL NOTES

Several patients thought they could identify the time of their periods for some months after operation. One stated she lost blood from her nose for many months at intervals corresponding to her periods. An occasional case had gall-stones, which were not removed at the same time. Upper vaginal prolapse was cured by the operation. Some patients had previously had operations for prolapse; others had subsequent operation for prolapse of the vaginal walls. Only one case required a laparotomy consequent on the hysterectomy—namely, for acute obstruction, after eight years. The old notes were investigated, and it was found that she had some vomiting and distension for a few days after the original operation; she had never been really well since. At the second operation there were adhesions of the small intestine in the pelvis. Such a result, accruing no doubt from a post-operative ooze, emphasizes the need for a careful technique. This patient's troublesome symptoms completely disappeared after her second operation. The absence of any complaint about constipation was remarkable. Only in two or three cases was it complained of, and in each of these adhesions of the sigmoid had been noted as present at the time of operation. There was no complaint of menopausal rheumatism; neither was there any mention of symptoms of atrophic vaginitis.

MORTALITY, ETC.

For the sake of completeness the records of the remaining eighty-three cases were investigated. There were three deaths, one of which was due to the anaesthetic, giving a death rate of three in 198, or 1.5 per cent. These remaining cases included eleven of malignant disease of the body or cervix, and one rare condition, a large angioma of the body of the uterus.

SUMMARY

1. An analysis is given of the after-histories of 112 cases of hysterectomy.
2. In the light of the facts as ascertained controversial questions such as whether ovaries should be removed or left are reviewed.
3. The effects of hysterectomy as regards obesity and sex feelings and menopausal phenomena are investigated.
4. The factors that lead to a uniformly successful result are discussed.
5. The mortality of the total series of 198 consecutive cases of hysterectomy was three, or 1.5 per cent.

I wish to express my thanks to my house-surgeons, especially Mr. Richard Saunders, for valuable assistance.

REFERENCES

- ¹ Green-Armytage, V. B.: *British Medical Journal*, 1933, i, 604.
- ² Young, J.: *Ibid.*, 1932, i, 683.

Food Investigation Special Report No. 43, on the storage of meat in small refrigerators, has been issued by the Department of Scientific and Industrial Research (H.M. Stationery Office, 9d.). This explains why meat sometimes fails to keep for a reasonable time in small refrigerators, such as butchers commonly use. While a refrigerator may be sometimes misused by overloading or otherwise, the most frequent cause of wastage is heavy infection of the meat by micro-organisms. The report shows how this infection comes about, and how it can be avoided.

PERNICIOUS ANAEMIA IN AN ASIATIC

BY

ERIC C. SPAAR, B.A., M.D., M.R.C.P.

PHYSICIAN, GENERAL HOSPITAL, COLOMBO

Pernicious anaemia has hitherto been unknown in the Asiatic. I have certainly not been able to find any reference to any such case in the literature, nor have I met with a single such instance of the disease before. It is remarkable, on the other hand, that another blood disease, leukaemia, is by no means uncommon. In my own wards no fewer than half a dozen cases of the latter were seen during the course of last year. This opinion is also shared by Dr. Brunel Hawes, professor of medicine at the Singapore School of Medicine, who saw my patient on a recent visit of his to this hospital.

CASE RECORD

The patient, a female Sinhalese, aged 55, was admitted to the General Hospital, Colombo, under my care on July 17th last. She answered to the three great criteria necessary for an accurate diagnosis of true Addisonian anaemia—namely, (1) the absence of free HCl in the stomach contents of every specimen of a fractional test meal, (2) a positive indirect van den Bergh reaction, and (3) megalocytosis with a raised colour index.

The Price-Jones curve, as furnished me by the laboratory attached to this institution, is given below. It shows the definite shift to the right, and is characteristic.

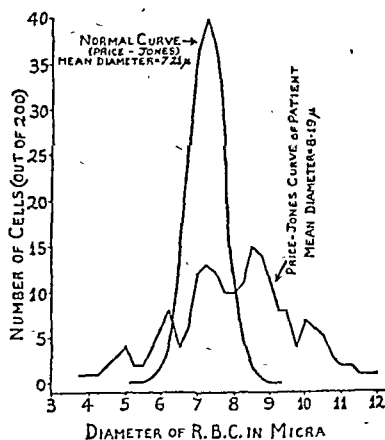


CHART 1.

History and Symptomatology

The symptoms for which the patient sought admission to hospital were: dyspnoea of two years' duration, with palpitation on the slightest exertion, a feeling of lassitude, headache, sleeplessness, and loss of appetite. The onset of her illness had further been marked by vomiting and discomfort in the abdomen. Latterly the sense of extreme weakness and exhaustion, with a progressive pallor of her tongue and conjunctivae, were so marked that her life was despaired of, and she was brought by her brother for admission to my ward as a last resource. Inquiry, however, revealed the fact that there had been a previous admission to hospital nine months before for the same symptoms, and that she had on that occasion been given a course of six intravenous injections of neosalvarsan, because of a positive Wassermann reaction in her blood. She denied any possibility of a venereal taint, however. Her blood, on examination, gave an anti-complementary result at first, but on being retested a month later, without the administration of any arsenical medication, proved to be definitely negative to the Wassermann test.

Physical and Laboratory Findings

She was a fairly well nourished subject, although she stated that there had been some loss of weight. The dark-complexioned skin was of a lemon-olive tint. The tongue was large, flabby, and absolutely bloodless. She was practically edentulous, with only half a dozen septic stumps. The conjunctivae were colourless. The heart was slightly dilated, with a soft, blowing systolic murmur at the apex; the lungs were healthy. The liver was not enlarged; the spleen was just palpable. In spite of the severe grade of anaemia there was, as will be seen presently, no indication whatever of any involvement of the nervous system. Her blood count on the third day of her stay in hospital was: red blood cells, 800,000; white blood cells, 3,800; haemoglobin percentage, 18; colour index, 1.1. Differential count, polymorphonuclears 48 per cent., lymphocytes 52 per cent.

No nucleated reds were seen in the blood film, but there was marked poikilocytosis and anisocytosis, as well as polychromatophilia. Malarial parasites were not found in the blood, nor was there a history of past infection. The stools were consistently negative to the ova of the ankylostome. Her temperature was occasionally febrile during the first three weeks of her stay in hospital. Pulse 76, of poor volume and tension.

Treatment and Progress

Ten days later, on the thirteenth day of her stay, the blood count was: red blood cells, 500,000; haemoglobin percentage 10.

No reticulocytes were seen in the blood film stained by cresyl-blue. The only treatment she had had in the interval was a mixture of ferri et ammon. cit., and half a dozen injections of cacodylate of soda. Treatment for pernicious anaemia was begun on the same day—that is, on the thirteenth day after admission, with intravenous injections of liver extract P.A.F. On the fifth day following, the reticulocytes had risen to 6.1 per cent. of the total red blood cells. This was the peak of the rise—a poor response indeed. By the end of the ninth week of treatment these were no longer present, however, none being seen in a count of 1,000 cells. The number of erythrocytes and the percentage of haemoglobin showed, on the other hand, a steady rise throughout the period of observation. Her diet consisted of rice, fresh vegetables, beef, and fruit.

The treatment adopted and its effect on her blood picture is shown in the table below.

Date	R.B.C. in millions	Hb Percentage	Reticulo-cyte Percentage	Treatment
19/7/33	800,000	18	Nil	Ferri et ammon cit. mixt. orally; six injections of cacodylate of soda subcutaneously
22/7/33	500,000	10	Nil	Six injections hepatex P.A.F. intravenously
3/8/33	1,320,000	30	6.1	Hepatex with iron orally for ten days—that is, the equivalent of 1,000 grams daily of fresh liver
12/8/33	1,400,000	38	5.0	Six injections hepatex P.A.F. intravenously
18/8/33	1,500,000	40	3.0	Ten intramuscular injections of campolou; septic stumps extracted from jaws
28/8/33	2,160,000	52	3.5	Five intramuscular injections of campolou; hepatex with iron by mouth—the equivalent of 1,000 grams daily
2/9/33	2,400,000	53	1.0	Three intramuscular injections of campolou and hepatex with iron by mouth as before
10/9/33	3,000,000	60	0.6	Three intravenous injections of hepatex P.A.F., as well as hepatex with iron by mouth in the usual dosage
17/9/33	3,000,000	60	0.6	Six intramuscular injections of campolou and hepatex with iron orally
24/9/33	*3,200,000	60	0.8	Three intramuscular injections of campolou and hepatex with iron by mouth, the equivalent of 665 grams daily
1/10/33	3,600,000	65	Nil in 1,000 R.B.C.	Hepatex by mouth, the equivalent of 165 grams daily

* The colour index was below 1 for the first time.

The patient left hospital three days later, having gained 20 lb. in weight during the last month of her stay.

Chart 2 shows the definite progress in the condition of the patient with no relapse for the period of nine and a half weeks during which she was treated for pernicious anaemia.

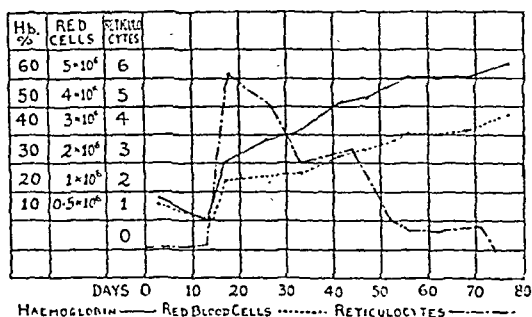


CHART 2.

DISCUSSION

The maintenance dose necessary to keep her well could not be correctly determined, as the patient left hospital a few days later after a stay of eleven weeks. She was then looking quite fit, felt strong and well, and had gained considerably in weight, as already mentioned. Her tongue

was of a normal rose tint. She was asked to continue taking a dessertful of hepatex twice a day, which was the quantity she had been given during the last week of her stay, without any setback.

The most noteworthy feature of the case was, however, the slow response to treatment. While it is held that an active preparation of liver extract will induce a rise in the reticulocyte percentage to a maximum of between 30 and 70 per cent. within seven to twelve days of commencing treatment, the peak in her case corresponded to an increase of only 6.1, while it required intensive treatment for a little over two months to bring her blood picture to anything like a satisfactory condition.

The idea naturally arises in one's mind that preparations of liver extract, whether for enteral or parenteral administration, are prone to deteriorate in the Tropics to a great extent.

The positive Wassermann reaction of the patient's blood on her first admission to hospital was evidently a false positive, due to some unknown factor in the blood, as suggested by L. S. P. Davidson, who has noticed such a false positive in several cases of grave anaemia.

BIBLIOGRAPHY

- Wilkinson, A. F.: *British Medical Journal*, 1931, i, 585.
Davidson, L. S. P.: *Quart. Journ. Med.*, 1932, i, No. 4.

Clinical Memoranda

A CASE OF CONVULSIONS AFTER ETHER ANAESTHESIA

The following is a case of ether convulsions occurring in this hospital, which I feel is worthy of record, as it shows a further possible line of treatment.

CASE HISTORY

A girl aged 11 was admitted to the Queen's Hospital, Birmingham, on October 1st, 1933. She had been ill for four days with abdominal pain, vomiting, and sore throat. The pain commenced in the epigastrium and localized in the right iliac fossa, while it was colicky in nature. There was no evidence of any epileptic tendency in the patient's personal or family history. When examined she was obviously very toxic, the throat being inflamed and the tongue dirty. The temperature was 103° F., the pulse rate 120, and the respiration rate 25. The whole abdomen was rigid, and the tenderness was most marked over McBurney's point.

After a hypodermic injection of 1/75 grain of atropine she was anaesthetized with ethyl chloride, followed by open ether. The induction, which commenced at 3.55 p.m., was quiet and the anaesthetic satisfactory, the patient being kept in the middle of the third stage throughout the operation. Pelvic peritonitis was present and the appendix was retrocaecal, while the wall of the caecum around the appendix base was swollen, oedematous, and in a state of cellulitis. Some of the mesenteric glands were enlarged. At 4.30 p.m., just as the peritoneum had been closed and the anaesthetic withdrawn, she began to develop convulsions. These commenced in the right foot and leg, rapidly becoming generalized. The face became cyanosed and the conjunctivae congested. Her head was raised and oxygen was administered. It was evident that all peripheral stimulation, such as even the needle-pricks as the surgeon was sewing up, started convulsions. The operation was therefore concluded as rapidly as possible, and all interference produced by active attempts to resuscitate the patient was stopped, even the stream of oxygen being discontinued. Then, within a few minutes, the convulsions became less violent, and soon ceased. No further fits occurred, and she made an uneventful recovery.

The main feature of this case appears to be the almost immediate cessation of the convulsions on suspension of

active treatment, and this suggests a course which can be further tried in other cases such as this.

In conclusion, I should like to thank Mr. Hugh Donovan, F.R.C.S., under whose care this patient was, for permission to publish these notes.

D. MASTERS BROWN, M.B., Ch.B.,

House-Surgeon, Queen's Hospital,
Birmingham.

MYOMA OF TRANSVERSE COLON

The following case may be of interest to readers on account of the rather rare tumour that was found on laparotomy.

A man, aged 54, was being measured for a truss when it was seen that he had a large lump in the abdomen. The patient had noticed an increase in his abdominal girth during the previous five or six months, but as he had suffered no symptoms he had not thought it necessary to apply for advice.

On examination a large, fairly well defined mass was felt in the centre of the abdomen, partly occupying the epigastric and umbilical regions. It was not freely movable, and remained fixed on respiration. It was dull on percussion, and felt very solid, so much so that at first it was thought to be an enlarged spleen, but the blood picture was normal.

Laparotomy was performed on August 16th, 1933. A tumour surrounding the middle of the transverse colon was found, embedded in omentum, with coils of small bowel adherent to it. These latter were easily separated, and the tumour, with the enclosed piece of colon, was removed. Recovery was uninterrupted.

The pathologist's report described the specimen as a large lobulated myoma measuring 7½ by 5½ by 5 inches. A section made longitudinally through the attached colon shows that the tumour arises from the circular muscular coat of the bowel. Microscopical section shows the growth to be a leiomyoma. It consists of interlacing fasciculi of smooth muscle cells. There is no suggestion of any malignant change.

I am indebted to Dr. Lawrence, pathologist at the Museum of the Royal College of Surgeons, where the specimen is being preserved, for his report, of which the above is an extract.

G. J. GRIFFITHS, M.B., F.R.C.S.,

Assistant Surgeon, Bedford County
Hospital.

Reviews

THE CAMPAIGN AGAINST SYPHILIS

"O fortunatam natam, me consule, Romam," wrote Cicero; substitute Dr. LOUIS SPILLMANN for Cicero and Nancy for Rome and the reason seems clear for the publication of "The Evolution of the Struggle against Syphilis—A Review of Twenty-five Years."¹ In his preface the author states that he proposes to demonstrate methods adopted as suggested by the march of events and the evolution of ideas, and describe the present position of affairs; his main contentions are that the campaign should be an epidemiological one, and that it is necessary to seek out the source of every infection and deal with it.

Commencing with a historical survey dating from 1880, he shows how inadequate was the accommodation for dealing with the problem when he took charge in 1907. He at once set to work to improve matters, more particularly by increasing the accommodation and by taking steps to see that all infected prostitutes were hospitalized. During the next few years he noted a remarkable fact—namely, that, whereas the numbers of female infections fell, the male ones rose; this was explained by the great increase in the number of "clandestine" prostitutes. In 1914 the war intervened, and the author spent the next few years in Lorraine with the 8th Army. Here cases were divided into three classes: (1) old cases under treatment; (2) established cases; (3) recently infected cases. The first were treated when out of the line, the second and third were sent to special hospitals, treated intensively, and returned to their units as quickly as possible. A brochure was issued to the troops pointing out that syphilis is a grave disease, and showing how it is caught, how recognized, how avoided, and how treated.

After the war Dr. Spillmann took up the threads again at Nancy, and demanded an up-to-date clinic; he insisted on the importance of early diagnosis of syphilis and the necessity of warning the public by a propaganda campaign. For this are needed the education, sexual and anti-venereal, of the young adult, and prophylaxis among workers. For the public campaign a conference was held at Nancy in 1928, where the author set out his views. Propaganda, he said, can take the form of lectures, articles in the Press, posters, the theatre and film, and wireless. A big part in the struggle should be played by the "Social Service," a body of women akin to almoners in this country. The ladies constituting this body in the region of Nancy seem to have been remarkably competent, for defaulting "is rare" following a letter of reminder, and a visit to the patient is "nearly always successful." Great stress is laid on tracing the source of all infections and inducing the offender to submit to treatment. A strong case is made out for pre-nuptial certificates of freedom from venereal diseases, and it is pointed out that these have worked well in Sweden, the marriage rate having actually gone up following their institution, not down, as the opponents of the measure anticipated. Without this system congenital syphilis may be expected to continue to kill thousands annually.

The technical organization in the district is set out in detail, including a central dispensary and general sub-dispensaries; the author's view is that it is better not to have *ad hoc* institutions, and he deprecates the use of the word "venereal": syphilis is not by any means necessarily venereally acquired, nor need it carry any moral stigma. The working of the dispensaries is de-

scribed in detail, and various and complicated "case cards" are explained; very rightly stress is laid on the use of the dark-ground microscope wherever applicable in order that the diagnosis may be made at the earliest possible moment. The relations between the clinics and private doctors present difficulties—and always will; the clinics are primarily for the indigent, but those who can pay do so according to a scale of charges. Summing up, the author insists that it must be recognized that syphilis has changed—we no longer see the old destructive lesions. New methods of diagnosis and treatment are now available, and full use must be made of them; in particular, students should receive more instruction in venereal diseases, and syphilis should be treated by a specialist. Propaganda should be educative and old prejudices done away with; the disease should be treated more on the lines of the infectious fevers, but agreement as to whether it should be made notifiable is not likely to be reached. More money is needed; if as much were spent on syphilis as on tuberculosis or cancer, far more effective results would be obtained.

Though the book is written in a rather flamboyant style and apparently for the self-glorification of the author, it must be admitted that it contains much that is sound, if not new, and that he has made a sincere attempt to tackle a difficult problem. If the "Social Service" is all that is claimed for it, this should be the biggest individual factor in lessening the ravages of syphilis, though how it can deal effectively with the modern "clandestine prostitute" or "amateur" we find it hard to understand. A list of forty-nine articles by the same author, published between 1908 and 1933, is appended. This book will not make much appeal to English readers.

HISTORY OF DISEASES

The study of the history of medicine has been enthusiastically taken up of late years in English-speaking countries in particular, and the latest evidence of interest in the subject is to be seen in the publication, *A Short History of Some Common Diseases*,² by divers authors, which Dr. W. R. BERR has edited. In his brief preface the editor states that these essays are intended mainly for students and practitioners of medicine, and possibly also for patients. Without this announcement we should have been in some doubt, for, although the articles are expressed for the most part in technical language, there is a popular feeling about them, and they lack the terminological pedantry of the monograph or textbook. But these remarks must not be taken to apply to all the contributions in equal degree, for some of them may be described as concise statements of all that is known of the subjects discussed.

"The acute infectious diseases," the subject entrusted to Sir John Broadbent, is obviously too large a one to be fully dealt with in a short essay, and he has wisely confined himself to a sketch of the history of the best-known acute infections. The regius professor of surgery in the University of Edinburgh traces the history of tuberculosis from that usual source, Hippocrates, until the present day, and the efforts made in this country to combat the scourge. There is a note of doubt in his closing paragraph, which leads one to think that he is not sure that we are getting our money's worth for the vast sums expended by public authority. Sir D'Arcy Power writes with his usual mastery on the venereal diseases, but hardly succeeds in lifting the veil over their early history, before Columbus discovered the West Indies.

² *A Short History of Some Common Diseases* Edited by W. R. Berr, M.R.C.S., L.R.C.P. By divers authors. Oxford Medical Publications. London: H. Milford, Oxford University Press, 1934. (Pp. 211. 10s. 6d. net.)

¹ *L'Évolution de la Lutte contre la Syphilis*. Par L. Spillmann. Paris: Masson et Cie. 1933. (Pp. 292; illustrated. 30 fr.)

Probably it never will be lifted completely. Sir D'Arcy is one of those who think that syphilis was introduced to Europe by the sailors of Columbus, on their return from his second voyage. Some American authorities are still unconvinced. The question whether its origin be European or transatlantic is now of purely academic interest compared to the tremendous fact of the discovery of the spirillum and of methods of radical treatment, which, if generally carried out, might eradicate the disease.

Dr. E. M. Brockbank's paper on pneumonia and that of Dr. F. J. Poynton on rheumatism are masterly. Dr. Leonard Findlay writes on rickets, and seems inclined to give far more credit to Whistler and far less to Glisson than has been done by Sir Norman Moore and others. Fate has been kind to us in suppressing Whistler's ill-starred attempt to designate the disease *paedospianchnosteocases*.—Better far that it should long have been known as the English disease! In the seven pages devoted to Bright's disease Professor J. A. Nixon of Bristol has contrived to give not only a clear account of the history of nephritis, but also a charming biographical sketch of his eponymous hero.* Bright may be said to have been an Admirable Crichton of medicine. He excelled in many lines, and despite bitter opposition at first, he achieved success when quite young. The subject of Dr. R. O. Moon's article, heart disease, is too technical to be understood by non-medical readers, but his facts are clearly stated. So little has been really known about the pathology and physiology of the heart, even after Harvey, until recent years, that there is not much to be said of its history. Of epilepsy, on the other hand, the history of symptoms goes back for centuries, and the New Testament provides a graphic description of a typical seizure. Despite the long history of the disease and of its treatment, there has been little progress made in its cure, but Dr. James Collier gives us a fascinating account of past studies and treatment. Dr. John D. Comrie's paper on arthritis is full of interest and important historical facts.

The editor of the book gives a lively account of appendicitis and of King Edward's obstinacy and final surrender to the advice of his medical attendants. We have always felt that the great weight of responsibility at the operation rested on the anaesthetist, the late Sir Frederic Hewitt. Mr. Harold Burrows gives us a succinct account of the present position of research into malignant disease and its treatment. The surgery of tonsils and adenoids has so short a history that Mr. Lionel Collidge has little opportunity for picturesque writing, but he gives a clear description of "T. and A." and their treatment.

INCIDENTS FROM GENERAL PRACTICE

All doctors who can look back on twenty years or so of general practice must have many tales to tell and experiences worth recording. Only a few such practitioners, however, have enough inclination, leisure, liveliness of memory, and literary ability to allow of these experiences being related acceptably in print. The excuse given by Dr. ERNEST PARKER for writing his book *In and Out of My Consulting Room*—that it afforded him occupation during convalescence and so relieved his monotony—can scarcely be accepted as a sufficient justification in itself; but the book is so good that he might have spared himself the apology. Though not free here and there from some slight faults of literary style, most of the incidents he narrates are not only interesting in themselves but are told with considerable ability and real effectiveness. They deal entirely with the human side of medical practice; they are not designed to add to scientific

or clinical knowledge; nor, except quite casually in one or two cases, do they convey any special hints for actual practice, though they manifest the spirit in which a successful practice should be conducted, and show throughout evidence of commendable skill, care, attention, hard work, kindness, and generosity in the author. They are just short stories or mere anecdotes of events which occurred in his own experience, and all of which he asserts to be true. Some of those among his "pot-pourri" were perhaps scarcely worth recording, and perhaps one or two had better not have been recorded. A few carry with them a certain definite flavour of familiarity, but then, as Dr. Parker himself declares, similar experiences must have befallen many general medical practitioners! The book can be commended as an admirable refresher for idle moments not without some more serious influences, but it will doubtless be most fully appreciated by medical practitioners themselves, by their families, by nurses, and by others who in their daily life are more or less closely associated with the circumstances of a general practitioner's work.

ATLAS OF PATHOLOGICAL ANATOMY

Through the liberality of the municipal authorities of Amsterdam the pathological department of the University has for some years been able to employ artists to execute drawings of pathological specimens. From this large collection Professor DE VRIES has now chosen a number of the more interesting drawings and published them in a handsome folio *Atlas of Selected Cases of Pathological Anatomy*.† The plates, seventy-three in number, are almost all coloured and are beautifully executed; they are accompanied by descriptions of the specimens, their clinical histories, and post-mortem appearances, concisely written in the manner adopted in our museum catalogues. The text is written in English.

In making his selection Professor De Vries has endeavoured to illustrate lesions in most of the regions and organs of the body, and he has chosen specimens which are either specially characteristic, or uncommon, or of which good drawings do not exist in available literature. Mere pathological curiosities have been excluded. Among the rarer specimens, such as are likely to be found in very few museums and good figures of which will therefore be valued by pathologists, may be mentioned the primary spindle-celled sarcoma of the veins figured in Plates 16 and 17. The patient from whom this specimen was taken had had for about two years a number of small, rather tender nodules and strands on the inner side of her left leg. A diagnosis of thrombosed varicose veins was made, but as the involved area grew operation was decided on, when the nature of the lesion was disclosed and amputation was performed. The specimen consists of a network of solid cords with localized thickenings at intervals, producing a moniliform appearance. Two years later a nodule appeared on the hip, followed by haematuria and the development of a large tumour in the right hypochondrium; the right eye was nearly blind, and the supraclavicular glands were enlarged. Death occurred about four years after the amputation. Other noteworthy lesions illustrated are chronic yellow atrophy of the liver, neurocytoma of the liver (Pepper's type), diffuse melanosis of the spinal pia-arachnoid, and tuberculosis of the inferior cervical sympathetic ganglion.

In the publication of the *Atlas* generous assistance was afforded by the curators of the Dekker Fund and the Amsterdam University Union. Professor De Vries is to be congratulated on the success of his undertaking.

* *In and Out of My Consulting Room*. By Dr. Ernest Parker. Leicester: Edgar Buckus. 1933. (Pp. 240. 7s. 6d.)

† *Atlas of Selected Cases of Pathological Anatomy*. By Professor W. M. De Vries. Amsterdam: J. H. de Bussy, Ltd. 1933. (25 Dutch guilders.)

ORGANIC CHEMISTRY

SHERWOOD TAYLOR's textbook of *Organic Chemistry*³ is professedly written with a special regard to the requirements of medical students; it is, nevertheless, a fairly comprehensive treatise on the subject. Experience of modern textbooks on organic chemistry leaves with the reader an impression either of a confused medley of unmeaning formulae or (when the treatment is more elaborate) of a mass of descriptive detail that obscures the way to a grasp of principles. Taylor's work is largely free from these defects. It describes in clear language exactly what the student wants to know, and adds only such supplementary information as will serve to connect the facts of organic chemistry with general knowledge. Thus it is stated that adipic acid is used in the preparation of baking powder. Information of this kind serves the double purpose of adding interest to the subject and of providing a basis of mnemonic aid.

A notable merit of the book is the fact that the treatment is thoroughly modern. This applies not only to sugars and matters which have received an unusual share of recent attention, but also to the more ordinary organic compounds. A set of questions is given at the conclusion of each chapter which are well calculated to arrest the student's attention, and to guide him to a grasp of the principles of the subject. The text is arranged in numbered paragraphs, and references are frequently inserted in the text calling attention to the number of another paragraph which furnishes information supplementary to the matter discussed. This arrangement will prove of much help towards a connected and coherent understanding. The volume is well indexed, and is thus no less serviceable as a work of reference than as a student's textbook.

Notes on Books

In his preface to the fourteenth edition of Bruce and Dilling's *Materia Medica and Therapeutics*⁴ Professor WALTER DILLING recalls the death of Dr. J. Mitchell Bruce on July 11th, 1929. "He was a courteous and esteemed physician, a skilful therapist, and a beloved colleague." It is now just on fifty years since Mitchell Bruce first launched this valuable little book, and its success may be judged from the fact that thirty-five editions and reprintings have been called for. Publication of the *British Pharmacopoeia* (1932) has afforded Professor Dilling one more opportunity to revise the work completely, and the main part of the text has been reset in larger type. The "pure materia medica" is now squeezed into smaller compass, and the work as a whole has been recast so as to drive into the student's mind the logical relations between pharmacological action and therapeutic use. The official remedies of the *B.P.* are adequately discussed, and many drugs and methods which are not yet official but which promise to advance therapeutics are considered. The section on general therapeutics has been brought into line with modern pharmacological knowledge.

Professor R. D. RUDOLF's *Notes on the Medical Treatment of Disease for Students and Young Practitioners of Medicine*⁵ first appeared in 1921, and after the manner of textbooks has grown in length, in this instance by about one hundred pages. It has been carefully revised, and changes necessitated by the new edition of the *British*

Pharmacopoeia duly made. As was pointed out in the review of the original edition in these columns, this work happily blends ancient with modern knowledge, as judged by a wise experience; thus Hippocrates and Galen are not forgotten, and the liver and stomach extract treatments, of Minot and Wilkinson, of Addisonian anaemia, whereby its former and familiar adjective "pernicious" has been made obsolete, find a place. The same is true about the treatment of Addison's disease by adrenal cortex extract, a complaint being not unnaturally registered about its expense. Many will cordially agree with the sound and Waltonian statement in connexion with the treatment of chronic heart disease that "fly-fishing is a gentle and pleasurable exercise for those who are fond of angling," and be loath to limit its employment in other directions, any more than this work should be restricted to young practitioners of medicine.

Dr. IRENE CLARK has written a very useful book⁶ on bacteriology and pathology for nurses. It should prove particularly useful to sister tutors, though it might be well to warn them that the author goes a little more fully into some branches of pathology than is expected in their examination syllabus. The third section, dealing with practical methods, is very well arranged. The only criticism we have to suggest is that the book would be more readable if it contained fewer colons and semi-colons and more full stops. Scientific facts are much more easily apprehended if the sentences are short. Proper punctuation and a little more respect for English grammar would greatly improve this otherwise admirable book.

The latest volume in the Notable British Trials Series is devoted to the *Trial of Benjamin Knowles*,⁷ which in point of fact took place not in Britain but in Ashanti, though the appeal was heard in London by the Judicial Committee of the Privy Council. Dr. Knowles, medical officer for the Beckwai District, was charged with the murder of his wife by shooting her in their bungalow; he was tried and found guilty, and sentenced to death by the acting circuit judge of Ashanti, sitting at Kumasi without a jury. The sentence was commuted by the Governor to one of imprisonment for life, but after argument before the Judicial Committee in London the conviction was quashed some twelve months later. The main outline of the case must still be fresh in a good many memories. Mr. ALBERT LIECK's strongest justification for reviving a wretched story is that a great principle of law was involved—the right to trial by jury. "Not lightly is the conclusion to be reached that a British subject in British lands is lawfully triable for his life without a jury, and debarred from the assistance of counsel."

The monograph on *Heine-Medin's Disease*⁸ by Dr. LUIGI CERZA, assistant to the Institute of Clinical Paediatrics at Naples, gives a concise and up-to-date account of the various aspects of the disease which is generally known in this country as infantile paralysis or acute poliomyelitis, based on a study of the literature and personal observations of 297 cases treated at the Naples Institute during the quinquennium 1928-32. A bibliography of recent literature is appended.

Messrs. Faber and Faber have now issued a fourteenth edition of *The Nurse's Dictionary* (3s. net), revised by Miss FLORENCE TAYLOR of Guy's Hospital, which brings this popular little reference book into its 464th thousand. *The Midwife's Dictionary and Encyclopaedia*, revised by Miss GLADYS B. CARTER of the Midwives' Institute (same publishers, 3s. 6d. net), is planned on parallel lines, and should prove equally useful to those for whom it is intended. Both dictionaries are of pocket-book size (5 in. by 3½ in.), and the general arrangement and typography are identical.

³ *Organic Chemistry*. By F. Sherwood Taylor, Ph.D., M.A., B.Sc. London: William Heinemann Ltd. 1933. (Pp. 587; 56 figures 10s. 6d. net.)

⁴ *Bruce and Dilling's Materia Medica and Therapeutics*. An Introduction to the Rational Treatment of Disease. By Walter Dilling, M.B., Ch.B. London, Toronto, Melbourne, and Sydney: Cassell and Co. Ltd. 1933. (Pp. x + 700. 10s. 6d. net.)

⁵ *Notes on the Medical Treatment of Disease for Students and Young Practitioners of Medicine*. By R. D. Rudolf, C.B.E., M.D. Fourth edition. University of Toronto Press. 1934. (Pp. 540. 4 dollars.)

⁶ *Bacteriology and Pathology for Nurses*. By Dr. E. I. Clark. London: Faber and Faber, Ltd. 1933. (Pp. 238; 44 figures. 10s. 6d. net.)

⁷ Edinburgh and London: William Hodges and Co., Ltd. (Pp. 216. 10s. 6d. net.)

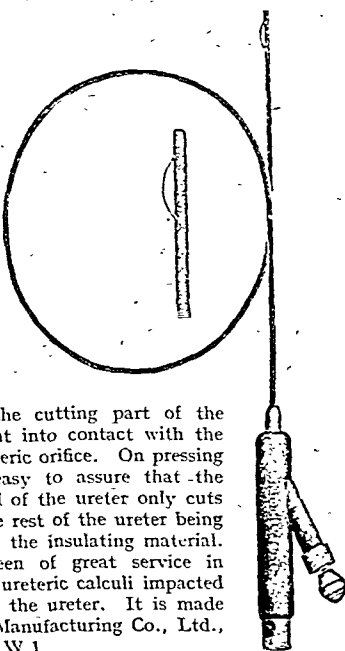
⁸ *La Malattia di Heine-Medin*. By Luigi Cerza. Naples: Arti Grafiche "La Nuovissima." 1934. (Pp. iv + 168. 30 lire.)

Preparations and Appliances

A URETERIC MEATOTOME

Mr. H. P. MURPHY-WHITE, F.R.C.S. (London, W.1), writes:

The electrode shown in the figure has been constructed for use with a high-frequency cutting current, and is employed trans-cystoscopically. After the instrument has been passed through the cystoscope, and its tip inserted into the ureteric orifice, a button is pressed at the outer end; a loop of wire, 1/2 cm. in length, is thus made to project laterally for about 2 mm. near the point of the instrument. This loop is the cutting part of the electrode, and is brought into contact with the upper margin of the ureteric orifice. On pressing the foot switch it is easy to assure that the resulting slit in the wall of the ureter only cuts the portion required, the rest of the ureter being adequately protected by the insulating material. The instrument has been of great service in assisting the passage of ureteric calculi impacted in the pelvic portion of the ureter. It is made by the Genito-Urinary Manufacturing Co., Ltd., 28A, Devonshire Street, W.1.



TREATMENT OF PERSISTENT EPISTAXIS

Mr. A. TUMARKIN, F.R.C.S. (Liverpool), writes:

Epistaxis, though very alarming to both patient and onlookers, is rarely serious, and usually easily controlled and cured; on the other hand, desperately dangerous and even fatal cases have been reported. The following, although never alarming, was quite the most obstinate case I have ever encountered.

Mrs. M. H. began with epistaxis in 1899, as a girl of 14 years, and trailed round endlessly from private doctors to hospitals and back again. She was naturally cauterized endless times, and was given various lubricants. Later, "bits of bone were snipped off," and early in 1931 her septum was resected; this gave her freedom for a month, but then the condition recurred. Her nose used to fill with sanguineous crusts, and she bled regularly two or three times a week, and every few weeks had a really big loss. Both sides bled, but the left was worse by far. I saw her early in February, 1932, and after removing the crusts found the septum generally engorged and velvety, but with no outstanding vessels worth cauterizing. In despair I decided to use radium, and in all she had the following applications.

February, 1932.—One 3 mg. needle, 8 mm. screenage, left nostril, twenty-four hours.

July, 1932.—Three 1 mg. needles, 8 mm. screenage, right nostril, forty hours.

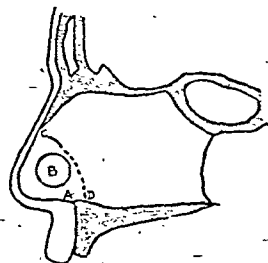
November, 1932.—Two 1 mg. needles, 8 mm. screenage, left nostril, forty-eight hours.

June, 1933.—Two 1 mg. needles, 6 mm. screenage, left nostril, forty-eight hours.

The patient was very enthusiastic about the results. Almost at once the left side dried up, and she insisted that I should go on to the right. I deferred this until July, fearing a delayed reaction in the cartilage. After the July treatment the right side stopped bleeding but the left recommenced, and so in November I gave another treatment as indicated. This again stopped the bleeding, but in June, 1933, as there were occasional trivial losses, I gave her a final treatment. Since then she has had no further haemorrhage. The nose, however, is still liable to fill up with crusts, and in this connexion I would draw attention to a lotion which I have found to be by far the best application: fel bovinum 2 per cent., sodii bicarb. 5 per cent., glycerin 20 per cent., aqua ad 100 per cent.

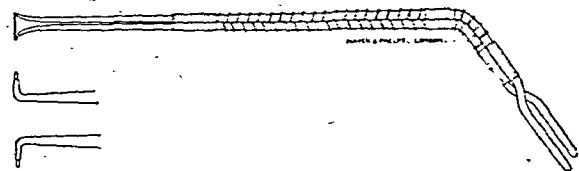
The classical treatment of epistaxis—namely, the application of the cautery or of caustics to the "bleeding area"—

has always seemed to me open to objections. Faced with a bleeding patient, one's first thought is to arrest haemorrhage; this done, one looks at "Kiesselbach's area" and wonders where to begin. I have so often seen these patients with scars, crusts, ulceration, and even perforation in the area of Little (or Kiesselbach), that some time ago I began to wonder whether some more rational and less destructive line of treatment could be evolved. The more so as this crusting is so irritating, and, especially in children, sets up the habit of nose-picking, which in its turn produces the dreaded epistaxis once more. Little's area is supplied (see diagram) from above and behind by the septal branches of the sphenopalatine artery and from below by the septal branch of the coronary artery. Possibly also the descending or anterior palatine may send a branch up through Stenson's foramen, but this is of no importance. It seems to me far preferable to attack these vessels, and this has proved eminently satisfactory. Often it is possible to make out a largish vessel entering from above or behind, but certainly in a very considerable proportion of cases one can discover a distinct vessel or leash of vessels below. Usually these run across the floor of the vestibule in a ridge actually in the muco-cutaneous junction, but sometimes one or more vessels run parallel about 1/4 inch posteriorly. They are especially distinct in the cases where a horizontal spur is present.



A. Site for cauterizing septal branch of coronary in floor of vestibule. B. Kiesselbach's area. C-D. Trench for obstructing branches of sphenopalatine.

Treatment should be directed in the first instance to these latter vessels. I have found the chronic bead surprisingly efficacious. It is quite painless; even children tolerate it without cocaine. If this is insufficient to control the haemorrhage, one attacks the postero-superior vessels at a later date. For this I use a special cautery point and produce a more or less continuous trench, as in the diagram.



This is placed well away from the area where "spontaneous" perforation of the septum is liable to occur. It heals rapidly, and does not form troublesome crusts. This line of treatment has enabled me, almost entirely, to dispense with the old method of treating this very troublesome condition.

THE "DAYON" SUPER-MICROSCOPE

F. Davidson and Co. (143-149, Great Portland Street, W.1) announce the construction of a new microscope for the rapid examination of uncovered slides at a fixed magnification of $\times 1,000$ (Bacteriological Outfit No. D.9). The apparatus, which comprises a horizontally mounted microscope, employing eyepiece, "collector," and primary and secondary objective, enables full magnification to be obtained with a 1/6 inch instead of a 1/12 inch lens. It is compact, easy to operate, and gives excellent results with stained blood or pus smears.

APPLE POWDER

"Aploma" is stated by the vendors to be a specially prepared apple powder, which they recommend for treatment of diarrhoea and in particular of diarrhoea in children. Analyses have shown that aploma has a high pectin content, and to this its astringent properties are ascribed. The preparation was produced at the instigation of the Children's Clinic of Munich University, and several of the staff of this clinic have published articles recording its beneficial therapeutic effects. It is marketed in England by Messrs. Coates and Cooper, Ltd., 94, Clerkenwell Road, E.C.1.

HEREDITY A MINOR FACTOR IN MENTAL DEFICIENCY

BY

CHARLES McNEIL, M.A., M.D., F.R.C.P.ED.

EDWARD CLARK PROFESSOR IN CHILD LIFE AND HEALTH, UNIVERSITY
OF EDINBURGH

The subject of mental deficiency has been brought to the notice of the medical profession and of the public by the recent report of the Departmental Committee on Sterilization.* Although the popular opinion of mental deficiency is that it is one disease and is inherited, it has long been recognized by medical men that a number of clinical types go to make up the aggregate of cases in the population. An important question raised by the report is the distribution of hereditary and non-hereditary cases in this aggregate. This question can only be answered by the investigation of a large number of cases; and these cases must be not only a large but a representative sample of the condition as it occurs in the general population. Such investigations have been made and are being made in institutions for mental defectives; but the criticism had been made of these institutional statistics that cases regarded as hereditary tend to be concentrated there, and that they do not form a good sample. A better sample would be one drawn from all classes of the population, and dealing with cases at an earlier age than those in institutions.

Dr. John Thomson's Analysis

The late Dr. John Thomson published in 1924 an analysis of 952 cases of mental deficiency¹; and all of these were under 5 years of age at their first examination. They were drawn from his private practice and from a special hospital clinic, which he established in 1904 for the clinical study of these cases; and they were based upon a total of about 1,200 cases, the remainder of which were over 5 years, and were excluded from his analysis. Here we seem to have a really good sample of mental deficiency as it occurs in the general population in early childhood—an investigation of a very large number of cases by one man, expert in this subject, and recognized as an accurate clinician, his study extending over twenty years and following up many of the cases for years. This investigation is the largest and best of its kind that has been carried out in this country. It is, and will probably long remain, the classical clinical study of mental deficiency. It seems to have been overlooked, and it is appropriate to call attention to it at the present time, and to make some comments.

Dr. Thomson divided his total into nineteen clinical groups, arranged in the two larger groups of primary and secondary amentia according to Tredgold's classification. In a paper which I published some years later² I arranged his clinical groups (without any alteration of the groups themselves) under the classification of ante-natal, natal, and post-natal, for reasons that will appear presently; and I also added forty-eight cases, taken consecutively from his hospital records between the publication of his paper and his death in 1926, in order to bring the total up to 1,000. This analysis of 1,000 cases is shown in Table I.

This classification of the cases shows that 65 per cent. were ante-natal in origin (and this figure should be a little higher, as some of the hydrocephalus group must have arisen in the ante-natal period), while 20 per cent. were natal, and due to trauma and vascular lesions of the brain at birth. Thus 85 per cent. of the cases were congenital, while 15 per cent were post-natal. It shows also the large number of known pathological conditions that cause mental deficiency.

TABLE I.—*Mental Deficiency. 1,000 Cases under 5 years*
(John Thomson)

Ante-natal	Natal	Post-natal
Simple primary amentia ... 292	Spastic diplegia, from birth injury 89	Hydrocephalus and meningocele ... 58
Mongolism ... 246	Spastic diplegia, with doubtful birth injury ... 28	Epilepsy ... 44
Microcephalus ... 25	Spastic diplegia, with no birth injury ... 34	Hemiplegia ... 16
Congenital syphilis 29	Birth injury, without spastic diplegia ... 47	Following cerebro-spinal meningitis 12
Sporadic cretinism 46		Encephalitis lethargica ... 4
Tuberous sclerosis 3		Hypopituitary ... 2
Various ... 4		Various ... 17
Amaraotic family idiocy ... 4		
Total ... 649	Total ... 193	Total ... 153

HEREDITARY AND NON-HEREDITARY CASES

Although Dr. Thomson himself made no attempt to divide the cases into those that are hereditary and non-hereditary, an attempt at such a grouping may be made. Taking the non-hereditary group first, the natal and post-natal cases can be put into it: and of the ante-natal group, the cretins and syphilis also belong to it. I propose to add also to it the large total of 246 mongols, for the following reasons. The cause of mongolism is unknown; it may be due to some fault in the developing embryo, or to some condition of the uterus, or even to some defect in the germ. Even if it were shown to be a genetic defect, it is accidental and not essential, and is not hereditary. The mongol leaves no heirs; and his parents, his brothers and sisters are not more liable to beget mongols than other people. This inclusion of mongols in the non-hereditary group is already done in American statistics.

Let us now deal with the hereditary group. The four cases of amaraotic family idiocy certainly belong to it: the hereditary mechanism is here beyond dispute, and is recessive Mendelian. There only remain the very large group of simple primary amentia, and a much smaller one, microcephalus. In these two groups heredity is believed to play an important part by most of those who have made a special study of the subject; but the hereditary factor is obscure, has not been convincingly demonstrated, and is still a matter of dispute. Meantime we may class these last two groups as uncertain; and so rearrange the total on a hereditary basis as follows:

TABLE II.—*Mental Deficiency. 1,000 Cases under 5 years*
(John Thomson)

Hereditary	Doubtful Hereditary	Non-hereditary
Amaraotic family idiocy ... 4	Simple primary amentia ... 292	Ante-natal, Cretinism 46
	Microcephalus ... 25	Ante-natal, Syphilis 29
	Various ... 4	Ante-natal, Mongolian ... 246
		Ante-natal, Tuberous sclerosis ... 3
		Natal (total) ... 193
		Post-natal (total) ... 153
Total ... 4	Total ... 321	Total ... 675

Thus in a large number of cases, a sample representative of all types of mental defect and of all classes of the population, heredity in the sense of transmissible defect or disease plays no part in a large majority of the cases (two-thirds); it is believed to play some part, obscure and uncertain, in one-third; and its action is definite and certain in only a negligible fraction of the whole.

Let us now examine the middle division of Table II, where the influence of heredity is obscure. It is made

* See *British Medical Journal*, January 27th, 1934, p. 161.

up to a great extent by the simple primary amentia group. This is not a homogeneous group of one clinical type, it is a residue of cases, which cannot be placed in any of the other groups, but which otherwise differ both in their bodily condition and in their mental behaviour. But it is a large group, the largest of all, numbering in this series nearly a third of the total; and in it the mental defect is ante-natal, so that it must be due, either to some morbid process after conception, or to genetic defect or weakness. As no morbid intrauterine process has been discovered, it is natural to suspect a hereditary taint in all or in a great majority of the cases in this group; and especially as among them we have the degenerate class, where one or both of the parents are defective both in mind and in body, and tend to beget defective children.

In this degenerate group the action of bad heredity is certain; yet it is not the transmission of a Mendelian defect, but that general blend of the constitution of the parents in the child which is the universal hybrid inheritance of man. Further, it must be remembered that the morbid factors of environment are also specially active in this group. It would be a serious mistake to ignore the importance of this group; they put a heavy social burden upon the community, and everyone would welcome measures to reduce their numbers. It is agreed, however, that in institutions the group of degenerate defectives form only a small minority, and that the great majority of the simple primary aments there have parents who are normal in mind. My own experience of simple primary amentia is based upon a large number of cases seen both in hospital and in private practice, which may be taken as a fair sample of this type of defect as it is found in the general population. In the overwhelming majority of cases the parents have been men and women of average or superior intelligence, character, and general health. If these cases are hereditary, what, then, is the nature of the hereditary mechanism? If they are due to the transmission of a recessive Mendelian defect, we ought to find the same types of amentia cropping up in successive generations of these families. Such a regular re-appearance of similar types has not been found in this country, although it is said that a type of recessive Mendelian feeble-mindedness exists in certain districts of Sweden. There remains the theory of a neuropathic constitution, which is not Mendelian inheritance of one fixed and recurrent defect, but an inherited liability to a group of morbid conditions, including mental defect, insanity, epilepsy, and nervous instability. It is not a satisfactory theory, and the evidence in support of it is not convincing; but in the absence of other evidence of ante-natal defect or disease it is widely held. But it is well to remember that congenital syphilis was regarded not so long ago as hereditary: it is now proved to be an ante-natal infection. Sporadic cretinism also was once hidden in the general mass of inherited mental defect, and is now a classical example of an ante-natal endocrine defect. It is reasonable to believe that further clinical investigation of this miscellaneous group of ante-natal mental defects, labelled simple primary amentia, will extricate from it other types of ante-natal disease and defect, and that these, when recognized, may be cured like syphilis and cretinism, or prevented. Heredity does play a part in the production of cases of simple primary amentia; whether that part is large or small we do not know. It is a reasonable assumption that morbid conditions of intrauterine environment are also playing a part. In our present state of ignorance the question of the respective parts played by hereditary and non-hereditary factors in the production of cases of simple primary amentia is unsettled and uncertain; and no dogmatic statements are warranted.

NEED FOR AN AUTHORITATIVE STATEMENT

For some years past active public propaganda has been carried on, by which our people have been led to believe that mental defect is nearly always inherited. They are told that at least 80 per cent. of all cases are accounted

for in this way. It is very desirable that some authoritative statement should be made in the medical press at the present time, showing how this percentage figure has been obtained, and giving some details of the actual investigations, with the numbers of cases and the methods employed.

Meantime, it is common ground with us all that the great majority of the parents of mentally defective children are men and women of average or more than average intelligence and character. I have had a fairly long and extensive experience of the mentally defective child and its mother at the Edinburgh Hospital Clinic, and I have been convinced of two things: the mother of the child is above rather than below the average in intelligence; and in her devotion to the child, and in the courage and cheerfulness with which she faces her heavy task, she shows the highest moral qualities. She might well be spared the additional pain and humiliation caused by all the popular lecturing and preaching on mental defectives. The appearance and behaviour of mentally defective persons, both children and adolescents, create, and naturally enough, a feeling of repugnance and disgust in the mind of the ordinary man; they seem to be less than human. But they are the same human clay as ourselves, only marred somehow in the making.

CONCLUSIONS FROM THIS STUDY

Finally, some general statements may be made, based upon this study of 1,000 cases of mental deficiency, constituting a large and representative sample of the condition as it occurs in the population, and carried out by a physician whose experience of the subject was very extensive, and whose reputation for clinical accuracy was very high.

The great majority of the cases were congenital (85 per cent.), and a large majority were ante-natal in origin (65 per cent.).

A large majority (two-thirds) were the result of non-hereditary morbid processes, acting before, during, and after birth.

In only a small fraction (0.4 per cent.) was mental defect known to be produced by the mechanism of Mendelian inheritance.

In a larger group (one-third of the aggregate), an important influence of heredity may be accepted for those cases where the children were born of defective parents. These cases, however, form only a small minority of this group. In the great majority, where the parents were of normal mind, the influence of heredity was uncertain and obscure.

The general conclusion appears to be that heredity plays a very small part in the production of congenital mental deficiency, and that its influence in this respect has been very greatly exaggerated.

REFERENCES

- ¹ Thomson, John: *Edin. Med. Journ.*, May, 1924.
- ² McNeil, Charles: *Ibid.*, October, 1931.

We have received from the secretary of the Birmingham Hospitals Centre, Captain J. E. Stone, a copy of the first number of *The Samaritan*, a quarterly journal published by the Birmingham Hospitals Contributory Association. This includes messages of encouragement from the Lord Mayor (Alderman H. E. Goodby) and the Lady Mayoress, and the chairman of the Committee of Management, Colonel Bertram Ford. The Lord Mayor writes: "Birmingham is proud in the knowledge that the hospitals contributory organization, as formed in this city, has served as a model and incentive for the rest of the country." The Lady Mayoress refers to the splendidly equipped ambulance service, which, with the co-operation of the St. John Ambulance workers, has done such efficient work during the last few years. An article on the Birmingham General Hospital is contributed by Mr. A. H. Leaney, the house governor.

British Medical Journal

SATURDAY, MARCH 31st, 1934

THE NORMAL LEUCOCYTE COUNT

There are clinicians who place too blind a reliance on laboratory reports, treating them sometimes as if they afforded the one haven in a stormy sea of diagnostic doubt. This confidence may be unmerited, either because "facts" in a report are not facts, a circumstance for which there may be more than one explanation, or because the facts are wrongly interpreted. The performance of a blood count is usually looked upon as a simple if tedious proceeding, and it is certainly not beset by such possibilities of error as are examinations in which the specimen itself may only be secured with a varying admixture of other material; but its finer accuracy depends very much on the experience of the operator, and on the side of interpretation we have A. F. Bernard Shaw's exposure¹ of the "haemoclastic crisis" fantasy to warn us that an accepted significance may be ill founded.

A still more severe blow at any attempts to base conclusions on minor variations in the leucocyte count has been delivered by Simpson,² who set out to determine the normal limits of the count in order to assess at their proper value the variations observed in the blood of x-ray and radium workers. He confirms the previous observations of Shaw, Sabin and her co-workers,³ and Doan and Zervas, that in the normal subject the numbers of leucocytes in the peripheral blood are subject to wide and rapid fluctuations: the extremes in a single individual were counts of 2,800 and 11,200 per c.mm., while even higher figures were sometimes obtained in other subjects apparently in perfect health. Whereas other workers have sought to identify rhythmic "tides" on which these variations depend, Simpson, beyond confirming a moderate average increase in the count as the day proceeds, could observe no sort of constancy in these fluctuations. A series of counts performed regularly on a single individual at the same time of day exhibited the usual variations, and successive counts at increasingly short intervals, even of five minutes, two minutes, and finally of one minute, betrayed nothing in the nature of a steady rise or fall, but only a capricious irregularity which it is perhaps not altogether inappropriate to compare to the density of clouds of smoke rising from a fire. It is natural at this point to inquire whether the methods used were accurate: this appears to have been sufficiently tested and demonstrated. And what would be the results of simultaneous counts? These, although too few in number, were performed on blood from adjoining fingers, and gave concordant results. It is a little difficult to picture the conditions in the circulation as a whole which underlie these rapid fluctuations: it would be interesting to repeat these studies using venous

blood, in order to demonstrate with certainty that the changes observed affect the circulation as a whole, and are not dependent on local conditions.

Whatever the explanation of these results may be, the fact remains that leucocyte counts performed in the usual way vary over a very wide range, and results which in a patient would confidently be taken as evidence of a leucopenia or a moderate leucocytosis are obtainable in the healthy subject: whether the count is high, "normal," or low is a matter of the purest chance. Although the variations affect chiefly the polynuclear cells, lymphocytes are also subject to fluctuation, and in four out of thirty-one healthy subjects Simpson obtained lymphocyte counts below 1,500 per c.mm., the figure given by Mottram as the low limit of the normal, the transgression of which in an x-ray or radium worker indicates damage to the bone marrow. What is now to be done about blood examinations in those exposed to irradiation is by no means clear. The alternatives appear to be to continue the present practice of single counts at intervals of three or six months, ignoring minor changes and watching closely only for the onset of anaemia; or to perform a dozen counts in a single day in order to obtain a representative average. This laborious proceeding would only be worth while if we could interpret its results with certainty, but the whole literature of blood changes in those exposed to irradiation is so confused and contradictory, owing doubtless in part to the fallacies which we have here been considering, that no such interpretation yet appears possible. Meanwhile clinical medicine as a whole has received a warning against too close an interpretation of the findings in a blood count. A false assumption based on unreliable data is much worse than having no data at all: this may perhaps mean that some blood counts were better not performed at all, and a good deal of soul-destroying labour would be saved if they were not. Some would go so far as to say that an accurate haemoglobin estimation will ordinarily yield all the information that is needed in states other than actual blood diseases. This, of course, implies that the function of the clinical pathologist is to confirm and define conditions of which there is clinical evidence, and not to conduct innumerable fruitless investigations for the sake of an occasional unlikely or unexpected discovery.

SIR ROBERT JONES

Mr. Frederick Watson has made a notable contribution to the history of medicine in *The Life of Sir Robert Jones*.¹ This volume is at once a tribute of filial piety from a son-in-law and at the same time a serious study of the development by H. O. Thomas and his nephew, Robert Jones, of orthopaedic practice in the last fifty years. Mr. Watson appears to take the view that fifty years ago, outside the practice of H. O. Thomas in Liverpool, orthopaedic surgery was not practised or

¹ *British Medical Journal*, 1925, i, 914.

² *Brit. Journ. Radiol.*, 1933, vi, 705.

¹ *The Life of Sir Robert Jones* By Frederick Watson. London: Hodder and Stoughton. 1934. (Pp. 327; 10 illustrations. 12s. 6d. net.)

taught in the United Kingdom. We think that this is an error. There were in London three orthopaedic hospitals where the conservative treatment of tuberculous joints and of deformities generally was successfully carried out, at a time when surgeons of the general hospitals were freely excising joints, often with disastrous results. It is true that, owing to an ingrained dislike of specialism, orthopaedic surgery was not highly esteemed by the leaders of the profession or by the medical press of those days, and its scope was narrow. Progress began in the United States, where conditions were more favourable and where the American Orthopaedic Association was founded with thirty-five active members in 1887. Before that event progressive American surgeons visiting Europe had discovered the remarkable clinic of H. O. Thomas in Liverpool, and had made known his teaching on their return to America. The British Orthopaedic Society was started by surgeons who attended the Annual Meeting of the British Medical Association at Bristol in 1894, of whom Robert Jones was one. It had thirty or forty members, and flourished at first. It published three volumes of transactions for the years 1894 to 1898, in the third volume of which is a report of a demonstration by Jones of Calot's method of correcting angular deformity of the spine, a method at one time enthusiastically acclaimed by some surgeons, but now long since given up. Despite its promising beginning the society faded away, presumably for personal reasons. It is noteworthy that, to avoid jealousies, it had no president, its only officers being a treasurer and secretaries. A chairman was elected *ad hoc* at each meeting.

Robert Jones was born in 1857 at Rhyl in North Wales, but soon after his birth his father removed to London, where he engaged in journalism, and where Robert's boyhood was spent. Not long before his father's early death he went to live with his aunt and her husband, H. O. Thomas, and became a student at the Liverpool School of Medicine in 1873. After obtaining the diploma of M.R.C.S. England in 1878 he became assistant to his uncle by marriage, of whose practice he had already had some experience. In 1889 Jones was elected surgeon to the Royal Southern Hospital, Liverpool. When the great work of making the Manchester Ship Canal was undertaken the contractors realized that special provision must be made for the medical and surgical needs of some 20,000 navvies and other workmen and their dependants. The young surgeon to the Southern Hospital was chosen to be medical superintendent of the works, with the duty of appointment of matrons of the hospitals and the selection of fourteen surgeons who were to serve under him. This appointment was no sinecure. It involved the supervision of three temporary hospitals as well as the performance of many operations. The power of organization which this work revealed, and the qualities of decision in emergency and rapid action which it required, were still further to be tested and triumphantly demonstrated in the Great War. H. O.

Thomas died in 1891, and Robert Jones succeeded to his large and comprehensive practice. Thomas was a general practitioner with a strong surgical and mechanical bent, who became from force of circumstances an orthopaedic surgeon. Jones was a general surgeon who practised orthopaedics, and he only gradually gave up general surgery, and, like his uncle, became by force of circumstances a specialist. Jones owed much to Thomas, but the latter, had he lived, could never have approached the achievements of Jones, owing to his pugnacity and lack of the power of suffering fools gladly.

We believe that the memory of three outstanding achievements will be linked with the name of Sir Robert Jones when time's perspective has adjusted itself. The first, in order of occurrence, is the introduction of the Thomas splints for recent gun-shot fractures; secondly, the curative workshops; and, thirdly, the National Scheme for the Care and Cure of Cripples, to which, with the aid of Mr. Girdlestone, he devoted so much time and thought. Probably the last-mentioned will prove to have made the deepest impression. The history of all these and other activities, such as his writings, will be found in Mr. Watson's *Life*. Unflagging energy, tireless industry, unruffled temper, and a winning charm of manner—these were characteristics which were ancillary to his great skill and ability. In 1907 Dr. William Mayo of Rochester, Minnesota, no mean judge, wrote: "I must place Mr. Robert Jones as one of the greatest surgeons it has been my good fortune to meet."

THE MALARIA CAMPAIGN

It is only a few weeks since we noted how regular and rapid is the system of mutual communication about infectious disease incidence which has grown up in the past ten years between the Health Departments of the Governments of the world. The Health Section of the League of Nations has now issued a survey of the work done during that period in the international field for the prevention and treatment of malaria. At the end of 1918 there was a general recrudescence of malaria. A serious situation had arisen owing to war conditions, which led to an almost complete suspension of anti-malarial measures in many countries, a general disorganization of health services, a lack of doctors for civilian work, an insufficiency of quinine, and inadequate funds. One of the most important factors seems to have been the movement of populations. Persons more or less resistant to local strains were found to be not immune to foreign strains, while immigrants had no resistance against the local virus. Bad housing conditions, famine, and many other circumstances called for study with a view to preventive measures and a reconsideration of the whole question of treatment. The reappearance of malaria in districts from which it had vanished threw doubt on the value of methods hitherto employed in combating the disease. It soon became clear that international measures were called for, the

problem being too large and too complicated for individual Governments with the means at their disposal. Accordingly in 1923 the Health Committee of the League appointed a subcommittee of experts, in order to obtain precise knowledge about the distribution and character of the disease. The original subcommittee later became the Malaria Commission, which now consists of fifty-four members. Attention was directed to three specific problems: anophelism without malaria, production and sale of quinine, organization of epidemiological inquiries in heavily infected countries. The Commission, besides arranging study tours and collective inquiries, has sent individual experts to certain countries to report on the situation. Meanwhile a general inquiry was set on foot to ascertain the prevalence of malaria throughout the world. Ninety-three health administrations of malarial countries, representing three-quarters of the population of the globe, furnished information. It was found that the cases treated during the last year covered by the inquiry numbered 17,750,760.

In 1927 the Commission, as a result of this work in many lands, laid down a number of principles which ought to govern antimalarial work in Europe. It was agreed that the first step must be to treat the sick, and the second to kill the malaria parasite, either by treatment in the patient or by destroying the infected mosquito. General inquiries made under the auspices of the Commission clearly showed, however, that the methods adopted must vary widely according to locality and the general circumstances of the infected population. Without careful study of local conditions a method yielding good results in one malarial country cannot be depended on in another. These conclusions showed the need for allowing young malariologists to gain experience by work in different countries. Hence, from 1926 onwards international courses have been held in France, Germany, Great Britain, Italy, Spain, and Yugoslavia, and many doctors attending them have been granted scholarships by the Health Organization of the League. The malaria courses in Europe do not, however, meet the needs of medical officers intending to work in non-European countries where the conditions are dissimilar; for them a course is being arranged at Singapore, beginning on April 30th, to be followed by field work in Indo-China, the East Indies, Malaya, or elsewhere. A conference of experts held in Geneva five years ago decided that several questions were important enough to need international co-ordinated research. The inquiries to be made were grouped under three main heads: (1) treatment of malaria and its importance in malaria prevention; (2) housing and malaria; (3) anophelism without malaria and malaria in deltas. Of these, the inquiry into treatment was entrusted to the secretariat of the League, who published the results in 1932. The quantity of quinine or of alkaloid mixtures necessary to meet the needs of the eighty-eight malarious countries of the world is put at 1,387 metric tons a year, the present consumption of quinine falls short

of 600 tons. The greatest obstacle to a larger consumption appears to be the cost of treatment, and the Commission has recommended a standard formula for a total alkaloid mixture (totaquina), researches into the efficacy of which have been carried out in various countries. The efficacy of other drugs has also been investigated, and the Commission published the results in June last. Put very briefly, three conclusions emerge. Quinine is still the best remedy for preventing the onset of clinical symptoms after infection; quinine and atabrin are the best remedies against the attack; but no drug can guarantee patients against relapse.

This ten years' study of antimalarial measures makes it even plainer than before that the many problems must be tackled on a world-wide scale. Most of the factors in the epidemiology of malaria present both general aspects and aspects which are peculiar to different localities, climates, races, degrees of immunity of the population, social and economic conditions, the virulence of the parasitic strain, and other features that vary from district to district. It is this mix-up of general and specific factors that makes organized international research so necessary. The Malaria Commission, representing all schools of malariology, acts as a clearing-house for information and experience from everywhere.

GLAUCOMA SIMPLEX

It is well known that the early diagnosis of glaucoma simplex is often a matter of the greatest difficulty. As may be expected, therefore, no royal road to the detection of the first stages of the disease is to be found in a group of recent papers. Methodical vigilance, and painstaking attention to detail in every case examined, alone will permit of treatment being started when it can do most good. The analytical figures, given by S. B. Marlow,¹ relative to the first symptoms discoverable, are inconclusive, but it is noteworthy that premature presbyopia has no relation to glaucoma simplex. The statement that there is no relation between the extent of field defects and the duration of the disease seems somewhat dogmatic, since, in such an elusive disease, the point at which the trouble is first recognized depends upon so many human factors. Photography of the optic disk at frequent intervals is suggested as a method of watching the progress. Even if one could honestly persuade patients that no harm would come of many exposures of the retina to intense lights, it is doubtful if many would submit to such a procedure. The author points out, with justification, that, though the tonometer, properly used, can be of the very greatest assistance, cases of glaucoma occur in which no increase of tension can be demonstrated. He makes the very practical suggestion that the light minimum can be easily determined without complicated apparatus by reducing the illumination in the perimeter to a degree arbitrarily chosen by the examiner as a useful standard. A. B. Reese,² in describing the pathology of glaucoma, expresses the present imperfect knowledge of the causation of the disease when he says that "peripheral synechiae cause

¹ *New York State Journ. Med.*, 1933, xxxiii, 1423.

² *Ibid.*

glaucoma, and glaucoma causes peripheral synechiae." No mention is made of the fact that there can be remissions of the glaucoma with persistence of peripheral synechiae. He gives a very instructive explanation of the causation of proliferative and non-proliferative atrophy of the iris. The theory, quoted from Schnabel, according to which cupping is considered to be due to the collapse of cavernous atrophic spaces in the nerve head, though a very attractive explanation of the cupping found in cases with no detectable increase in intraocular tension, is, however, not generally accepted. The operative treatment will for some time to come be a personal matter with each individual surgeon. "Whatever method the operator can use with confidence is the best method for him" puts the matter in a nutshell. A. Knapp³ employs the Lagrange operation in selected cases, but does not exercise the same discrimination with the trephine. It is therefore difficult to compare his results in these two operations. After so many glowing accounts of cyclodialysis from other authorities, it is useful to note that "the results have been very disappointing, principally because one never knows how long the good result may last, and another serious objection is that the return of tension may be abrupt and stormy." He also looks with disfavour on iridotaxis. W. Zentmayer,⁴ in discussing the medical treatment, accepts the importance of surgical intervention. In contradistinction to the general practice in this country, he begins treatment with the weaker miotics in dilute solutions. Though massage is of assistance in certain cases, few patients will carry it out properly and conscientiously. As is usual in America, great stress is laid on dietary and a very complete investigation of the endocrine, vascular, and nervous systems.

COST OF LONDON HEALTH SERVICES

At its last meeting before Easter the London County Council considered its estimates for the year 1934-5. The vote for maintenance expenditure for the general hospitals was put down at £469,000; for the infectious diseases hospitals at £156,000, and for sanatoria and children's hospitals at £86,000. The vote for the district medical service was £6,500, for pathological laboratories £8,000, and for maternity and child welfare and the administration of the Midwives Acts £6,300 (the Council is not the maternity and child welfare authority for London, these duties being discharged by the borough councils). The vote for the diagnosis and treatment of venereal diseases was put down at £57,000. The scheme is one in which six neighbouring county councils and three urban corporations participate with the L.C.C. The Hospitals and Medical Services Committee states that the agreements with the voluntary hospitals for this purpose have now been in operation for seventeen years, and the time has come when they should be reviewed in the light of experience. The voluntary hospitals concerned will, when notified of the grants for 1934-5, be informed that it is proposed to review the arrangements during the year. The various hospitals at which venereal diseases clinics are conducted make provision for in-patient treatment. The number of in-patient days in 1933 in respect of patients from all areas was 52,581, comparing with 54,023 in 1932, and 56,541 in 1931.

The number of new cases of venereal diseases was 15,802; other cases to the number of 11,236 attended and were found to be non-venereal. The new cases of syphilis numbered 4,710, of gonorrhoea 12,104, and of soft chancre 195. Nearly 40,000 pathological examinations were made for practitioners, and the names of 520 practitioners in the county were on the approved list for the supply free of cost of salvarsan or its substitutes. Facilities for instruction at the clinics in modern methods of diagnosis and treatment have so far been limited to medical practitioners and medical students. It is now desired to extend the facilities to pupil midwives, and certain clinics have been asked to make arrangements for this purpose. The response has been encouraging, and agreements with the hospitals for 1934-5 will include a clause to the effect that the hospital shall, if required, provide for the instruction of pupil midwives in venereal diseases.

Actions have been commenced in the High Court against the L.C.C. and the medical superintendent of one of its hospitals for damages on behalf of certain infant patients who contracted an infectious disease while under treatment in the hospital. The Council has power to indemnify its officers in respect of damages and costs in proceedings brought against them for acts done in the execution of their duty, but the Court might overrule the indemnity on the ground that the case is such that public funds should not be utilized for the purpose. The circumstances of this particular case, in the opinion of the Hospitals and Medical Services Committee, justify the exercise of the discretion vested in the Council, and it is considered, moreover, highly desirable from the point of view of public policy that the defence of the two actions should be in the same hands. The committee proposes, therefore, that the Council should offer, if the medical superintendent so desires, to undertake his defence as well as its own, and that the Council, in the special circumstances of the case, should indemnify the superintendent in respect of any costs or damages that may be awarded against him.

ACTION OF WATER ON LEAD

Drinking-waters attack lead pipes and, taking up traces of the metal, give rise to lead poisoning in consumers. This statement is broadly true. Plumbosolvency and plumbism occur. It is common, if vague, knowledge. But when instead of vague generalities a slightly closer view is attempted, and answers are sought to such seemingly elementary questions as "Why plumbosolvency?" and "What is plumbism?" it soon appears that there is a lack of precise information on many points, as well as much divergency of opinion among recognized experts. As a step towards a clearer understanding of the various questions involved—which as a group are of much importance to the health of the community—the Water Pollution Research Board has arranged for a laboratory investigation to be carried out into the conditions affecting the action of water on lead. In the first place, it instructed a survey to be made of what has been written on the subject, and a summary of the data collected appears in a report just issued.¹ In this work attention is mainly directed

³ *Arch. Ophthalmol.*, 1933, x, 298.

⁴ *New York State Journ. Med.*, 1933, xxxiii, 1423.

¹ *The Action of Water on Lead, with Special Reference to the Supply of Drinking Water: Summary of Existing Knowledge.* By H. Ingleton, M.A., D.Phil. Water Pollution Research. Technical Paper No. 4. London: H.M. Stationery Office, 1934. (2s. net.)

to: (1) the maximum permissible lead in drinking-water; (2) the factors causing action of water on lead; and (3) the methods of preventing such action. The observed values of lead in water samples examined are shown to vary within wide limits. As regards a permissible maximum, some authors consider that any trace of lead found should promptly veto the further use of lead pipes with the supply concerned. Others are prepared to view with equanimity up to 0.1 part of lead per million. Most, however, would apparently consider 1 part per million as gross contamination. Between 0.1 and 1 it is at present debatable land. As regards the factors inducing plumbosolvency discrepancies of the same kind emerge. One authority states that sulphuric acid promotes the action on lead; another, that it protects the pipes. Again, one says that carbon dioxide is the primary active agent; another, that it exerts a restraining influence. Similarly with the methods of preventing plumbosolvency there is great variation in both opinion and practice, and in this connexion accounts are given of the protective measures adopted by the Yorkshire and Lancashire towns and Continental and other centres. The report, however, is much more than a succession of conflicting antitheses as the random samples cited above might possibly suggest. It exhibits in summary form a comprehensive mass of important information. Though strongly condensed, it is amply equipped with references to original papers. It is a work which, for their guidance, should be in the hands of medical officers, water engineers, and members of councils or public boards who may have it in mind at this time to embark upon any undertakings for the protection of water supplies containing lead or potentially plumbosolvent.

HOSPITAL DEVELOPMENT IN LONDON

On page 126 of the *Supplement* to this week's issue appears an account of the meeting arranged by the Metropolitan Counties Branch of the British Medical Association for a discussion by members of the teaching staff of London's hospitals of the problems of London's hospital development. It was evident from what was said that London consultants are not altogether easy about the state of things as they are, and as they may come to be. The development of the municipal hospital service as a result of the Local Government Act of 1929 has had its repercussions on the voluntary hospital system. In London the financial resources of the London County Council give it scope and power to reorganize and equip its hospitals in such a way as to challenge in efficiency, if not yet in personnel, the teaching hospitals which depend economically upon voluntary assistance. This is all to the good for the community which these two systems serve, but if the voluntary hospitals are to continue in the proud position they have maintained up to the present there will be need for a more planned and concerted effort and a greater awareness of their economic and medico-political problems. The proposal to be put to the Hospitals Committee of the Metropolitan Counties Branch that one-half of its members shall be representatives of the twelve London teaching hospitals is a move in the right direction. If this suggestion is accepted these representatives would constitute a nucleus of opinion that

ought to be of great value in the development of hospital services, not only in London, but in the country at large. "Whither medicine?" is a question that pre-eminently concerns the younger members of the profession, and we may express the hope that the junior members of the teaching staffs will not be forgotten when it is decided whom to elect on the Hospitals Committee.

PATHOLOGICAL MUSEUM, BOURNEMOUTH

We are asked to make further reference to the Pathological Museum which is being arranged for the Annual Meeting of the British Medical Association at Bournemouth next July. This will be held in the same building as that in which the Sectional work is carried on, and the material will be grouped under: (a) exhibits bearing on discussions and papers in the Sections; (b) specimens and illustrations bearing upon recent research work; (c) instruments relating to clinical diagnosis and pathological investigation; (d) individual specimens of special interest, or a series illustrating some particular subject. It is also hoped to have exhibits relating to neurology and to heredity and mental and physical deterioration, and a series of x-ray and other photographs. The committee is anxious for the co-operation of pathologists and others in securing specimens of medical interest on the lines indicated above. Offers of assistance should be sent to the honorary secretary of the Museum Committee, Dr. C. G. H. Morse, 10, Madeira Road, Bournemouth.

SIR ROBERT McCARRISON

The governing body of the Arnold Flinker and Julius Wagner-Jauregg Foundation of Vienna for research on goitre and cretinism has awarded the Foundation's prize of 2,000 Austrian shillings to Major-General Sir Robert McCarrison, I.M.S., for his researches into the aetiology of goitre, upon which he presented a report at the second International Congress on Goitre, held in Bern last summer. As this prize had never before been awarded to a foreigner the statutes had to be altered for the purpose of recognizing Sir Robert McCarrison's work.

Major Charles H. H. Harold, M.D., R.A.M.C., at present assistant director of hygiene, Southern Command, has been appointed Director of Water Examinations by the Metropolitan Water Board, in succession to the late Sir Alexander Houston.

We much regret to announce the death, on March 25th, after an operation, of Mr. David Lees, consulting surgeon for venereal diseases to the Royal Maternity Hospital, Edinburgh, and medical officer to the venereal clinic of the Royal Infirmary.

Colonel Arthur Lynch, M.R.C.S., whose versatility of mind and varied career have been made familiar to all newspaper readers, died in St. Mary's Hospital on March 25th, at the age of 72.

At an extraordinary general meeting held on March 23rd the Governors elected Viscount Leverhulme president of Epsom College in succession to the late Lord Burnham.

TRAINING THE HOSPITAL ALMONER

SIR FARQUHAR BUZZARD ON WHAT AN OLD PROFESSION CAN TEACH A NEW

In an address to the Institute of Hospital Almoners, of which he has lately become president, Sir Farquhar Buzzard, Bt., dealt with some aspects of professional training in general, and gave to the members of this comparatively new profession some counsel which has an interest for a wider circle than those to whom his remarks were immediately directed. As a result of his long experience on the staffs of four London hospitals, he paid tribute to the manner in which the almoner had gradually bridged the gulf between the treatment prescribed by the hospital doctor and its practical application. These four hospitals, by the way, included the Royal Free, the first institution to establish an almoner—Miss Stewart; and St. Thomas's, where Miss Cummins, whom he described as "the Florence Nightingale, if not the Mussolini, of the movement," had served.

ASPECTS OF THE ALMONER'S WORK

He went on to refer to the results of a questionnaire sent out by the council of the Institute to hospitals all over the country, which showed that out of a sum of £9,185 spent on surgical appliances, 47.2 per cent. had been raised from the patients, 8.9 per cent. from hospital and almoners' funds, and the remainder from other agencies. Thus a large number of appliances (9,334) were provided at an extremely low cost to hospital funds, and the co-ordinating influence of the almoner helped the other agencies to carry out their functions in the best way. Of £12,734 spent on convalescent treatment for 5,509 cases, the patients provided 28 per cent. of the cost, the hospitals 18.6 per cent., and other agencies the remainder. Here again the almoner was able to arrange that only a small part of the cost fell on the hospital. The questionnaire had also yielded much interesting information with regard to the following up of patients after discharge from hospital. These patients fell into four categories: those in need of convalescence, appliances, or extra nourishment and help at home for a limited period; those requiring prolonged supervision or assistance in procuring diet and drugs to enable them to lead a more or less normal existence; the incurables, who required certain accessories and comforts; and, finally, cases the further history of which was specially desired for the purpose of research or statistics. Sir Farquhar Buzzard believed that the preventive aspect of the almoner's work would one day assume a more important role. It was through the medium of the almoner as interpreter and expositor that a knowledge of the advances made in practical medicine would reach the poorer classes of the population.

PREPARATION FOR A PROFESSION

Turning to the almoner's training, the speaker thought that something was to be learned from the history of the medical profession. The older profession had been taught by experience some lessons which were worthy of attention by a younger profession still experimenting and feeling its way. One advantage which the profession of almoner enjoyed over the medical profession was that its ranks were recruited by a process of selection and probation, and up to the present only candidates had been accepted who had completed a general education, so that the snare of early specialization had been avoided. It could not be too strongly urged that even after school life was over a girl needed a period of at least a year in which to widen her horizon before entering upon special preparation for the almoner's certificate. In order to become an efficient social servant some knowledge of all social strata was essential, and without it a woman's sense of perspective might be seriously and permanently warped. The interval between leaving school and entering upon professional training might be usefully employed in travel, university graduation, or the study of any subject having no immediate connexion with social service. All professions would benefit if some

such rule were in force, but the small profession of hospital almoners was almost the only one at present able to make it a universal requirement.

The medical student, less than a century ago, began his preparation by becoming an apprentice for a year or two to a doctor, afterwards joining a medical school and turning to the more academic side of his training. But with the advance of medical knowledge, the extraordinary development of the sciences ancillary to medicine, and the necessity for acquiring some knowledge of chemistry, physics, biology, anatomy, and physiology, the student's course was completely changed, and now he no longer came into contact with sick persons until that background of learning had been attained. A few regretted the old system, but nothing was less likely than its resuscitation. On the other hand, the pendulum of reform had perhaps swung too far in the opposite direction. The student might well see more of sick persons at an earlier stage of his curriculum, if only to enable him to compare health with ill-health and to appreciate better the significance of his studies. It could also be urged with justice that too much of the student's time was spent in scientific fields remote from those in which he would have to earn his living. The general desire was now being felt for a simplification of the curriculum in some directions, and a greater and more fluent continuity.

DANGERS OF AN OVERBURDENED CURRICULUM

Sir Farquhar Buzzard referred to one more criticism of the present medical curriculum, which was pertinent when considering that of another profession. During the last half-century, owing to a continuous series of new discoveries, large additions had been made to medical knowledge, and the student's burden had become heavier than he could bear. He had time perhaps to memorize, but certainly not to digest, the material put before him. If the profession he was now addressing were tempted to add to the training little by little there would come a time when that profession also would have to face an overburdened curriculum, and would be under compulsion to do something about it. He urged that the subjects which were essential for every candidate should be kept clearly in mind, together with the subjects which were merely desirable, or were necessary only to a few. The curriculum should embrace the essentials, and post-graduate study deal with the remainder. Moreover, not every moment of the curriculum should be filled even with essentials: time must be allowed for thought, for mental digestion, and for recreation.

An essential theoretical and academic background should be painted, and before it had time to dry the practical details of the foreground should be gradually filled in. In medical training the background had become so separated from the foreground that they might almost be thought to be separate pictures. The hard lines of demarcation, emphasized by too numerous examinations, had been allowed to split the picture into artificial compartments. The present task was to wash them out, and the process of restoration was none too easy.

WHAT SHOULD THE ALMONER KNOW OF MEDICINE?

Some had asked what an almoner ought to know of anatomy and physiology, medicine and surgery. Sir Farquhar Buzzard confessed himself doubtful as to the value of the time spent even by nurses in acquiring a smattering of anatomy and physiology, so it was not surprising if he deprecated the idea of almoners wasting much of their energies on a similar quest. Of course, it was to be hoped that in a day not far distant all girls and boys would be taught at school the elements of biology in such a way as to make them familiar with the general structure and functions of the human body. In the meantime, he doubted the wisdom of doing more than encourage students for the almoner's profession to gather what they could from suitable books. Still stronger was the argument against any attempt to teach them even the elements of medicine and surgery. What they would need in carrying out medical social service

was the ability to understand and interpret the strange language used by doctors, and, more important still, an intimate and sympathetic conception of the principles, ideals, and ethics underlying the practice of medicine. For those who wished to specialize in the work of mental hospitals, medical psychology must be regarded as a post-graduate study of importance, requiring perhaps special courses of instruction, and opportunities of gaining experience. The student who had taken a course of social psychology and philosophy was well prepared to assimilate the main features of medical psychology.

In conclusion, he said that the almoner's profession would be faced, as the medical profession had been, with the problem of specialization. Social services in the field of mental hygiene and in that of industrial psychology needed special qualifications, but these should be a superstructure based on an all-round knowledge and experience of social service as a whole. The best specialists in any walk of life were those whose grasp of subjects outside their specialties had reached and maintained a high standard. It was encouraging to learn that the demand for almoners was steadily increasing. It was a career undoubtedly only suitable for women who were well educated, physically and mentally sound, and had a genuine "urge" for social service.

Reports of Societies

BRONCHOSCOPY AND OESOPHAGOSCOPY

At a meeting of the Aberdeen Medico-Chirurgical Society held on March 1st, with Mr. ALEX. MITCHELL, president, in the chair, Dr. H. ROSS SOUPER read a paper on "Bronchoscopy and Oesophagoscopy in Diagnosis and Treatment."

After a brief outline of the development of peroral endoscopy within the past thirty years, and a description of the types of instruments in common use, Dr. Souper detailed the indications for bronchoscopy, more particularly in diagnosis. He pointed out that, while the part played by bronchoscopy in the search for, and removal of, foreign bodies had been realized for years, it was not by any means so widely recognized that bronchoscopy was a diagnostic method of the greatest importance in diseases of the lung, and quoted the dictum of Chevalier Jackson, that "in a general way it should be stated that diagnostic bronchoscopy is indicated whenever there is an unsettled diagnostic question." He referred to the uses of bronchoscopy in bronchiectasis, lung abscess, atelectasis, bronchial obstruction, asthma, tumours of lung, and post-operative complications. He then analysed his own figures of 188 bronchoscopic and oesophageal examinations, a total which excluded all bronchoscopies performed merely for the local injection of lipiodol and all direct laryngoscopies, with one exception, a somewhat unusual case of foreign body. The total of 188 was composed of 166 oesophagoscopies and 22 bronchoscopies, the latter figure being in Dr. Souper's opinion lamentably small. The two most numerous groups in the bronchoscopy cases were examinations for foreign body in the bronchial tree and for lung abscess. The importance of early diagnosis of foreign body was emphasized, and cases were described where, owing to the lack of appreciation of the presence of foreign body, it had been overlooked for months or even years. Four cases of tumour of the lung had been encountered, and two were described in detail. In both cases the diagnosis, while suspected on clinical grounds, had been absolutely confirmed by bronchoscopy.

INVESTIGATION OF OESOPHAGEAL SYMPTOMS

In the investigation of cases presenting oesophageal symptoms, the lecturer considered oesophagoscopy an essential method of examination. He pointed out that it had the advantage over x-ray examination in that it permitted direct inspection of the diseased viscus, and that the appearances obtained by x-ray examination of the barium-filled oesophagus might occasionally be misleading. He condemned whole-heartedly old-fashioned methods of investigating cases of oesophageal disorder by the blind

passage of the bougie and by attempting to remove a foreign body by probangs and other obsolete instruments. The cases of oesophagoscopies, numbering 166, were made up as follows: (a) foreign body, (b) cardiospasm, (c) cricopharyngeal spasm, (d) dysphagia and anaemia, (e) simple stricture, (f) peptic ulceration, (g) oesophagitis, (h) diverticula, (i) abscess, (k) functional dysphagia, (l) negative, (m) malignant disease. These groups were then discussed in some detail and some unusual foreign body cases described, more particularly two cases in which examination had been performed by bougie or other instrument before the patient was admitted to hospital, with an eventual fatal result in both. In one case an ulceration of the oesophageal wall was found three inches down the oesophagus proper, through which it was assumed the foreign body had passed. The patient in a few days died of uncontrollable haematemesis, and at necropsy a perforation of the oesophageal wall was found entering a small abscess on the left side, which had ulcerated into the left subclavian artery.

In the cardiospasm group there were twelve females and seven males, the youngest being 17 and the oldest 65. All had been submitted to oesophagoscopy with a view to confirming the diagnosis, and nearly all cases had been treated with success by the use of the mercury bougie. Only three patients in whom the oesophagus was so dilated that the bougie could not hit off the cardiac opening had been submitted to Walton's operation, one of whom had died of streptococcal gastritis. The lecturer delivered a warning against the too ready acceptance of a radiographic diagnosis of cardiospasm in an elderly patient, and showed slides of two cases where appearances suggesting cardiospasm were present which in reality masked malignant disease of the cardiac end of the stomach.

Seventeen cases, all female, of dysphagia and anaemia, or the Plummer-Vinson syndrome, had been investigated, and in seven cricopharyngeal spasm, and in six a cricopharyngeal web, had been found. These cases also improved by the passage of the mercury bougie and the administration of iron in suitably large doses. In the group of active ulceration two cases were those of ulceration following pregnancy, which, on subsequent examination, were found to have healed without stricture formation. Two slides of diverticula were shown, one at the upper end and one in the thoracic oesophagus:

MALIGNANT DISEASE OF OESOPHAGUS

The group of malignant disease of the oesophagus, fifty in number, was discussed in some detail. The importance of early diagnosis was stressed, and Dr. Souper urged that practitioners finding a patient of cancer age suffering from dysphagia, however slight, should send the case for early complete examination, as the only hope of satisfactory treatment was afforded by early diagnosis. He again repeated the warning against the indiscriminate use of bougies in patients presenting symptoms of oesophageal obstruction. In the fifty cases described twelve were situated at the introitus of the oesophagus, thirty-three in the thoracic oesophagus, and five at the lower end, with or without involvement of the cardiac end of the stomach. The youngest patient was 28 and the oldest 77, twenty-eight being males and twenty-two females. The difficulties of treatment were described and the different methods which had been tried were discussed. Dr. Souper believed that the most hopeful results had been obtained by the direct implantation of radon seeds into the tumour area of the oesophagus. Intubation by a radium-bearing tube had on the whole been disappointing, and Souttar's method of intubation had been used in two cases only, in both without the slightest benefit. The patients in whom radium and/or radon had been used numbered thirteen, all of whom had since died, but as every other case of proved malignant disease of the oesophagus was also dead, the radium was not to be blamed for the result. In one case radon seeds had resulted in complete disappearance of the tumour for a period of eight months, when recurrence took place. Early performance of gastrostomy was of the utmost help in the treatment of these cases, as it maintained the

patient's general condition, rested the oesophagus, and prevented irritation of the tumour. As his impressions of this group of malignant disease of the oesophagus, Dr. Souper summed up as follows:

1. Far too many cases are labelled neurotic or functional and are not investigated properly until the tumour has reached a size which renders any method of treatment almost impossible.

2. Every case of dysphagia occurring in a patient of an age where cancer is likely to develop, whether the symptoms are referred to any particular area of the oesophagus or not, should be without delay referred for the fullest investigation, an investigation which must include oesophagoscopy.

3. If, in any such patient, x-ray examination is negative, this should be accepted with reserve, as x-ray examination may fail to show an early oesophageal lesion. In two cases of this kind, where oesophagoscopy was suggested but declined, both died months later of obvious malignant disease of the oesophagus. Further, x-ray appearances suggestive of cardiospasm in a patient over middle age, whose symptoms are of recent development, should not lead one to the belief that the case is one of pure cardiospasm. It should certainly be submitted to oesophagoscopy to rule out the possibility of malignant disease.

4. No case of this kind should be investigated by the bougie.

OBSTETRICS AND GYNAECOLOGY

At a meeting of the North of England Obstetrical and Gynaecological Society, held at Sheffield on February 23rd, with the president, Professor DANIEL DOUGAL, in the chair, Mr. OLDFIELD (Leeds) showed a specimen of malignant teratoma of the testis in a girl aged 14.

D. S. was admitted to Dewsbury Infirmary complaining of pain in the right side of the abdomen for three weeks, with recent vomiting. On examination the patient looked like a normal girl of 14. There was an ill-defined mass in the lower abdomen, and on rectal examination a fixed tumour was found in the pelvis. Laparotomy was done: the tumour, attached by a broad base to the top of the left broad ligament, was found to be adherent to small intestine and omentum. The uterus and right tube were small, the right ovary absent. At the usual site of attachment of the right ovary was a porcelain-white structure, flush with the posterior layer of the broad ligament, as big as the impression of one's little finger: tiny cysts projected from it. In the position of the ovarian fimbria was another structure, the size of a coffee bean, and egg-shaped: it was whitish and solid. The tumour and the left tube were removed, the uterus and other structures being left. When a pathological report had been received from Dr. Carmichael, stating the tumour was a teratoma with epithelial malignancy, the abdomen was reopened and the uterus removed with most of the right broad ligament. Recovery was normal. Subsequently, a course of deep x-ray treatment was given. When the child was seen on February 7th she had returned to school. There was no sign of recurrence. The breasts were flat: the Aschheim-Zondek test was negative.

Histologically, Dr. Carmichael found the structure in the position of the right ovary to be an atrophic testis. The coffee-bean structure was a typical epididymis. The tumour itself was a typical tridermal teratoma of small cystic type: most of the tissue was fairly differentiated, but much was still embryonic, and large portions of a solid area were carcinomatous. It was assumed to be of testicular origin, partly because teratomata of this type were fairly common in the testis and very rare in the ovary, and partly because it was more reasonable to assume that the patient was a pseudo-hermaphrodite rather than a case of the much rarer true hermaphroditism. The patient's feminine habitus did not affect this view, because in cases of pseudo-hermaphroditism with bilateral testes the secondary sexual characters virtually always conformed to the external sexual organs rather than to the sexual glands.

Professor MILES PHILLIPS showed a specimen of contraction ring in the first stage of labour. This was a post-mortem specimen of a uterus containing a foetus at term, showing an internal stricture. It had been obtained from a primigravida of 29, who died unexpectedly whilst recovering from examination under an anaesthetic during a labour which had lasted more than three days. Chloral hydrate, morphine, and scopolamine had been given during the first two days, and nembital (six grains in all) and chloral hydrate during the last ten hours. Oedema

of the glottis and slight chronic renal sclerosis were the only lesions found. There was no obstetrical injury. The foetus, of eight pounds weight, lay as a right occipito-posterior, with the head in the upper pelvic cavity. The ring persisted after death as a horizontal, sharp-edged, crescentic ridge, visible on the inner surface only, exactly opposite the neck of the foetus. It extended round a third only of the circumference of the uterus at this level, and was 17.5 mm. thick at its base, with a flat upper and concave lower surface. The uterine wall above and below was only 4 mm. thick (3 mm. at the cornua), except for a small localized thickening (9 mm.) opposite a depression below the knees of the foetus. The cervix was thinned to 2 mm., and was not quite half dilated. The membranes had been punctured on account of hydramnios when the cervix admitted two fingers. Professor Phillips considered that the contraction ring afforded an explanation of the repeated attacks of colicky pain which had distressed the patient during the last thirty-six hours: in the interests of the foetus they would have been better treated by repeated doses of morphine with atropine.

Mr. OLDFIELD described the following two cases.

1. Wertheim's operation for cancer of the cervix performed during labour.

The patient was aged 31, and a 5-para: she was admitted to St. James' Hospital, Leeds, on June 27th, 1933. She was first seen by Mr. Oldfield thirty-six hours after the onset of labour, on the afternoon of June 28th. Pains were strong and expulsive in character; maternal pulse 110; the head was above the brim, and the child was alive. A hard nodular infiltration of the left posterior part of the cervix was felt. The os was dilated to the size of a five-shilling piece, and the membranes had been ruptured eighteen hours. Examination under ether strongly suggested the diagnosis of carcinoma, and two small portions of the growth were removed for biopsy: this was followed by free haemorrhage, the first of which had occurred during the labour. There had been a slight discharge of blood during November and December, 1932, and in April, 1933. Two hours later, when histology had confirmed the clinical diagnosis, Wertheim's hysterectomy was done. A long skin incision was made, and the uterus everted: Caesarean section was not done. There was no special difficulty except during separation of the left ureter, which was adherent to the growth. Recovery was uneventful. On July 14th the patient was transferred to the radium department of the General Infirmary at Leeds, and received 4,500 milligram-hours of radium in three doses, followed by a course of deep x-ray therapy. She has remained well since. On February 21st, 1934, she had no symptoms, and looked well. At the roof of the vagina was a small area of thickening, and a tight narrow band of tissue anchored this part to the side of the pelvis. There was no ulcer and no bleeding on examination.

2. Menorrhagia cured by splenectomy.

The patient was a girl of 25, who had suffered from menorrhagia for three years and resultant relapsing anaemia. Her menstrual periods usually lasted three weeks. There was no pelvic cause for the bleeding. She had been treated at York, after examination under anaesthesia, with drugs, sera, and injections of whole blood, with little effect. She was admitted to the Hospital for Women at Leeds in August, 1933, and Dr. Hartfall was asked to examine the blood and report. Examination showed a deficiency in platelets, prolonged bleeding time, and bruising on percussion over bony points. A purpuric eruption could be produced by venous congestion. There had never been a purpuric rash or bleeding from other mucous membranes. The spleen was not palpable and there was no family history. Splenectomy was advised, and was done by Lord Moynihan after two blood transfusions. The bleeding time became normal immediately after operation. Within six days the platelet count had risen from under 20,000 to 1,000,000 per cubic millimetre. They then fell to 500,000 and had remained about 400,000 since. A menstrual period of normal amount, lasting four days, occurred in the second week of convalescence. The general condition of the blood improved quickly, and now, nine months after operation, the blood was normal and the patient in perfect health. Since operation she had had short regular periods and no excessive loss.

Mr. Oldfield said that this case emphasized the necessity for a full blood examination in all cases of menorrhagia of obscure aetiology.

Mr. PETER McEWAN read a paper on a study of hysterectomy, with an investigation into the after-histories of 112 cases, the text of which appears at page 574.

CORRESPONDENCE

Sudden Circulatory Failure and Diabetic Coma

SIR,—With reference to the letters of Drs. C. J. Fuller and H. P. Himsworth in the *Journal* of February 17th (p. 305), and of Dr. A. H. Douthwaite (February 24th, p. 353), I would like to make a few observations bearing on this question.

Early in the use of insulin—I think it was in 1923—when I was assistant in the Medical Unit, University College Hospital, I remember treating a female patient brought to the hospital in diabetic coma, in whom treatment with fluids and insulin resulted in recovery from the coma, with, I believe, a cessation of glycosuria and ketonuria. She conversed with me, but her blood pressure failed to rise and the secretion of urine ceased; death occurred abruptly soon afterwards. At the time one considered this a vascular failure, probably vasomotor in origin, due to the patient having been in coma a considerable length of time.

For the past twelve months, at Johns Hopkins Hospital, I have been making observations on cortical adrenal insufficiency in the dog as to the mechanism of the haemoconcentration and circulatory collapse, the results of which I hope to publish shortly. Here the condition appears to be due directly to loss of plasma electrolytes in the urine. This condition is analogous, in many respects, to the condition of "shock" developing in some cases of diabetic acidosis and coma, where a large loss of tissue fluid and electrolytes have occurred in the urine, quite apart from the condition of acidosis. These cases have often been referred to as uraemia and kidney failure, but the condition is dependent largely on peripheral vascular collapse, with decrease in the circulating blood volume and a low blood pressure. There is a stage in diabetic coma, usually late, when giving saline solution intravenously is not sufficient to alleviate the condition by raising the blood pressure and restoring the circulating blood volume, and when all the usual remedial measures have been used, transfusion of whole blood seems to offer the only permanent means of restoration of the volume of the circulating blood. To two articles,¹ which have been published in this country in the last twelve months, I would refer the above correspondents. Therefore one would suggest transfusion of whole blood in the class of case giving the clinical picture described by these correspondents.—I am, etc.,

KENNETH STUART HETZEL,
Thorndyke Memorial Laboratory,
Boston City Hospital

Boston, U.S.A., March 15th.

A Milk Ration for Children

SIR,—Sir Ernest Graham-Little asks whether I "really suggest that the Bill which may come before Parliament as a result of the present agitation for supplying milk to school children should insist upon the milk being of 'certified' quality?" I would reply: No, Sir; but I do seriously suggest that the Children's Minimum Committee should substitute for the words "pure fresh milk" the words "the best milk available." It should be left to the local medical officer of health to advise the local education authorities as to what is the best milk available. The supply to the schools should not be restricted to any one form of milk; for the reason that in one district pasteurized milk might be the best milk available, in

another district raw certified milk might be the best, or even the only, clean milk available. And I would go further: at present it is often difficult to say what is the best milk in the district, because the choice is often between raw certified milk and doubtfully pasteurized milk. This difficult choice would be obviated if pasteurized certified milk were available. So I really do suggest a memorandum by the Ministry of Health (or a clause in the Bill) to permit the pasteurization of certified milk.

My view is (*British Medical Journal*, November 18th, 1933, p. 945) that if disinterested specialists in hygiene are agreed that raw certified milk is not safe enough it is useless to dispute the point. The question then is: Can raw certified milk be made safe enough by better tests, better methods, etc.? If so, then that is the best course. If not, and in the meantime, the producer of certified milk must be allowed to pasteurize his milk. My argument (*Spectator*, March 9th and 16th, 1934) is that the best way to get healthy children and healthy cows is to buy pasteurized certified milk. I suggest that members of Parliament should insist on the best milk available, because I think it would pay the country. I cannot answer for the Archbishop of York, about the dole, but I appreciate the association. I gather that Sir E. Graham-Little would let the tested herds go. I think that is a bad policy, and not only because I think that it would be grossly unfair to the people who have built up what are admittedly the best herds in the country; but this letter is already too long.

I will only add that I think it is a great pity that Sir E. Graham-Little gave his reference in the *Times* as a "well-known laboratory" instead of the United Dairies laboratory. I should be interested to know whether the zeal of United Dairies for pasteurization extends to the pasteurization of certified milk, or whether they take the view that the country cannot afford to supply school children with certified milk in any form.—I am, etc.,

Wetherby, Yorks, March 25th.

R. L. KITCHING.

Ovulation and Menstruation

SIR,—In the paper on ovulation and menstruation in the *Journal* of January 6th (p. 7) Dr. Wilfred Shaw made scarcely any remark on the work of Ogino of Japan. The correspondents on the same theme in the later issues of the *Journal* mentioned nothing about his work. Ogino's interesting research on menstruation and ovulation, as well as on the period of conception, was highly appreciated by eminent Continental gynaecologists. The monographs introducing his work have already appeared in Holland and the United States.

His fundamental idea was that menstruation is a phenomenon which follows ovulation, not the reverse; therefore the date of ovulation should be calculated back from the succeeding menstruation. He has studied 118 cases of varying menstrual cycle, investigating ovaries during abdominal operations and follicles and endometria by histological means. He found out definitely that ovulation occurs twelve to sixteen days before the succeeding menses. Professor H. Knaus of Austria came to the same conclusion by endocrinological research; the only point on which he differs is that ovulation occurs fourteen to sixteen days instead of twelve to sixteen days before the succeeding menstruation. Ogino, believing that the human ovum loses its facility of impregnation a few hours after ovulation, proved by clinical statistics that these eleven days before the succeeding menses were absolutely sterile. There is also some sterile period between the preceding menses and the period of ovulation, according to the length of cycle, because the capacity for impregnation

¹ Peters, J. P., Kydd, D. M., and Eisenmann, A. J.: Serum Proteins in Diabetic Acidosis, *Journ. Clin. Invest.*, 1933, xii, 355; and Sheppe, W. M.: The Control of the Circulatory Failure in Diabetic Coma, *West Virginia Med. Journ.*, 1933, xxix, 107.

of the human spermatozoon in the female organs probably lasts three days. The existence of this periodical sterility was a great relief to those people who are not allowed to use any mechanical or chemical contraceptive methods, and who want to limit their families.

Ogino proved that the previous confliction of opinion in regard to ovulation was due to the calculation of its date from the preceding menses. He revised the cases in which the dates of ovulation ranged from eleven to thirty-four days after menstruation from the reports of Fraenkel, Ruge, Schröder, Tschirdewahn, etc., and, by bringing these cases into relation with the menses that followed, he succeeded in confirming that in 542 out of 557 cases all these ovulations had occurred between twelve to sixteen days before the subsequent menses. The other fifteen cases could be explained because of the pathological condition of the patient, insufficient data, etc.

The result of Dr. Shaw's investigation that ovulation is restricted to about the fourteenth day after the preceding menses in a twenty-eight days' cycle also supports Ogino's theory. Dr. Shaw believes that *Mittelschmerz* is an unreliable sign as to the rupture of the follicle, but Ogino mentioned in his paper two obvious cases from Tschirdewahn and Ando, proving that *Mittelschmerz* appeared exactly in Ogino's period of ovulation. His papers have been published in the *Zentralblatt für Gynaekologie* (1930, liv, and 1932, lvi).—I am, etc.,

London, N.W.3, March 12th.

DENZABURO KATO.

Teaching Hospitals and Manipulative Treatment

SIR,—No medical man can deny the benefit derived from manipulation in certain cases, and that the general public are demanding this type of treatment more and more. It seems probable that the Bill for the registration of osteopaths will soon become law. This will be an inestimable benefit to those osteopaths who have undergone an extensive training, and who will now, for the first time, be able to distinguish themselves from the much greater number of unqualified practitioners, who are really no more than untrained masseurs. It should be borne in mind that the number of qualified osteopaths who will be able to practise in the British Isles is under one hundred. It is probable that given the inducement of a recognized status many of the unqualified group will undergo training. Medical practitioners will undoubtedly experience a much more formidable competition from this future reinforcement of the ranks of qualified osteopaths. It is essential, therefore, at this stage that the medical profession should turn out doctors conversant with the methods of manipulation.

I suggest that there is room in the physiotherapeutic department of every hospital for the creation of the post of two house-surgeons or clinical assistants, whose work should be to carry out gentle daily manipulative movements to the patients attending the department, as the doctor in charge of the department has no time to carry these out daily. These gentle manipulative movements are quite distinct from those of the passive type. In cases of recent injury, chronic stiff joints from injury, osteo-arthritis, and fibrositic conditions, gentle daily manipulations are as important as massage, diathermy, and faradic contractions. These latter methods prepare the joint for manipulation, and so often this important procedure is entirely omitted. It is not too much to estimate that three-quarters of the patients attending the physiotherapeutic department of each hospital require gentle manipulations daily.

Some will argue that it is waste of time for a recently qualified man to spend six months learning the methods of manipulations. This will not be so, because he will

obtain a sense of touch and a knowledge of the treatment of many medical and surgical conditions which will be invaluable in his work in general practice, and which he would not otherwise come in contact with in his duties as house-surgeon or house-physician. From the various teaching hospitals of the British Isles hundreds of men would be trained annually in the art of manipulation, which, combined with their medical knowledge, would make them far more proficient than the osteopath, besides increasing the value of other physiotherapeutic methods a hundredfold.—I am, etc.,

London, W.1, March 21st.

W. ELDON TUCKER.

Multiple Teeth Extractions

SIR,—During the last few weeks I have twice been called at night to stop haemorrhage from the gums after teeth extractions. One was serious, the gums being torn and the patient having lost a great deal of blood before I saw her, and suffering from shock. In one case ten teeth had been removed, in the other fourteen. In these days, owing to the improvements in giving anaesthetics, longer time is allowed the dentist, and often many teeth are extracted at one sitting. I am writing to suggest that multiple teeth extractions should be treated much more seriously than they are at present. The patient should always be accompanied by a friend, sent home to bed, and given definite instructions as to mouth washes, food, etc. In certain cases the operation would be best done in a nursing home or hospital, the patient staying the night.—I am, etc.,

Kensington, W., March 25th.

HOWARD M. STRATFORD.

Diathermy in the Treatment of Essential Hypertension

SIR,—I have read with great interest Dr. Gunewardene's excellent article (*British Medical Journal*, December 16th, 1933, p. 1114) on the treatment and control of essential hypertension by electrical stimulation of the skeletal muscles. There is, however, one remark to which I would take exception, and which might lead practitioners to abandon a very valuable form of treatment. I refer to his remarks on diathermy. Concerning diathermy he states: "I was never able to convince myself that pressure was reduced to an extent which could not be explained by the simultaneously ordered rest, in spite of Clifford Allbutt's statement nine years ago that 'd'arsonvalization by the auto-condensation method is the most valuable immediate aid we possess for hyperpiesia.'"

I am glad to say that I can endorse Clifford Allbutt's statement, and have found diathermy the greatest use in cases of hypertension during the last five years, despite the fact that rest is never ordered. It can only be suggested to Dr. Gunewardene that either his apparatus was not powerful enough to produce the desired effect or the frequency was unsuitable. I consider the latter to be of considerable importance, and by making a change in the frequency of the machine used I am getting better results now than I was two years ago, when using a higher frequency. Again, the condenser couch and the thickness of the dielectric are important factors. Of course, it goes without saying that the sources of infection must be diligently searched for and eliminated, and the mode of living investigated and corrected if necessary. If these points are attended to and suitable apparatus used, good results can be obtained not only in recent cases but also in long-standing ones.—I am, etc.,

Christchurch, New Zealand.

W. GORDON RICH.
D.M.R.E. Cantab.

Regarding the Nature of Cytost

SIR,—Some time ago my attention was called to a book by Fenton B. Turck,¹ in which a peculiar biologically active substance, which the author called "cytost," was described. Dr. Turck's principal thesis is that anabolic and catabolic processes, both normal and pathological, are governed by this endocellular substance; or, to use his own words "... that the apparent stimulating and repressive activities of various physical and chemical agents, as well as the pathological changes which they induce, are due to a common cause—namely, the release by the cells themselves of a substance capable of modifying cellular activity." The author has termed this substance "cytost." A little later the following statement is made: "As will be shown in our subsequent discussion it is improbable that cytost and histamine are identical."

Preparations of cytost are only supposed to produce their action on homologous animals—for example, if a tissue extract of cytost is prepared from the muscle of a dog it will be found to be an extremely active substance when administered to another dog, but will be ineffective if it is administered to a cat or a monkey. The method of preparation of the extract is very simple. It consists essentially of a saline extract of autolysed tissue, which is later passed through a Berkefeld filter. Such an extract will contain all the water-soluble metabolites originally present in the tissue, and a number of others resulting from autolysis. I have investigated the actions of such extracts, and have been unable to reproduce any of the startling results described by Dr. Turck. The only action which I have been able to demonstrate is a histamine action which is equally effective on any animal. The "subsequent discussion," which is supposed to demonstrate the differences between cytost and histamine, cannot be found in the book. In addition to the histamine content of these crude extracts there will be present a certain amount of adenosine, acetylcholine, propionylcholine, and butyrylcholine, all being substances capable of producing the acetylcholine response.—I am, etc.,

University of Alberta, Canada.

DAVID R. CLIMENKO.

Treatment of Arthritis

SIR,—I was much interested to read Dr. C. W. Buckley's article on the causes and treatment of arthritis, in your issue of March 17th (p. 469), and particularly so in his remarks on vaccine therapy in the treatment of this disease. It is very difficult indeed to have a thorough consensus of opinion on the result of vaccine therapy, as there are so many factors which operate against a good result.

1. Most bacteriologists have their own special methods of the preparation of cultures.

2. The taking of specimens, etc., is usually left to the general practitioner, who may be unfamiliar with bacteriological technique.

3. The specimens are often delayed in the post for more than twelve hours before being put in the incubator, when, to ensure the proper growth, they should be put into the incubator immediately after being taken from the patient; and if they are to be sent a long distance they should be sent in a vacuum flask at body temperature.

4. Again, the bacteriologist is not familiar with the clinical side of the case, and this puts him in the position that he is not able to judge accurately the doses required, and to gauge the first dose is just as important as the most delicate surgical technique in the treatment of disease, because the failure of this is very well demonstrated in Dr. Buckley's statement "that there have been more cripples than cures

following the injudicious, uninstructed, and often haphazard administration of a remedy which, with skill and care, has sometimes proved of great value." At least 75 per cent. of good results is my experience in the treatment of this condition for the last ten years.

5. Again, the immunologist or the clinician should be just as familiar with the bacteriological side: in other words, it is essential for good results in vaccine therapy to bring the laboratory to the bedside.

6. As regards the technique itself, it is necessary to isolate and incorporate in the vaccine the causative micro-organism, because the vaccine treatment of arthritis is just as specific as the typhoid vaccine.

The school of thought which holds that the good result from vaccine therapy is due to protein shock will be very shocked themselves when they contemplate how much protein is in a suspension of 1/16 million streptococcus, which is the dose one often begins with.—I am, etc.,

London, W., March 19th.

M. R. BRADY, M.D.

Hereditary Scoliosis

SIR,—Referring to the article by Dr. Hugh Garland, published on February 24th (p. 328), and the questions asked by Dr. Thomas McKee in your issue of March 17th (p. 507), I am of the opinion that the malformation described is indubitably of an acquired character. Genetically, such a condition is most unlikely, and there are no embryonic derangements which would support such a theory. With a practice in an industrial area, and in a long survey of patients, I have observed kyphosis very marked in the grandmothers, due to the nature of their work, which necessitated constant bending. This bending, continued for years, caused constant pressure upon the anterior portions of the bodies of the vertebrae and the intervening intervertebral disks, with consequent atrophy and absorption, producing the characteristic "hump-back," so common years ago among certain classes of working women. This being a time when the birth rate was very high, these women had numerous offspring. The elder children of the families had to nurse and attend to the younger members while the mothers were at work, and, as perambulators were then a luxury, the little "mothers" carried the children in their arms for hours. Meanwhile, lack of suitable and adequate nourishment, causing undue softness of their bones, resulted in the production of malformations of the spine in these members of the second generation. In these one observed both kyphosis and scoliosis, but scoliosis was often the more marked, again due to uneven pressure of the vertebral column.

Now one comes to the third generation, which is the present one. If the condition were hereditary we should expect the malformation to be still more marked; but, as a matter of fact, among these children of the same families, it is practically absent, or, at any rate, not a noticeable deformity. Proofs of this can be demonstrated daily. This is brought about by the improved conditions of the present generation. Even the poorest child to-day is better off than most children of the last generation, by reason of education, improved social conditions, etc. The limitation of families has relieved the elder ones of their burden, and allows more of the necessities of life for all. Food with a high calcium and vitamin content is more generally consumed, while any deficiency in quality or quantity of nourishment is remedied at the schools and welfare centres, so that the child is sure of adequate bone-forming elements, while the schools also encourage good postures. Thus perfect growth is being ensured, and the acquired malformations are slowly but surely being eradicated, to the benefit of all.—I am, etc.,

Birmingham, March 20th.

CLEMENT BELCHER.

¹ Turck, Fenton B.: *The Action of the Living Cell*. New York, 1933. Reviewed in the *Journal* of June 17th, 1933, p. 1056.

Hypochondriasis, Labour, and Analgesia

SIR,—I have read, with mixed feelings, Dr. J. W. Hamilton's letter in your issue of March 17th (p. 505). Is it not time that the medical profession disabused itself of the idea that labour pains are a species of female neurosis? It is highly ridiculous for us, firmly protected by bars of unassailable immunity, to dismiss thus smilingly and blandly the woman's claim and right to a painless labour. There is nothing salutary to mother or child in a painful labour. All this nonsense emanates from men, and women are strangely silent thereon.

Has it occurred to Dr. Hamilton that *pari passu* with the deplorable degeneration of women, which he laments, a generation of men has arisen incapable of having a tooth extracted without anaesthesia, incapable of having a limb amputated by the old methods? It is right and proper that these things should be done under anaesthesia of some sort, because men may be called on to suffer therefrom! The edentulous female does not criticize the male mental attitude towards a visit to the dentist, nor do women deny men the right to a painless prostatectomy, from which latter pain they are as immune as the man is from parturient pangs. A woman's first confinement is often a very painful and dreadful experience, productive of lasting psychological traumas which tend to increase the difficulties of her subsequent easier labours. A painless first confinement would avoid all this. Surely a woman is entitled to "fair play."

Doubtless many have now received, as I have, a folder with a picture of Thomas Sydenham. Underneath was written "*Nollem esse medicus sine opio.*"—I am, etc.,

Blackheath, March 20th.

WILLIAM G. WATSON.

Colonic Irrigation

SIR,—May I add to the observations of the chairman of the Education Committee of the College of Nursing, in the *Journal* of March 10th (p. 459), that the practice of what is popularly known as "colonic irrigation" is one that calls for all the knowledge and acumen that can be applied to it, and, further, is one the responsibility for the results of which cannot be delegated to anyone?

As one who has himself practised irrigation for a number of years, and regularly employs a whole-time nurse to do for him what, for one reason or another, he is unable to do for himself, and has thereby learnt at first hand, as well as through the medium of the nurse, something of its difficulties and dangers, I feel in a position to state that one great, if not the greatest, danger is that of delegation, which is the basic factor underlying the point at issue in the letter referred to. This reflects in no way on the probity or skill of the nurse to whom it may be delegated, but on the fact that, unless the medical man in charge of a case is able to be present to note what is to be learnt in the matter of diagnosis that irrigation provides, to watch the changes in the degree of digestion of food ingested, the changing amount and character of catarrhal mucus washed out in progressive stages, and so on, or has a delegate specially trained to observe these objective signs for him, he must be completely at a loss to know how to point the direction of further treatment or to know what real progress is being made, for the subjective feelings of well-being usually experienced by a patient after its administration are wholly illusory, and misleading as a guide to progress. Moreover, there are other more immediate dangers to the patient arising from injudicious lavage performed without proper medical control.

It follows, then, that routine irrigation is not a rational procedure, by whomsoever it may be performed. None the

less, irrigation is invaluable as providing positive first-hand clinical evidence of the degree and nature of intestinal failure that cannot be as accurately gauged in any other way, and indispensable as a first-aid measure in that one condition in which intestinal block thrums its warning note. It is very necessary, therefore, that none but qualified nurses, who naturally will only undertake work under medical authority, should be thoroughly trained to observe, record, and appreciate the niceties of the operation, so as to be able to state the facts intelligibly that the medical man may interpret them correctly; and that instruction in technique include not only a recital of the difficulties and dangers to be met with, but insistence on its practical value to the medical attendant when properly performed and recorded, as the bedrock upon which the procedure stands.—I am, etc.,

Nice, March 16th.

F. A. HORT.

SIR,—With reference to the recent letters on colonic irrigation I note that Miss MacManus, in your issue of March 10th, states that "the Education Committee of the College of Nursing feels that this treatment should be carried out by a trained nurse, working under the direction of a doctor." I agree with this opinion, and beg to differ from Mr. Elmslie, who states that "it is really a question of the convenience of organization and of the patient." I maintain that it is essentially a question of the welfare of the patient, and a question of far-reaching importance, too. Masseuses and bath attendants may have an adequate knowledge and experience for their own work, but colonic irrigation comes under an entirely different category. If colonic irrigation is allowed to come within the scope of a masseuse, or bath attendant, the next inevitable step will be for the masseuse to be expected to undertake nasal feeding, rectal feeding, gastric lavage, test meals, vaginal douching, and bladder washouts—treatments which are safer in the hands of a trained nurse.—I am, etc.,

N. I. LANCKENAU, M.D., B.S.

Examiner for the Chartered Society of
Massage and Medical Gymnastics.

London, W.C.1, March 21st.

SIR,—With reference to the question at present under discussion as to whether a trained nurse or a trained masseuse should undertake treatment by colonic lavage, it has been suggested that some additional experience is necessary in either case.

Over forty members of the Chartered Society of Massage and Medical Gymnastics, some of whom are nurses, are employed on the staff of this clinic, and colonic lavage is constantly prescribed by the physicians. It has been found that certain instruction in the special technique required is necessary for the trained nurses; one or two demonstrations are, however, all that they require in order to become proficient. In passing the rectal tube, in excluding air, in keeping the patient dry, and in maintaining the fluid at the correct temperature and pressure they are already skilled. The whole of their past training has made them familiar with this type of work, and enables them to undertake it with confidence. They are trained by years of routine examination of stools to recognize and describe the results of their treatment, and to report any abnormality at once to the physician. In the case of one or two masseuses who were allowed to give colonic lavage it was found that they needed detailed instruction and much supervision before they acquired the art of manipulating the tube and fluid satisfactorily. They themselves realized that they were quite unfitted to report on the results, having never seen any of the abnormalities for which they were instructed to watch.

Although it may be possible to provide facilities for members of the Chartered Society of Massage and Medical Gymnastics to receive instruction and to gain experience in this subject, it would still seem undesirable for their training to be lengthened and their syllabus extended to include a form of treatment in which the nurse is, by general training, so much more fitted to specialize.—I am, etc.,

W. M. McALLISTER,

Matron, British Red Cross Society's
Clinic for Rheumatism.

London, N.W.1, March 21st.

Pathogenesis of Cancer

SIR,—One aspect of the pathogenesis of cancer has not been alluded to. The late Sir Henry Butlin said that the scrotum was most resistant to cancer, and only succumbed to it under the irritation of soot (+ mule oil). Other organs also have their specific cancer-producing irritants: the bladder—aniline; the tongue—syphilis; the skin—tar, paraffin, and x rays. Workers in arsenic die frequently of cancer of the lungs. In this connexion I noticed in my colliery practice that cancer of the rectum was much more prevalent than any other form of cancer; all my cases were males and all but one colliers. I wonder if other colliery surgeons have had a similar experience.

I think Sir Henry Butlin suggested that there was not one definite material (*materies morbi*) cause of cancer, but that cancer was the result of the interaction of the secretions of the area or organ affected, with its specific irritant. Soot and aniline do not figure as causes of cancer of the rectum, tongue, or stomach, but of the scrotum and bladder; a similar restriction applies, perhaps, to x rays, tar, and paraffin. That the local secretion may yield a contributory factor may be one reason for the rarity of cancer in the male breast. This aspect makes the problem a problem of biochemistry.

As to treatment, other than surgical or radium, what is urgently needed is a "lead from Nature," such as Coley's genius took advantage of. Has Professor Blair-Bell's treatment sprung from the same source? Many years ago the late Dr. Beatson claimed for his operation a similar sanction. Nowadays we rarely read of "spontaneous cures of cancer." The late Sir William Bennett wrote "that there were very few surgeons of many years' standing who had not seen at least one or more cases of spontaneous cure of cancer." Is that true to-day? I think I read in the *Clinical Journal*, twenty or more years ago, an article by the late Mr. Bruce-Clark on a case of arrest of cancer, and Sir Henry Butlin stated his belief in the arrest of cancer in the cervical glands left after removal of the tongue. Such cases—"spontaneous cure" or "arrest of cancer"—if they occur to-day, should be examined most conscientiously, I think, by acute observers at our hospitals and clinics, as well as by the general practitioner, to glean some hints of Nature's methods of curing or arresting the disease.—I am, etc.,

M.D.

March 14th.

The Tuberculosis Problem

SIR,—Although a comparative newcomer to the ranks of those in search of the tuberculosis philosopher's stone, may I submit the following text?

It is being stated authoritatively that (a) conjugal tuberculosis is rare; (b) adult infection and reinfection is impossible; (c) the segregation of + and - sputum cases is unnecessary; (d) healthy workers in institutions for the tuberculous are in no danger; and that (e) tuberculosis constitutes no problem in the school child. These trumpetings harmonize badly with bruitings anent "sources of infection" and "percentage of contacts

found tuberculous," etc. Little wonder is it that a medical man in general practice has written of the tuberculosis officer as "dabbling a finger on a patient's chest" and inscribing a "no-evidence-of-active-tuberculosis chit." The T.O. suffers the explicable contempt of the general practitioner, while celestial voices call for more contact examinations and mundane voices call for more economical use of radiology. As if any "tuberculosis expert" could ordinarily certify as non-tuberculous a case referred to him without x-ray examination. If he does, can he say that the patient, if exposed to infection, will not develop the disease in six months or five years?

The greater the proportion of contacts found tuberculous the more inefficient is the anti-tuberculosis scheme. This follows because there must be a case notified before contacts come into existence (on paper). The longer a case is in an infective state before notification the more heavily infected the contacts become, and the more likely they are to have demonstrable disease. Is tuberculosis an infectious disease caused by the tubercle bacillus? If it is, why not treat it like other diseases of this nature, and not attempt to cloak the communicable aspect, even if we admit that the incubation period may be infinitely short or infinitely long? After fifty years of the practice of preventive methods we are scarcely any nearer an ideal than when Koch first demonstrated the transmission of infection. The relative who so often says, "It can't be, doctor; there is none of it in our family," is not so befogged as the tuberculosis officer who has to make answer to this. Indeed, in connexion with this and other questions the T.O. might well be described as a very worried, prematurely aged man with a lot of writing to do. It sometimes happens that the contact found tuberculous is considered to be the infecting agent from which the notified case has derived the disease. Macaulay would have liked the opportunity that such instances give for making antitheses. It is also noted that the patient who complains most is not seldom not actively tuberculous, while the patient who insists that he feels quite well often has advanced disease. The bearing of this on the possibility of large numbers of carriers distributing infection unknowingly is obvious, and it is possible that the bulk of cases where no source of infection is known have arisen from such carriers, directly or indirectly.

Universality of infection is the gospel of some, denied by others. Those who apply the intracutaneous tuberculin test are usually surprised to discover an appreciable number of negative reactors. It is probable that these negative reactors have either never been in contact with infection or have received such minimal doses that infection has never been accomplished. The significance of the presence of negative reactors is realized in some of our hospitals where children and others are admitted for observation regarding the presence or absence of tuberculosis. The possibilities underlying the application of the test to the general population, or a section of it, do not appear to be appreciated. It is probable that the lack of facilities to-day for transmission of the disease, which is due to the control of infectious material in the home and the isolation of large numbers of infective patients in institutions over a long period, is the cause of the lowered incidence rate of the disease and the decrease in mortality figures. If the question of infectivity is controversial, as it seems to be at the present time, then a rise in both rates is to be expected owing to a natural tendency to slacken the grip on the problem. New plans will have to be adopted to put into application old and new methods based on the acceptance of the facts relating to the bacterial nature and infectiousness of the disease.

It must be true that anybody and everybody may become infected by the tubercle bacillus, and that demonstrable disease depends on the mass of infection and period and mode of contact, combined with lowered resistance from any cause. Childhood tuberculosis is due to first infection, and depends in type on the mode of ingress of the bacillus. Adult tuberculosis may be due to reactivation of a primary focus due to lowered resistance or to superimposed infection, or, indeed, to primary

infection if the individual has not been previously exposed. The tubercle bacillus is no respecter of persons, and infection may, and does usually, occur without obvious illness. A cheap, reliable, and easily applicable method for finding out when this happens, and possibly whence the infection comes, would be invaluable. The intracutaneous tuberculin test as devised by Mantoux is easily applied, reliable, and not dangerous. It is a quarter of a century old.

Now if it were possible for the powers that be to get rid of their complexes regarding dispensary attendances and contact examinations they could devote some of the available machinery to making a survey of the amount and distribution of tuberculous infection in any area. This could be done by applying the intracutaneous test to everybody in a given district or in several schools, or even in one school. Negative reactors could be re-tested six-monthly to find out if and when infection occurs. Positive reactors could be further investigated for cases of active disease and possible source of infection. This method might bring to light many unknown sources of infection at present acting as carriers of the bacillus. Incidentally, it is a more scientific procedure to discover an unsuspected case of the disease, and by its removal or supervision prevent the continued dangerous infection of its contacts, than to wait for a case to be notified and write off as non-tuberculous those contacts who are not obviously diseased. Surely the method at present in existence savours of "locking the stable door after the steed is stolen." The useless physical examination of contacts and children as practised to-day is one of the sacrifices that a conscientious tuberculosis officer has to offer on the altar of tradition.

A survey of the amount of tuberculous infection present in a community must be possible on the lines suggested above. Elaboration is necessary, and such a scheme would of necessity need sponsoring by the powers that be. In one or two areas in America where such methods are in existence sceptics have been surprised at the results obtained. The possibilities of adding to our rather meagre knowledge of the local and general epidemiology of the disease are boundless. The finding of a source of infection before the individual becomes ill enough to seek treatment voluntarily would be a true application of the science of preventive medicine.—I am, etc.,

London, S.E.10, March 12th.

F. R. WALDRON.

Testimonial to Professor R. W. Reid

SIR,—In response to a widely expressed desire that his colleagues, former pupils, and friends should be given an opportunity of marking their appreciation of the long and distinguished services rendered by Professor R. W. Reid, M.D., LL.D., F.R.C.S., to the University of Aberdeen, a committee, consisting of representatives of the University Court, the Senatus, former students, and others, has been formed to arrange for a testimonial. It is proposed that the testimonial should take the form of a fund, "The Reid Fund," the revenue of which should be utilized for the foundation of a lectureship in anthropology, including the cultural and sociological aspects of the subject. The committee feels that this would be a fitting monument to Professor Reid's able and devoted work for Aberdeen University, and for the science of anatomy, which has had so much influence on the many hundreds of students who passed through the anatomy department during the years 1889 to 1925. Twenty-eight years ago he instituted the Anthropological Museum, and all along has acted as its honorary curator. By his zeal he has not only created and catalogued a valuable museum—a great teaching asset to the University—but has stimulated and done much to promote the interests of anthropology, particularly in relation to the prehistoric peoples of the North of Scotland.

The committee is confident that colleagues, former pupils, friends, and others interested in the advancement

of the study of anthropology will wish to be associated with this testimonial. Contributions to the fund should be sent to the honorary treasurer, Mr. H. J. Butchart, D.S.O., B.L., Secretary, The University, Aberdeen.—We are, etc.,

MESTON,
Chancellor of the University of
Aberdeen.

WALTER ELLIOT,
Rector and Chairman of the
University Court.

GEORGE ADAM SMITH,
Principal and Chairman of the
Senatus Academicus.

University of Aberdeen,
March 22nd.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Dr. O. A. Trowell has been appointed university demonstrator in physiology for three years from October 1st, 1934, and Dr. H. N. Green university demonstrator in pathology for three years from April 1st, 1934.

Alice Barbara Field (Newnham College) has kept the Act as required for the degree of M.B.

UNIVERSITY OF LONDON

At a meeting of the Senate, on March 21st, Professor Karl Pearson, LL.D., F.R.S., was appointed Heath Clark Lecturer for 1934.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—E. Gledhill (with distinction), S. Ross.
FINAL M.B., Ch.B.—(Part I): A. J. E. Barlow, T. M. Boyle, Julia M. Brown, D. F. Cameron, G. Clarke, G. A. Collinson, S. C. Crystal, W. G. L. Flather, Irene Haslegrave, J. Holden, E. H. Kitching, E. F. Lai, H. T. Levi, D. G. Liversedge, A. E. Penn, T. W. Percival, F. Reid, H. Silman, R. G. Smithson, H. E. Steward, E. H. Tomlin, C. C. N. Vass. (Part II): E. C. Allibone, J. Benn, D. Bickler, G. Cohda, J. H. Crawford, D. H. Drake, F. H. B. Fuller, H. W. Gothard, J. C. Hutchinson, M. B. Khan, N. Lissimore, W. Lomax, O. C. Lord, L. Nagley, A. B. Raper, R. T. Rushton, H. S. Shucksmith, A. Smith, D. Thackray, G. N. Watson, W. Zemskv. (Part III): H. S. Shucksmith, J. E. C. Allibone, J. G. N. Watson, J. Benn, D. Bickler, G. Cohda, J. H. Crawford, D. H. Drake, F. H. B. Fuller, H. W. Gothard, J. C. Hutchinson, M. B. Khan, N. Lissimore, W. Lomax, O. C. Lord, L. Nagley, A. B. Raper, R. T. Rushton, A. Smith.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—F. S. Esher, J. S. Johnson.

* First-class honours. † Second-class honours.

The following awards have been made: Infirmary Scholarship and Littlewood Prize: I. R. Gray. Scattergood Prize: J. C. Hutchinson. Hardwick Prize and McGill Prize: divided between A. B. Raper and H. S. Shucksmith. Edward Ward Memorial Prize: H. S. Shucksmith.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—(Part A): T. N. Fegarty, J. W. H. Foy, S. K. Sahay.

D.P.H. (Part I): T. L. Hughes, H. V. M. Jones, J. A. Jones, F. Langford, E. R. Smith, E. Taylor, V. J. Woodward.

DIPLOMA IN TROPICAL MEDICINE.—A. Ahmed, E. S. Amzalak, A. R. Arulpragasam, J. J. Beausang, P. Y. Chang, F. R. Craddock, A. C. Edwards, T. Foulds, I. H. B. Ghosh, B. A. Hamid, W. Hughes, * J. R. Innes, C. C. Ling, J. H. McElney, J. S. McMillan, T. A. Maloué, P. J. Purcell, K. S. Tay, Banco V. Vakil.

DIPLOMA IN TROPICAL HYGIENE.—N. E. W. Anderson, V. B. Athavale, L. C. Feng, L. P. Greson, S. L. A. Manuwa, C. W. A. de Silva.

* Recommended for the Milne Medal.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At the monthly business meeting of the College, held on March 2nd, the following resolution was unanimously adopted:

That this College is of opinion that foreign graduates should not, under any circumstances, be admitted to the final examination until they have first satisfied the examiners of their knowledge of English and of having spent at least three years in clinical study in these countries.

Medico-Legal

THE DUTIES OF THE MEDICAL WITNESS.—III

THE IMPORTANCE OF IMPARTIALITY*

Every medical witness should, for the honour of his profession, aim at impartiality. Apart from their great skill and experience, the chief characteristic of the well-known expert witnesses is their impartial attitude. They regard themselves almost as officers of the court, and hold it their duty to assist in the discovery of truth and the administration of justice, no matter which side may be found to be in the wrong. They are not in the least ashamed to confess ignorance on any particular point; they are not perturbed if their evidence appears to favour the other side more than their own. They are an indispensable help to the court, and do as much as any other doctor to make the public respect the medical profession. Every medical witness should model his attitude on that of such men. Nothing does the profession more harm than the sight, a distressingly common one, of three medical men going into the witness-box on each side in a motor accident case and flatly contradicting each other, giving the impression that they intend their evidence to support the case of the party who has called them.

It is difficult to give medical evidence well, and it would be unjust to assume that many medical witnesses take sides from lack of scruple. Medicine is far from an exact science, and it is always possible, except in the presence of the most obvious injuries, to take either a pessimistic or an optimistic view. Most of the doctors who give evidence in civil actions concerning injury are behaving in a perfectly honest way, but, owing to the infinite possibilities of interpretation of the evidence, both sides are always able to get a sufficiency of doctors to support their respective points of view. Bias is a very human failing and almost impossible to avoid, and under a system by which a medical man is employed and paid by one side it is hardly surprising that he should unconsciously select the aspects of the case which are more favourable to that side. This is unfortunately true in practice, as a visit to the county court will demonstrate. When one of the medical staff of the injured man's hospital happens to be called, his evidence is often conspicuously more valuable than that of the doctors who have examined the injured man on behalf of one or other side, because he is probably the only doctor who approaches the matter with an absolutely unbiased mind.

It would also be unfair to disregard another important factor: if a panel doctor goes into the box in a compensation case and gives evidence against one of his patients, his practice may suffer for his honesty. What is more natural, therefore, than that he should insist on keeping out of the proceedings unless his evidence is likely to be favourable to his patient? Yet another factor which tends to create a perfectly innocent bias in the doctor's mind is that in many injury cases the man's complaints of pain under various conditions of posture and manipulation are very important and, in some cases, are practically the only indications of his condition. If the doctor is sympathetic, these complaints will tell one story; if he is not, they will tell another. Each doctor is speaking the truth as it appears to him, and yet his evidence almost entirely contradicts that of the other.

Another weakness of many medical witnesses is that, having once formed a particular view of a case, they henceforth inevitably regard the case from that point of view, and frame their evidence in the way which they feel will best establish it. This is the type of witness who is most likely to come to grief under cross-examination, because he is almost certain, in his efforts to prove his opinion right, to say more than he can vouch for and to be compelled to admit that he is not, in fact, so sure

as at first he said he was. There is also the unfortunate fact that the qualities which constitute a valuable witness in the eyes of counsel appearing for one of the parties are by no means those which are most highly esteemed by a judge or a medical man.

A member of the Bar once won a slashing victory in a compensation case. He was appearing for an insurance company whose assured was the employer of a workman who had ruptured himself. The workman claimed compensation for total incapacity on the ground that his hernia was still persisting. The doctor consulted by the insurance company thought otherwise. Counsel spoke loud in the praises of his medical witness, who, he declared, had largely won the case for them. "He gave evidence magnificently," counsel narrated. "None of the usual qualification about 'I could not see any evidence of persisting hernia'; he said 'There was no hernia,' and when So-and-so on the other side tried to shake him, he went on saying 'There was no hernia.' That is the kind of witness one wants."

This illustrates the melancholy fact that the scientific attitude, which knows that its evidence for the plainest of facts is at the best dubious and which in order to be honest must be tentative, is a constant source of anxiety and irritation to a tribunal which is trying to arrive at certainty. A dogmatic statement by a medical witness that the facts are so-and-so, especially when there is a good deal of evidence to support it, comes like a vigorous and refreshing breeze into what must seem a fog of speculation. Nevertheless, as every medical and scientific man knows, the cases in which a medical witness can make a definite categorical statement of this kind without departing from the ideal of speaking, according to his conscience, nothing but the truth, are so few as to be almost negligible.

COMING TO COURT

The witness is told a day, time, and place for the hearing, but neither he nor anyone else can tell how long the hearing is going to take. He should therefore be prepared to give up not only the named day but the next as well, and make provisional arrangements for someone to look after his work until he is free. An inquest or police court case is usually either finished on the first day or adjourned for a number of days; a county court case is usually finished on the same day; but a trial or civil action before assizes or in the High Court can well go on to a second day or even longer. "New Procedure" cases offer more hope of a quick finish than actions before a jury. The witness should see the counsel who is representing the party calling him, and persuade him to call him as early as possible and to ask the judge to release him as soon as he has given his evidence.

The doctor should arrive punctually. He may be in time to give his evidence even if he appears an hour, two hours, or half a day late, but he is taking a risk of being severely reprimanded, if not punished, by the judge, and he will make himself very unpopular with solicitors and counsel, who are usually in an anxious state which the absence of a witness intensifies alarmingly. If it is necessary for him to hear the evidence of the other witnesses in order to give an opinion on it, he must arrive before the case is called. In any event, the work goes forward much more smoothly if everyone is there and anything that has to be said between lawyers and witnesses can be said with plenty of time in hand. If the witness knows the solicitor and lives near the court, he may be able to arrange to keep in touch by telephone, so that he can carry on with his own work until shortly before his presence is actually wanted. When he is starting for the court, let him be certain that he is taking with him all the documents he needs, including the memoranda, notes, bones, models, and anything else that he intends to use in the witness-box.

IN THE WITNESS-BOX

When the precepts of all the authorities are digested they amount roughly to the following. Have the subject-matter clear in your mind, and never let your mind wander. In Lord Riddell's words: "He who vegetates

* The first of this series of five articles by a legal correspondent appeared on March 3rd (p. 407), and the second on March 17th (p. 508).

in the witness-box is lost." Listen to counsel's question and make sure you understand it. Answer in non-technical language. Avoid exaggeration or committing yourself to something which you do not really know. Treat counsel for both sides alike. Do not argue with counsel, and, no matter how much he annoys you, never lose your temper.

The doctor who is used to giving evidence in court will probably not need such elementary advice. The doctor who is not used to the witness-box will probably be so frightened that as soon as his name is called he will forget any advice he may have memorized. Nevertheless, a doctor who studies carefully the cardinal rules of the work is bound to assimilate something of the essential attitude of which all maxims are an expression. He will find no better instruction than in Taylor's *Medical Jurisprudence*, vol. i. As soon as he enters the witness-box the witness takes the oath. The form is printed on a card fixed to the front of the box, and he is fully instructed by the usher. He need not kiss the Testament, and, as Taylor points out, it is advisable on every ground not to do so. It is sufficient to hold the book in the right hand, or even to raise the right hand, so long as the witness recites the prescribed words. A witness who objects on conscientious grounds to taking an oath (for example, a Quaker, a Moravian, or an atheist) may be allowed to make an affirmation having the same validity as an oath.

The first piece of advice, to have the subject-matter clear in his mind, is really kept before the witness comes to court at all. He should have decided in every detail what he considers to be the truth of the whole matter, and the manner and language in which he shall present that truth, and should have tested his evidence by a sparring-match with a friendly cross-examiner, and his language by conversation with a layman. When he goes into the box he must follow a rule which really is the corollary of this first piece of advice, and that is to carry out resolutely what he has decided to do. He has formed an honest and unbiased opinion; he should then stick to it tenaciously, even obstinately, in the face of the adversary. To be unbiased and impartial it is not necessary to agree with the suggestions that cross-examining counsel urges in opposition to the witness's considered opinion, or even to admit that there may be some truth in them. The term "adversary" is not out of place, however little the witness identifies himself with the side who has called him. Counsel for the other side—very properly, for it is his job—does identify himself with his side. He is strongly partial, and he takes the view "Whoever is not for me is against me." The medical man, therefore, battles with cross-examining counsel to uphold the view which he has formed as an impartial witness. When he realizes that his work in the witness-box, as far as cross-examination is concerned, is in the nature of a contest—a clean and friendly one, but none the less a fight—he will see that all the rules which the authorities on medical jurisprudence have evolved for him are much the same as the rules which would guide him if he were competing in a tennis or boxing tournament. Counsel for his own side will probably treat him fairly gently, but counsel for the other side may assail him with energy and craft, and he must keep his wits about him and, so to say, keep on his feet, in order that he may come out of the witness-box with credit, having told the truth as he has seen it and not as counsel for the other side has suggested it.

First of all, counsel for his own side will draw out the evidence in chief: the witness's account of the facts, his opinions on those facts, and perhaps his views on the evidence which he has heard other witnesses give. Counsel will do this in such a way that the witness's evidence will appear as favourable as possible to his side. This is his duty, and by the practice of the court the witness is for the time being in his hands. The doctor should remember this and confine himself—at any rate until counsel has finished—to answering counsel's question's without trying to determine for himself the order in which the evidence shall be presented. If he appre-

ciates the part allotted to him in this operation he will save the court and himself a good deal of time and trouble. He must attend carefully to the questions which counsel puts, and give to them the best answers he can, addressing himself to the judge and jury, who are most concerned with the answer, in a clear voice. If he wishes to address the judge, he uses the term "My Lord" or "Your Lordship" in the High Court or at assizes, and "Your Honour" in the county court; he will call a magistrate "Your Worship" and a coroner "Mr. Coroner" or "Sir." He will save the court, not to mention the reporters, much trouble if he remembers to speak up. He must avoid lecturing the court, but if the question demands answer by a lengthy statement the witness should observe whether the judge is taking down the evidence in longhand; if so, he should dictate the statement in sentences of convenient length, waiting between each until he sees the judge's pen stop. If counsel reads to him an extract from a document, in order perhaps to ask his opinion on the passage, the witness should ask counsel to let him see the document before he commits himself to a reply. It is just possible that if counsel had started the quotation a little earlier or finished it a little later the sense of the question and answer might have been quite different.

Let the medical witness be most careful not to guess, exaggerate, or say anything of which he is not absolutely certain. Counsel, in his eagerness to do the best he can for his side, may try to flatter his witness into giving opinions on matters which are not properly within his scope.

Sir William Willcox¹ gives a good example of how a witness should behave in this situation. Sir Edward Marshall Hall once asked a medical man to give his opinion concerning statistics of death from diphtheria before and after treatment with antitoxin. The doctor said: "It is not my special department. I am not an expert on this matter, and I should prefer not to answer these questions." The judge quite rightly supported this witness, and the evidence on the point was left for other doctors who had made a special study of the subject. If that witness had been indiscreet enough to express a wrong opinion, it would have been put to each of the better-qualified witnesses in turn and have been contradicted, a procedure damaging to the professional dignity of the first witness.

(To be continued)

The Services

Colonel H. F. Humphreys, O.B.E., M.C., T.A., has been appointed Honorary Physician to the King, vice Colonel G. L. Thornton, M.C., T.A.

Colonel A. R. Moodie, T.D., has been appointed Honorary Surgeon to the King, vice Colonel C. L. Isaac, T.D. T.A. (ret.).

AUXILIARY R.A.M.C. FUNDS

The annual meeting of the members of the Auxiliary R.A.M.C. Funds will be held at 5.15 p.m. on Friday, April 13th, at 11, Chandos Street, Cavendish Square, W., when the annual report and financial statement for the year ended December 31st, 1933, will be presented and the officers and committee for the current year elected.

NAVAL MEDICAL COMPASSIONATE FUND

A meeting of the subscribers of the Naval Medical Compassionate Fund will be held on April 19th, at 3 p.m., at the Medical Department of the Navy, Admiralty, S.W.1, to elect six directors of the Fund.

DEATHS IN THE SERVICES

Colonel Robert Bradley Roe, Madras Medical Service (ret.), died at Ipsden, Oxon, on March 5th, aged 75. He was born on March 22nd, 1858, the son of the Rev. Robert Bradley Roe of Wincanton, Somerset, and was educated at St. George's, taking the M.R.C.S. and L.S.A. in 1881. Entering the I.M.S. as surgeon on October 1st, 1881, he became colonel on April 30th, 1911, and retired on May 15th, 1914. Most of his service was spent in civil employ, as civil surgeon of Akola and Amraoti, in the Berars, and later of Nagpur, in the Central Provinces.

¹ *Trans. Med.-Leg. Soc.*, 1931, xxiv, 102.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The Road Traffic Bill was introduced by Major Stanley in the House of Commons on March 26th. Its chief purpose is to increase safety on roads. It does not incorporate the proposals made in Lord Moynihan's Road Traffic (Compensation for Accidents) Bill. During the week the House of Commons further debated the Unemployment Bill, and took Scottish Bills.

In the House of Lords, on March 21st, the Indian Pay (Temporary Abatements) Bill was read a second time. On March 22nd the Birmingham United Hospitals Bill was reported with amendments. The Wirral Joint Hospitals Bill was reported without amendments, and its third reading was set down for March 27th. On the same date the Dyestuffs Import Regulation Bill and the Rural Water Supplies Bill were reported. The Solicitors' Bill and the British Hydrocarbon Oils Production Bill were read a third time, and the Petroleum Production Bill was read a first time.

A report by the Attorney-General on the Plymouth Hospitals Amalgamation Bill was presented to the House of Commons on March 23rd.

The Parliamentary Medical Committee has asked Mr. Neville Chamberlain to receive representations about the remuneration of medical practitioners under the National Health Insurance Acts. On March 26th Mr. J. H. Thomas received a joint deputation from the Parliamentary Medical Committee and the Social Hygiene Council. The deputation included Sir Francis Fremantle, Dr. Howitt, Captain Elliston, Colonel Buchan, Dr. Drummond Shiels, Sir Basil Blackett, Major Orde Brown, and Mrs. Neville Rolfe. It adduced evidence of undue prevalence of disease in Bechuanaland, and the lack of an adequate medical service. Mr. Thomas promised to inquire into the matter.

On March 14th the Conservative Health and Housing Committee met, with Sir Francis Fremantle in the chair. Sir Leslie Scott, chairman of the Central Association for Mental Welfare, and Miss Evelyn Fox, secretary of the association, presented their view of the necessity for a Bill legalizing voluntary sterilization. The committee heard, with sympathy, that the Central Association was rousing support for the Bill on this subject, but during the discussion a general suggestion was made that the subject should be dealt with by a Government Bill.

Methylated Spirit Drinking

The second reading of the Methylated Spirits Bill was moved in the House of Commons on March 23rd by Miss HORSBROUGH. She said the regulations now in force for controlling the sale of mineralized methylated spirit had been applied very fairly, but in some cases carelessly. The present regulations were under the Spirit Act of 1880, amended by the Revenue Act of 1886, and there were certain regulations in Methylated Spirits Orders. One section of the 1880 Act made it an offence to prepare or attempt to prepare any methylated spirit for use as or for a beverage, or as a mixture with the beverage. Another section of the same Act made it an offence to sell any methylated spirit, whether so prepared or not, for a beverage or mixed with a beverage. These restrictions not having proved sufficient, and the number of convictions for drinking methylated spirit having increased, a new formula was introduced in 1924, which included a certain amount of pyridine. For the year after there was a fall in convictions because people believed that what had been added was poison, but since that time there had been a steady increase. The evil of methylated spirit drinking was widespread, and not confined to the poor districts of big towns. In Scotland the figures were higher than in England, and although there had been a sustained decrease in general convictions for drunkenness, convictions for drunkenness due to methylated spirit had not decreased

to any extent. She regretted that the figures were not tabulated in Scotland so clearly as in England, but in six of the largest boroughs the total annual convictions for this offence remained at about 1,000. She had heard of one person being brought before the court fifty-one times, but out of 553 persons apprehended in Glasgow last year 337 were before the court for the first time. In Inverness forty-two out of seventy-four cases of drunkenness in one year were due to drinking methylated spirit, and twenty-three of these were before the court for the first time in 1932. Methylated spirit 60 above proof was sold for 8d. a quart; when mixed with water it was not obnoxious, and it was flavoured with peppermint or with ground ginger. There were many ways of treating the spirit so that the pyridine could be removed. In this Bill no restriction was proposed on surgical spirit or spirit of perfume. When pyridine was added in 1924 permission was given for industrial spirit to be used for surgical purposes under a certain formula. Although castor oil and other ingredients were added to surgical spirit it was still a favourite drink in many places. If a little milk was added and the mixture shaken the castor oil and other ingredients came to the top with the cream, and consumable alcohol was secured. The formula for that surgical spirit had been withdrawn in the previous week by the Customs and Excise, and new formulae substituted from March 15th. She hoped that if the spirit could still be treated so as to make it drinkable the permit for surgical spirit would be removed. To discover whether the drinking of methylated spirit was a danger to the health of the people she had communicated with medical officers of health, police surgeons, professors, and hospital doctors, and none had suggested that it was not injurious. Professor Sydney Smith, professor of medicine at Edinburgh University, said:

"It is much more toxic than ordinary alcohol owing to the fact that it takes much longer to be destroyed in the tissues, and the effect of one dose may last for several days. One of the most disastrous effects is connected with disorders of vision. In the last year or two there have been treated in the Edinburgh Royal Infirmary about thirty cases of definite methylated spirit poisoning, and two of these cases proved fatal. Coupled with toxic poisoning is the poisonous effect on the central nervous system."

The present Bill was based upon an Act in force in Northern Ireland in which the restrictions were perhaps more stringent; that Act had been successful. The Bill suggested that licences should not be granted to a retailer of mineralized methylated spirit unless that retailer had a certificate from the local authority to say that he had been listed as a person who was suitable for the sale and whose premises were suitable. It also provided that the seller's name should be entered in the local authority's list, that the bottle or other container of the spirit should be labelled, that the seller before handing over the spirit to a purchaser should enter in a register the purpose for which the spirit was required, and that the register should be signed by the purchaser. The Bill also provided that a signed order might be taken. If the Bill became law many persons would be warned of the harm due to drinking this spirit. Chief constables in England and Scotland had told her that the effect of putting the onus on the purchaser in the way suggested would check the evil. In many cases the police knew the people who at present obtained this spirit in order to supply it to others, but they had no power to deal with them. Mr. HERBERT WILLIAMS seconded the motion. He suggested that it might be possible to introduce an emetic without destroying the value of the spirit for the purposes for which it was legally obtained.

Sir WILFRID SUGDEN moved the rejection of the Bill. He said that methylated spirit was essential in the medical and dental professions, and in the boudoir. It was used in beauty parlours, and was essential in the engineering trades. He criticized the Bill in detail. Colonel APPLIN, seconding the amendment, said that in country districts methylated spirit was hawked by the oilman's cart, which went round selling groceries and other things, or it was sold in small shops out of a can. The suggested precautions would greatly inconvenience villagers.

Mr. DOUGLAS HACKING, for the Home Office, said that in the opinion of the Government chemist the addition of other liquids to methylated spirit would not get rid of the pyridine. Dilution with water might cause some mineral naphtha to float to the top, but the liquid would still retain a large

measure of the wood naphtha, pyridine, and dye, and would remain nauseous. In England and Wales the problem of methylated spirit drinking was not large. In 1932 convictions for drunkenness so caused were 596, or 2 per cent. of all the convictions for drunkenness that year. This meant that one person was convicted for methylated spirit drunkenness in every 68,000 of the population, or, making an allowance for addicts, not more than one in every 75,000 of the population of England and Wales. The Royal Commission on Licensing had commended to the authorities concerned the desirability of discovering a denaturant which would be even more effective, but the Commission inclined to doubt whether much more could be done by legislative or administrative action to check the drinking of these spirits. He doubted the effectiveness of the provisions of the Bill. He regretted that, so far as England and Wales were concerned, the Government could only leave the Bill to the House. Mr. Hacking also regretted that the Secretary for Scotland had been called away on urgent business, and could not express an opinion on behalf of the Scottish Office. Sir E. GRAHAM-LITTLE said he could not confirm Miss Horsburgh's belief that there was a strong medical opinion in favour of the Bill. The subject had not appeared in the medical press for the last ten years. The medical profession was more concerned with other poisons. Mr. MACQUISTEN said the drinking of methylated spirit was an especial evil in large towns, and the Bill would abate it considerably. The Bill gave local authorities the same power to refuse licences as did the Poisons Act. Mr. Burnet and Mr. Dingle Foot supported the Bill as representatives of Aberdeen and Dundee. Mr. BURNETT said that of 250 convictions during 1933 for drunkenness in Aberdeen eighty-eight were in respect of the drinking of ordinary alcohol, 124 in respect of red wine often mixed with methylated spirit, and thirty-eight in respect of methylated spirit unmixed.

On the motion that the House divide on the Bill the voting was 48 to 28, and as the numbers were not sufficient to carry the closure there was no division on the second reading.

Road Accidents: Early Legislation

Colonel HEADLAM told Mr. Anstruther-Gray, on March 15th, that the Minister of Transport hoped to introduce before Easter a Bill with a view to reducing road accidents. On the same date he told Mr. Leckie that the Road and Rail Traffic Act, which had just come into operation, amended the provisions of the Road Traffic Act of 1930 in regard to payments to hospitals for treating persons injured by motor accidents on the highways. It would be premature to consider further amending legislation now. [Mr. Leckie, in his question, suggested a short Bill compelling insurance companies which covered third-party risks to pay adequate remuneration to the hospitals for their services in these cases.]

Colonel HEADLAM states that arrangements have been made with the Home Secretary and the Secretary of State for Scotland for the number of persons killed and injured on the roads to be reported weekly for a period beginning at Easter, so that they might be available for publication in the coming campaign for the reduction of road accidents.

Vaccination

Replying to Mr. Groves, on March 15th, Sir HILTON YOUNG said he was aware that in Leicester, during the past twenty-five years, not more than 5 per cent. of the children born had been vaccinated; that during the twenty-five years 1905 to 1929 no death was registered from small-pox; that during seventeen of those years no cases occurred; and that during the years 1929 to 1931 two outbreaks of mild small-pox which occurred in the city were attended by only two deaths. These figures might with advantage be supplemented by the Registrar-General's official record that during the 1929-31 outbreak 2,871 cases of small-pox occurred in Leicester (967 of these cases being notified to the local authority in the first quarter of 1931). The facts were well known to his Department and their significance duly appreciated. He saw no reason for instituting a special inquiry.

On March 15th Lord STANLEY told Mr. Groves that in 1933 there were seventy-four cases of catarrh on H.M.S. *Furness*. No case of spotted fever occurred that year, but there was one case in January, 1934. The rating affected

was landed at the Isolation Hospital, Gibraltar. Lord Stanley could not say whether he had been vaccinated or inoculated. Unless they objected on conscientious grounds all officers and men were revaccinated at intervals of five years. They were also inoculated against the typhoid group before a ship went abroad and at intervals during foreign service. It was not the custom to inoculate against spotted fever.

On March 19th Mr. DUFF COOPER told Mr. Groves that no record was kept by the War Office of the number of "bad arms" resulting from the vaccination of recruits, with the exception of cases which were admitted to hospital.

Sir HILTON YOUNG, replying to Mr. Groves on March 19th, stated that it was not with the approval of his Department that registrars of births, marriages, and deaths handed to persons registering births printed matter other than the certificate of registration and Form A under the Vaccination Acts. He was not aware of any statutory authority under which public health committees could require registrars of births to distribute any forms other than those which they were required to issue under the Registration and Vaccination Acts.

Nitrophenol

Replying to Mr. McEntee on March 22nd, Sir JOHN GILMOUR stated he had received a report of an inquest at Paddington concerning the death of a girl from an overdose of a drug of the nitrophenol class. The Poisons Board, set up to advise him under the Pharmacy and Poisons Act of last year, was considering restrictions to be applied to this and other poisons. Meanwhile it was clearly desirable that this drug should be placed under the utmost restriction. He was in consultation with the Lord President of the Council and with the Pharmaceutical Society, who, until the new Act was brought into force, were the responsible authorities, with a view to its being scheduled as a poison at the earliest possible date. He also proposed to take up the matter with the manufacturers, with a view to the adoption of further precautions. He agreed with Sir Reginald Banks that the coroner had said the manufacturers had taken ample precautions against the misuse of the drug by warning on the bottle and otherwise, and that nobody was to blame except the unfortunate woman who disregarded the instructions.

Birth on the Isle of Scarp

On March 20th Mr. T. B. W. RAMSAY asked the Secretary of State for Scotland if he was aware that the wife of James McLennan, Isle of Scarp, who was delivered of a baby by an untrained midwife at Scarp on January 13th, was conveyed over the island, the sea, and the uncompleted Hushinish road on a stretcher to a motor car for transport to Tarbert, Harris, eighteen miles away, on January 14th; that ultimately she was conveyed by car to Lewis Hospital, Stornoway, where she was delivered of a second baby on January 15th; and, seeing that the people of Scarp had repeatedly asked for a trained nurse, pier, and road transport facilities, what action he proposed to take in the matter. Mr. SKELTON said he understood that the facts of the case were generally as stated. Some time before the birth the doctor visited Mrs. McLennan and strongly urged her to go to Tarbert for her confinement. He again saw her a few days before the birth, and repeated this advice. Neither the doctor nor the trained nurse was summoned until after the first child was born. Within two hours of receiving the telephone message asking for assistance they reached the island, and under the doctor's personal supervision the patient was removed to the hospital, where she was successfully delivered of the second child. A doctor and nurse were available in Tarbert, and the installation of a telephone between Tarbert and Hushinish had reduced the difficulty of summoning them to Scarp. The Department of Health was satisfied that these arrangements were adequate. The provision of improved transport facilities was a matter in the first instance for the County Council of Inverness. Mr. RAMSAY asked if Mr. Skelton was aware that the doctor who gave the information mentioned in the question also stated that if a district nurse was given to Scarp the island would be lucky indeed compared with other islands. Mr. SKELTON said he thought if other women in similar circumstances would take the advice proffered to Mrs. McLennan, and go to a proper home in time, many of the difficulties incidental to life on scattered islands would be removed.

Diphtheria Immunization in Acton Schools.—Sir HILTON Young told Mr. Groves, on March 20th, that diphtheria immunization had been carried out by the Acton Town Council in its schools in its capacity of health authority. All children over 7 years of age were Schick-tested before immunization, but the children in the infants' department of one school only were so tested. The immunizing material used was almost wholly T.A.M. (toxoid-antitoxin mixture), but T.A.F. (toxoid-antitoxin floccules) was used in a few cases. Three injections were given in the great majority of cases. The inoculated children were Schick-tested more than three months after the final inoculation. Eight out of approximately 1,600 were still Schick-positive.

Cheap Milk Supply to Hospitals.—Replying to Sir Alfred Beit, on March 15th, Dr. ELLIOT said it would be for the Milk Marketing Board to frame proposals for expenditure from the milk publicity fund. The approved programme was required to contain, *inter alia*, provision for the supply of milk to schools at reduced rates. It would be open to the boards to consider other suggestions, such as that the cheap milk should be supplied to hospitals. On the same date Mr. Elliot estimated the home production of milk in England and Wales during 1933 at 1,368 million gallons; in Scotland at 171 million gallons; and in Northern Ireland at 90 million gallons. Imports of condensed milk during the year were equivalent to 100 million gallons.

Payment of Public Vaccinators.—Sir HILTON Young told Mr. Groves, on March 14th, that he would bear in mind his suggestion that the fee system of payment for services rendered by public vaccination officers should be abolished when he was next promoting legislation or issuing orders dealing with vaccination.

Diphtheria Antitoxin.—Sir HILTON Young told Mr. Groves, on March 15th, that toxoid-antitoxin was still used for diphtheria immunization in this country. There had been no alteration in the strength of the mixtures used during the last twelve months.

Obituary

WILLIAM PRINGLE MORGAN, M.B., D.P.H.
Past President, Sussex Branch

It is with great regret we have to record the death, at the age of 72, of Dr. William Pringle Morgan, in a nursing home in London, from septic endocarditis. Dr. Morgan was born at Rostrevor, Ireland, and received his education at Dundalk Grammar School, Ennis College, and Trinity College, Dublin, where he graduated B.A., M.B., B.Ch. He settled in practice in 1886 at Seaford, which he saw rise from a small fishing village to a good-sized town, with twenty-five schools at the date of his retirement in 1928. Although over age he joined the Army during the Great War, being posted to Malta and Salonika. Among his other activities were the following. He was a member, later chairman, of the Seaford Urban District Council, and chairman of the local branch of the League of Nations Union, and was well known in Masonic circles. He was the third Master of the Seaford Lodge on two occasions. In 1911 he was Provincial Junior Grand Deacon. He was well known for his work in the British Medical Association, especially in Sussex. He was president of the Sussex Branch in 1925, and had acted as one of the Representatives of the Brighton Division—1930-3. He had been elected again by his colleagues for the forthcoming Bournemouth Meeting. All those who met him at the various Representative Meetings will remember that, though he spoke seldom, when he did his utterances, quietly and clearly delivered, were full of sound common sense. When he visited Dublin last year he was full of joy and enthusiasm at once again returning to his Alma Mater, and paid visits to many of his old haunts. His kind and genial hospitality, when president of the Branch, will be remembered by all those who came in contact with him. He was cremated at Golders Green, and on March

24th a memorial service was held at Seaford Parish Church, which was attended by large numbers of old friends, patients, colleagues, and officials, who desired to pay a last tribute of respect to a beloved doctor. He was a man of transparent honesty, always ready to do a kindness when the chance offered. No better tribute can be paid to him than that of his colleagues—"A perfect gentleman." Dr. Morgan leaves a widow, two daughters, and two sons—Dr. A. G. Morgan of Harley Street and Major Morgan of Exeter.

THE LATE DR. DARLEY HARTLEY

Dr. Alfred Cox writes:

Your notice of the death of my old friend William Darley Hartley demands from me a word in recognition of all I owed him, officially and personally, when I was medical secretary. The Empire-wide organization of the B.M.A. leads very often to requests at headquarters for information which can only be satisfied if one has access to reliable sources on the spot. A query about prospects in Canada meant a reference to Routley; about Australia, the never-forgotten Todd; and Darley Hartley was for many years my infallible guide and friend in South Africa. His knowledge of medical affairs in that country and his influence were equalled by his sagacity and kindness. Officially, he combined the offices of editor of the *South African Medical Journal* with a medical agency in which he was assisted by his son, but unofficially he was also the medical secretary for that country, and I always advised doctors who were thinking of settling in South Africa to see Hartley as soon as they could after arrival.

He was an ardent South African, but he firmly believed that it was for the good of that country that its medical profession should be guided by the traditions and ethics of the old country, and therefore he threw himself into the work of organizing the B.M.A. in South Africa with great vigour. My mission to South Africa in 1926-7 was a very difficult one. It would have been an impossible one had it not been for two men who stand out, amongst others, in my memory—Darley Hartley and Orenstein. The morning after my arrival at Capetown I spent with Hartley in his office, and I was, to my great benefit, in close touch with him throughout my tour. Ever since my return I have kept up an occasional correspondence with him, and to the very last he exhibited all those gifts of sympathy and knowledge which endeared him to all who knew him. I am glad to be able to pay this last tribute to a man who richly deserved the honour of being the first Gold Medallist of the Association in South Africa, and the gratitude of all who had the pleasure of working with him.

THE LATE DR. A. G. BARRS

Dr. M. P. K. MENON (Edmonton) writes:

I would like to add my tribute—the tribute of an Indian student—to the memory of that large-hearted Englishman, the late Dr. A. G. Barrs of Leeds. It was my good fortune to be his clinical clerk at the Leeds Infirmary during my student days—and how I enjoyed those six months! I was thrilled by his personality and overcome by his kindness and his accessibility. He was by no means a textbook teacher. He had no time for rare diseases or miraculous cures. He made one observe the main and essential landmarks of our science, and although at times he may have been a little too sure about his aphorisms we students accepted them, as we loved and respected him. He had great psychological insight into human nature, and always knew, as if by instinct, what his patients and his students desired—and did his utmost to provide it. He was very human, and knew the human failings. The world is indeed poorer for his passing.

The death took place in London, on March 13th, of Dr. ARCHIBALD STODART-WALKER of Denham, Bucks. He was born in 1870 at St. Fort, Fife, and was a nephew of Professor John Stuart Blackie, the celebrated professor of Greek at Edinburgh University. Dr. Stodart-Walker

was educated at Liverpool College and at the University of Edinburgh, where he graduated M.B., C.M. in 1891. He studied also in London, Paris, and Bologna. After acting as resident house-physician to the late Professor Grainger Stewart in the Royal Infirmary, Edinburgh, he subsequently became assistant professor in physiology and clinical tutor at Edinburgh University. He joined the Royal College of Physicians of Edinburgh as a Member in 1895, proceeding to the Fellowship in 1897. After considerable research in the subjects of psychology and neurology Dr. Stodart-Walker abandoned the profession of medicine for that of literature in the year 1898. During his medical course at Edinburgh University he took an active interest in student affairs, being president of the Students' Representative Council in 1890 and president of the Students' Union in 1891; he also acted for a time as editor of *The Student*. He served in the R.A.M.C. during the war with the rank of major, being mentioned in dispatches and receiving the M.B.E. for his services. From 1919 to 1925 he acted as president of the Joint Survey Board at the Ministry of Pensions. Dr. Stodart-Walker published many works dealing with literary subjects, including *The Letters of John Stuart Blackie* in 1909; *The Struggle for Success*, 1900; *Habit and Control*, 1901; *Robert Buchanan, the Poet of Modern Revolt*, 1901; *A Volunteer Haversack*, 1902; *A Beggar's Wallet*, 1905; and *Occasional Verse*, 1920. He was a keen art critic, and founded in 1907 the Scottish Modern Arts Association, of which he was appointed chairman.

Medical News

The British Orthopaedic Association, under the presidency of Mr. Harry Platt, will hold a spring meeting in Holland on Thursday, Friday, and Saturday, April 12th, 13th, and 14th. An interesting scientific and social programme has been arranged. Thursday will be spent with Dr. Murk Jansen at the Anna-Kliniek. On Friday the members will visit the clinic of Dr. Schoemaker at The Hague, and on Saturday the clinic of Professor Noordenbos at Amsterdam. The excursions for members and their ladies will include, amongst others, a visit to the Frans Hals Museum and a special trip to the Bulb Fields.

At the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., on Tuesday, May 8th, at 5.30 p.m., Dr. Jane Walker, C.H., will deliver a Chadwick Public Lecture on "Village Hygiene; Water Supply; Disposal of Refuse." Sir James Crichton-Browne, F.R.S., will preside. Admission free, without ticket.

The Royal Sanitary Institute has arranged a sessional meeting at the Town Hall, Bolton, on Friday, April 13th, at 5 p.m., when a discussion on "Public Baths in Relation to Health and Disease" will be opened by Dr. R. M. Galloway, medical officer of health, Bolton; to be followed by a discussion, opened by Mr. Cyril H. Walker, on "The Technique of Rehousing, etc., from Slum Areas."

A three months' course in clinical practice and hospital administration will be given at the Brook Hospital, Shooter's Hill, S.E., by Dr. J. V. Armstrong, on Mondays and Wednesdays, at 9.30 a.m., and alternate Saturdays, at a time to be arranged, beginning April 4th. It is intended for those studying for the D.P.H., and complies with the requirements of the General Medical Council's revised regulations, which came into force on October 1st, 1931. A course may, however, be taken under the previous regulations for £4 4s. The fee (£3 13s. 6d.) should be paid to the medical officer of health, L.C.C. Public Health Department (Special Hospitals), County Hall, S.E.1.

The Fellowship of Medicine announces a further lecture-demonstration, on shortness of breath, by Dr. Clark-Kennedy, at 11, Chandos Street, on April 10th, at 2.30 p.m. (There will be no lecture on April 3rd.) An all-day course in proctology will be given at St. Mark's Hospital from April 9th to 14th. There will be an afternoon course at the Infants Hospital from April 9th to 21st; and an evening course in rheumatism at the British

Red Cross Clinic, Peto Place, on Tuesdays and Thursdays, from April 10th to 26th. A week-end course in general medicine and surgery has been arranged at the Southend-on-Sea General Hospital on April 14th and 15th. Six lectures on the diagnosis and treatment of chronic diseases of the chest in general practice will be given by Dr. Ellman, at 11, Chandos Street, on Wednesdays and Fridays, at 8.30 p.m., from April 11th to 27th. Demonstrations for candidates for the M.R.C.P. have been arranged during April, and particulars may be had from the secretary of the Fellowship, 1, Wimpole Street, W.1. Other forthcoming courses include ophthalmology at the Royal Eye Hospital, April 16th to 28th; gynaecology at the Samaritan Hospital, April 28th and 29th; psychological medicine at the Maudsley Hospital, April 30th to May 26th; dermatology at St. John's Hospital, April 30th to May 26th. Three lectures (free to members and associates of the Fellowship) will be given at the Medical Society of London, on April 19th, 26th, and May 3rd; the first, by Mr. F. W. Edridge-Green, will deal with vision and colour-vision.

In connexion with the inauguration of the new State-built thermal establishment at Aix-les-Bains an international scientific conference on rheumatoid arthritis will be held in that town from June 28th to July 1st, under the patronage of the French League against Rheumatism. The chairman will be Professor Bezançon of Paris, and discussions will be opened by Sir William Willcox and Drs. S. Gilbert Scott and F. J. Bach, among others. Inquiries should be addressed to M. Dussuel, Rue du Casino 1, Aix-les-Bains (Savoie), France.

The fifth Congress of Yugoslav Surgery will be held at Belgrade from April 28th to May 1st, when the following subjects will be discussed: surgical tuberculosis of the lungs and pleura, introduced by Professor Kostitch of Belgrade; fractures of the long bones of the extremities, introduced by Dr. Florschütz of Zagreb and Dr. Simovitch of Belgrade; and indications for the Caesarean operation, introduced by Professors Durst of Zagreb and Bogdanovitch of Belgrade.

The French Society of Ophthalmology will hold its forty-seventh congress in Paris from May 14th to 17th, when the chief subject for discussion will be biomicroscopy of the normal and diseased conjunctiva, introduced by M.M. Cuenod and Natal of Tunis. Further information can be obtained from the general secretary, Dr. René Onfray, 6, Avenue de la Motte-Picquet, Paris, 8e.

The Oxford University Press has ready for early publication, as an addition to the Oxford Medical Publications, *The Menace and Geography of Eclampsia in England and Wales*, by Dr. Norman Porritt.

The King has confirmed the appointment of Dr. J. O. Shircore, C.M.G., to be an unofficial member of the Legislative Council of the Tanganyika Territory.

On March 21st the Mayor of Torquay reopened the Corporation warm sea-water swimming bath, which has been entirely refitted on modern lines, and is now equipped with a Bells filtration plant, with a three-hour turnover which chlorinates, aerates, and warms the water as it passes through the filters. The ceremony was attended by representatives of the local medical profession.

On March 23rd a special service was held in Carlisle Cathedral to celebrate the centenary of the death of Dr. John Heysham, founder of the Carlisle Dispensary, and author of the *Carlisle Tables of Mortality*. Some account of the proceedings, and of Dr. C. W. Graham's commemorative oration, will appear in a later issue.

According to statistics issued by the League of Nations, the population of the world amounts to 2,012,800,000, to which Asia contributes 1,103,000,000, Europe 506,000,000, North America 252,000,000, South America 83,000,000, Central America 34,000,000, Africa 142,000,000, and Oceania 10,000,000. These figures represent an increase of 20,000,000 over those of 1930.

The Prussian Home Office has recently drawn the attention of mothers, midwives, and clergymen at baptism to the increased prevalence of pemphigus neonatorum.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, *British Medical Journal*, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, *British Medical Association House*, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the *British Medical Association* and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

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QUERIES AND ANSWERS

Bacte-rhino-phage in Asthma

'M.D.' (Devon) would be glad to hear, from anyone who has had experience of bacte-rhino-phage in the treatment of asthma. He also asks for references to English literature thereon.

Use of Quinine in Normal Labour

Dr. W. J. BURNS SELKIRK (Birmingham) writes: May there not have been an old fallacy in Dr. Sheinkin's (March 17th, p. 516) argument—namely, that the tablets passed through undissolved? It has seemed to me that the preliminary quinine (given in solution) helps one to choose a suitable day of confinement about full term, the hot bath and castor oil being more successful following the period of medication by quinine.

"G. B." writes: If Dr. Sheinkin had given doses of 1/2 to 1 grain three times a day, and limited his time to the last six or eight weeks, his results might have been better.

The Pox Doctor's Clerk

Dr. GEORGE JONES (London, S.E.) writes with reference to Dr. Philip Gosse's inquiry about "the pox doctor's clerk": Forty years ago the late Dr. Jukes de Styrup was a frequent contributor to your columns, chiefly on medical ethics. He published in 1890 a small book called *The Young Practitioner: His Code and Tariff*. At page 85 he wrote: "Be careful that your repute for special interest in venereal diseases does not obscure and surpass that for other maladies, otherwise you may get the unenviable title of 'P—x Doctor,' and entail social ostracism and the loss of family practice . . . or . . . by perpetually inquiring about the urine, and having it kept and bottled for you, earn the easily acquired title of 'P—s Doctor.'" That our forefathers were in the habit of using plain words is known to every reader of Shakespeare: 2 Henry IV, Act I, Sc. ii, line 258 and below. "The gout galls the one, and the pox pinches the other. . . . A pox of this gout! or, a gout of this pox! for the one, or the other, plays the rogue with my great toe."

LETTERS, NOTES, ETC.

History of Nitrous Oxide Anaesthesia

Dr. F. WILLIAM COCK, F.S.A. (Appledore, Kent), writes: In 1887 my old fellow-student, Dr. Dudley Buxton the anaesthetist, introduced me to J. F. Blennerhassett, who fitted me out with anaesthetic apparatus for a good many years. The N₂O bottles were of steel, with the flat bottoms welded in. "J. F. B." was a quaint bird, clever, ingenious, and perfervid, even to making interruptions at the local vestry or similar meetings: long-haired, with much-tangled beard, and withal a very likeable chap. After he died, or gave up, I was supplied by Barth and Co. for many years. Somewhere in the early 'nineties I attended an old gentleman named Orchard, who claimed to be the first to

condense oxygen in a cylinder. A man was killed at Fenchurch Street Station by the explosion of a gas-filled cylinder. The old gentleman, contrary to my orders, would attend the inquest to find out where the fault in the metal was. It was winter, he increased his bronchitis, took to his bed, and though I believe I kept him alive for at least a week by the use of his own oxygen (warmed by passing through a coil of gas-metal tubing placed in a pail of hot water), he ultimately died "drowned in his own secretions." The early cylinders were a great nuisance by reason of the freezing of the water vapour in the neck. I believe I shared the idea of putting a turned-up tube inside the delivery tube of the bottle, thus preventing the liquid gas escaping into the neck, freezing itself and the water vapour. But that is a long time ago.

Chilblains

"A. S." writes: Dr. Gillson's letter on chilblains recalls my meeting a patient in a tram last autumn. Besides the weather, she complained of chilblains. As I have great faith in this, I said, "It is four years since I wore gloves, and since then I have never had a chilblain." She smiled and said, "But mine are on the toes." I jokingly said, "In that case you will have to wear nothing but sandals." Her reply, "I know what you mean, but it might have been better expressed," made the next car-stop a convenient alighting place. I suppose Dr. Gillson would advise the elastic bands round the ankles whilst dressing, and then to lie on the bed with the legs as high as possible—an exercise that would at least tend to improve one's appetite for breakfast.

Adjustable Thermostat for a Car

Dr. MAXWELL K. BARNETT (Southampton) writes: I should like to call the attention of other general practitioners to the great benefits of an adjustable thermostat on a car. After running seven cars (two of which had radiator shutters) I have come to the conclusion that this is the ideal control for any machine which is left out for long periods in the cold and seldom properly "warmed up." On my "A.C." the temperature of the water in the cylinder block rises to 70° in two or three hundred yards' running, and I never have difficulty in starting from cold. The thermostat can be adjusted (if necessary) in a few seconds, and without soiling one's hands. I need hardly mention that I have no financial interest in this fitment.

CO₂ Therapy in Lobar Pneumonia

Surgeon Lieutenant A. F. DAVY, R.N., writes: I read with interest Dr. Hilton's article on the above subject in the *Journal* of March 10th (p. 418), and in particular the conclusions he had drawn. Surely, if pneumonia is an acute general infection with a local manifestation in one or both lungs, one's aim should be to rest the lungs as much as possible to avoid any further spread of infection. In these circumstances would not CO₂ be definitely contraindicated, except in very special circumstances?

Professor Adolphe Pinard

The death of Professor Pinard (writes our Paris correspondent) has been the signal for a remarkable demonstration of affection and regret, not only in the medical, but also in the lay Press. In the French Academy of Medicine also he was the subject of a glowing tribute by its president. No epoch-making discoveries are associated with his name, and for this reason history will perhaps forget him. But he did very useful work by applying the discoveries of others, from Pasteur's onwards, to the problems of daily life as they affect mother and child. With his aptitude for thoroughness he spent the first half of his life drilling into all with whom he came in contact—medical students, nurses, midwives, and others—the essentials of clinical obstetrics. At the Baudelocque he was the centre of the younger generation of medical men, foreigners as well as Frenchmen. At the Academy of Medicine, to which he was elected in 1892, at the *Conseil Supérieur de la Natalité*, in the Chamber of Deputies, and wherever else he could make himself heard, he was the untiring advocate of reforms. The latter part of his life was spent in infant welfare work, and he took a leading part in the education of nurses. When his health began to fail, about a year ago, he retired to the country in the neighbourhood of his birthplace, and he passed away about four weeks after celebrating his ninetieth birthday.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 34, 35, 36, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 132.

TREATMENT OF GONORRHOEA IN WOMEN BY MERCUROCHROME, WITH SPECIAL REFERENCE TO COMPLICATIONS

A FURTHER REPORT

BY

R. S. STATHAM, M.D., CH.M., F.C.O.G.

PROFESSOR OF OBSTETRICS, UNIVERSITY OF BRISTOL; HONORARY GYNAECOLOGIST, BRISTOL ROYAL INFIRMARY;
MEDICAL OFFICER TO BRISTOL VENEREAL DISEASE CLINIC

About six years ago I contributed a short paper to the *British Medical Journal*,¹ describing a method of treating gonorrhoea in women by swabbing with 1 per cent. mercurochrome solution. This paper was based upon a short experience and a limited number of cases, but it showed such good results that I was encouraged to continue the same treatment on a larger series of patients, and over a time sufficiently long to enable recurrence to be detected, even if it occurred after a considerable interval.

The present paper embodies the experiences of the last five years. During this time about 450 cases of proved gonorrhoea have been treated with this method by myself and my colleagues, and I have been in no way disappointed with the results. The patients have attended well, and have expressed their appreciation of the slight inconvenience caused by this technique. The recovery rate has been satisfactory, and the recurrences have been few, but so many variables occur in cases treated by different members of the staff of a clinic that I have thought it well to reduce the cases for this paper to 158. These 158 have all been treated by myself. They have all attended until finally discharged as "cured" after full tests. They have all been treated by the mercurochrome method only, so that I think they can be used as the basis of statistics to form a fair estimate as to the value of mercurochrome in the treatment of gonorrhoea when used in this way.

METHOD OF TREATMENT

This was fully described in my previous communication.¹ Briefly, it consists in applying 1 per cent. mercurochrome to the cervix and vagina, with the latter fully stretched out by a fenestrated speculum. The application is preceded by a warm douche of saline, accompanied by swabbing to get rid of pus and mucus. This is repeated daily. No advantage has been found in using the mercurochrome in stronger solution than 1 per cent., and there is some evidence to show that when stronger than 2 per cent. it tends to the formation of "erosions." In cases complicated by urethritis and cystitis the bladder also is irrigated.

CRITERIA OF CURE

In this series the criteria of cure are essentially the same as in the previous group. The main tests are: three consecutive sets of smears from cervix and urethra, taken at a month's interval after the usual menstrual period; also a negative culture from the same regions, and a negative complement-deviation test for gonorrhoea. All these tests are taken after treatment has ceased. A "final test" in which smears, cultures, and a complement-deviation test are repeated is performed three months later. The reliability of this method is shown by the very low incidence of recurrence, and the fact that a number of these cases were attending my gynaecological out-patient department at varying intervals after treatment, yet none has ever given a positive result since treatment was stopped, though frequently tested. It is surprising that it should still be so very necessary to

stress the importance of stopping douching as early as possible in cases of cervicitis. The presence of an "erosion" will cause a mild discharge, which is aggravated as long as hot douching is in use. Frequently cases, which originated as gonorrhoea, are treated for many weeks, and even months, longer than is necessary because it has not been recognized that the discharge is due to the erosion and cervicitis, and not to an active gonococcal infection. Stopping the douche, and application of the cautery, will effect a cure in a few days in most of these cases.

RESULTS AND COMPLICATIONS

This paper has been compiled with a special view to ascertaining whether the mercurochrome swabbing method was, or was not, effective in preventing complications, and most careful watch was kept upon all the 158 cases from this point of view.

TABLE I.—Total Number of Cases under Review, 158

Associated with syphilis ...	13 = 8.2 per cent.
Associated with pregnancy ...	15 = 9.5 "
Became pregnant during treatment...	2 = 1.2 "

No mother or child developed any unusual symptoms. No case of ophthalmia was recorded. One mother was delivered by Caesarean section on account of pelvic contraction.

TABLE II

Average number of days under treatment until the first negative smear was obtained*	37.2
Longest number of days under treatment (1 case)	84
Shortest number of days under treatment (2 cases)	8

* First negative smear means the first smear of the final series. If a positive appeared later the series was started again and the previous negative smear not counted.

Just over three weeks' treatment—that is, during the interval between one period and the next—was sufficient in the majority of cases to render the next smear negative. It was noticed that the few resistant cases took a long time to clear up, and that there were very few intermediate types of infection.

TABLE III.—Number of Complications

Large erosion of cervix ...	16
Salpingitis ...	14
Bartholinitis ...	6
Acute cystitis ...	3
Rheumatism ...	3
Eye symptoms ...	2

Total (occurring in 35 cases) ... 44
Cases making an uninterrupted recovery, 123 = 77.8 per cent.

In ten cases the only complication noted was an "erosion" of the cervix, and this is so much a part of a cervical infection that it can hardly be considered a complication. If these cases are deducted, the cases making an uninterrupted recovery were 133, or 83.5 per cent.

DETAILS OF COMPLICATIONS

Many of the complications were present when the patient first attended the clinic, as is shown below, and only a few developed during course of treatment.

TABLE IV

	On admission	During treatment
Erosion, persistent ...	11	5
Salpingitis ...	9	5
Bartholinitis ...	5	1
Acute cystitis ...	3	—
Rheumatism ...	2	1
Eye symptoms ...	2	—
	32	12

If the erosions are again disregarded, it will be seen that one case of bartholinitis, one of rheumatism, and five cases of salpingitis occurred during the treatment of 127 cases, which gives a proportion of 5.5 per cent. complications. This seems satisfactorily low when the mild type of complication is taken into account.

Erosion

Sixteen cases of persistent erosion of the cervix were noted, these being large enough to require definite treatment (small erosions clearing rapidly without special treatment are not counted). The five which developed during treatment were all in cases which took a long time to clear up, and in two of which there was a suspicion of reinfection. In ten cases there was a greater or less degree of cervical laceration and a probability of old-standing cervicitis with chronic infection, as there was a history of "whites" for some years. The treatment was in every case the same. As soon as negative smears had been obtained twice the erosion was cauterized with an electro-cautery. Radiating lines were drawn with the cautery from the cervical canal outwards to the periphery of the cervix and any Naboth's follicles were punctured. This procedure does not cause any pain if gentle pressure and fairly rapid movement are maintained with the cautery. In no case was any anaesthetic needed, and in no case did any patient object or refuse to return to complete the treatment. There is no need to apply a vulsellum, provided an efficient speculum is used. The number of treatments necessary is shown below:

TABLE V

Cauterized on 2 occasions ...	...	...	...	7 cases
" " 3 " ...	...	...	...	5 cases
" " 4 " ...	...	...	...	1 case
" " 5 " ...	...	...	...	2 cases
" " 8 " ...	...	...	...	1 case
				16 cases

In all these cases the down-growing epithelium was completely replaced by smooth squamous epithelium or scar tissue, and the erosion was quite "cured" before discharge. In two cases operation was advised owing to the old laceration, and in one case it was performed six months later, the other patient refusing owing to the symptoms having quite disappeared.

Salpingitis

This complication is known to be very rare in women who have never become pregnant, for the reason that while the internal os remains intact it is almost impervious to any organism. The extensive lymphatic drainage and the facility with which organisms are dealt with have often suggested comparison with the tonsil, but the cervix appears to present a complete bar to the passage of organisms, when it is not interfered with.

The passage of a child, or the products of an abortion, in patients infected with gonorrhoea are followed in many cases by an ascending infection with consequent salpingitis of a more or less severe type. The frequency of the one-child marriage, in a patient with mild or chronic gonococcal infection, is, of course, due to this fact. Any method of treatment entailing passing instruments through the internal os is to be condemned as strongly as possible.

No matter how potent the antiseptic used, some active organisms may be pushed up past the internal os, with consequent ascending infection. A colleague, who was unfortunate enough to be persuaded to try a technique based on passing probes armed with antiseptic swabs up the cervical canal, was horrified to find three cases of acute salpingitis develop in five weeks, all in nulliparous girls, a higher incidence amongst nulliparae than was experienced during the whole preceding five years.

The fourteen cases of salpingitis which are included in this series fall into two groups. Nine women were suffering from infection of the tubes and pelvic peritoneum when first seen; five developed these conditions while actually undergoing treatment.

TABLE VI

Salpingitis Cases Infected Before Admission

1. Mild salpingitis, right and left. Last confinement eight months previous to first visit to clinic. Cleared up rapidly with treatment.
2. Acute salpingitis, right and left. Last confinement sixteen days previously. (Baby with gonorrhoeal ophthalmia.) Cleared up with palliative treatment.
3. Chronic salpingitis, right and left, with swollen tubes. Last confinement eight months previously. Palliative treatment four weeks, then Bartholin's abscess. Gonococcal rheumatism after sixteen weeks' treatment, although she had negative smears and cultures. Did not get really well for twelve months.
4. Right pus-tube. Aborted eight weeks previously. Palliative treatment, and refused operation. Pregnant four months later—aborted with crochet-hook—no ill result.
5. Acute salpingitis, right and left. Last confinement two years previously. Clinical cure with expectant treatment. Normal pregnancy two years later.
6. Very large pelvic mass involving all organs. Did not want operation. Nulliparous—greatly improved by expectant treatment, and remains well except for some dysmenorrhoea.
7. Salpingitis, very acute, right and left. Miscarried eight weeks previously. Good result with expectant treatment.
8. Acute salpingitis, right and left. Expectant treatment for four weeks. Refused operation. Four months later, when apparently "cured," sudden obstruction by adhesions. Operation. Both tubes left in, and in fair condition. One tube patent to fluid. No gonococci found in smears from peritoneum, tubes, or cervix.

Salpingitis Developing after Admission to Treatment

1. After three weeks' treatment developed a mild salpingitis. Last pregnancy twenty-six weeks previously. Rapidly got well with palliative treatment. A mild attack of cystitis next developed. She was actually treated for seventy-six days. (Small erosion formed, which was cured by cautery.) Final result good.
2. Acute salpingitis, right and left, ten days after treatment was started. Last pregnancy six months previously. Complete recovery with palliative treatment.
3. Left-sided salpingitis on thirteenth day of treatment. Last pregnancy six months previously (child had "sticky" eyes). Rapidly recovered with palliative treatment. One healthy child since.

Salpingitis Developing after Treatment had Finished

One patient became pregnant eight months after treatment had been stopped, and then aborted after "some instrument" had been passed. She then developed acute pus-tubes, which had to be removed by operation five weeks later. Numerous tests failed to show gonococci in cervix or urethra, or in pus from tubes.

The same method of treatment was adopted in every case. It is hardly necessary to point out the danger of operation in cases of acute salpingitis—unless done at the very earliest stage possible (Bourne²). The work of Hendry³ and his colleagues very completely demonstrates this. Palliative treatment is invariably carried out until the acute symptoms have subsided. Immediate operation may be needed in the extremely rare cases when general peritonitis appears to be definitely threatened.

The method adopted here is quite simple and easy, provided that there is an ample supply of hot water, for heat is the real key to success. The patient is kept well propped up in bed and is given magnesium sulphate in sufficient quantities to obtain two or three watery stools a day; this keeps the pelvic colon empty and prevents the pain and backache so commonly complained of when the full colon presses upon the inflamed contents of the pouch of Douglas. Hot douching is carried out twice a day; the water is used as hot as the patient can bear it, and the douching is continued for at least fifteen minutes. This necessitates a very large supply of hot water, as it is

found that about 2½ to 3 gallons are needed for each patient. When home treatment is carried out in chronic cases, douching under water, in a bath, is convenient and efficient if there is a good supply of hot bath-water available. (This method was described in detail in an article by me in the *British Medical Journal*, 1929, ii, 661.) In almost every case the acute symptoms rapidly subside, the temperature and pulse fall to normal, and the patient experiences great relief. When the symptoms have subsided the patient is examined bimanually to assess the amount of permanent damage, if any. The mercurochrome treatment, which was in abeyance during the acute stage, is restarted, and efforts are made to build up the patient's resistance by fresh air and a liberal diet. In a very few cases the acute condition shows signs of recurring after having subsided for a few days, and then operation is indicated at once if the patient is seen early. If not, the palliative treatment is carried out once more, but laparotomy is performed as soon as the state of temperature and pulse justifies such interference. This treatment is most successful, and from a summary of fifty cases treated in my gynaecological wards during the last three years the following figures appear from a follow-up inquiry:

50 Cases of Acute Pelvic Peritonitis

- 31 "cured"—that is, no complaints and no physical signs.
13 "greatly improved."
6 required operation.

So that only six cases required operation because of recurrence or failure to yield to treatment. Of course, some of these cases will come to operation later on because of chronic dysmenorrhoea and pelvic pain due to adhesions following the old peritonitis, but this lies outside the scope of the present paper, which shows that only two of the cases of salpingitis thus treated at the clinic came to operation, and in one case the cause of operation was intestinal obstruction.

Bartholinitis

Four cases were admitted to the clinic with a Bartholin abscess. Of these, three were treated by operation—that is, incision and swabbing with pure carbolic. Two were apparently cured, and one had the cyst dissected out intact when it appeared again after the first incision. One patient refused operation, and the abscess burst and recurred on three successive occasions before she would consent to excision. A cure was finally attained. The case which developed a Bartholinitis during treatment was cured by excision.

Cystitis

Three cases were admitted with very severe cystitis. In only one case was the gonococcus found in the urine. Twice daily irrigation of the bladder, and the leaving in of 2 oz. of 1 per cent. mercurochrome, rapidly improved the condition, and all signs and symptoms were cleared up after three weeks' treatment at the longest.

Rheumatism

Two cases were admitted with acute gonococcal rheumatism; in one case the right shoulder was severely affected, in the other the swelling began in the right elbow and then attacked the right wrist. Splinting and rest, accompanied by active treatment to vagina and cervix, very soon cleared up the condition. Aspirin in large doses was found to be the best analgesic. The case which developed rheumatism under treatment showed a series of subacute arthritic attacks in different joints. No joint was very severely attacked, but the total time under treatment was nearly six weeks. This case also developed a mild cystitis. In all cases "movements" were started as early as possible.

Eye Symptoms

Two cases developed a mild cyclitis; neither of these had a positive Wassermann reaction. One patient had also gonorrhoeal arthritis, and the other case occurred in a woman who developed salpingitis on the thirteenth day of treatment.

CONCLUSION

Since this paper is based upon cases which have all undergone complete treatment and observation by myself alone, it has been necessary to rule out all those women who did not complete the full treatment, or who were not considered cured. This prevents any statistics being given which show the comparative efficiency of the method. From a rough count of the original 450 cases from which these 158 cases have been drawn, I was able to obtain the following figures, which are only approximately correct.

Total Cases, 450

Clinical Cures, 460.—Many did not complete the final tests and would not return to do so, but had been quite free from symptoms for some weeks.

Ceased to attend, 38.—Most of these had been free from clinical symptoms for several weeks.

Failed to improve, 7.—Four of these were cured by other methods, and three refused to continue here.

Reinfected, 5.

Two points at once become evident when these 450 are considered. First, the very small number who "ceased to attend," and this is attributed to the rapid improvement in the patient's condition and to the simplicity and short duration of each daily treatment. Secondly, the high percentage of clinical cures obtained with such a short period of treatment. It is, of course, fully open to anyone to criticize the word "cure" used here, seeing that in many cases the full number of tests had not been carried out, but I think it is a fair inference that the missing final tests would have remained negative in the vast majority of cases, seeing that they did so in almost every one of the 158 cases which were fully observed. I feel, therefore, it can be claimed that treatment with 1 per cent. mercurochrome—provided it is efficiently carried out—is a very rapid and easy method of curing gonorrhoea in women, and is a method which keeps complications at a very low percentage of incidence.

Finally, I think many failures are due either to using the mercurochrome too strong, which injures the power of resistance of the epithelium, or to using a substance which is not genuine mercurochrome. This latter point is of great importance, and needs careful consideration.

I have to thank Dr. Hardy Kingston, the director of the clinic, for his permission to publish this paper, and also the sister and nurses for their great co-operation and help. The obstetric department of the University of Bristol has defrayed the small cost involved.

REFERENCES

- ¹ Statham: *British Medical Journal*, 1928, i, 544.
- ² Bourne: *Journ. Obstet. and Gynaecol. British Empire*, 1927, xxxiv, 185.
- ³ Hendry: *Surg., Gynecol. and Obstet.*, 1927, xlv, 535.

A national conference on maternity and child welfare will be held in the Town Hall, Birmingham, on July 3rd, 4th, and 5th, preceded by a short clinical course for medical practitioners on July 2nd. The programme has been drawn up on behalf of the National Council for Maternity and Child Welfare and its constituent bodies by the National Association for the Prevention of Infant Mortality, in co-operation with the Maternity and Child Welfare Group of the Society of Medical Officers of Health. Particulars may be obtained from the honorary secretary, Miss J. Halford, Carnegie House, 117, Piccadilly, London, W.1.

EPHEDRINE SULPHATE AND BARIUM CHLORIDE IN THE PREVENTION OF STOKES-ADAMS SEIZURES

BY

A. RAE GILCHRIST, M.D., F.R.C.P.Ed.

ASSISTANT PHYSICIAN, ROYAL INFIRMARY, EDINBURGH

The peculiar syncopal attacks which are named after Stokes and Adams have as their predominant feature either a complete and transient cessation of ventricular beating or else the temporary development of such an extremely slow ventricular rate than an adequate cerebral circulation is not maintained. Complete ventricular arrest is the commoner variety. Recovery of the heart beat may take place after a pause of some seconds', or even of five minutes', duration.¹¹ Extreme bradycardia is a less frequent cause of Stokes-Adams seizures. Should the ventricular rate fall to less than nine or ten beats per minute then a semi-conscious stuporose state is apt to arise. This persists until a greater rate of blood flow through the brain is brought about by an increase in the rate or power of the ventricles. On the other hand, a further reduction in rate, perhaps to six or seven beats per minute, is accompanied by loss of consciousness, cyanosis, muscular twitchings, and a deepening coma, which can only be relieved by a more efficient pumping action of the heart.

STOKES-ADAMS ATTACK: PREDISPOSING CONDITIONS

Stokes-Adams seizures develop in a variety of circumstances. In partial heart-block associated with a progressive defect in the conducting power of the bundle of His, seizures are apt to occur over the period when, starved of their full quota of impulses from the sino-auricular node, the ventricles are left to initiate their own independent rhythm. Vagal stimulation in the presence of a pre-existing partial block of toxic origin is a potent cause of ventricular standstill. In such cases I have seen typical Stokes-Adams seizures induced by digitalis, by vago-carotid pressure in the neck, and, in one instance, by sudden over-distension of the rectum during the hasty administration of an enema.

Repeated or single seizures may herald the onset of permanent complete block, and, the idioventricular rhythm becoming firmly established, the patient may live for years, never to experience another Stokes-Adams attack. But seizures at irregular and infrequent intervals, either in the course of chronic partial or in complete block, associated with permanent degenerative changes in the conducting tract, are less easy of explanation. Uncommonly, seizures appear in rapid succession for a number of days, cease of their own accord, only to return again in a few weeks or months for no very obvious reason. One patient under my observation had 352 fully developed Stokes-Adams attacks with loss of consciousness (exclusive of many minor attacks of giddiness and faintness) between April, 1930, and January, 1932. The seizures occurred in groups for a few days at a time: there were as many as 131 attacks over a period of four days. Ventricular fibrillation was demonstrated as the cause of the temporary arrest of the circulation in this patient. In intermittent complete heart-block, in which periods of total failure of the bundle of His alternate from time to time with shorter or longer intervals during which the auricular impulse is carried to the ventricle, repeated seizures of great severity are common, and may progress in spite of treatment to a status epilepticus, with a fatal termination.

That the underlying cardiac mechanism responsible for the temporary arrest of the circulation therefore varies in different cases, and probably also even in the same individual at different times, is a fact more fully appreciated in recent years. It would seem established that in the majority of Stokes-Adams attacks occurring in the course of chronic complete block the centre of impulse formation controlling the ventricular rhythm becomes suddenly depressed, and until it, or another centre, awakens, a critical state exists, during which the circulation is in abeyance. Whether the attack is precipitated by preponderating vagal influences, reduction in sympathetic tone, a block of the idioventricular impulse itself, the development of ventricular fibrillation, or by the presence of unknown chemical factors in the blood stream, is of less consequence than the fact that in complete heart-block the ventricular rhythm is, as a general rule, peculiarly sensitive to sympathetic stimulation.⁶

VALUE AND LIMITATIONS OF ADRENALINE

It has been shown that adrenaline is capable of arousing a dormant ventricular rhythm. When seizures are recurring frequently no drug has proved more effective in their prevention than adrenaline.^{14 17} It is not always successful, but until we have a greater knowledge of the different mechanisms responsible for the Stokes-Adams attack it will not be possible to discriminate accurately between those who will benefit from its use and those who will not. It should always be given a trial when seizures happen frequently. When attacks appear only at long intervals their prevention with adrenaline is less easy. Ineffective by the mouth, and relatively short in its action, adrenaline cannot well be employed for this purpose. Ephedrine and barium chloride, both of which are alleged to increase the rate of spontaneous ventricular beating, have been suggested for use in those cases of block in which seizures occasionally arise at infrequent intervals. Both may be taken orally over long periods of time, and neither produces much systemic disturbance.

THE ACTION OF EPHEDRINE AND BARIUM

It would appear that, while ephedrine in large doses may act as a depressant to the mammalian heart, yet the cardiac stimulant effects of smaller quantities are quite well marked in the case of the human heart.² Its effects in therapeutic doses are less intense than those of adrenaline, but they persist for a longer time. Their similarity in action is indicated by the fact that, while adrenaline stimulates the myoneural junction of the sympathetic system, ephedrine acts upon the nerve endings of the sympathetic fibres.¹ The ventricles receive a rich sympathetic supply; and, though no experimental observations are available regarding the action of ephedrine on the blocked heart of animals, from analogy with the action of adrenaline, and from the few isolated instances in which the drug has been used in clinical examples of heart-block, it is not surprising to find that an acceleration of the ventricular rate was induced. Miller,¹² the first to test the action of ephedrine in complete heart-block, found that in his patient the auricles increased in rate from 110 to 125 and the ventricles from 33 to 55 per minute after a subcutaneous dose of 100 milligrams. Hollingsworth⁹ found that in a case of complete heart-block daily doses of 50 mg. by mouth were sufficient to abolish repeated Stokes-Adams seizures. Within forty-eight hours of withdrawing the drug the attacks recurred. Stecher^{21 22} reported a similar case. Parade and Voit¹³ found thyroxine, caffeine, and, digitalis ineffective in preventing seizures, but when taking a synthetic preparation of racemic ephedrine by mouth their patient obtained practically complete relief for a period of two years. The drug was then discontinued,

attacks soon reappeared, and death in a seizure followed before adrenaline could be administered. Wood²² presents very convincing evidence of the value of ephedrine. In his patient 24 mg. twice daily were sufficient to control typical Stokes-Adams seizures over many months. Roberts and Taber¹⁹ found that 25 mg. of ephedrine twice daily controlled attacks in their patient. Death supervened in a seizure twenty-four hours after a further reduction in the daily dose.

As regards the value of barium chloride in the prevention of attacks, the reports in the literature are often at variance, and are decidedly less convincing than the results obtained with ephedrine. The experimental work of Rothberger and Winterberg²⁰ and van Egmond,² which indicated that the excitability of the ventricular muscle was increased by barium chloride, suggested to Levine¹⁹ its clinical application as a possible remedy for the prevention of Stokes-Adams seizures. Colln and Levine,³ in reporting three cases of the Stokes-Adams syndrome, formed a favourable impression of the value of barium chloride; but it is admittedly difficult to distinguish between a spontaneous alleviation of symptoms and a definite effect produced by the drug. Reviewing the work of Levine,¹⁰ Levine and Matton,¹¹ Herrmann and Ashman,⁸ Parsons-Smith,¹² Strauss and Meyer,²³ and Price and Nisse,¹⁶ the conclusion is reached that, in general, barium chloride does appear to have some effect in reducing the frequency of seizures. On the other hand, Wilson and Herrmann²¹ have reported that in a case of complete block, complicated by repeated convulsive syncopal attacks, barium chloride administered in doses of 1/2 grain thrice daily for thirty-eight days was without benefit. Stokes-Adams attacks recurred repeatedly despite its use. The more recent clinical accounts of Drake⁴ and Heard,⁷ and the absolutely negative results obtained by Parsonnett and Hyman¹⁸ in eight cases of complete heart-block, clearly cast a doubt on the efficacy of this drug, and fail to substantiate the more optimistic reports of some years ago.

CLINICAL TESTS

As a means of estimating the worth of these drugs two methods were employed. It seemed desirable to discover if, when they were given by mouth, any significant change took place in the rate of the independent ventricular rhythm. Cases of complete heart-block, free from seizures for months or years, were selected for the test. After an ample control period of ten days or more, during which no drugs were administered, the patient being strictly confined to bed, ephedrine or barium chloride was prescribed for a week or a fortnight, and the effect on the heart rate recorded by frequent pulse counts at two- or four-hourly intervals, and by daily electrocardiograms. Six casts of complete heart-block were tested in this way.

As a further measure of the efficacy of ephedrine it has been administered at intervals to two patients for over a year, both of whom suffered from complete heart-block and had been accustomed to fairly frequent seizures. Actually, this method would seem to be the more desirable test of the two, but when attacks of any kind appear only at rare and infrequent intervals the effect of treatment directed at their prevention is difficult to assess. It is not uncommon to find that even frequently repeated Stokes-Adams seizures may cease spontaneously for no very obvious reason. *Vivis medicatrix naturae* must always complicate therapeutic deductions.

EFFECT OF EPHEDRINE AND BARIUM ON VENTRICULAR RATE

In four of the six patients ephedrine taken orally brought about and maintained a definite acceleration of the ventricular rate. In the two remaining individuals (Cases 2 and 4) the test was indecisive. Case 2 was that

of an elderly man with a relatively high ventricular rate (46 per minute) in an advanced degree of congestive heart failure. Adrenaline has but little accelerating effect on the ventricles at such a rate,⁶ and it may be for similar reasons that ephedrine (in 1-grain doses, thrice daily for six days) was apparently ineffective in this man. In Case 4 the test was vitiated by the patient's insisting on leaving his bed during the period when the drug was being given. It was therefore not possible to discriminate between the effects of increased bodily activity and any sympathetic stimulation induced by ephedrine. Both these cases may therefore be dismissed and regarded as negative results.

Barium chloride was taken by mouth for several days by the four patients (Cases 1, 5, 10, and 14) whose ventricles were accelerated by ephedrine. Although proved to be susceptible to sympathetic stimulation, no demonstrable effect was produced on the ventricular rate by barium chloride in these four individuals. The response of these cases may now be examined in a little more detail.

Case 1

The patient is an active woman, who had a number of Stokes-Adams seizures between 1923 and 1926. Alive and well at the present time, she has been under observation since 1928, and has had no further attacks. The effect of 1/2 grain doses of ephedrine, twice daily, over a period of eleven days was tested in November, 1928. It increased the ventricular rate by an average of 4 beats per minute throughout the period of its administration, the maximum rate in the control period being 28 per minute. For two days she received 40 mg. of barium chloride at six-hour intervals, and then 60 mg. for the succeeding nine days. No change in the pulse rate, blood pressure, or form of the electrocardiogram was observed.

Case 5

The patient, a man, has been under observation as a case of complete heart-block since August, 1931. One Stokes-Adams seizure occurred in December, 1930. There have been no further attacks, and he keeps well and reasonably fit for work. Ephedrine was given in increasing amounts over a period of eleven days, commencing with 1/2 grain twice a day and rising to 1 grain four times a day (see Fig. 1). The ventri-

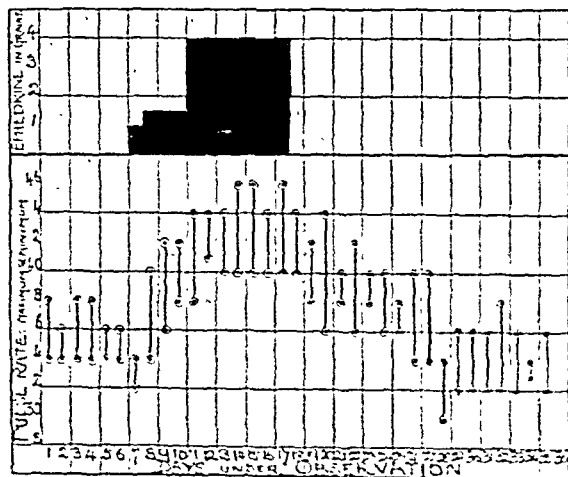


FIG. 1.—Shows the effect of the oral administration of ephedrine on the pulse rate in Case 5. The daily maximum and minimum of two-hourly pulse counts are recorded.

cular rate increased from a maximum of 38 in the control period to 46 during the time the drug was taken. Thereafter the rate gradually declined during the succeeding days. At a later period he received 240 mg. of barium chloride for three days, followed by double this amount for a further period of three days. No effect on the rates of auricles or ventricles was recorded. Extrasystoles were not detected.

Case 10

The patient was an elderly woman, who had one severe Stokes-Adams seizure on the day of her admission to hospital. She died two months later of hypostatic pneumonia without experiencing another attack, although she had had at least 352 typical attacks in the previous twenty months. The pulse rate ranged from 28 to 32 during the control period. Ephedrine in 1/2 grain doses, four times in the twenty-four hours, produced no appreciable effect, but on doubling the dose the rate varied from 32 to 36 during the four days on which this amount was taken. The rate returned to its pre-existing level within thirty-six hours. Barium chloride was tried in larger doses than in the previous cases. For three days

fell from 250 mm. Hg during complete block to 210 during the three to one rhythm. Ephedrine was abruptly discontinued on the night of May 31st.

A remarkable series of symptoms arose within twelve hours of discontinuing the treatment with ephedrine. In the early hours of the following day (June 1st) she complained of headache and pains in the back, and suffered from two fainting turns of no more than a few seconds' duration. During the forenoon the heart rate gradually declined. At 11 a.m. the ventricles were beating at a rate of 16 per minute, and she complained of increasing weakness. At 11.55 a.m. the rate was 11 per minute. At 12.15 p.m. it had declined to 9 beats per minute (Fig. 4). She was pale, with slow, sighing respira-



FIG. 2.—Displays an electrocardiogram of a mild Stokes-Adams attack recorded in Case 14 on July 2nd, 1931. The period of ventricular arrest measures 9.8 seconds, and is preceded by two to one block and followed by three to one. Ephedrine was effective in abolishing these seizures.

she received 60 mg. thrice daily, increased to 90 mg. for a similar period, and finally 120 mg. thrice daily for six days. No appreciable alteration in the rate of the pulse was observed, though occasional extrasystoles were recorded.

A TOXIC EFFECT ATTRIBUTED
TO EPHEDRINE

Case 14

The patient was an obese woman, aged 61, who in 1930 suffered from dyspnoea and was found to have a persisting two to one block (P-R interval 0.18 second). In June, 1931, she began to have repeated syncopal attacks due to ventricular arrest (Fig. 2), the block being either two to one (P-R interval 0.185 second) or three to one (P-R interval 0.165 second). By April, 1932, electrocardiograms demonstrated a complete dissociation of auricles (rate 70) and ventricles (rate 28), and syncopal attacks were infrequent. In May, 1932, her response to ephedrine was tested. At this time she complained of repeated frontal headaches, general weakness,

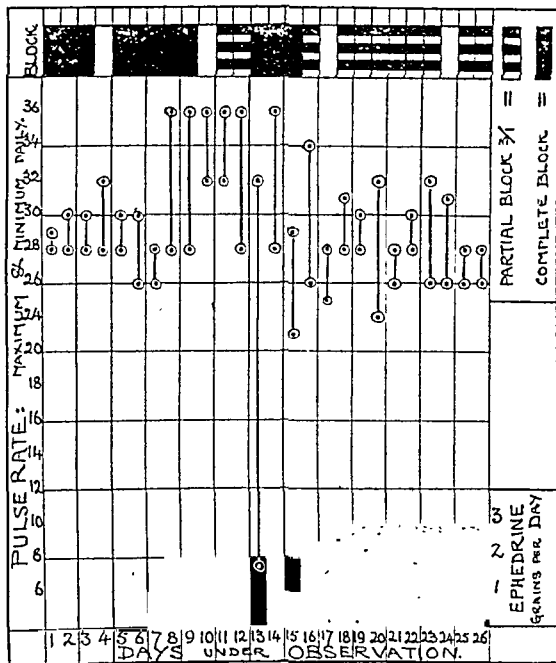


FIG. 3.—Shows the effect of ephedrine on the pulse rate in Case 14 in May, 1932. The ventricular rate increased from 30 to 36, and four days after commencing the drug a three to one block replaced the complete block formerly present. The ventricular rate fell to 7.5 per minute on suddenly discontinuing the drug's administration.

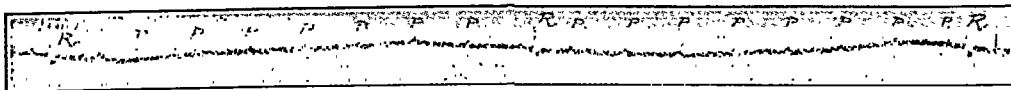


FIG. 4.—Shows an electrocardiogram recorded in Case 14 on June 1st, 1932, sixteen hours after discontinuing the administration of 3 grains of ephedrine per day. The ventricular rate is 8.5 beats per minute. The auricular rate is 82.4.

and great exhaustion on the least bodily exertion. She was, in consequence, confined to bed for three months. For one week she received daily 120 mg. of barium chloride, and for a second similar period double this amount. No change was observed in the rate of the ventricles or in the electrocardiograms. Extrasystoles did not occur. Ephedrine in 1/2 grain doses, four times a day, was commenced on May 26th. It produced an increase in the ventricular rate from 30 to 36, as demonstrated in Fig. 3; but four days after commencing the drug a regular three to one block, with a P-R interval of 0.395 second, replaced the complete dissociation formerly present. The systolic blood pressure

was unable to make the least bodily exertion, and was semi-conscious, but sufficiently well to ask for nourishment. At 12.35 p.m. she complained of nausea, and immediately afterwards lost consciousness in a typical Stokes-Adams seizure. She was quite unconscious for one and a half minutes, during which time the ventricles continued to beat at a rate of 7.5 per minute. Recovery was gradually accomplished by a spontaneous increase in ventricular rate, first to 10 and then to 15 beats per minute. Between 1 and 2 p.m. she had three further seizures, each of which resembled the first in that the ventricles continued to beat throughout the attack at a rate of approximately 7 or 8 per minute. A subcutaneous injection of 0.5 c.cm. adrenaline abolished the attacks by increasing the ventricular rate to 23 per minute and inducing four to one block. A further course of ephedrine restored three to one rhythm. She gained rapidly in health and was discharged from hospital, taking 1 grain of ephedrine thrice daily.

These alarming symptoms, which immediately followed the abrupt withdrawal of ephedrine (and were later abolished by its continued administration) suggests that over-stimulation was a cause for the exhaustion of the few remaining conducting strands in the bundle of His, and also of the rhythmic centre controlling the independent ventricular beat. When the drug was discontinued conduction failed, and the transition from high-grade partial to complete block was rendered dangerous by a progressive slowing in the idioventricular rate. As a general principle it would appear desirable to use the minimum

quantity of ephedrine capable of increasing the ventricular rate, as larger doses may, at least in certain cases, cause over-stimulation and later exhaustion of the idio-ventricular centre.

EPHEDRINE IN TWO CASES OF STOKES-ADAMS SYNDROME

Of fourteen patients with complete heart-block under observation only two were accustomed to have seizures at sufficiently frequent intervals to warrant a fair test of the efficacy of ephedrine in their prevention.

Case 4

A patient (Case 4, referred to above) came under observation in April, 1932, suffering from complete heart-block with a history of repeated Stokes-Adams seizures at intervals of from three to six weeks for three years. Ephedrine in 1/2 grain oral doses thrice daily was commenced on July 2nd, 1932, and continued until October 31st, 1933. Not one seizure was experienced during these sixteen months. The drug was discontinued on November 1st, 1933, and he remained well and free from attacks for seven weeks, when a single seizure again took place. He recommenced taking the drug the following day, and from December 22nd, 1933, until February 5th, 1934, when last seen, he has had no further attacks.

Case 14

Another patient (Case 14) was admitted to hospital on June 25th, 1931, and that evening there were several "fainting attacks" in succession. Single attacks occurred on June 26th, 29th, and 30th. On July 1st there were about half a dozen attacks, and on the next day about twenty seizures were observed in the course of an hour or two. Fig. 2 demonstrates a period of ventricular asystole lasting 9.8 seconds, preceded by two to one block and succeeded by three to one. Adrenaline, 0.5 c.c.m. subcutaneously at 2 p.m., was followed by freedom from attacks until 5 p.m., when two similar fainting turns were experienced. Ephedrine was begun in 1/2 grain doses by mouth four times a day at 6 p.m. that evening. No seizures were observed or complained of on July 3rd, 4th, or 5th. Ephedrine was discontinued at 8 p.m. on the 5th, and at 6 a.m. on the following day there were three minor attacks. The drug was recommenced on the evening of July 6th, and continued until her discharge from hospital on July 18th, 1931. On the 8th and 9th two short attacks were complained of, at about 8 a.m. on each occasion. By rearranging the times of administration of the drug no further attacks arose.

It seems reasonable to conclude that ephedrine played a part in the prevention of seizures in this woman, probably by facilitating conduction (though the block remained two to one) and increasing the excitability of the ventricular muscle. She voluntarily gave up taking the drug about January, 1932, and between then and April, 1932, when she was again admitted to the ward, she had several seizures. The block being complete, her response to ephedrine was tested in May, 1932, as described previously, when toxic effects supervened on its sudden withdrawal. She was discharged from hospital on June 15th, 1932, and from that date until the end of July, 1933, she took 1 grain thrice daily. She had no attacks during this time. During August, 1933, she was persuaded gradually to give up its use. After discontinuing it she had three seizures in four weeks. From September 1st, 1933, until January 30th, 1934, taking 1/2 grain thrice daily, she has had no further attacks, and refuses to make any further reduction in the dose. Electrocardiograms show that the block is complete, and the usual ventricular rate 30 per minute.

Both these cases point strongly to the efficacy of ephedrine as a means of preventing Stokes-Adams seizures. During its administration syncopal attacks ceased. When its use was abandoned seizures returned. No ill effects were observed when it was being taken; on the contrary, both individuals have now a much greater response to effort than formerly, and each, unknown to the other, attributes improvement in health and well-being to the drug. In Case 4, after eighteen months' treatment, the patient is now able to enjoy a walk of four to five miles over the rough country of the Pentland Hills. In

Case 14 the patient can do housework, which she was formerly forced to decline.

Barium chloride has not been tested under similar conditions, as from the earlier observations it was evident that, in spite of larger doses than those recommended, it did not appreciably alter the rate of the ventricles. It may be that it acts by increasing their irritability without a decisive change in rate, and that in certain cases barium might enhance the response to ephedrine. Employed alone, it can hardly be expected to compete with ephedrine as a remedy for the prevention of occasional seizures. It is perhaps too much to hope that ephedrine will prove effective in all cases of the Stokes-Adams syndrome. If attacks recur despite adequate dosage, then it would seem reasonable to combine it with barium chloride.

SUMMARY AND CONCLUSIONS

In six cases of complete heart-block ephedrine taken orally increased the rate of ventricular beating in four. In two patients the test was indecisive.

Barium chloride produced no demonstrable effect on the ventricular rate in the four cases responding to ephedrine. It did no harm in doses larger than those originally recommended.

In two cases of complete heart-block, complicated by occasional Stokes-Adams seizures, ephedrine taken for two and a half and one and a half years respectively proved entirely successful in the prevention of syncopal attacks. When the drug was discontinued typical seizures returned.

It is recommended that the dose of ephedrine should be the minimum quantity consistent with an acceleration of the resting ventricular rate. Larger doses may cause over-stimulation. If the drug be then suddenly omitted, profound slowing of the ventricular rate, with repeated Stokes-Adams attacks, may occur, as a result, presumably, of exhaustion of the idioventricular centre. A dose of 1/2 grain by mouth at eight-hour intervals may be sufficient.

In the absence of positive findings it is difficult to credit barium chloride with the power of preventing Stokes-Adams seizures.

My best thanks are due to Professor Murray Lyon, who has given me the opportunity of having all these cases under observation in his wards in the Royal Infirmary. To Dr. Edwin Matthew and Dr. Alexander Goodall I am also indebted for their kindness in placing patients at my disposal for this investigation. Dr. P. Martin Brodie and Dr. George Brewster kindly referred cases to me.

REFERENCES

- Burn, J. H.: *Journ. Pharmacol. and Exper. Therap.*, 1932, xlv, 75.
- Chen, K. K., and Schmidt, C. F.: *Medicine*, 1930, ix, 1.
- Cohn, A. E., and Levine, S. A.: *Arch. Int. Med.*, 1925, xxxvi, 1.
- Drake, E. H.: *Amer. Heart Journ.*, 1928, v, 590.
- Van Egmond, A. A. J.: *Arch. f. d. ges. Physiol.*, 1913, cliv, 79.
- Gilchrist, A. R.: *Quart. Journ. Med.*, 1933, N.S. 2, 499.
- Heard, J. W., Marshall, W. R., and Adams, F. S.: *Amer. Heart Journ.*, 1927, ii, 582.
- Herrmann, G. R., and Ashman, R.: *Ibid.*, 1926, i, 269.
- Hollingsworth: Quoted by Wood.¹
- Levine, S. A.: *Boston Med. and Surg. Journ.*, 1926, cxcv, 1147.
- Levine, S. A., and Matton, M.: *Heart*, 1926, xii, 271.
- Miller, T. G.: *Amer. Journ. Med. Sci.*, 1925, clxx, 157.
- Parade, G. W., and Voit, K.: *Deut. med. Woch.*, 1929, iv, 179.
- Parkinson, J., and Bain, C. W. C.: *Lancet*, 1924, ii, 311.
- Parsons-Smith, B. T.: *Proc. Roy. Soc. Med. (Clin. Sect.)*, 1926-7, xxii, 542.
- Parsonnett, A. E., and Hyman, A. S.: *Amer. Journ. Med. Sci.*, 1930, clxxx, 355.
- Phear, A. G., and Parkinson, J.: *Lancet*, 1922, i, 973.
- Price, F. W., and Nisse, B. S.: *Amer. Heart Journ.*, 1929, v, 197.
- Roberts, J. L., and Taber, T. H.: *U.S. Naval Med. Bull.*, 1933, xxxi, 31.
- Reithelger, C. J., and Winterberg, H.: *Arch. f. d. ges. Physiol.*, 1911, cxlii, 341.
- Stecher, R. M.: *Amer. Heart Journ.*, 1928, iii, 577.
- Stecher, R. M., and Hixley, C. S.: *Ibid.*, 1933, ix, 99.
- Strass, S., and Meyer, J.: *Ibid.*, 1926, ii, 325.
- Widens, F. N., and Herrmann, G. R.: *Arch. Int. Med.*, 1923, xxxv, 923.
- Wood, J. E.: *Journ. Amer. Med. Assoc.*, 1932, xxviii, 1934.

TRANSIENT MASSIVE ALBUMINURIA AFTER CHROMOCYSTOSCOPY IN A PSYCHO- NEUROTIC INDIVIDUAL

BY

F. PARKES WEBER, M.D., F.R.C.P.

SENIOR PHYSICIAN TO THE GERMAN HOSPITAL

I have not succeeded in finding any account of a case in which cystoscopy or chromocystoscopy was followed by transient massive albuminuria as it was in the case reported below. But then the urine is not usually examined in this way twenty-four hours after a cystoscopy, and by another twenty-four hours the albuminuria had almost completely disappeared. I can find no published clinical or experimental support for my idea that the massive albuminuria represented an idiosyncratic reaction towards the intravenous injection of indigo-carmin. The non-appearance of the colour in the urine after the injection of indigo-carmin has usually been regarded as a bad sign, but presumably in the present case the indigo-carmin was excreted in the urine after having undergone transformation into a colourless substance. This need not have had any connexion with the subsequent transient massive albuminuria. I am much indebted to Mr. T. Dietzsch for his kindness in referring me to data about indigo-carmin.

One cannot help thinking of the massive albuminuria which has been observed occasionally after cerebral haemorrhage. J. Sabrazès and Ch. Massias in 1923 (abstract in the *Presse Médicale*, Paris, 1923, xxxi, 104) drew attention to such "massive" albuminuria, without tube-casts, in cases of cerebral haemorrhage. They found that in a young rabbit, when 2 to 3 c.c.m. of its own blood was injected into its brain, albuminuria accompanied the resulting apoplectiform shock, the albumin in the urine reaching 4.6 per mille at the time of the animal's death, thirty hours afterwards. In connexion with the same subject one might also compare some of the phenomena of attacks of acute "angioneurotic oedema."

RECORD OF CASE

The patient, a well-nourished woman aged 26 years, was admitted to hospital on November 9th, 1933, on account of uncertain abdominal pains. For nearly ten years she had been troubled with frequent micturition during the day, but not (or much less) during the night. This pollakiuria had been supposed to be of psychoneurotic origin (in Germany) as early as 1925, but at that time there seems to have been evidence likewise of a *Bacillus coli* infection. Psycho-analytical treatment at Zürich and elsewhere is said to have had a beneficial result. In March, 1933, she commenced to complain of abdominal pains, and in September appendicectomy was performed for "chronic appendicitis"—but without relieving her main symptoms.

On November 9th, 1933, she was therefore admitted on the medical side of the German Hospital. Apart from somewhat vague abdominal pains and the pollakiuria, hardly anything abnormal could be discovered. By Roentgen-ray examination of the abdomen, two or three calcified lymph glands were evidenced. Nothing abnormal was found in the thorax. The urine (catheter specimen) showed a cloud of albumin, and the centrifuge sediment contained a few leucocytes and erythrocytes, but no tube-casts. Brachial blood pressure: 120/74 mm. Hg. Nothing abnormal by ophthalmoscopic examination. A Pirquet cuti-reaction gave a weakly positive reaction, as it does in most normal adults. Menstruation had commenced at 14 years of age, and had always been normal. There was a history of longevity on both sides of the family.

In order further to investigate the cause of the slight albuminuria and the source of the erythrocytes in the centrifuge sediment of the urine, a chromocystoscopy was kindly undertaken on November 14th by my colleague, Mr. A. Compton. It was, however, impossible to find the orifices

of the ureters, and therefore the ureters were not catheterized. The indigo-carmin (4 c.c.m. of a 0.4 per cent. solution) injected intravenously was not observed to reappear in the urine. The mucous membrane of the urinary bladder was seen to be intensely congested, possibly as a reaction towards the irritation of the examination.

This cystoscopic examination (none had been previously made) was followed by some local pain, which, however, left her in two hours or so. But next morning (about twenty-four hours after the cystoscopy) her urine was found to be loaded with albumin (10 per mille by Esbach's tube), and, though it was not coloured with blood, the centrifuge sediment contained many erythrocytes and leucocytes; no tube-casts seen. A day later (November 16th) the urine showed only a thin "cloud" of albumin; there were a few leucocytes and a very few erythrocytes in the centrifuge sediment and (as before) no tube-casts. No culture of *Bacillus coli* could be obtained from the urine (November 22nd and on a previous occasion). In the hospital the pollakiuria was not accompanied by polyuria, and before she left (November 25th) the former was greatly diminished—possibly partly owing to her psychic condition having been entered into. Moreover, the patient altogether felt better.

DIABETES AND ULTRA-VIOLET IRRADIATION THERAPY

BY

NOAH MORRIS, M.D., B.Sc., F.R.F.P.S.G., D.P.H.

AND

D. CAMPBELL SUTTIE, M.C., M.B.,
F.R.C.S.Ep., D.P.H.

(From the Department of Paediatrics, Glasgow University, and
the Biochemical Laboratory, Royal Hospital for
Sick Children, Glasgow)

During the past twelve years reports have appeared in the literature regarding the beneficial effects of ultra-violet light irradiation on sugar tolerance and hyperglycaemia in diabetes.

Pincussen¹ found that irradiation produced definite improvement in a series of diabetic patients with regard to level of blood sugar and excretion of glucose and acetone. He gave no details of the clinical condition of the patients apart from the diagnosis of diabetes mellitus, but stated that those diabetics who had marked polyuria (hypophyseal diabetes) showed no improvement. Andersen² recorded a beneficial result in the treatment of one diabetic patient whose sugar tolerance increased from 24 to 96 grams of carbohydrate, and whose fasting blood sugar fell from 100 mg. per cent. to 70 mg. per cent. immediately after irradiation. Saidman³ has reported benefit from the use of ultra-violet irradiation in five patients, in two of whom a mild glycosuria completely disappeared. He considered that ultra-violet treatment was indicated in glycosuria associated with cutaneous manifestations, dental lesions, and malnutrition, and also in severe diabetes where insulin was necessary. Rothmann⁴ has given records of two diabetic patients treated with ultra-violet light. One with acne rosacea responded favourably, with disappearance of acetonuria and glycosuria (5.3 grams glucose daily) and a fall of fasting blood sugar from 183 to 120 mg. per cent. The other, who had generalized eczema, showed no improvement after ninety-five days, both blood sugar and glycosuria tending to increase. A patient of Rollier (quoted by Furniss⁵), aged 45 years, with benign diabetes mellitus of many years' standing and easily controlled by dieting, was able, after natural sunlight treatment, to live on ordinary hotel diet without glycosuria: after twenty-four hours without a sun-bath all the symptoms reappeared. J. Wilson,⁶ after a brief résumé of the literature, stated that all workers found decrease of glycosuria and acetonia after ultra-violet irradiation of diabetic patients: he considered this treatment specially suitable for diabetes complicated by neuritis, carbuncles, and vasomotor and trophic disturbances. Rothmann⁷ also obtained good results in a case of diabetic xanthomatosis: in another diabetic with

pruritus the skin irritation disappeared after ultra-violet irradiation, although the fasting blood sugar rose from 140 to 210 mg. per cent.

All the reports in the literature that we have obtained have dealt with adults, and on the whole have been favourable. It is noticeable, however, that many of the patients successfully treated have had pathological conditions of the skin. In view of the well-known fact that sunlight has a marked effect on the development of children it seemed advisable to determine whether ultra-violet light influenced their sugar tolerance and insulin requirements. As diabetes in childhood is not usually complicated by other diseased conditions, such as arteriosclerosis or tuberculosis, it was hoped to decide whether the improvement observed in adults was the result of direct action on the carbohydrate-regulating system, or of a secondary effect due to alleviation of some other pathological condition such as skin lesions.

SCOPE OF INVESTIGATION

The immediate effect of irradiation on blood sugar was investigated in a few normal and diabetic children. Blood was withdrawn prior to, and immediately after, irradiation lasting two minutes. The children were in the post-absorptive state, having refrained from food for at least six hours previously. Table I shows some of the results obtained.

TABLE I

Name	Age in Years	Condition	Blood Sugar	
			Before Irradiation	After Irradiation
A. R. . . .	8	Non-diabetic	mg. per cent. 66.0	mg. per cent. 58.0
J. H. . . .	10½	"	81.0	53.0
E. G. . . .	11	"	72.0	91.0
E. B. . . .	11	"	100.0	82.0
W. A. . . .	10	"	68.0	59.0
M. H. . . .	14½	Diabetic	125.5 138.8 93.0 100.0	133.5 113.5 25.1 1.04
S. N. . . .	7½	"	80.9	66.6
W. D. . . .	8½	"	149.2	161.2
P. McK. . .	10½	"	205.0 157.5	272.7 148.1
J. P. . . .	11½	"	160.0	153.8
J. L. . . .	8	"	108.0	117.6

Ultra-violet irradiation of five non-diabetic subjects produced in four an immediate fall of blood sugar and in one a rise, while irradiation of six diabetic patients on ten occasions led to an immediate fall in blood sugar on five, a rise on four, and no change on one. It is evident from these figures that irradiation may cause an immediate increase or decrease of the blood sugar both in non-diabetics and in diabetics. Furthermore, different results were obtained on different days with the same patient. These findings differ somewhat from those of Lucca and Reviglio,* who reported that in children after irradiation with infra-red or ultra-violet rays the sugar content of the blood was always diminished, though there were individual variations in the decrease.

Despite these conflicting results it was determined to study the effect of a course of ultra-violet irradiation on carbohydrate tolerance in a series of diabetic patients.

MATERIAL TESTED

The subjects of the test were regular attendants at the diabetic clinic of the Royal Hospital for Sick Children,

Glasgow. All had been attending for at least six months, and some for five or six years. Their dietary and insulin requirements were fairly accurately known. The mothers of the children were all intelligent, and had been co-operating successfully with us. The possibility of improving sugar tolerance by ultra-violet therapy was explained to the mothers of all the children attending the clinic, and those that desired to try out the effect of this treatment did so enthusiastically, in the hope that the treatment might permit a decrease in the dose of insulin. The children of the more sceptical mothers acted as controls.

In all ten children (ages varying from 7½ to 14½ years) received ultra-violet therapy, and four (aged 2½ to 13 years) did not. The treatment was given twice weekly; at first one-minute exposures were given to the whole thoraco-abdominal region, dorsal aspect of the body, and limbs (small slips being worn and goggles). Gradually the exposures were increased by thirty seconds every week until three-minute exposures were given. The source of light was a mercury vapour vacuum burner (new) 250 volts D.C. Five minutes was allowed after lighting to permit the output to settle. The distance of the exposed area from the source of light was 36 inches. When pigmentation was observed the therapy was stopped for an interval, as most workers are agreed that pigmentation lessens the therapeutic effect. (Rothmann* states that when pigmentation occurs the blood sugar begins to rise.)

RESULTS OBTAINED

The following tables give a brief résumé of the results after ultra-violet irradiation had been given. The carbohydrate tolerance was estimated from the amount of total carbohydrate—that is, carbohydrate plus half the protein—utilized per unit of insulin. The weight and height were calculated as percentages of the expected weight and height respectively.

TABLE II

Name	Age in Years at July, 1932	Carbohydrate Tolerance		Percentage Expected Weight		Percentage Expected Height	
		Before	After	Before	After	Before	After
M. D. . . .	11	4.1	8.0	85	87	95	95
A. McC. . .	7½	6.0	10.3	72	77	88	88
J. R. . . .	12½	2.1	2.2	91	95	99	98
M. H. . . .	14½	1.5	1.2	—	—	—	—
W. D. . . .	8½	1.8	2.2	90	90	92	91
J. L. . . .	8	15.0	10.5	83	80	95	95
A. G. . . .	11	4.0	3.4	82	75	87	84
P. McK. . .	10½	2.8	1.7	93	94	105	105
S. N. . . .	7½	3.0	2.6	100	95	97	95
S. U. . . .	11½	2.4	1.7	82	85	92	90
C. F.* . . .	2½	4.2	9.9	155	155	105	111
J. D.* . . .	13	3.8	2.2	94	92	95	95
J. McK.* . .	11	7.5	4.1	100	110	—	—
J. P.* . . .	11½	2.6	2.4	97	89	94	97

* These patients did not receive ultra-violet irradiation therapy.

The carbohydrate tolerance improved in four out of the ten patients given ultra-violet therapy. The same proportion was found when the estimation was based on the absolute amount of insulin required, four patients requiring less insulin at the end of the year. In six patients, however, the tolerance diminished. Although the proportion with decreased tolerance was greater in those not receiving ultra-violet irradiation the numbers are much too small to make this difference significant.

The incidence of infection in the two groups was also noted with special reference to the occurrence of glycosuria. In the ultra-violet irradiation group three of the patients had mild infections—for example, nasal catarrh with or without mild pyrexia—and four had moderately severe attacks—influenza, adenitis, scarlet fever. Two of the latter four had to be admitted into hospital because of diabetic acidosis. Of the control group one patient had a mild enteritis and two had moderately severe attacks of adenitis necessitating their admission to hospital because of impending coma.

TABLE III*

	Total No.	Carbohydrate Tolerance			Percentage Expected Weight			Percentage Expected Height		
		Improved	No Change	Decreased	Improved	No Change	Decreased	Improved	No Change	Decreased
Receiving U.V.R. ...	10	4	—	6	4	1	4	—	2	7
Not receiving U.V.R.	4	1	—	3	1	1	2	—	1	2

*Cases receiving U.V.R.—data of height and weight from only nine cases. Cases not receiving U.V.R.—data of height from only three cases.

As regards other effects of the treatment, the mother of one patient stated that about one hour after irradiation the boy felt very limp, and that sugar had occasionally to be given because of the threat of hypoglycaemia. This particular patient was one whose carbohydrate tolerance per unit of insulin was reduced at the end of the year. Another patient (a boy of 13 years) stated that he felt better after ultra-violet irradiation treatment was commenced: in this case it had been noticed in previous years that during long spells of bright weather in the summer the insulin had to be reduced owing to a tendency to hypoglycaemic attacks.

SUMMARY

The effect of ultra-violet therapy on sugar tolerance, insulin requirements, growth, and general health was determined in ten diabetic children, aged $7\frac{1}{2}$ to $14\frac{1}{2}$ years, over a period of one year. The results, compared with those of a control series of four children who did not receive ultra-violet therapy, showed no significant improvement that could be attributed to the irradiation.

We should like to express our thanks to Professor G. B. Fleming for his interest in this investigation, and to the Medical Research Council for a personal grant to one of us (N. M.).

REFERENCES

- ¹ Pincussen, L.: *Biochem. Zeit.*, 1922, xxvi, 127.
- ² Andersen, A.: *Munch. med. Woch.*, 1923, lxx, 1484.
- ³ Saidman, J.: *Les Rayons Ultra-violet et Associés en Thérapeutique*, 1925, Doin, Paris, p. 736.
- ⁴ Rothmann, S.: *Zeit. f. d. ges. Exp. Med.*, 1923, xxxvi, 398.
- ⁵ Furniss, A.: *Brit. Journ. Actinotherap. and Physiotherap.*, 1931, v, 252.
- ⁶ Wilson, J.: *Clin. Journ.*, 1928, lvii, 97.
- ⁷ Rothmann, S.: *Strahlentherapie*, 1927, xxiv, 465.
- ⁸ Lucca, A., and Reviglio, G. M.: *Actinoterapia*, 1929, viii, 153.

We have received a specimen copy of the *Indian Journal of Pediatrics*, edited by K. C. Chaudhuri and published quarterly at Calcutta. This fifty-page issue contains six original articles, including one on "Feeding in Chronic-Diarrhoea" and another on "Milk-free Diet in Pyuria and Eczema"; case reports; proceedings of societies; book reviews; and an abstract of current medical literature.

A CASE OF AXILLO-BRACHIAL
EMBOLECTOMY

BY

G. E. LARKS, CH.M., F.R.C.S.ED. AND ENG.
SURGEON AND MEDICAL SUPERINTENDENT, PLYMOUTH CITY HOSPITAL

The paucity of references in this country to the subject of arterial embolectomy suggests that the record of a single successful case is still worth the making.

CASE RECORD

A retired male railway worker, aged 64, was admitted to the Plymouth City Hospital complaining of vague abdominal pains and recently developed constipation. His history was one of good health, except that he had had a perianal abscess two years previously, and "phlebitis" in the right popliteal region six weeks before admission. Nothing abnormal could be detected in the popliteal region. He was well nourished, of a full-blooded appearance. Radiological evidence of carcinoma of the upper end of the sigmoid colon was obtained, and this was confirmed at operation on July 25th, 1933. Abdominal section by a paramedian incision was made and the growth located, through a left lateral oblique muscle cutting incision it was widely mobilized, and the first stage of a Paul-Mikulicz resection was performed. On August 5th, 1933, eleven days after operation, the patient complained of a sudden loss of power in the right arm and hand, accompanied by tingling pain and numbness. This occurred while he was washing himself. I saw him at 11 a.m., when he was still complaining of pain and numbness, and was rubbing the limb "to improve its circulation." The whole limb distal to the middle of the arm was pale and cold, with a blotchy cyanosis in the upper part of the cold area. The radial pulse was impalpable, the brachial pulse could not be felt or heard at the elbow or in the arm, but about the level of the termination of the axillary artery a forcible pulse could be felt.

At 11.30 a.m., five hours after the onset, under local anaesthesia, the artery was exposed by an incision along its course, care being taken to preserve branches. The artery was mobilized; the site of lodgement of the embolus was easily detected, just proximal to the offset of the profunda artery. There was a local increase in the diameter of the non-pulsating axillo-brachial artery for about 1½ inches. Proximal to this the axillary artery seemed to beat unusually powerfully; distally lay the brachial artery, contracted and pulseless. Light intestinal clamps, rubber-covered, were gently applied above and below the embolus, and a small incision, 1/3 inch or so in length, was made into healthy artery above the upper end of the embolus, which was immediately partially extruded. It was carefully withdrawn. The distal clamp was released, and blood flowed from the distal end. The proximal clamp was then released somewhat, and blood flowed freely. With the clamps again controlling, the incision in the artery was closed by three mattress sutures of paraffined silk evertng the edges of the wound, and apposing the intima, and narrowing the arterial lumen as little as practicable. Throughout the operation the wound was sponged occasionally with 2 per cent. sodium citrate.

The clamps were released, and a good pulse was immediately palpable at the elbow, and a definite though less forcible pulse at the wrist. The wound was closed and healed perfectly. No splint was used, but the limb was swathed in wool. Shortly after operation the limb was definitely warmer, and twelve hours after operation there was a warm limb of apparently normal colour, with a radial pulse of good quality, though somewhat less forcible than that of the other arm. The pulse remained of good quality and the limb of normal appearance. At the present time, twenty-three weeks after operation, the right radial pulse is slightly less forcible than the left; there is, however, no difference in appearance or function between the two limbs.

Since the arterial operation the patient has undergone two further operations to restore the continuity of the intestine. Less drastic measures failing to produce closure of the colostomy, excision with end-to-end anastomosis was performed. He is now in good general health, and living his normal routine of retired life.

COMMENTS

There is a steadily increasing literature, mainly Scandinavian and American, concerning embolectomy. Of 216 operations culled by Einar Key¹ in 1929, from his own experience and the literature, 145 were Swedish. There were eighty-six successes. In 1922, in a pioneer paper which stimulated interest and activity in embolectomy, Key² had gathered thirteen successes out of forty-five cases. He states that to Ssabanagew (1895) is usually credited the first attempt, though unsuccessful; and to Labeys the first success in 1911.

Emboli are somewhat less common in the upper than in the lower extremity. Curiously, Jefferson's³ case—the first success in England and recorded in 1925—a case published by A. Gray Banks⁴ in 1931, which I was fortunate enough to see, and the case here recorded were all in the upper extremity; all were also post-operative occurrences.

The diagnosis presents no difficulty. The sudden onset of tingling pain, numbness, and loss of power, with waxy pallor, coldness in the limb, and absence of the pulse make the diagnosis obvious. The absence of warmth and oedema excludes venous thrombosis, and a nerve lesion needs only to be considered to be immediately excluded. It is noteworthy that the accompanying pain is often very severe. The embolus tends to lodge at the site of the giving off of a large branch (in this case the profunda), or a bifurcation. If the site is accessible a swelling may sometimes be felt in the line of the artery. The stethoscope may help to localize the block by auscultating along the vessel towards the obstruction.

When exposed at operation the picture is unmistakable: a local swelling with the vessel thin and contracted beyond it, and proximal to it beating powerfully in a manner that recalls the downward thrust of a main limb artery ligated in an amputation. The operation follows the usual lines of arterial surgery. While special arterial clamps are helpful they are not essential, and no instrument is called for that is not usually available in every theatre. In addition to the materials for arterial surgery, it is advisable to have a suitable soft rubber catheter in paraffin, to which a syringe containing 2 per cent. sodium citrate, can be attached. The arteriotomy wound can then be flushed, if necessary, to get rid of small adherent particles of thrombus. There is no agreement as to the best site at which to open the vessel. Incision immediately proximal to the clot, if anatomically convenient, has the advantage that it is through healthy artery of convenient size for suture. The embolus may extrude itself, as in this case, or may need to be "milked out," or extracted with forceps. In closure intimal apposition is secured by evertting the edges of the arterial wound with a mattress suture, which may be interrupted or continuous.

The recorded cases show that the time factor is of paramount importance in prognosis. Andrews and Harkins⁵ believe that operation after ten hours is usually too late to save the limb. Danzis⁶ stresses the time factor, and points out that in early cases 60 per cent. of good results may be expected, but that even at the end of twenty-four hours operation is not too late to lessen the chances of gangrene arising, or of removing the site of gangrene further distally than it would otherwise have been. Neuhoof⁷ holds that the symptoms of vascular occlusion are due to the thrombus which forms in relation to the embolus, and that "early" operation is not really so early after all. In both the successful cases I have seen, however, the onset was apparently sudden, and gave no warning symptoms of impending vascular occlusion such as a developing thrombus might be expected to show.

There is no real doubt that early operation is imperative, and that the condition is one of real urgency; recognition of this may save many a limb. No conditions could have been more favourable than those in the cases of Jefferson, Gray Banks, and in the ones recorded above; in each case there was a single embolus occurring in a patient, apparently in good general health, during post-operative convalescence in hospital.

SOURCE

The recorded cases divided themselves into two main groups: (1) those in which a cardiovascular lesion exists, and (2) post-operative or post-parturition. A few occur in acute infections. Jefferson emphasized the important part played by the heart as a source of small emboli, either from vegetation or intracardiac thrombosis. There seems little doubt that mural thrombi are not uncommon, and it is probable that they are more prone to occur with cases of infection or following operation. An origin from systemic veins or the right heart postulates the existence of a patent foramen ovale. There was no clinical evidence of heart disease in this case.

In this connexion it may be of interest to mention a case which I have seen since, of embolism of the popliteal artery, in which the probable source was demonstrated at necropsy. The man was 66, and moribund with cardiorenal failure. The left leg became cold, and no pulse could be found in the popliteal anterior or posterior tibial artery. No lump was palpable over the line of the artery, but by auscultation I was able to locate the block about the level where the artery passes through the adductor magnus to the back of the limb. The patient was only a few hours from death, so no operation was attempted. At necropsy I found the block at the level indicated, and in the ascending aorta an atheromatous plaque, 3/4 inch in diameter, which was ulcerating and partially free, and bearing on its surface a thin, shaggy, fibrinous layer—I think almost certainly the source of the embolus. A splenic infarct was also present.

REFERENCES

- ¹ Key, Einar: *Ergeb. d. Chir. u. Orthop.*, 1929, xxii, 1. (Quoted by Andrews and Harkins.)
- ² Idem: *Surg., Gynecol. and Obstet.*, 1923, xxxvi, 309.
- ³ Jefferson: *British Medical Journal*, 1925, ii, 885.
- ⁴ Banks: *Ibid.*, 1932, i, 57.
- ⁵ Andrews and Harkins: *Ann. of Surg.*, 1932, xcvi, 40.
- ⁶ Danzis: *Ibid.*, 1928, lxxvii, 667.
- ⁷ Neuhoof: *Ibid.*, 1932, xcvi.

On his retirement, after thirty-eight years' service as medical officer of health for Portsmouth, Dr. A. Mearns Fraser has received a personal tribute in the form of a cheque from a large number of subscribers. Sir Thomas Bramsdon, who made the presentation, remarked that at Dr. Fraser's appointment in 1896 he was the youngest medical officer of health who had ever held so important an office, and he had held it longer than any other in the United Kingdom. Under his guidance Portsmouth had attained a position second to none in the country as regards health matters, while Southsea had won a deservedly high reputation as a coast resort. Another important reform which Dr. Fraser had assisted in promoting was the inspection of meat, and the drawing up of regulations, which had been widely adopted. He had taken an active part in pressing for the clearance of slum areas, and for the purification of the Portsmouth water supply. In 1912 he had been invited by Mr. Lloyd George to become a member of the original Departmental Committee on Tuberculosis. Of its seventeen members only two were medical officers of health. A further activity of his was the drawing up of special regulations for the control of venereal diseases. Previous appreciatory gifts had been made to Dr. Fraser by the Lord Mayor and Corporation, the Health Committee, the Corporation officers, and the Portsmouth Midwives Association.

INJURIES TO FEMORAL VESSELS DURING HERNIA OPERATIONS

BY

F. T. RANSON, M.B., B.Ch., B.E.L., F.R.C.S. Ed.

SHANGHAI

Most surgical textbooks mention the possibility of injury to the external iliac or femoral vessels during operations for hernia, but even in the larger textbooks the matter is dismissed in a few lines, and no account of treatment or sequelae is given. These injuries must be extremely rare; many surgeons of considerable experience to whom I have spoken have never seen or known of a case. Burrows¹ says that he has once seen the external iliac artery wounded, but he does not give details. He gives a reference, however, to the *British Medical Journal*, (1914, ii, 115), where O'Connor mentions two cases in which he himself injured the external iliac vein: a Chopart amputation was the penalty in one case; there was no penalty in the other. Coley² states that from personal communication he knows of four cases of injury to the large vessels during the insertion of deep sutures into Poupart's ligament. Thorek³ deals with the subject briefly, and gives but little information.

The best account of these injuries that I have been able to find is by Stich and Makkas,⁴ in their book on surgical errors. Although the surgeon is usually apprised of the fact that damage has been done to a large vessel by the copious haemorrhage which takes place, yet these authors say that the accident sometimes is unnoticed, as no bleeding occurs at the time, and they refer to two cases illustrating this. In one a man died of pulmonary embolism on the ninth day after an operation for inguinal hernia, and it was found that the femoral vein had been perforated. Burrows suggests that some cases of thrombosis after operations for hernia may be due to misadventures with the needle. In the other a patient returned to the clinic two months after a similar operation, with a small pulsating swelling below Poupart's ligament. This was exposed, and was found to be a traumatic aneurysm of the femoral artery. The artery was ligated and the sac excised; a hole the size of a lentil was found in the vessel wall, and the hole was traversed by a stout silk thread. In neither case was there any undue bleeding at the time of operation.

I have recently heard of a case in which the patient died of pyaemia, the result of injury to the external iliac vein. The following is an account of a case which I had the opportunity to study.

CASE RECORD.

The patient, a male Indian aged 36, was operated on in 1926 by a French surgeon for double inguinal hernia. The hernia recurred on both sides. He consulted me, and on December 14th, 1932, I operated on both sides by the Gallie method. The left side was quite successful, but the right discharged some serum, and, after the operation, a little pus. The hernia recurred in about three months' time. I advised him to wear a truss, but, dissatisfied with his truss and with my advice, he consulted a German surgeon, who again operated on the right side on June 12th, 1933.

I have been unable to obtain accurate details of what happened at that operation; but as a suture was being inserted deep into the wound there was a sudden brisk haemorrhage. This the surgeon attempted to stop by passing a still deeper suture. This simply increased the bleeding, and he finally resorted to packing the wound with gauze. The wound bled freely for several days and became septic, but gradually healed, and the patient was discharged from hospital on August 2nd with a small sinus. He was readmitted on August 7th with a severe haemorrhage, arterial in nature. The wound was again packed with gauze, and a blood trans-

fusion was done. On August 18th he had another severe haemorrhage, and Dr. Bennett, superintendent of the Shanghai General Hospital, who saw him on this occasion, says that the haemorrhage was definitely arterial, and that jets of blood hit the wall two feet away from the bed. The wound was again packed with gauze and another transfusion performed.

On August 20th I was asked to see the case, in consultation, and to perform any further operation which might be necessary. It was explained to the patient that it would probably be necessary to tie the main artery to his limb, and that this carried the risk of gangrene of the foot and loss of the leg. He said he would wait and only have the operation done if he had another haemorrhage. At this stage there was a sinus just below the inner end of Poupart's ligament and a small pulsating swelling. No thrill or bruit could be detected.

On August 30th, at 6 a.m., he had another severe haemorrhage, and I was called to the hospital. I found the patient in the operating theatre, and a dresser was controlling the haemorrhage by digital pressure over a gauze pad, which had been tightly packed into the sinus. I at once administered spinal anaesthesia, and, after exposing the external iliac artery by the extraperitoneal route, tied this vessel. The sinus was then examined, but on releasing the pressure there was free venous haemorrhage. The sinus was at once enlarged, and a small arterio-venous aneurysm found just below Poupart's ligament. To stop the haemorrhage it was necessary to tie both the artery and the vein above and below the sac. As this wound was septic it was left open to granulate. The patient had lost a good deal of blood, and was given a transfusion of 500 c.cm. citrated blood.

Two days later the foot, which had been cold, became discoloured. This discoloration spread rapidly up the limb, and as it was obviously gangrenous the limb was amputated just above the knee on September 14th. After this the patient had some fever and increased pulse rate, but he rapidly improved, and is now completely healed. He has been fitted with an artificial limb.

DISCUSSION

Accidents of this kind have happened in the hands of very expert operators, and it is necessary to know how to deal with them. If, as happens in the majority of cases, the injury is at once followed by haemorrhage, the ideal procedure is undoubtedly exposure and suture of the vessel wall. The very fine needles and thread advocated for experimental work are not necessary. Most operating rooms could, however, supply fine needles and silk such as are used in ophthalmic surgery, and these are quite suitable.

By courtesy of Mr. John Gray, F.R.C.S., of the Henry Lester Institute of Medical Research, I have been enabled to carry out experiments in arterial suture. It was found possible successfully to suture incisions in both the aorta and the femoral arteries of small dogs with Kalt's conjunctival needles and very fine silk. The vessel can be held up by an assistant on tapes or rubber tubes; this gives excellent access, and controls bleeding during the suturing. It is not necessary to use paraffin or vaseline on the needles and thread. Human hair, which is readily available and is easily sterilized, is suitable material, and it is easier to thread these fine needles with hair than with silk. A vessel the size of the femoral artery in man could certainly be securely sutured with these materials.

If, for any reason, suture were impracticable or failed, then it would be necessary to resort to ligation. Authorities differ as to the risk of ligation of the common femoral trunk. Wolf, quoted by Stich and Makkas, says that in 25 per cent. of cases gangrene follows. Rowlands and Turner⁵ stress the risk of gangrene, but Reid and Andrus⁶ state that in the absence of infection one should be able to tie the normal femoral artery in any part of its course with no untoward result. Dr. Loucks, head of the department of surgery in Peking Union Medical College, to

whom I am indebted for helpful comments, is of this latter opinion, and considers that the gangrene which ensued in my case was due to interference with the collateral circulation by infective thrombosis. It is commonly taught that where it is necessary to ligature the main artery to a limb, ligature of the main accompanying vein at the same time will diminish the risk of gangrene, but the results of the experimental work of Wilson⁷ do not support this view.

The treatment at a later date depends upon the conditions present, whether traumatic aneurysm, arterio-venous aneurysm, or haemorrhage. If I were treating a similar case again I would not put a permanent ligature on the external iliac artery, although Lejars⁸ recommends this procedure. It would have been preferable to occlude the vessel temporarily by a special clamp, or by a knot tied over a piece of drainage tubing the calibre of the vessel. As, however, it was necessary to tie the common femoral trunk, and as there was marked infection of the wound, gangrene would very probably have ensued whether the external iliac were patent or not.

Proximal ligature of the external iliac alone has been suggested and has been carried out in similar cases, but it is universally held to be unsatisfactory.⁹ Even though the wound is in the artery alone, the haemorrhage is almost certain to recur; and, naturally, if both artery and vein are involved the measure is useless. Whatever method of proximal control of the circulation be adopted,

the wound must always be explored and the actual bleeding point dealt with.

A colleague informs me that in 1914, in London, he saw the femoral vein wounded during a hernia operation by a well-known surgeon while he was demonstrating to a group of visiting American surgeons. In these embarrassing circumstances the surgeon dealt with the situation very coolly. He said: "Gentlemen, this gives me the opportunity to show you how to deal with this accident," and he proceeded to expose and ligature the vein. The patient made an excellent recovery.

One hopes never to have the misfortune to injure a large vessel; but in the event of such an accident it is well to have a clear idea of the treatment, and to be able to repair the damage by some simple method and with needles and appliances which one might expect to find in most operating rooms, for the needles, suture materials, and special clamps usually described in operative surgery books are unlikely to be at hand in an emergency.

REFERENCES

- ¹ Burrows: *Pitfalls of Surgery*, 1925, p. 221.
- ² Coley: *Keen's Surgery*, 1916, iv, 38.
- ³ Thorek: *Surgical Errors and Safeguards*, 1932, p. 403.
- ⁴ Stich and Makkas: *Fehler und Gefahren bei Chirurgischen Operationen*, 1923, p. 754.
- ⁵ Rowlands and Turner: *The Operations of Surgery*, 1927, i, 862.
- ⁶ Reid and Andrus: *Living Surgery*, 1927, i, 778.
- ⁷ Wilson: *Brit. Journ. Surg.*, 1933, January, p. 393.
- ⁸ Lejars: *Urgent Surgery*, 1923, p. 751.
- ⁹ Rowlands and Turner: *The Operations of Surgery*, 1927, ii, 885.

Clinical Memoranda

RESUSCITATION AT BIRTH BY EVE'S ROCKING METHOD

I had been much impressed by the simplicity and ease of the rocking method of artificial respiration described and originated by F. C. Eve.¹ Its physiological soundness was demonstrated in a further paper by Eve and Killick.² Hence I determined to try this method in asphyxia of the newborn when occasion should arise, and such was the case last Christmas Eve.

The mother was debilitated by influenza and had three previous children. Uterine pains were very feeble throughout a long labour. When the cervix had at last dilated the child was easily delivered by forceps—white, and making no attempts to breathe. The heart was just audible with the stethoscope.

I did the rocking in front of the fire, seated, holding the infant on the palms of my hands, face upwards, the legs dangling free, the buttocks being supported and restrained by the left first finger and thumb, the head and neck by the right first finger and thumb. After a few attempts with the child, naked, I covered the trunk in a small towel, which facilitated matters. I found that the fingers adapted themselves to the small body, and that the thumbs and first fingers were used instinctively to check any slipping when the infant was tilted, so that the weight of the viscera alternately pushed and pulled the diaphragm up and down. The rocking movements were performed up and down, about fifteen double "rocks" to the minute (ten are advised). I changed the position of the child to face downwards, but found that was not so easy to manipulate.

After the first minute air was heard coming in and out through the air passages. After twenty-five minutes I put the child into a warm bath, but found that breathing did not go on. It was not until after a total of fifty minutes' rocking that natural respiration was established, when there was some crying, and my task was done.

For general practice, and after a single case only, I consider that Eve's method is an ideal one, and

especially for a very feeble child. There is no violent handling as there may be in other methods of artificial respiration. With supervision it could be performed by anyone of ordinary intelligence, and it could be done in a box-lid, or on the knees with some manipulation. It is a natural method after all, and has materialized from the dawn of the earliest birth—to be adapted by its originator and first published in a scientific paper in 1932. I venture to report this case for publication because I believe it to be the first recorded instance of resuscitation at birth by Eve's rocking method.

Malton.

NOEL C. FORSYTH, M.D.

FIFTY-ONE STOKES-ADAMS ATTACKS IN FIVE DAYS IN A CASE OF DIPHTHERITIC HEART-BLOCK

It is well known that, at the onset of complete heart-block, attacks of syncope may occur at frequent intervals until the ventricle settles down to beat at its own rhythm. The following case is remarkable for the number and the severity of the attacks.

A boy, aged 17, was admitted to the East Malling Isolation Hospital on October 23rd, 1933, with a history of a sore throat for two days. He was suffering from a very severe attack of faucial diphtheria. The whole of both tonsils, anterior pillars, and uvula were covered with a foul sloughing membrane. There was severe cellulitis and oedema of the neck, which extended over both clavicles and over the sternum to the level of the second ribs. The patient was given 32,000 units of antitoxin, and in three days the swelling of the neck had disappeared. Two days later the throat was clear of membrane, and the acute faucial stage had been safely passed. On the sixth day of the disease (October 26th) albuminuria appeared, which got progressively worse until October 31st, when there was a heavy cloud of albumin, and only twelve ounces of urine were passed. The general condition was fairly satisfactory and the heart normal.

It was on November 1st, the twelfth day, that heart-block appeared, associated with a remarkable series of Stokes-Adams attacks. I saw the patient at 12 noon, and the

¹ *Lancet*, November 5th, 1932. ² *Ibid.*, September 30th, 1933.

matron reported that while he was being washed at 10.45 he fainted. I found the pulse 68 and regular, and no obvious cause for the faint. At 10 p.m. the matron sent for me, but as I was out visiting two urgent cases I did not arrive at the hospital until 12.30 a.m. I was then told that the patient had fainted at 7.15 p.m., and again at 7.30 p.m., and that from 9.30 to 11.30 he had had fainting attacks with remarkable regularity every ten minutes. From 11.30 p.m. until my arrival at 12.30 a.m. the attacks had occurred every five minutes. Since 9.30 no pulse had been felt at the wrist.

I found the patient very pale, in a cold sweat, restless, but quite conscious. No radial pulse could be felt. On auscultation the ventricles could be heard beating feebly but quite regularly at 26 beats a minute. While I was listening the heart stopped suddenly. The patient took a long breath, there was general muscular rigidity for a few seconds, the eyes became fixed, the pupils dilated, the conjunctivae were insensitive, and respiration ceased; he had gone through the usual process of dying. With the stethoscope on the chest and my eye on the watch I heard the heart begin to beat again, after an interval of twenty seconds' silence, at the rate of 26 a minute. Respiration began at once, and consciousness rapidly returned. It was then clear that I was dealing with a case of complete heart-block, with severe Stokes-Adams attacks occurring at regular intervals of five minutes. All the attacks since 7.15 p.m. had been similar to the one I had just witnessed.

The treatment was as follows and in the order given: (1) adrenaline, 10 minims hypodermically; (2) the foot of the bed was raised eighteen inches; (3) camphor in oil, 1 c.c.m. intramuscularly; (4) one pint of saline intravenously. This last was given because the patient had been vomiting and taking fluids badly for the previous twenty-four hours. After half an hour the attacks ceased. At 3 a.m. the pulse could be felt at the wrist at 32 a minute, the colour was much improved, and the patient was sleeping peacefully. I next saw the patient at 10.45 a.m. He had had slight attacks of syncope at 5 a.m. and 7 a.m., and a more severe attack at 9.30 a.m., when 10 minims of adrenaline had been given. The pulse rate had risen to 68 for a brief period at 6 a.m., but was 32 when I saw him. I gave him 1/50 grain atropine intravenously. During the day he had three slight attacks, and three severe ones, when adrenaline was given. The pulse remained between 30 and 40 all day.

On November 3rd there were no further attacks, but 5 minims of adrenaline was given every four hours. The pulse was 24 throughout that day. At 9.15 a.m. he passed three ounces of urine. This was the first urine passed since 3 p.m. on November 1st (forty-two hours), and it contained much less albumin. At 11.30 p.m. ten ounces of urine were passed, and the kidneys appeared to be functioning once again. On November 4th the pulse rate, taken four-hourly, was 24 at 2 a.m., 56, 24, 56, 68, and 58 at 10 p.m. There were eight syncopal attacks in all, and adrenaline was given five times. Twenty-two ounces of urine were passed during the day, which contained a trace of albumin only.

On November 5th the pulse rate did not drop below 50, and there was only one slight fainting attack. Thirty-three ounces of urine were passed and no albumin was present. The patient was altogether better. There was no further heart-block. On some days gallop rhythm could be heard, and there were occasional extrasystoles. Good progress was made up to December 7th, when there appeared a paralysis of the left external rectus. The next day there was a weakness of the muscles to the left of the mouth. The heart was still normal. On December 10th, the fifty-second day of the disease, paralysis of the diaphragm set in, and the patient died suddenly the next day of asphyxia. The heart remained in a satisfactory condition right up to the last.

Summary

A case has been described in which, during the course of a diphtheritic heart-block, fifty-one attacks of syncope were actually witnessed and recorded in the space of five days. Treatment consisted of frequent injections of adrenaline. The heart made a good recovery, but the patient succumbed to diaphragmatic paralysis.

West Malling, Kent.

J. VINCENT BATES, M.B., B.Ch.

Reviews

PROGRESS IN ENDOCRINOLOGY

Professor A. T. CAMERON's *Recent Advances in Endocrinology*¹ is an admirable survey of the subject written more particularly from the experimental and biochemical standpoint. Nevertheless it is very valuable to the clinician, since it states clearly, critically, and succinctly the basis of our knowledge of the endocrine system at the moment. After a brief introduction, in which he shows himself somewhat of a purist in the matter of terminology, the author goes on to an account of each gland in turn, dealing with the biochemistry, physiology, pathology, and then the clinical conditions associated with diseases of the gland in question. A short chapter on secretin and some presumptive endocrine principle follows. Finally, he deals with endocrine interrelationships, subscribing to Cushing's dictum that "all pituitary syndromes are essentially polyglandular." We might indeed maintain the converse of this—that all polyglandular syndromes are initiated by the pituitary.

From such a storehouse of information it is difficult to select material for quotation. We may mention, however, the account of the relationship of iodine to the thyroid, incorporating Harington's most recent observations on the metabolic inactivity of any compound containing less than four atoms of iodine in the molecule, which disposes of the theory that Graves's disease is due to some form of thyroxine unsaturated with iodine. Professor Cameron further gives an interesting account of the control of goitre by iodine in the Pemberton Valley, British Columbia, where it was found that no Indian who ate salmon, an excellent purveyor of iodine, ever developed goitre. This recalls Dr. Woods Hutchinson's humorous description of salmon as "iodide of trout." The goitrogenic influence of cabbage is also well discussed, and is referred to the cyanide, which is a component of its glucoside, diminishing the consumption of oxygen. Marine has injected various organic cyanides into young rabbits and produced goitres, and even exophthalmos. Apparently some abrupt change occurs in the growing cabbage, connected with its maturation, which renders it goitrogenic.

We have said enough to recommend this book very strongly as one of the best, and yet brief, accounts of the subject. The author acknowledges his indebtedness to his former chief, the late Professor Swale Vincent, but, while keenly critical, he shows himself less sceptical than his teacher. There is no doubt, however, that the advance of endocrinology has been actually delayed by uncontrolled speculation and hasty deductions from unproved data, to which Professor Cameron's method of approach is an excellent corrective.

SURGERY OF CHILDHOOD

A famous article in the *Quarterly Review* of some hundred years ago pointed out that one of the main secrets of the art of the reviewer was to read carefully what the author had to say about the purpose of his book, and then scold him for not doing something else. But on reading the introduction to Mr. WILLIAM RANKIN'S *Lessons on the Surgical Diseases of Childhood*,² and then proceeding to the book, it is possible to object that what the author has not done is precisely what he has announced that he will do. These summaries of lectures are

¹ *Recent Advances in Endocrinology*. By A. T. Cameron, M.A., D.Sc., F.I.C., F.R.S.E. London: J. and A. Churchill. 1933. (Pp. 365; 54 figs. 15s.)

² *Lessons on the Surgical Diseases of Childhood*. By D. W. Rankin, M.B., Ch.B. Glasgow: Alex. Macdougall. 1934. (Pp. 190; illustrated. 21s. net.)

put forward with the claim that "if the student knows what is contained herein, he may be considered grounded in the subject"; and the point of view from which they are written is defined by saying that they belong to "the older surgery," which is "based on a knowledge of pathology and anatomy . . . now being so replaced by the use of electric currents, radium emanations, and injections of all sorts." Now in almost all the subjects of which Mr. Rankin treats—for instance, cleft palate, undescended testicle, or club-feet—the newer school is not proposing recondite methods of treatment, but is accusing its seniors of neglecting to work out what they claim to be the foundations of their teaching—the relevant anatomy and pathology. The exact mechanism of the closure of the nasopharynx, the means of suspension of the testis, the true nature of the deformity so curiously described as talipes equino-varus—these are the points on which the older teaching on the surgery of childhood is being attacked. And for any definite statement on this groundwork Mr. Rankin's book may be searched in vain.

The book for all that is very interesting as showing the ways (not necessarily better ones) in which thought on the subjects treated is moving. One obvious contrast lies in the much greater severity of the measures recommended by the older school. In treating ordinary mastoiditis Mr. Rankin recommends making a hole large enough to put a finger easily through by "sacrificing the posterior three-quarters of the meatus." In talipes equino-varus the tendo Achillis is cut in those cases which come early for treatment, and astragalectomy or wedge-resection done in those which come later. In osteomyelitis wide removal of the shaft of the bone is advised, with the insertion of a glass rod to preserve length. Foreign bodies at the upper end of the oesophagus are removed by forceps guided by x rays, or, failing this, by a coin-catcher. Mr. Rankin dismisses hypospadias as intractable, without reference to the work of Edmonds on this subject; and for tonsillectomy uses the guillotine, which removes the organs attacked "sufficiently often."

As to anaesthetics, chloroform is of course recommended as the drug of choice, as ether takes too long to put a patient under, does not give relaxation nor freedom from movements, and runs all over the patient's face. If Scotland accuses the rest of the world of not knowing how to give chloroform, surely there is room for a little counter-criticism as to the local methods of giving ether which are suggested by this. No mention is made of intratracheal administration, nor of gas and oxygen, while it is doubtful if all of the newer school would agree that while the patient is "snoring loudly and regularly an ideal state of affairs is being maintained."

The photographs in the book, many of which come from the collection of that pioneer in this branch of surgery Mr. J. H. Nicoll, are extremely interesting and well reproduced. The drawings, on the other hand, at least one reader found unintelligible.

SANITARY SCIENCE

The second edition of Professor GERSCHENFELD'S *Bacteriology and Sanitary Science*¹ consists in part of an ample statement of formulae for bacterial stains and culture media and a description of the methods employed for the preparation of antitoxins, antibacterial sera, biological tests utilized in diagnosis, allergic skin tests, and the like. But from these beginnings the author ranges widely over the fields of bacteriology, and discusses, in addition, the helminths and the arthropods, immunity and anaphylaxis, ventilation, the purification of water, the milk

supply, and the filterable viruses, to name only a selection of the contents of a copiously stocked volume.

It is rather curious to us, living on this side of the Atlantic, to observe that a book which deals so extensively with so medical a group of subjects should not be addressed to medical men, but should be intended for chemists, pharmacists, nurses, and other non-medical persons. Among the reasons given are that pharmacists sell biological products, that pharmacists more than medical practitioners are consulted by the public on questions of sanitation, and that pharmacists, and nurses also, having close contact with physicians and local authorities, ought to know enough of the above-mentioned topics, and others dealt with in the book, to be able to "converse intelligently regarding them." While we may perhaps permit ourselves to speculate whether these special topics, however ably presented by the author, are likely to be competently grasped by people not medically trained, we cannot, even if we would, deny the evidence of this second edition that there is in North America a section of the general public which, whether fully understanding or not, is at least interested.

For our own part we have read Professor Gerschenfeld's book with both interest and pleasure. We recommend it as a work of reference to medical officers of health in this country. In dealing with points which arise from time to time in the course of health administration they will find it of genuine service.

HEREDITY AND ENVIRONMENT

Professor LANCELOT HOGGEN has now published, under the title *Nature and Nurture*,² the William Withering Memorial Lectures, which he delivered in the Faculty of Medicine of the University of Birmingham on a subject then described as "The Methods of Clinical Genetics." The original title was not a misnomer, and should attract medical readers, but that now adopted is the more appropriate as indicating the general subject under consideration. No teacher or serious student of genetics, or of subjects such as biology, physiology, medicine, or sociology (of which genetics forms an essential part), will fail to appreciate, on perusal, the learning, research, scientific acumen, and power of exposition which have gone to its making, or the importance of its methods and conclusions with regard to some of the most discussed medical and sociological problems of the day. Much of the book is not easy reading: concentration and logical appreciation are required of the reader throughout; but no one prepared to contribute these need be debarred should he be unable to follow in all their detail the algebraical expressions and calculations which are a necessary part of the author's complete exposition.

Professor Hogben demonstrates the all-pervading influence of environment in the formation or display of human characters or peculiarities, of the complexities of genetic constitution and methods of transmission, and of the relation of these influences on one another in the manifestation of the end-product. That what are to all intents and purposes the same end-products can be brought about in entirely different ways and by various combinations of contributing factors is clearly shown. The distinction in genetic inheritance between those differences which are recognizable in almost any environment in which the fertilized egg will develop and those manifested only within a fairly restricted range of environment is stressed and usefully illustrated by clinical examples from human disease or abnormality, both bodily and mental. The bearing of this on recent researches on mongolism is well brought out. After a chapter on the general medical

¹ *Bacteriology and Sanitary Science*. By L. Gerschenfeld, Ph.M., B.Sc. Second edition, thoroughly revised. London: H. Kimpton, 1934. (Pp. 493; 55 figures, 3 plates. 21s. net.)

² *Nature and Nurture*. By Lancelot Hogben, M.A., D.Sc. London: Williams and Norgate, Ltd. 1933. (Pp. 143. 6s. 6d. net.)

applications of genetic principles; the author studies in particular the principle of random mating, consanguineous parentage and the theory of inbreeding, and the genetic analysis of familial (as distinct from hereditary) diseases, and offers illuminating warnings as to the compilation and reading of pedigrees, which should be of great service both to doctors and to eugenicists. In this regard his three main points for the physician may be quoted:

"(1) If the physician is devoting himself to the study of a simple disease or a small group of diseases, he must treat all cases as if they had equal value for genetical purposes. It is just as important for the geneticist to know about the patient who has no affected relations as to know about the patient who can boast of a proud lineage of fellow sufferers.

"(2) If the physician obtains the family history of any isolated case of a rare familial disease he should place it on record whether there are affected sibs or not.

"(3) It is always important to give the age at death of both parents, the age of the mother at the birth of each of her offspring, the correct birth order of all sibs, including miscarriages, sex and age at death of all sibs, and age of onset of the disease of all affected members of a pedigree."

The author's development and illustration of these statements, and his reasons for making them, are of great interest; and it will be seen that he is not content with mere theoretical expositions of principles, however fundamental, but is concerned to be helpful in their practical application. The multiple character and varied modes of causation of mental defect are demonstrated, and it is pointed out that the division of diseases into two groups, mental due to heredity and bodily due to environment, is wholly unjustified, as is also the assumption that, when alternative explanations of the causation of a condition are possible, it must follow that an origin in heredity is the more likely. There is no occasion, says Professor Hogben, to magnify the importance of the genetic aspect of feeble-mindedness till it assumes menacing dimensions.

SPEECH DISORDERS AND SESQUIPEDALISM

Of recent years much attention has been paid in the United States of America to disorders of speech, particularly by educationists and psychologists. Some of the work done has been valuable. There is an American Society for the Study of Disorders of Speech. Its nomenclature committee has prepared a classification of the disabilities in reading which are closely associated with speech, and SARA M. STINCHFIELD, Ph.D. (Mrs. C. L. Hawk), in a book on *Speech Disorders*,⁵ whole-heartedly adopts this new nomenclature. Apart from the contents table and index, no fewer than six of the pages of her text are devoted to a bare list of these words and their synonyms, and it is stated that "as the entire classification will shortly be published elsewhere we shall confine ourselves to an abbreviated form for practical use in the speech clinic." These six pages of samples from the Dictionary of Terms make us fearful of what the entire classification may be like. Someone with a mischievous, almost impish, familiarity with a Greek lexicon, and a "crossword" expertness in juggling with letters and syllables, must have been at the disposal of the American committee, and given his patrons this amazing collection of polysyllabic words in full measure, pressed down and running over.

Mockery of the stuttermaster is unkind and sometimes dangerous. But if he were told that his trouble was known as "dysarthria syllabaris spasmodica," or alternatively "spasmophemia" (with twenty sub-varieties!), we think he would henceforward suffer from "aphemia pathemata—dumbness due to fright or passion (lalophobia)." Of the several causes of "dyslexia," difficulty in reading, "agnosia, due to unknown or uncertain

causes," comes first; the explanation would not be true of failure to read these pages in public. Next comes "amphidextoxia, due to ambidexterity and the resulting lack of unilateral cerebral dominance." Ophthalmic surgeons have to use some big words, but despite their usual ambidexterity we think they would repudiate the ownership of this word. The author revels in sesquipedalian terms, and uses them with remarkable agility. But in the reader who has no more than a nodding acquaintance with them the book may induce a nodding which is neither a recognition nor an assent.

The first half of the book is taken up with speech disorders, though too much space is given to brain and cord diseases, which are better dealt with in a work on neurology. The second half is filled with the returns of "statistical studies of the speech defects of 3,000 college women and of public school groups." If well digested and well chosen some of these returns would be of interest, but prolixity smother them. Perhaps we may trace here the influence of the questionnaires which are so popular in the United States. One on "handedness index" is reprinted. There are no fewer than ninety questions, of which these are fair samples: "Which hand wraps the tie around when you tie your tie?" and "When standing with both feet together which foot goes forward first to catch yourself when you start to fall?" What was the fate of the centipede who tried to answer a like question?

THE EFFECTS OF ALCOHOL

An admirably simple, succinct, and informative account of the effects of the ingestion of alcohol is given in a small book entitled *Alcohol: Its Effects on Man*,⁶ by Dr. HAVEN EMERSON, professor of public health practice in the Columbia University and president of the American Public Health Association. The publisher's note does not err when it says: "In the present volume a noted authority on public health sets forth the facts clearly, frankly, and without propaganda: its findings constitute the most modern, sound, and accurate information available to-day." The only qualifications that might be added to this statement are that, for the sake of brevity and emphasis, the author's pronouncements have to be dogmatic, so that to some of them a proviso might be required if the book were intended for certain classes of scientific readers only; and that in the chapter on "Effects on Reproduction and Offspring" a too implicit reliance appears to have been placed upon the experiments of Stockard. In fact, since all but two of the United States require teaching with regard to alcohol to be given in every school in receipt of public money, the book is written "to provide school teachers and high-school and college students with the facts" relevant to this matter. It could scarcely be bettered for its purpose, for it has not only all the qualities already mentioned, but it is very interesting, well ordered, and well expressed. In this country, as in America, not only teachers and senior students, but most medical practitioners, will derive advantage from its perusal. The author not only quotes from the report of the British Medical Association's special committee on the subject, but he cites most apposite passages from the Book of Proverbs (chap. xxxi), and from Plato and Galen. It is impossible to forbear repeating a portion of Galen's:

"Does not wine act like a tyrant forbidding the mind to think as carefully as it did and to act as correctly as it did? . . . If it once gets into the body it prevents the steersman from handling the ship's rudder properly, and the soldier from keeping order in the ranks: it makes judges vacillate when they ought to be just, and presidents rule badly and impose unsound ordinances"

⁵ *Speech Disorders*. By Sara M. Stinchfield, Ph.D. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1933. (Pp. 341. 15s. net.)

⁶ *Alcohol: Its Effects on Man*. By Haven Emerson, M.D. New York and London: D. Appleton-Century Company Inc. 1934. (Pp. 114. 3s. 6d. net.)

Notes on Books

Professor SAMSON WRIGHT'S *Applied Physiology* has had a well-deserved success since its first appearance in 1926. For the fifth edition, now published,¹ the text has once again been thoroughly overhauled, in order to keep it abreast with current developments of physiology. A certain amount of rearrangement of the material has also been carried out, and indications of these changes are given by the author in his preface. To make the book more useful to various classes of readers he has had printed in italics, in the table of contents, those parts of each subject which are wholly or mainly of clinical interest. In its revised form *Applied Physiology* will no doubt maintain the popularity it has already achieved among students and practitioners of medicine, while the needs of those working for an examination in "pure" physiology have not been overlooked.

The fact that a fourth edition of Dr. GEIKIE COBB'S *The Organs of Internal Secretion*² has been called for testifies to its continued popularity. Every chapter, with the exception of that on the endocrine glands and nervous disorders, has been revised, while chapters on obesity and on infantilism have been added. It is admittedly a book written by a practising physician for general practitioners, and the emphasis is laid on the clinical rather than on the experimental side. Perhaps a more definite account of pituitary basophilism might have been given, while we should have been glad to see reference made to hyperparathyroidism and to hypoglycaemia. The time has come when the part played by the cortex in Addison's disease might be more definitely accepted. Room for these topics could be made by condensing the chapter on nervous disorders, and restricting it to those more directly associated with endocrine disease. But it is a pleasantly written book and easy to read.

The thirty-third edition of the well-known *Handbook of Physiology*,³ with which the name of the late Professor W. D. Halliburton was so long and so honourably associated, has been very extensively revised by Professor R. J. S. McDOWALL, whose name appears on the cover as joint author. Among the more salient alterations are the use of bold type for terms and figures which should be memorized by the student; the omission of much of the detail of the connective tissues and elementary electrical apparatus, or its insertion in abbreviated form in the sections where this is appropriate; and the provision of original illustrations and an enlarged index consequent on the insertion of new letterpress rendered necessary by the steadily continuing advances in knowledge. In this way the book has shrunk a little in size; its usefulness has been greatly enhanced by the rearranging of the chapters, and the planning of the approach to the subject on a physiological rather than on the now obsolete anatomical basis. In a prefatory note by the publishers the history of this student's classic is traced from the first edition in 1848 under the authorship of William Senhouse Kirkes. In 1860 Sir William Savory's name was associated with that of Kirkes. Successive editions reflected the changing outlook of physiology, until in 1896 the book entered a new phase of still greater progress under Professor Halliburton's guidance. The many new features in the thirty-third edition will be welcomed by students, whose present-day requirements are always kept in mind.

The *Transactions*⁴ of the Tuberculosis Society of Scotland during the year 1932-3 have now been published under the editorial direction of Dr. FERGUS HEWAT of Edinburgh. The subjects dealt with include the detection

of tubercle bacilli in the blood stream in pulmonary tuberculosis; tuberculous disease of the middle ear and mastoid; phrenic evulsion; problems of research in tuberculosis; silica in relation to pulmonary disease; and the treatment of tuberculosis in relation to eye disease. The volume also contains notes of demonstrations before the society, a report on tuberculosis work in the United States, and some shorter papers and notes.

Tabulae Biologicae Periodicae,¹¹ vol. iii, Nos. 2 and 3, provide a wide variety of biochemical data. One of the longest articles deals with the toxicology of poison gases. Another very useful series of tables summarizes present knowledge about the respiration of living cells. Further articles deal with the biochemistry of vitamins, oestrin, snake poisons, and other animal poisons.

Dr. LOUIS CAILLON of Vichy has written a good little book on diabetes,¹² indeed the most practical and useful of its size that we know in French. All the necessary instructions about diet, injections, and urine tests are clearly detailed. As one might expect, much more attention is given to the spa treatment by water and baths than we find in English books, but the limitations of hydrotherapy in severe cases are frankly admitted.

¹¹ Berlin: W. Junk. 1933. (M.55; subscription price, M.48.)

¹² *Le Livre du Diabétique*. Par Louis Caillon. Paris: N. Maloine. 1934. (Pp. 171. 8 fr.)

Preparations and Appliances

AN OPHTHALMIC RULE

The ocular base line must be measured for every eye patient. The ophthalmic surgeon needs to measure it before proceeding to certain detailed subjective investigations—for example, binocular balance by means of the diaphragm test. The dispensing optician must measure it to determine the fit of spectacle frames and the centring of lenses.

In 1910 I showed to the Ophthalmological Society a form of callipers, or rule, whereby this measurement could be made with accuracy and speed. This rule has been much used. A new pattern has now been made by Messrs. Hamblin which is a material improvement. In the first pattern the moving member or cursor slid on the rule, so that a little dirt checked its free movement, and the wires by which the sighting is made were long and easily bent. In the new model the position of the cursor has been reversed; it now slides within the channelled frame of the rule. These channels give wide bearings with free, yet steady, movement to the cursor, and the interior housing gives protection to the wires. The new



rule is made of duralumin stampings, so that each rule is mathematically exact. It weighs only half an ounce, yet it is so strong that it may be carried in the pocket. The wires are of fine steel, wedged into the cursor by taper pins. The rule is black, with the millimeter scale engraved and filled in with white. There is a full range of 45 to 80 mm. The scale has a sharply bevelled edge so as to obviate parallax between the scale and the wire.

In use the rule should be held in the right hand with the root of the little finger crooked into the notch on the end of the handle; the thumb falls naturally into place on the little thumb-piece at the lower edge of the rule and which is part of the cursor. The patient looks at a light in the distance, and the observer sights with his own left eye the wire of the rule against the spot of light on the patient's right eye, and with his own right eye sights the other wire over the spot of light on the patient's left eye. For near vision the patient fixes a near point, and the distance between the corneal images of the light is taken as before.

The rule is obtainable from the manufacturers, Messrs. Theodore Hamblin, Ltd., Dispensing Opticians, 15, Wigmore Street, London, W.1.

N. BISHOP HARMAN, F.R.C.S.

¹ *Applied Physiology*. By Samson Wright, M.D., F.R.C.P. Fifth edition. London: H. Milford, Oxford University Press. 1934. (Pp. xxvii + 604; 195 figures. 18s. net.)

² *The Organs of Internal Secretion: Their Diseases and Therapeutic Application*. By Ivo Geikie Cobb, M.D. Fourth edition. London: Baillière, Tindall and Cox. 1933. (Pp. xiii + 303. 10s. 6d.)

³ *A Handbook of Physiology*. By the late W. D. Halliburton, M.D., LL.D., F.R.C.P., F.R.S., and R. J. S. McDowall, M.B., D.Sc., F.R.C.P. Ed. Thirty-third edition. London: John Murray. 1933. (Pp. xi + 971; illustrated. 18s. net.)

⁴ Edinburgh: Oliver and Boyd. 1934. (Pp. 104.)

MEDICAL RESEARCH COUNCIL

ANNUAL REPORT FOR 1932-3*

(Concluded from page 543)

WORK ON THE ANAEMIAS

The success that has during recent years attended research on the anaemias is a striking illustration of the great advantage that comes from combined laboratory and clinical work. Pernicious anaemia, formerly a fatal and incurable disease, has been brought under control, and the knowledge that has been gained by research into this disease has thrown much light on the physiology of normal blood formation—another example of the kind of contribution medical science can make to the "pure" science of physiology. As the report states:

"We know now that different forms of anaemia in man are cured by different substances, and we deduce from this that the performance of different stages in the formation of haemoglobin and of red blood cells is dependent on the presence of specific chemical factors, including iron, copper, a water-soluble substance in liver, an enzyme in gastric juice which seems to act with an 'extrinsic' factor in meat and yeast, and probably a part of the vitamin B complex. The discovery of these substances essential for the proper supply of haemoglobin in normal corpuscles has, as can be imagined, already greatly increased our knowledge and our appreciation of the significance both of different forms of anaemia and of the processes involved in their production. It is probable, for instance, that the liver active principle causes the conversion of the mother cells (megaloblasts) present in bone marrow into the daughter nucleated cells (normoblasts), and that iron and copper are necessary for the actual manufacture of haemoglobin and the conversion of the nucleated red cell into the granddaughter cell, the ordinary non-nucleated form. The enzyme haemopoietin in gastric juice (present in desiccated pig's stomach, but not in that of ox or sheep) cures pernicious anaemia by acting on meat in the food; it then produces a substance, possibly identical with the liver active principle, that converts the megaloblast of bone marrow to the normoblast. Thus it is probable that at every stage in the life of the red blood corpuscle a particular chemical agent acts as a stimulant; and that if this agent be absent the development process breaks down, with the production of a particular form of anaemia. Treatment consists in artificially supplying the missing factor."

Since the original discoveries of the American workers—Whipple, Minot, and Murphy—valuable contributions to the subject of anaemia have been made by English physicians. Dr. Helen Mackay has drawn attention to the incidence of anaemia in children; Professor L. G. Parsons has helped to unravel the difficult question of nutritional anaemia in children; Dr. L. J. Witts has advanced knowledge on the macrocytic and microcytic anaemias; Dr. J. F. Wilkinson has demonstrated the presence of an enzyme (haemopoietin) in the desiccated stomach of pigs and carnivora which cures pernicious anaemia; while Professor L. S. P. Davidson has also promoted research into the treatment of this disease.

CARDIOVASCULAR DISEASE

A most important investigation into chronic heart disease has been carried out in Sir Thomas Lewis's department by Dr. R. T. Grant. The basis of this work was a follow-up inquiry into a large group of patients with heart disease who had been under the observation of Sir Thomas Lewis and his colleagues in military hospitals during the war. Hitherto prognosis in heart disease, in the absence of a systematic survey of a large number of cases over a long period of time, has depended mainly on individual clinical experience. In Dr. Grant's investigation a thousand men with definite evidence of

acquired cardiovascular disease (chiefly of the valves of the heart) were observed for a period of ten years. At the end of this period fully half of these patients were alive, and approximately four-fifths of these "have lived uneventfully and comfortably." The inquiry has shown that the outlook for patients with valve defects is less serious than has been generally thought, and that the most important findings on which prognosis should be based are cardiac enlargement and cardiac failure. The type of valve lesion is of little significance, and, while prognosis is least favourable in aortic stenosis and syphilitic aortic regurgitation, there is no material difference in the death rates among those suffering from non-syphilitic aortic regurgitation and mitral stenosis. The average life of patients with aortic aneurysm is over five years. In syphilitic aortic regurgitation, without aneurysm, only 58 per cent. of patients die within ten years.

Other important clinical researches have been carried out at University College. Sir Thomas Lewis has for a number of years been making observations on coarctation of the aorta. He has shown that the blood pressure in the upper limbs is greatly and continuously raised; and from the fact that cardiac enlargement and failure are not greatly in evidence in cases of coarctation, he makes the point that the common association of raised blood pressure with enlargement and failure of the heart is not a simple question of cause and effect.

Sir Thomas is also engaged in investigating the syndrome known as erythromelalgia, in which there is redness and burning pain of the skin of the extremities. Dr. Pickering and Dr. Hess have been working on the headache produced by histamine. They have shown that headache provoked in this way does not arise in the scalp, and that it depends upon an intact sensory root of the trigeminal nerve. The effect of histamine is to bring about a fall of blood pressure and an increase of lumbar and intracranial pressures, as a result of cerebral vaso-dilatation, and the headache appears, not during these changes, but directly after they subside. It is suggested that the pain is caused by a mechanical disturbance related to the action of histamine on the vessels, and that the pain originates in the dura mater. Dr. Wayne, in an investigation into the angina of effort, has found that the amount of exercise necessary to produce pain in any one individual is, under standardized conditions, almost constant. He has also shown that the appearance and disappearance of the pain is not closely determined by the frequency of the heart beat. This is consistent with the view that anginal pain is caused by a relative myocardial ischaemia, and manifests itself when the energy expenditure of the heart rises above a certain level.

RESEARCH IN THE SPECIAL SENSES

The report states that during the past year the Council has been able to provide for intensive research into the physiology of the special senses. Some years ago it appointed a committee on the physiology of vision, and more recently a similar committee on hearing has been set up. Dr. C. S. Hallpike has a grant for whole-time work at the Middlesex Hospital, where he is investigating the electrical changes in the cochlea and the auditory nerve as they affect, or are affected by, the functions of different structures of the ear:

"It is through development in the physical aspect of research on hearing, when advance gained in physiological knowledge can be applied to principles of instrumental design, that the prescription of hearing aids may be expected to emerge from the empirical stage."

The Council has joined with University College in establishing the post of Reader in Special Senses, to be held

* Cmd. 4503. London: H.M. Stationery Office. 1934. (2s. 6d. net.)

there by Dr. R. J. Lythgoe, who has for some time been an active worker for the Committee on Vision. Four of the recent reports of this committee have dealt with the problem of colour vision, and it appears that defects in colour vision are commoner than was thought. About 4 per cent. of individuals in an unselected male population were found to be either red-blind or green-blind. More common than this type of colour-blindness is that in which there is sensitivity to all three primary colours, which are, however, seen differently from normal people. Persons in this group, while able to distinguish colours satisfactorily in ordinary circumstances, are liable to break down under unfavourable conditions. It was found that a number of men had passed the usual tests for entrance to the Navy, but had dangerously defective colour vision. As a result of this investigation more rigorous tests have been introduced.

THERAPEUTICS

The report includes a brief review of developments in the radium beam therapy of cancer, in which the affected part is exposed to massive irradiation from a large quantity of radium, held in a container, external to the body. Several grams of radium have been loaned for this purpose by the Union Minière du Haut Katanga, and responsibility for its safety and control has been undertaken jointly by the Council and the Department of Scientific and Industrial Research.

A number of new remedies have been tried out under the supervision of the Therapeutic Trials Committee. At University College Dr. E. J. Wayne has investigated the therapeutic properties of digoxin and digitalinum verum (Burroughs Wellcome and Co.). These two glucosides of digitalis, he has shown, are useful in the rapid treatment of heart failure with auricular fibrillation. Digoxin appears to be of particular value. It can be given intravenously or by mouth, and produces an effect within a few hours. Dr. J. Chassar Moir, at the same hospital, has found that ergotoxine ethanesulphonate (Burroughs Wellcome and Co.) is as effective as ergotamine in causing contraction of the post-partum uterus. Dr. J. M. H. Campbell, Dr. W. Evans, and Dr. J. C. Bramwell are examining the value of hormol derivatives (Boots Pure Drug Co. Ltd.) in the treatment of angina pectoris. It is pointed out in the report that, where the committee has failed to substantiate the therapeutic claims of any product, the manufacturers have agreed not to advertise these claims.

A number of new chemical compounds for the treatment of tropical disease have been tried out. Various workers have been investigating the trypanocidal properties of different drugs, and it has been found that the cure of trypanosome infection in rabbits by styryl compounds is followed by a long period of immunity to reinfection. Further tests have also been made of the effects of plasmoquine and atebirin on malaria.

SURGERY, OBSTETRICS, AND GYNAECOLOGY

At St. Mark's Hospital Mr. W. B. Gabriel and Dr. Cuthbert Dukes are carrying out an inquiry into the after-histories of patients with cancer of the rectum treated by operation alone or with radium. Follow-up records have confirmed the bad prognosis for those cases in which metastases are found in the regional lymph nodes at operation, and an attempt is now being made "to correlate the proved extent of the upward lymphatic spread of columnar-celled cancer of the rectum with the length of subsequent survival." Mr. Lambert Rogers has done further work on the surgery of the sympathetic nervous system. Regeneration of sympathetic nerves after

injury and alterations in blood supply following operation on these nerves are subjects of study.

At the Royal Maternity and Women's Hospital, Glasgow, Dr. Dugald Baird has continued his investigations on infections of the urinary tract in pregnant women. It has been found that invasion of the blood stream by *B. coli* is commoner than was thought, and that many cases of supposed pyelitis of the puerperium are in reality cases of *B. coli* septicaemia. Dr. D. F. Anderson, at the same hospital, has been unable to confirm the theory that diminution of the calcium content of the cerebrospinal fluid is associated with eclamptic convulsions. Dr. Leonard Colebrook and his co-workers have pursued their researches into the relation of streptococci to puerperal fever.

MEDICAL SICKNESS, ANNUITY AND LIFE ASSURANCE SOCIETY

At the annual general meeting of the Medical Sickness, Annuity and Life Assurance Society, Ltd., Dr. F. C. Martley, chairman of directors, in moving the adoption of the annual report, said that there had been a gratifying increase in the business during the year. A considerable part of this large increase was due to the initiation of the pension and insurance scheme for British Medical Association members and insurance practitioners. This had been given wide publicity, and the resulting business was very gratifying. The ordinary business was showing a satisfactory expansion, and the number of new entrants was increasing. The rapid increase in the "life" business during the last few years had now brought the "life" fund to approximately the same amount as the "sickness" fund. Claims on the life business had also increased, and in two or three instances the claims were concerned with comparatively young men, who had been wise enough to make provision for their dependants, but the mortality was well within actuarial expectation. As for the sickness fund, the influenza epidemic during the early part of 1933 was the severest in the experience of the society, and the amount paid away for that cause alone was in the neighbourhood of £6,000. With each fresh year the members holding the policies, and having had some experience of them, took the opportunity of increasing their cover.

Turning to the practice purchase scheme, Dr. Martley said that a large portion of the time of the officials was now devoted to interviewing and giving advice in this matter. There was a growing feeling of perturbation in the mind of many leading members of the profession with regard to the onerous terms imposed in some quarters on doctors who required capital for the purchase of practices. The terms offered by the society were as good as any that could be obtained, and better than many. This was because there was a board of medical men with full knowledge of the difficulties of the new practitioner. He also reported progress regarding the house purchase scheme and other sides of the society's business, and concluded with a reference to the recent jubilee and a tribute to the manager, Mr. Bertram Sutton, and the staff.

The report having been adopted, Dr. de Bec Turle proposed and Sir William Willcox seconded the re-election of the two directors who retired by rotation—namely, Dr. Martley, and Mr. R. J. McNeill Love. The chairman then brought forward a recommendation that an interim bonus be paid on all with-profit policies for permanent sickness and accident insurance and life assurance becoming claims during the present year. The recommendation was carried, and the meeting concluded with an expression of thanks to the chairman.

The annual meeting of the Franco-Ibero-American Latin Union, commonly known as the Umfia, was held in Paris on February 2nd, when the president and founder, Dr. Dartigues, surveyed the history of the Union, which was founded in 1920, and numbered 3,000 members belonging to thirty nations and speaking five languages (French, Italian, Spanish, Portuguese, and Rumanian).

British Medical Journal

SATURDAY, APRIL 7th, 1934

THE METHOD OF MEDICAL CARE

What in this country is commonly called "medico-sociology" seems to be more often spoken of in the United States of America as "medical economics," and the provision of a "general medical service for the nation" is regarded from the point of view of the "cost of medical care." In American discussions, too, there are those who appear to be unable to distinguish sociology from socialism. Such things are important, for, in commenting on those discussions, we have constantly to remind ourselves that not only may the exact connotations of words differ, but the angle of consideration may vary, and the circumstances of the country may not be identical with those that prevail in Great Britain. Moreover, it is easier to get provoked and angry about a political creed than about a science. Nevertheless, an attempt should be made on both sides of the Atlantic Ocean to understand and not to misrepresent what experience can contribute to the solution of common, or of similar, problems. It is with a wish to be helpful rather than provocative that we comment upon a meeting recently held in Philadelphia to consider the relationship of the physician (using the word in its American sense) and the community, as reported in the *Journal of the American Medical Association* for March 3rd last.

The report leaves the impression that the atmosphere of the meeting was too highly charged with personal antagonisms for the calm elucidation of the truth, and it may not quite convey in just proportion what was said by the various speakers; but the broad situation seems clear. On the one hand, there is a powerful body of persons who are conducting with no little success a campaign throughout the United States in favour of an extensive reorganization of the methods by which medical provision is made for members of the public who are unable to provide the full cost themselves, mainly by some sort of insurance scheme. These persons, though united as to the urgency of the need for such a change, are not necessarily of one mind as to the details of the scheme they would prefer, nor do they all seem able to make clear the exact nature of the arrangements they wish to establish. Over against this body of opinion stands the American Medical Association—or perhaps it would be more correct to say a number of those who at present officially voice what that Association is supposed to think—whose statements can only be interpreted as meaning that they are opposed to accepting any serious change at all. The latter attitude is surely unreasonable, for it can scarcely be denied that it is the duty of a modern civilized community to make provision for the health of its members if they cannot secure it for

themselves, or that in America as elsewhere there are large numbers who suffer from this disability.

The statements made in support of the position of the American Medical Association are that the changes proposed are socialistic, and therefore, it is implied, objectionable; that the present state of affairs is reasonably satisfactory, or at least will shortly become so by the action of the medical profession itself; and that experience of national health insurance in Great Britain and elsewhere has proved it to be a failure and detrimental to the interests of both profession and public. It is a curious comment on the first of these statements that in this country the provision of medical advice and treatment through a scheme of compulsory contributory insurance is generally regarded as a bulwark against the really socialistic movement to provide it by means of a whole-time salaried service. If the second statement were correct it is evident that the suggestions for change could make no headway, or that the medical profession ought to be in process of showing that such deficiencies as had been proved to exist were being actually supplied by practical steps taken under its own auspices. It is with the last statement, however, that we are most concerned, for it shows either ignorance of facts or a complete misapprehension of the situation in Great Britain. There are official resolutions of the British Medical Association and of the Conference of Panel Committees, almost unanimously adopted and from time to time reiterated, to the effect that the measure of success which has attended the experiment of providing medical benefit under the national health insurance system has been sufficient for the profession to unite in securing its continuance and improvement; that medical benefit under this system should be extended to include the dependants of all persons insured thereunder; that Poor Law domiciliary attendance should be merged in the insurance scheme; and that "immense gains" have accrued to the community by the establishment of the Insurance Medical Service. Neither the contrary opinion of certain individuals, nor the existence of defects within the service, nor the admitted possibility of some tendencies which would become dangerous if allowed to prevail, can stand against these emphatic official pronouncements. It is unwarrantable to portray collective medical opinion in this country as being other than that indicated; and it is unreasonable to demand as a proof of success that an immediate and consequential lowering of the mortality and morbidity rates of the country should be demonstrated. This illogical requirement was, in fact, actually laid down by one of the chief speakers at the Philadelphia meeting; but, for reasons which it would be easy to state did space allow but which must be fairly obvious, this is a condition impossible of fulfilment, at least for many years to come.

A much wiser attitude for the organized medical profession to adopt would be to admit that the need for further provision along the suggested lines exists, and to advocate means being taken to supply it; to

lay down at once certain fundamental conditions which must be fulfilled if the good will and co-operation of the profession is to be secured, and certain other arrangements, not so fundamental, which it is highly desirable to make to this end; and to examine and influence any proposed schemes so as to bring them into accord with the conditions and arrangements so laid down. In such a work as this the experience of Great Britain and of some other European countries must be of real value. The points which general medical opinion in this country would undoubtedly emphasize are that the scheme for the provision of medical advice and treatment should be separated as completely as possible from insurance provision for cash payments of any kind to insured persons; that from the beginning provision for a full medical service, and not merely for a general practitioner service, should be made; that the right of all medical practitioners to be members of the service should be secured; that there should be no interference between doctor and patient when once this relationship has been brought about; that there should be a close and appropriate part taken by the profession itself in administration; and that this administration should be through topographical organizations and not through a multiplicity of "approved societies." Some of these conditions exist in the English service and have proved their immense and essential value; the absence of others has been the cause of most of the difficulties we have experienced. To obtain all of them may require great effort on the part of the American Medical Association; but, with them, there need be no apprehension of disaster to the profession or disadvantage to the public. Experience points to a contrary conclusion. In the pamphlets published by the British Medical Association, entitled "A General Medical Service for the Nation" and "The Essentials of a General Medical Service," will be found an ampler exposition of these important features and requirements.

RADIODIAGNOSIS IN CLINICAL MEDICINE

The discovery by Röntgen of the rays which, because of their mysterious properties, he named x rays gave to science a new method of investigating animate and inanimate bodies. Their use has extended into many departments of science, but their application to medicine has probably been the most fruitful of all. Röntgen himself introduced the methods of radioscapy and the registration of the images on photographic plates. The study of the skeleton and search for foreign bodies were the first steps in employing the new rays in medical science. This early radiodiagnosis was soon followed by exploration of other fields. Already in 1896, a year after Röntgen's discovery, Bouchard applied the new technique in studying the natural transparency of the lungs compared with the shadow of the heart and skeleton, pointing out that by the information gained the physician was likely to benefit

by the new method as well as the surgeon. A further step led to the use of artificial contrast materials: opaque meals of bismuth and barium for the digestive tract; lipiodol in the spinal theca, in the uterus and Fallopian tubes, and in the bronchi; opaque dyes for demonstrating the gall-bladder and renal tract. And probably the list is not yet closed of methods which have made such development in the domain of diagnosis alone, apart from the application of the x rays to treatment.

The field has become so wide that a special branch of medical practice has arisen, practitioners devoting their whole time to x -ray work after special study and often an additional diploma. This specialism has grown up not so much on account of the technical problems of management of the complicated apparatus used, as of the need for training in the accurate interpretation of the resulting pictures. Each of us would feel competent to express an opinion on the faithfulness of an ordinary photograph of a scene or person, but in the case of the x -ray photograph we are dealing with shadows of a three-dimensional world imposed on a two-dimensional plane. As Bécélère says, "the x rays are never mistaken. It is we who make the mistake of demanding from them more than they can give or of interpreting their language wrongly." Knowledge not of anatomy and pathology alone is required but also of the normal and abnormal appearances, the shades and degrees of which can only be assessed by constant practice. Often, indeed, "the difference is too nice, where ends the virtue and begins the vice." So that it is necessary to control the interpretation offered by taking into account the data furnished in the history of the patient's illness, the clinical examination, and ancillary laboratory tests, chemical and bacteriological. For this it is not enough to receive a report from the radiographer's darkroom. The actual pictures of the lesion should be submitted for discussion between the practitioner in charge of the case and the radiologist. In many cases it is advisable, in some cases necessary, for the clinician to be present himself at the x -ray examination. That is to say, the practitioner attending the patient must be not only a clinician of experience, but must have some knowledge of radiodiagnosis.

The knowledge needed for this purpose may be obtained by discussion and oral teaching, but that there is scope and demand for instruction from books is shown by the appearance in the different civilized countries of the world of textbooks and manuals devoted to various aspects of radiological practice. Some of these are for the specialist, some are written by specialists to instruct and enlighten the clinicians. One of the most recent and most satisfactory of the latter class is a manual of radiodiagnosis¹ by Dr. Ledoux-Lebard, head of the radiological clinic in the Paris Faculty of Medicine. In two handy volumes Dr. Ledoux-Lebard has brought together the essentials of the subject, which he has divided into eight sections

¹ *Manuel de Radiodiagnostic Clinique*. Par R. Ledoux-Lebard. Deux volumes. Paris: Masson et Cie. (200 fr.)

or "books." The chapter headings and a good index enable the practitioner with a working knowledge of French to turn quickly to any subject on which he needs information and guidance. These subjects are adequately described and fully illustrated; special care has been given to the illustrations, both of typical lesions and of the common variations. With such a manual for reference and study, the clinician will be able to appreciate the finer points in the interpretation of modern radiograms. The books on similar lines which have been published in the English language are usually in the nature of atlases of radiograms, or large volumes on special subjects. In the former there tends to be inadequate discussion of the diagnostic points, while the latter class appeals to the specialist rather than to the busy practitioner. A translation of Dr. Ledoux-Lebard's book with editing of some parts to meet the constant advances of radiological work would probably be welcomed.

THE MASTER GLAND

The manifold functions of the pituitary gland increase in numbers as enthusiastic research proceeds. The long neglect of this organ seems to be more than compensated for by the extraordinary importance it now assumes in endocrinological research. It seems to be well established that the anterior lobe has an important effect upon growth and sex development. The attribution of these activities to this gland is accompanied usually by physico-chemical evidence of "hormones." Houssay's demonstration of a diabetogenic hormone in the pituitary is based on most convincing evidence, although it was long ignored by other workers in the field of carbohydrate metabolism. This work showed that in the absence of the pituitary gland pancreatectomy did not produce the typical picture of diabetes. More recently Anselmino and his co-workers at Düsseldorf in a series of papers claim to have demonstrated a further series of "tropisms," which must be associated with the pituitary gland. By simple drying of fresh anterior lobes with acetone and extraction with distilled water, a filtrate is obtained which is buffered at pH 5.2 and ultrafiltered. The ultrafiltrate is injected into male rats for some three or four days. Since the gonadotropic and thyrotropic fractions from the pituitary are not ultrafilterable, the Anselmino principle is distinct from these. The result of injection of the latter into the rats was to produce a new growth of islets of Langerhans and an increase in size of those already present. Since presumably such an extract would indirectly give rise to insulin-like effects, Anselmino proceeded to show that it lowers the blood sugar of dogs, that it depresses adrenaline hyperglycaemia, but that it has no effect on the blood sugar if the pancreas is removed. Thus it appears that the pituitary produces both an insulin-stimulating and an insulin-antagonizing hormone. Continuing on similar lines in regard to the influence of the pituitary on other glands, Anselmino and his colleagues found that extracts could be prepared which, injected into rats, resulted in a marked enlargement of the parathyroid glands, with increase in the clear faintly staining

principal cells, decrease in the more deeply staining cells, and absence of oxyphil cells. Further investigation revealed that these extracts increased the serum calcium of rats and dogs, but failed to do so if the parathyroids were extirpated. Thus it seems that the pituitary elaborates a parathyroid-tropic hormone. The next step in Anselmino's researches¹ was the demonstration in the infantile female mouse (castrated) of an enlargement of the adrenal cortex after injection of a pituitary extract which differed in properties from all hitherto known extracts except the pancreatropic one he had previously described. The histological evidence given in his most recent paper seems satisfactory, and shows that the increase in size of the adrenal cortex is principally restricted to the zona fasciculata and the zona glomerulosa. This work is the more impressive since Collip and his co-workers had previously found that the atrophy of the adrenal cortex which follows hypophysectomy can be prevented by injections of pituitary extracts containing what Collip calls the adrenotropic hormone. The position thus seems to be that the anterior pituitary gland exerts a controlling influence on the whole endocrine system; this is not only in regard to the secretory activity of the already existing gland tissue, but it can stimulate an increased growth of such tissue. It looks almost as though the pituitary had now established its right to be called the master gland.

CARBOHYDRATE METABOLISM AND LIVER FUNCTION

In a recent article Mollerstrom² attempts to explain the daily variations in the blood sugar in diabetes by relating them to a periodic rhythm of liver activity both in carbohydrate and in biliary function. It has been known for many years that when some diabetics are given three or four equal meals in the day the most likely to produce glycosuria and hyperglycaemia is breakfast. Mollerstrom has convincingly confirmed this fact and has adduced for the first time a reasonable explanation founded on experimental work by Forsgren. The latter found a twenty-four-hourly periodicity in which glycogen and bile salt production alternate. The glycogen content of the liver is highest from about 3 a.m. to 11 a.m. and rapidly decreases after this, largely independent of food, while the bile acid content simultaneously increases and reaches its maximum in the evening. Thus an inherent rhythm of high glycogen and low bile acid production alternates in the liver. These facts seem to be clearly proven, and not only adequately explain why breakfast alone may produce glycosuria in diabetics, but why, in the insulin case, there is such a marked tendency to hyperglycaemia from 7 a.m. to 11 a.m. The author suggests that a far better effect can be obtained by giving insulin much earlier than usual in the morning—say, at 5 or 6 a.m.—instead of only half an hour before breakfast. In most cases, however, such a suggestion cannot be carried out without great practical inconvenience, and fortunately makes little difference to the welfare of the insulin case. It is difficult to agree that such a rhythm should be considered in practice, instead of the more humane considerations of usual habit. The author

¹ *Klin. W'och.*, February 10th, 1934, p. 209.

² *Arch. Int. Med.*, November, 1933, p. 649.

does not discuss the importance of this endogenous glycogen rhythm on the still disputed theories of the origin of glycogen. Is it immediately laid down from ingested carbohydrate or mainly formed by endogenous production by the liver? The author's paper naturally shows the importance of the latter origin, but does not disprove the former. The problem of glycogen formation in the liver remains unsolved, but every fresh fact contributed emphasizes the importance of this mysterious substance in the nutritional supply of blood sugar.

THE CANNING OF FOOD

The preservation of food by canning received its first impulse in 1795, when Napoleon Bonaparte inspired the French Government to offer a prize for a new method of preserving food. The original containers were made of glass. The substitution for these fragile vessels of the more durable "tin can" was the happy thought of an Englishman. The earliest developments on a large scale took place in North America, where also later the researches of Prescott and Underwood into time and temperature conditions ushered in the era of scientific canning. In 1929 one hundred thousand workers were employed in the United States turning out a matter of 10,000 million cans of preserved food. Compared with these figures the dimensions of the industry in Britain are comparatively small, though the country consumes large quantities of imported canned goods. In a recent paper on canning Mr. T. N. Morris describes the process as carried on to-day, and deals with some technical problems of the industry. The tin plate of which the cans are made is mild steel covered with a coating of tin. This coating is extremely tenuous, less than one ten-thousandth of an inch in thickness. It is in consequence slightly porous and probably also suffers some stripping at bends when the cans are being made up or closed. In this way steel is left bare, and when an acid fruit is put into the can an electro-chemical reaction ensues between the two metals. At first the steel forms the corroding anode and the tin the non-corroding cathode; but soon these relations are reversed, and finally a static condition is established as a result of which acid fruits in cans often keep for years in good condition. Lacquering is largely employed by manufacturers in order to check corrosion of this kind and the subsequent impregnation of the food with tin or iron. Lacquer is an alcoholic solution of the resinous substance shellac, and with perfect lacquering, as the paper points out, protection of the food from the metals would be complete; but imperfect lacquering not only fails, it may even aggravate the condition it is intended to remedy. Too thin a lacquer does not close the pores in the tin coating. Thus the steel beneath is still left exposed, and the greater the area of steel to tin the more intense the electro-chemical reaction and the corrosion which it entails. The hydrogen freed by the electro-chemical reaction distends the cans without bursting them; it diffuses through the steel plate, and may by its pressure raise blisters in the outer enamel of cans. Mr. Morris rightly claims for canned foods the merit of being easily handled. The cans are proof to the ordinary shocks of transport, and secure their contents against

rats, mice, marauding insects, and other pests. That canned foods are not always sterile, and do not indeed require to be sterile, has been demonstrated by the work of W. G. Savage and others. It would be quite easy for the manufacturer to produce an invariably sterile article, but the temperature and duration of exposure necessary for such a result would in many cases macerate the food, altering it out of resemblance to its natural self and rendering it unsaleable. On the other hand, if the heating process is insufficient to control any proteolytic bacteria present the food will undergo "spoilage"—that is to say, decomposition—and once more be unsaleable. So between Scylla and Charybdis the manufacturer has to steer a course which in the early days of canning may often have been disastrous, but which now, thanks to accumulated experience, leads to results which, with scarcely an exception, are satisfactory to all concerned. The primary purpose of the processing by heat is to prevent loss by spoilage, not, as is sometimes supposed, to destroy bacteria which might otherwise give the consumer food poisoning. Every care is taken to exclude such pathogenic organisms at the outset by using the purest raw material only, and later to debar them from access by scrupulous cleanliness at subsequent stages. There is no good foundation for the view that canned foods, as such, are more apt than other prepared foods to convey the germs of that disease condition which, even in otherwise well-informed circles, is often still most erroneously termed "ptomaine poisoning." The question of the vitamin content of canned foods is of some moment. The capacity of a vitamin in a food to withstand the heat of processing depends primarily on its general power of heat resistance. The thermostable vitamins may be expected to survive in the finished product. But even the vitamins which belong formally to the thermolabile class may show themselves capable of withstanding heat if heated in the absence of oxygen. This condition is one which may be said to be almost expressly furnished in the routine course of the canning process, for the producer, in order to prevent the development of the aerobic bacteria which originate spoilage, makes every effort to reduce the air in his cans to the vanishing-point. There would therefore appear to be warrant for the claim that, so far as vitamin content is concerned, canned foods in general are not significantly inferior to their fresh originals. On this showing the canned tomato, described as especially rich in vitamin C, is a reservoir of antiscorbutic virtues which can be usefully drawn upon during the lean seasons when fresh fruit and vegetables are hard to come by.

A SAFE MILK SUPPLY

The Minister of Health, Sir Hilton Young, and the Minister of Agriculture, Dr. Walter Elliot, received, on March 27th, a deputation of scientific workers arranged by the London School of Hygiene and Tropical Medicine, and consisting of Dr. J. A. Arkwright, Professor J. C. G. Ledingham, Dr. F. C. Minett, Professor H. Raistrick, Professor G. S. Wilson (chairman), and Dr. N. C. Wright. They were introduced by Sir Austen Chamberlain, chairman of the Court of Governors of

the School. The object of the deputation was to bring to the notice of the Government its views as to the desirability of ensuring a clean and safe milk supply for the country in general, with particular reference to the policy of the Government as announced by the Minister of Agriculture on February 22nd. The deputation urged a measure of compulsory efficient pasteurization of all liquid milk intended for human consumption, coupled with measures for the eradication of disease in cattle and the stimulation of clean milk production. A memorandum, embodying proposals for a policy which might receive the support of medical, veterinary, and agricultural interests, was put in. The Ministers, in reply to the points raised, said that these were under examination by the Cattle Diseases Committee of the Economic Advisory Council, and the report of the committee and the views of the deputation would receive careful consideration by the Government. The legislation about to be introduced would be in general terms, and would permit full consideration to be given at a later stage to the matters dealt with by the deputation.

ROYAL MEDICAL BENEVOLENT FUND

The annual general meeting of the Royal Medical Benevolent Fund took place on March 22nd, with Sir Thomas Barlow presiding. Reports were made to the meeting by Dr. L. G. Glover, the honorary treasurer, and Mr. R. M. Handfield-Jones, the honorary secretary, which showed that although last year a considerable number of new subscribers were enlisted, and the revenue from subscriptions and donations increased, reaching a total of £11,856, it was insufficient to meet the volume of applications for help which the committee could not resist. It is the income from this source, after a certain deduction has been made for working expenses, which provides the annual maintenance grants and the emergency and single grants, and under these headings the committee has been called upon to vote £12,582, with the result that the reserve fund has been drawn upon to the extent of £1,435. Unless a larger measure of support is forthcoming this year the committee will have to reduce its grants distribution by £1,700 as compared with last year's figure. As many as 606 applicants for grants had their cases sympathetically considered during the year, and in addition to its annual and occasional grantees, the Fund has 191 annuitants on its books. Taking the grants and annuities together, the amount distributed reached the record figure of £18,920, and this was done on an administrative and publicity expenditure well below 10 per cent. of the income. A number of pathetic cases were described to the meeting. One was that of a 75-year-old widow of a medical man, who has spent the last four years nursing her husband, and declares that, having worked all her life, as soon as she possibly can she will start again, but at present is too worn out to do anything—"four years of nursing takes it out of one." In this case a grant of £26 has been made to supplement the old-age pension, the rent of a cottage, and the sale of some personal belongings, which are her only sources of income. The daughter of a medical man, who has been similarly assisted, is a music teacher reduced to selling her violin to buy

food. Another lady, also the daughter of a medical man, has maintained herself as a letter carrier in a wild and scattered district of Scotland until she has become paralysed and bed-ridden. The legacies received during 1933 amounted to £4,823, a sum which has been transferred to capital account. The book value of the Fund's investments is £160,267; the income from these investments is almost wholly absorbed by the provision for the annuities. The largest sum paid in a single annuity is £100. Votes of thanks were passed at the meeting, first of all to the Ladies' Guild attached to the Fund (which itself makes relief and maintenance and educational grants amounting to more than £5,000 in the year), to the British Medical Association and its Charities Committee (which allotted £1,446 to the Fund during the year), to the Medical Insurance Agency (for help which has now extended over very many years), and to the editors of the medical journals (for much useful publicity). On the motion of Mr. Warren Low, seconded by Dr. R. O. Moon, Sir Thomas Barlow was re-elected president, Dr. Glover honorary treasurer, and Mr. Handfield-Jones honorary secretary. The names of Sir Ashley Mackintosh, Professor D. P. D. Wilkie, and Professor Archibald Young were added to the list of vice-presidents, on the motion of Dr. C. O. Hawthorne, seconded by Dr. Herbert Spencer.

SIR HENRY WELLCOME

The American Pharmaceutical Association has conferred its Remington medal for distinguished service to pharmacy upon Sir Henry Wellcome, LL.D., F.R.S., Hon. F.R.C.S., founder of the Wellcome Research Institution and head of Burroughs Wellcome and Co. Apart from the research and experimental laboratories of the business firm, Sir Henry Wellcome has established a number of scientific research laboratories and research museums which are co-ordinated under separate direction as the Wellcome Research Institution, whose fine new building in the Euston Road, London, has not yet been formally opened. We learn also that the President of the French Republic has recently conferred the honour of La Croix de Chevalier de la Légion d'Honneur upon Sir Henry Wellcome.

We publish in the *Supplement* this week the letter addressed to his fellow practitioners by Dr. H. Guy Dain, announcing his candidature for election to the General Medical Council to fill the vacancy among the direct representatives for England and Wales caused by the death of Dr. Christine Murrell.

We are asked to amend the notice of the programme for the Section of Surgery at the forthcoming Bournemouth Meeting, which appeared in the *Supplement* of March 31st (p. 122). The discussion on "Bad Surgical Risks," on Thursday, July 26th, will be opened by Mr. Gordon Taylor of London, followed by Professor A. H. Burgess of Manchester and Mr. Ernest Finch of Sheffield. On Friday there will also be a short paper by Mr. G. A. Mason entitled "Post-Operative Management of Cases of Acute Empyema Thoracis."

New Zealand

[FROM OUR CORRESPONDENT IN WELLINGTON]

Physicists and Radiotherapeutics

The New Zealand branch of the British Empire Cancer Campaign is impressed with the extreme variations in dosage and control of deep x-ray therapy machines and the varying and conflicting methods of radium and radon application. This subject was discussed at the Fourth Cancer Conference at Canberra in Australia last year, and is to be further considered at the conference in April. In the meanwhile, the physicist who has been in charge of the radon plant in Wellington has been engaged, with the assistance of a grant from the Travis Cancer Bequest, to act in an advisory capacity to the various cancer treatment centres in New Zealand. He has been sent to Australia for four months' research work, and will first study under Professor Laby, F.R.S., of Melbourne University, and Mr. Turner, physicist to the Commonwealth Government; later he will take a course of study at Sydney. Spectroscopic and other methods of measuring dosage will be studied and an attempt made to standardize and calibrate the plant used for this form of treatment at the various centres in New Zealand. At the Cancer Clinic in Wellington, during the past four years, various methods of radium and deep x-ray therapy have been applied, and the results have steadily improved. Still different methods have been used in Dunedin and Christchurch, and more uniformity is desired in the light of experience, greater accuracy and certainty of dosage, and greater protection for both patient and operator. The establishment of a course of study in radiology, perhaps at Melbourne, has been discussed; the course would be for surgeons who wish to qualify to treat cancer by combined surgical and radiological methods, and a diploma would be given. The impression is also strengthening that the services of a qualified physicist are necessary in all radiotherapeutic clinics.

Charge of Manslaughter Against a Nurse

A verdict of "Not guilty" was returned in a recent case in which a nurse, who was formerly matron of a public hospital in a small town in New Zealand, was charged with manslaughter, in that, being in charge of a patient, she did not take sufficient care, with the result that her alleged neglect led to the patient's death. The deceased, a maternity patient, died after an enema had been given by the accused, who was relieving the maternity nurse ordinarily in charge of the ward. It was found that the basin used in giving the enema had contained a solution of carbolic acid, left in a cupboard by the maternity nurse. The facts were not disputed, and no evidence was called for the defence. The counsel for the accused pleaded that the Crown had failed to prove culpable negligence. The accused had been under the impression that she was handling an innocent solution, and there was no reason why she should have expected it to be otherwise. The law required reasonable caution and care, not the utmost caution. The jury gave its verdict after thirty-five minutes' consideration.

To the Antarctic

The importance of a doctor in a Polar expedition was exemplified by the regrettable serious illness of the doctor with Admiral Byrd's expedition, and his return to New Zealand in the ship *Jacob Ruppert*. Admiral Byrd sent a wireless message to New Zealand intimating the illness and early return of the sick surgeon, and appealing for a doctor to serve at the expedition's base in Little America for at least a year. There was more than one

volunteer, and the services of a Nelson practitioner were accepted. It was at first arranged that the *Jacob Ruppert* should make a further voyage to the Antarctic with the relieving doctor on board, and that a plane from the expedition base should meet the ship at sea a considerable distance from the Bay of Whales. In the meantime, however, the research ship *Discovery II* arrived at Auckland, and proceeded to Port Chalmers to embark the doctor for the Antarctic. The other ship of the Byrd expedition, the old Arctic exploring ship now known by the name of the *Bear of Oakland*, will, if the ice permits at a suitable time, sail north to meet *Discovery II* to save the latter as much time as possible. On the voyage south the *Discovery II* will call at the Antipodes Islands to search for castaways. During the return trip from the ice barrier to New Zealand the captain of the *Jacob Ruppert* was taken ill with severe pneumonia, and his life was almost despaired of. The doctor on board, invalided from the Antarctic, devoted his attention to the captain, and his skilful treatment and devotion are highly praised by all on board, not least, of course, by the captain himself. Two facts emerge from a consideration of these arrangements; first, that wireless has bereft the Polar regions of silence and isolation; and, secondly, that, as in ancient times, a doctor should be honoured and cherished as being "worth many men."

England and Wales

Centenary of John Heysham of Carlisle

On March 23rd a special service was held in Carlisle Cathedral to celebrate the centenary of the death of Dr. John Heysham, founder of the Carlisle Dispensary and author of the Carlisle tables of mortality. This was followed by a meeting in the Crown and Mitre Hall, when Dr. C. M. Graham delivered a commemorative oration and the president of the Institute of Actuaries gave an address on the Carlisle mortality tables. Dr. Graham reviewed the life and surroundings of Heysham. After being educated in a school belonging to the Society of Friends he had been apprenticed to a surgeon in South Westmorland, and had combined with his work the study of bird life in the local dales and of sociology. During the latter part of his five years' apprenticeship he worked at Latin and mathematics, and then went to Edinburgh, where he qualified in 1777. In the following year he started practice in Carlisle, where his first activities seem to have been directed against the prevalent ignorance and superstition in matters of health and sickness. His passion for accurate information led him to realize at once that very little was known about the community as a whole, and he therefore set out to compile a statistical registration of births, deaths, marriages, prevalent diseases, and the effects of various local industries on the duration of life and the incidence of disease. Very early in this work it became apparent that important issues were emerging. From the beginning of 1779 to the end of 1787 he persevered, by which time his gifts as a statistician had become well known to the leading insurance societies throughout the kingdom, and eventually the Carlisle tables of mortality were accorded general acceptance. Their data were found to be more reliable than those of the Government, and they were adopted by all the leading countries of the world. One immediate effect was the incentive to investigate the causal conditions of the more serious infections. At that time typhus fever and small-pox were rife in Carlisle, and Dr. Heysham was soon able to incriminate the local badly constructed and ill-ventilated houses. Action followed, and this sanitary science pioneering quickly wrought great benefit. Meanwhile his

own practice extended rapidly until his dwelling proved quite inadequate to the demands on it. The Dean and Chapter of the Abbey provided a room for him above the Abbey Gate as an emergency measure, and a subscription list was opened. In 1782 Dr. Heysham was thus enabled to found the Carlisle Dispensary, and larger premises were later acquired in the Tithebarn, Heads Lane. In 1857 the present Dispensary building was established in Chapel Street. Dr. Graham remarked that at the inauguration of the Dispensary his great-grandfather had been associated as honorary physician with the founder. In addition to these labours, Dr. Heysham was a justice of the peace and a deputy lieutenant for the counties of Cumberland and Westmorland. He was very active politically under the Lowther Tory domination of the period, being an ardent partisan, but towards the end of his life his sympathies became Whig. He was intimately associated with the mayor and corporation. It is recorded of him that he never had a day's illness in the eighty-two years of his life.

Heysham's Contribution to Statistical Science

Mr. W. B. Elderton, president of the Institute of Actuaries, said that Dr. Heysham's new contribution to statistical research was his recording of the population and the mortality person by person and age by age, as no one previously had done. He produced a census in 1780, which was the first mortality table of the kind now taught to actuarial students; this was made possible by the accuracy of his statistics rendering possible intelligent interpretation. In 1875 about one-third of assurance offices were still using the Carlisle tables, and five were still employing them in 1880, although by that time more suitable tables had been evolved. The criticisms of them which led to their ultimate supersession had actually arisen from the following to their logical conclusions of the principles which Heysham had himself brought to light. Under the age of 30, he had set himself to counting the houses and inhabitants, tabulating his results, counting the deaths and setting out their causes age by age and person by person, recording influences likely to be causative, and then repeating the whole process in order to verify his deductions. Without such pioneer work it would have been impossible to frame the schemes of pensions and insurance which were so prominent to-day. Mr. T. G. Kyd, secretary to the Government Actuaries Department, compared Heysham's work with the pioneer achievements of Harvey in medicine. As a fitting conclusion, to the commemoration ceremony a fund was inaugurated to improve and modernize the Carlisle Dispensary, which still depended entirely on voluntary support. It was mentioned that at his death Heysham had left a sum of £1,000 to the Carlisle Corporation to endow a people's park and recreation centre. This has now reached the figure of nearly £2,800, and would be devoted to the provision of a Heysham Park in the Raffles area of the city. The work is now nearing completion.

The One-Pipe System of Drainage

A matter which has received considerable attention lately among surveyors, builders, and domestic engineers is the installation of the one-pipe system of drainage. This modern system, for suitable buildings, has been advocated by sanitary authorities and the professional associations concerned, but it does not comply with the present requirements of the L.C.C. by-laws. Accordingly, the Central Public Health Committee of the Council is proposing to amend the by-laws to permit of the installation, under conditions, of this system. In ordinary drainage the removal of excretal matters from water-closets, slop-sinks, and urinals is effected by a pipe connected

direct to the drain, while the removal of waste water from baths, lavatory basins, bidets, and sinks is carried out by means of a second pipe, separate from the other, discharging the waste water over or into a properly trapped gully connected to the drain. In the one-pipe system the pipes from all these outlets are connected direct to the drain by a single pipe, to which they are joined. The primary distinction between the two arrangements, therefore, is that in the one-pipe system drain air is in direct contact with the water content of the trapped outlets of all the connected fittings, while in the two-pipe system it is in direct contact only with the water content of the trapped outlets of fittings receiving excretal matters, as aerial separation between the drain and the waste pipe conveying waste water from baths and lavatory basins is secured by disconnecting the waste pipe at the point of discharge over or into the trapped gully. The one-pipe system is largely used in the United States, where it is said to be satisfactory in operation. It is considered that it can be made sanitariously efficient if deep-seal and otherwise suitable traps are used and adequate trap ventilation provided. It is expected that the use of the one-pipe system will be, in the main, limited to large buildings such as hotels, where from the standpoint of unsightliness it is desired to limit the number of exposed pipes to the minimum. It will probably be installed in many hotels where the provision of lavatory basins in bedrooms is usual. The waste pipes of these fittings will connect direct and be in aerial communication with the drain, and, where the drain is not intercepted from the sewer, in aerial communication with the latter. It is thus essential that every possible precaution should be taken to ensure that the trap shall have an effectual water seal, and the requisite specifications are made in the new by-laws. Ventilating pipes are also to be required for all traps connected with the one-pipe system. The by-laws await a second meeting of the Council for their confirmation.

A Costs Scale of Minimum Needs

Sir Hilton Young, the Minister of Health, received a deputation on March 23rd from the Children's Minimum Organizing Committee. The deputation was introduced by Miss Rathbone, M.P., chairman of the committee, and included Sir Francis Acland, M.P., Mrs. Hubback, Miss Tuckwell, Mrs. Drake, Miss Shaw, Miss Phillips, Miss Hawtrey, Dr. Geffen, and Miss Green. It urged that a scale representing the cost of the minimum needs for the health of families and individuals should be determined, adjustable from time to time and from place to place according to variations in the cost of living, and should be used for the guidance of authorities in all forms of relief and assistance; that the existing discretionary powers of local authorities to provide milk for children under 5 and for expectant and nursing mothers should be made compulsory; and that the practice of rebates from rents of municipal houses, in respect of children or of income in proportion to the number of children, should be encouraged. The Minister, in reply, said he would first recall the deputation's attention to what the Prime Minister had said when receiving a similar deputation from the committee recently. Scales, though to be regarded with caution, served a useful purpose as a working guide to remove anomalies. The contemplated Unemployment Assistance Board would provide a machinery for dealing with the whole problem on a more adequate basis than had been possible in the past. He shared the committee's keen interest in the question of milk to children and mothers, and he was engaged, with the Departments concerned, in working out the best distribution of the considerable moneys which the Government had afforded for this purpose. Pressure, where necessary

in the ordinary course of administration, was to be preferred to turning the statutory power of local authorities into a general obligation. Local authorities had been given very elastic powers for relating rents to means, but he himself had almost no power of intervention.

Drinker Respirator at Great Ormond Street

By the generosity of the Imperial Chemical Industries the Hospital for Sick Children, Great Ormond Street, has been presented with a Drinker respirator, which was installed at the beginning of March. At a Press demonstration, held on March 14th, Mr. R. W. Gorman Davis of the firm of Siebe Gorman, and Dr. G. P. Crowden, lecturer on industrial science at the London School of Hygiene and Tropical Medicine, explained, with the aid of a cinematograph film, the working of the apparatus, while Dr. F. J. Poynton, senior physician to the hospital, described the steps by which it had been made available. The instrument was, he said, used for infantile paralysis and diphtheria where the respiratory muscles were involved. Other indications were partial electrocution, gas poisoning, drug intoxication, drowning, and alcoholic coma. Research would, he felt sure, reveal yet further indications for its use.

The history of the Drinker respirator begins in 1929, when the engineer whose name it bears and Dr. L. A. Shaw demonstrated the invention at the Harvard University School of Public Health, and instructed Dr. G. P. Crowden in its use. In 1931 Professor Drinker brought over the latest type of respirator to this country. Messrs. Siebe Gorman, whose attention had already been drawn to the uses of the apparatus, undertook to modify the motors to suit the requirements of hospitals, and the apparatus was taken successively to Bart's, University College, Oxford (where it saved the first life in this country), and the National Hospital, Queen Square. In October last year Dr. Stowell and Major Freeth of Imperial Chemical Industries made it possible for a specially adapted apparatus to be presented to Great Ormond Street Hospital: this has been made by Gorman's.

Scotland

Neuro-Psychiatric Institute, Glasgow

The annual report of Dr. W. M. Ford Robertson, director of the West of Scotland Neuro-Psychiatric Research Institute, states that this institute has been reorganized and re-equipped in the past year. Certain structural changes were made to provide a separate room for biochemical and serological work, and a complete microphotographical department with dark room. Additions were also made to the permanent fixtures, so that the laboratory is now regarded as fulfilling the most modern requirements. During the year the number of routine investigations carried out at the laboratory was 958, including chiefly flocculation tests and Wassermann reactions. The aim of the institute has been to maintain a critical attitude towards established methods for the sero-diagnosis of syphilis, and more especially towards the Wassermann reaction. The director paid some forty-five visits to the contributing mental hospitals with the object of maintaining contact with their pathologists and medical officers in regard to research. In this connexion an investigation into the calcium metabolism of mental disorders was begun at Hawkhead Mental Hospital. In Woodilee Mental Hospital collaborative work on pneumococcal infections was carried out, and also an investigation by the Schick test on some seventy-three patients and controls, to obtain the incidence of diphtheria suscep-

tibility in mental disorders. In Dykebar Mental Hospital a survey of the Schick test reactions in ninety-four inmates and twenty-one controls was made, while in Stoneycetts Mental Defective Institution the incidence of susceptibility to diphtheria was investigated in over 300 inmates. A preliminary inquiry into the question of allergy, in a small group of epileptics, was undertaken at Lennox Castle Mental Defective Institution. At Riccarton Mental Hospital a detailed investigation on leucogenesis in the manic-depressive group of the psychoses was carried out by making a four-hourly survey of the leucocyte condition in seven cases from the day of admission to discharge; this research entailed some 2,000 individual counts, and the findings were given in a paper before the Royal Medico-Psychological Association. The financial statement shows that the expenditure of the institute for the year 1933 amounted to £2,249, with a revenue of £2,142.

Deaconess Hospital, Edinburgh

Presiding at the annual meeting of the Deaconess Hospital, of the Church of Scotland, held in Edinburgh on March 23rd, the Rev. Alexander Fiddes said the hospital had sustained a very great loss in the death of Lord Sands, who had been on the Board of Management for thirty-three years and chairman for twelve years. He had been an outstanding man of his generation, a distinguished judge, a great churchman, and a great citizen, and his humanity had brought him into touch with many movements of the time. In submitting the annual report the chairman stated that 891 adult patients had been treated in the hospital during the year and 329 infants and children in the children's ward. There had been over 6,000 out-patients, and the district nurses attached to the hospital had paid 2,506 visits, chiefly to maternity cases. For several years it had been realized that the present building was inadequate, and the hospital had recently acquired, from the Edinburgh Corporation, a piece of ground and a vacant police station, both adjoining the hospital, at a cost of £4,000. The contemplated improvements would cost over £30,000, of which £7,000 was already in hand. The Board of Management had still to approve the scheme, which included remodeling the present building, additional nurses' quarters, an enlarged out-patient department and children's ward, and a new operating theatre. After plans had been approved an appeal would be made to the public.

Aberdeen Royal Mental Hospital

It was stated at the annual meeting of the Aberdeen Royal Mental Hospital, on March 21st, that the revenue of the institution had amounted in the past year to £63,700, which was £2,000 less than in the previous year. Expenditure, however, had been reduced to £61,100, so that the year's working showed a surplus of £2,600. Progress was being made with a scheme of reconstruction and extension, which, it was estimated, would cost somewhat more than £100,000. The annual report of Dr. Dods Brown, physician-superintendent, emphasized the need for early treatment in mental illness, and the high percentage of recoveries that resulted when patients and their friends took early advantage of the opportunities afforded for treatment. He also emphasized the grave danger to the community which resulted from the full freedom allowed to a large number of mental defectives.

Glasgow Samaritan Hospital for Women

At the annual meeting of the Royal Samaritan Hospital for Women, Glasgow, Professor J. M. Munro Kerr expressed the view that the future of voluntary hospitals depended upon an extension of their paying blocks. Unless these were established voluntary hospitals would

be swept under the care of the local authorities. The more pay-beds there were in a hospital the more efficient would be the service of the non-paying part of that hospital. It was stated at the meeting that the hospital had had to transfer £3,000 from extraordinary income to make good the deficiency in the past year's ordinary revenue. The deficiency had arisen partly from diminished subscriptions and partly from reduced interest on securities held as capital. A proposal had therefore been made during the year to establish paying wards. Principal Sir Robert S. Rait said the hospital could only continue its good work by increasing its resources through the addition of paying wards. Such wards were, he said, a very real need of our time.

Aberdeen Maternity Hospital

At the annual meeting of the Aberdeen Maternity Hospital it was intimated that the directors had decided to proceed at once with the erection of a new maternity hospital at Foresterhill. Owing to financial stringency, however, the accommodation of the new building would, for the time being, be restricted to thirty-four beds; ten further beds might be added later. The cost of the proposed hospital was estimated at over £40,000, exclusive of furnishing and equipment; of this £27,000 was already in hand, and a grant of £7,500 had been promised from the Ross-Crombie Fund if the directors speedily raised the remaining £5,000.

Ireland

Royal Maternity Hospital, Belfast

The first annual meeting of the new Royal Maternity Hospital was held in the King Edward Memorial Hall, Belfast, with Professor R. J. Johnstone presiding. The annual report states that the new Committee of Management, nominated by the Boards of the Incorporated Belfast Maternity Hospital and the Royal Victoria Hospital, was appointed in January, 1933. A period of the strictest economy was observed; nothing was bought that could be done without, and many articles of equipment which would otherwise have been discarded and replaced were made to do service for another month or so. The expenditure for the five months in the new hospital was £3,364 13s. 4d., and the income, not including a £1,000 loan from the Royal Victoria Hospital, was £3,523 16s. 7d. There was thus a small credit balance of £159 3s. 3d. The annual cost of the hospital will be approximately £8,200. This figure does not cover heating, laundry, and telephones: these services are supplied by the Royal Victoria Hospital. The medical report states that 1,157 patients were admitted to the two hospitals during the year, including sixty-six patients to the Rea Block (the septic ward) in the Royal Maternity Hospital. There were 821 babies born in the hospital, and twelve mothers died. Of the latter, five were ante-natal patients, two dying from pneumonia during an outbreak in the hospital in the early months of 1933, and the other three from shock, severe anaemia, and cardiac disease. The death rate among ante-natal patients was 0.59 per cent., but among patients admitted as emergency cases it was 3.6 per cent. The ante-natal department continued to be well attended, with 1,500 new patients and 5,051 reattendances, making a total of 6,551. The number of ante-natal patients admitted to the hospitals was 912, fifty-three of whom were in hospital on more than one occasion. Professor Johnstone, in moving the adoption of the report, paid tribute to Colonel Forrest, Mrs. Herbert Ewart, and all those who had done

laborious and useful work in connexion with the old hospital and the new Maternity Hospital. The committee of management of the new hospital had named a ward in acknowledgement of the services of the Ewart family to the institution. He also thanked those who had helped to raise funds for the building of the hospital, and in this connexion it was only fitting that he should mention especially the Duchess of Abercorn, who continued to show great interest in the institution, and had intimated her readiness to come and receive the gifts on the hospital's first pound day. In conclusion, Professor Johnstone referred to the committee formed last August to further the interests of the Royal Maternity Hospital. It had taken the name of "The Gleaners," and its aims were to help the Management Committee and save expense wherever possible, and to raise funds in various ways.

Amalgamation of Dublin Hospitals

Sir John Lumsden presided at the seventy-second annual meeting of the governors, subscribers, and friends of the Convalescent Home, Stillorgan, held in the Royal College of Physicians of Ireland. The report submitted to the meeting stated that the number of patients admitted during the year was 627, an increase of eighty over the number for the previous year. The Committee of Management, however, much regretted the continued falling off in the number of subscribers, due no doubt to decreased income and to the deaths of previous subscribers. Acknowledgements were made to the Dublin Hospital Sunday Fund for its grant of £260 2s. 8d., and to the Dublin Corporation for £133 6s. 8d. The statement of accounts showed an excess of income over expenditure of £687 5s. 9d. In moving the adoption of the report and statement of accounts, Sir John Lumsden said that the Dublin hospitals had been passing through a rather anxious period, but the Hospitals Sweepstakes Fund, with its wonderful organization, had practically placed them on their feet again. Many hospitals held out for a long time in the hope that they could continue to be maintained as charitable institutions, supported as of old by voluntary subscriptions; but when the sweepstakes came along subscriptions fell off, and nearly all the hospitals were driven into participation in the sweepstakes fund. A commission had been set up to consider the whole problem of hospitals in the Free State and to report to the Government. For a long time he had been in favour of the amalgamation of certain hospitals. No city of equal size had as many hospitals as Dublin. Many of them, however, were badly constructed, could not be modernized, and were more or less out of date. He hoped the commission would consider this question of the amalgamation of certain hospitals. If four or five of them were scrapped, and a new one built with, say 500 beds, opportunity would be afforded for better and more up-to-date treatment and diagnosis. The patients would benefit, and if the new hospital were endowed more free cases could be admitted, and there would be improved teaching facilities. In any scheme which might come before the commission he hoped there would be provision for convalescent home treatment.

Diphtheria in County Dublin

Dr. J. A. Harbison, medical officer of health for County Dublin, reported an outbreak of diphtheria in Clondalkin and Rathcoole during the period March 5th to 15th, twelve cases having been notified to date. One child had died, another was dangerously ill, and a school had been closed. Dr. Harbison considered that the public should be warned to seek medical attention immediately a child complained of sore throat, especially if the sore throat was associated with headache or other symptoms.

Reports of Societies

PATHOLOGY AND TREATMENT OF LYMPHADENOMA

At the Section of Medicine of the Royal Society of Medicine on March 27th, with Sir FARQUHAR BUZZARD in the chair, a discussion took place on recent advances in the pathology and treatment of lymphadenoma.

THE PATHOGENIC AGENT

Dr. MERVYN H. GORDON limited his opening remarks to the pathological side. Lymphadenoma, he said, formed a link between granulomata of known aetiology and malignant disease. Its aetiology, therefore, might well be a key position, opening up the possibility of a successful attempt on sarcoma, the form of malignant disease nearest to it. It had been described as a specific disease affecting primarily the lymphatic glands, and spreading to other organs. When the three characteristic changes—fibrosis, giant cells, and eosinophils—were all present the evidence for lymphadenoma was complete, but in practice many cases occurred in which one or more of these three changes were lacking. There might be proliferation of the reticulo-endothelium without typical giant cells, or the fibrosis and eosinophils might be absent. There seemed to be a series of gradations between typical lymphadenoma and typical lymphosarcoma or reticulosarcoma. The term "Hodgkin's group" seemed to be a convenient one for these conditions until more was known. Such incomplete knowledge as had been gained with regard to lymphadenoma depended upon clinical methods and anatomical pathology (macroscopic and microscopic). On the other hand, there was a definite disease with specific clinical and histological features which enabled it to be recognized if reproduced in an animal. The course of the disease was suggestive of an infective agent, but its apparent uniform fatality tended to bring it nearer to malignant disease than to the granulomata. It seemed possible that when the pathogenic agent did come to light it would be found to be more nearly allied to that of sarcoma than to the granuloma-producing agents at present known.

Dr. Gordon then described the attempt which had been made during the last six years, with the co-operation of the staff of St. Bartholomew's, to obtain further light on the aetiology. This work had proceeded along three lines: (1) the search for a pathogenic factor in the glands removed from lymphadenoma cases; (2) microscopical studies of this material for the presence of an organized agent; (3) allergic tests. So far as possible the procedure had been from the known to the unknown, and the results had been checked by the examination of control glands from other diseases. In the first place known granuloma-producing organisms were looked for, but cultures remained sterile. No evidence of spirochaetal infection could be obtained, though pseudo-spirochaetes were met with. There was no evidence that the tubercle bacillus (human or bovine) played an important part in lymphadenoma, nor was any confirmation found of l'Espérance's suggestion that the avian tubercle bacillus was the causative agent. Early attempts to produce any effect on laboratory animals by injecting them cerebrally with suspensions of lymphadenoma glands had been unsuccessful, the material probably not being suitable or the dose sufficient. In 1930, however, two Stockholm workers, Hellerstrom and Wassen, reported that they had succeeded in producing meningo-encephalitis in monkeys by cerebral inoculation of pus from the glands of cases of lymphogranuloma inguinale, a benign condition that appeared to belong to the lymphadenoma group. This experiment was confirmed and serial passage obtained. The agent was thus shown to be a virus, and was now established as a cause of lymphogranuloma inguinale. Accordingly, when suitable material from lymphadenoma came to hand, the cerebral inoculation of animals was

resumed, using a more efficient technique. As a result an encephalitic condition, frequently fatal, was found to be produced in the rabbit and the guinea-pig, though not, so far, in the mouse or the monkey. After an incubation period of one to several days these animals might develop symptoms similar to those produced by well-known viruses (vaccinia, herpes, psittacosis)—such as fits, teeth-gnashing, salivation, head-turning, tremors, paresis. Dr. Gordon showed a cinematograph film illustrating the characteristic movements. The first step was to see whether this curious action of lymphadenoma glands on the rabbit's brain could be applied for diagnosis. This matter had been under investigation now for three years, during which time glands from all sources, but chiefly those removed for biopsy in cases in which on clinical grounds lymphadenoma seemed possible, had been submitted to the rabbit test. It was plain that this biological test was capable of performing useful service in the diagnosis of lymphadenoma. So far he could recall only three cases in which a mistake had been made. In all of them the error was one of interpretation, a weak passage with a raw material alone being regarded as positive. In typical cases the reaction was pronounced, both with the raw material and with the same after it had been heated for thirty minutes to 65° C. The value of the test for diagnosis had been confirmed, in Edinburgh, by van Rooyen, who had obtained positive results in fifteen out of twenty cases of lymphadenoma, and negative results with glands from other conditions.¹ The test seemed to be of chief value in early cases of lymphadenoma. Later, when the disease had become chronic, the glands not infrequently gave negative results. The strongest reaction seemed to occur when all the three cardinal histological changes mentioned at the beginning were present in the glands. The nature of the pathogenic agent concerned in this aetiological reaction had not yet been settled. Its pronounced thermostability distinguished it from most of the known viruses, though not from all. Its presence in a given suspension increased as time went on, apparently from autolysis of the cells, and in glands from acute cases it could then be detected sometimes up to a dilution of 1 in 200. With such material he had confirmed van Rooyen's observation that it was filterable through bacterial filters such as the Seitz.

In view of Friedemann's interesting observations² the speaker had recently examined specimens of marrow, and found that the foetal ribs and spleen contained neither a proteolytic nor an encephalitogenic agent. A child's ribs at term were equally negative. By the thirty-third day, however, both agents were present in the rib marrow, and eight out of ten adult rib marrows were also positive in both respects. Pus gave almost, if not quite, as high a proteolytic titre as marrow, and all of eight specimens tested gave high readings, yet, when injected into the rabbit's brain, six of them were negative. The two positive specimens came from a case of pneumococcal empyema following appendicitis and from one of staphylococcal osteomyelitis. Although in some of the rabbits inoculated cerebrally the symptoms very closely resembled those produced by lymphadenoma glands, it seemed to him that in most of them the chief effect was one of paralysis, far more so than was usually the case with lymphadenoma gland suspensions, and he was not satisfied that the conditions induced were identical. Through the kindness of Colonel Hamerton he had recently been able to test rib marrow from a bear and a leopard. Both gave good proteolytic readings, but neither of them contained an encephalitogenic agent for the rabbit. The problem of the relation of these two agents, therefore, was complex, and required further investigation. The manner in which they acted was also at present obscure. If they eventually proved to be identical, then Medlar's hypothesis that lymphadenoma was primarily a malignant disease of the marrow would receive support. Whatever the outcome might be, the presence in marrow and pus of an encephalitogenic agent did not invalidate

¹ *British Medical Journal*, March 24th, 1934, p. 519.

² *Ibid.*, March 24th, 1934, p. 517.

the diagnostic value of the rabbit test when applied to glands from suspected cases of lymphadenoma. Recent work on vaccinia had proved that the well-known elementary bodies of Paschen were the actual virus of that disease. It was of much interest, therefore, to find that bodies closely resembling these vaccinia bodies were present in large numbers in suspensions of lymphadenoma glands. Dr. James Maxwell had also tested cutaneous allergy of lymphadenoma cases. The results with tuberculin were negative, and with extract of fungi no evidence of specific allergy was obtained. Wilson Smith had shown that a boiled extract of tissues containing vaccinia virus excited the specific allergic reaction in the skin of previously vaccinated persons, and therefore an extract on similar lines from dried lymphadenoma glands had recently been tried on lymphadenoma cases. He left it to Dr. Gow to refer to the results.

SOME CLINICAL OBSERVATIONS

Dr. A. E. Gow reminded the Section that this subject was last considered by the Society in 1926. He had nothing to add to what Sir Humphry Rolleston had said on that occasion on behalf of the Section of Medicine with regard to terminology, but the last few years had shown that the term "lymphadenoma" did not denote a single disease, but several morbid processes, much alike in their general characteristics, but yet showing minor differences in their symptomatology, course, prognosis, and therapeutic response. Sir Humphry Rolleston had said, eight years ago, that the cause of Hodgkin's lymphadenoma was unknown, so that it was necessary to fall back on its histological structure as the only means of defining exactly what was meant by the name. The possibility that lymphadenoma was a virus infection was beginning to receive considerable laboratory support, but clinically the disease bore no resemblance to other virus conditions in man, except granuloma inguinale. Dr. Gow described a number of cases, which he illustrated with photographs, x-ray pictures, and microscopic sections. One patient, a female aged 28, developed severe pruritus, which symptom persisted until her death from lymphadenoma three years and eight months later. She was treated by radiation, arsenic by three routes, and iron, but nothing was found to control the pruritus. Histological and biological tests were positive for Hodgkin's disease. The first attempt at specific therapy was with a chicken serum, but the conclusion was reached that the treatment was of no avail, and the same conclusion was recorded by other workers. In some cases the patients felt better after the injection, but the effect on the progress of the disease was disappointing. Later in this case a suspension of the patient's own glands, attenuated by 10 per cent. ether, was administered intramuscularly. This extract eased the pruritus for twenty-four hours, but was followed by an appreciable swelling of the nodes in the neck and face, which ultimately broke down. It was therefore justifiable to assume that the extract contained some active agent. Another patient, aged 30, had been under observation for three and a half years. She had a pendulous swelling on the right side of the neck. The gland histologically showed the typical Hodgkin's lesion. Tonsillitis was followed by swollen glands on the left side of the neck, which never subsided, and erysipelas in the left arm shortly preceded the development of a painful swelling in the left axilla. The sequel to a second bout of erysipelas involving the chest and left arm was the breaking down of glands on the right side of the neck, and later in the axilla, and the formation of very large fungating granulations. On the first occasion the pus aspirated was sterile, but later haemolytic streptococci and staphylococci were isolated. The patient was given two courses of sensitive vaccine prepared by Dr. Gordon. The first dose was followed in half an hour by a sensation of tingling in the glands of the neck, but injections on following days caused no obvious local or general disturbance. The spread of the disease, however, was not arrested. The case of another female patient presented many features of interest. Her father was

reported to have died of the disease five years before the daughter became affected. The mother contracted an acute form of the disease four years after the daughter, and died in eleven months. The death of the daughter took place four years and eight months after the gland was noticed.

With regard to the intradermal allergic test referred to by Dr. Gordon, Dr. Wilson Smith had demonstrated that a boiled extract of vaccinia virus prepared by his method was efficacious when injected intradermally. Lymphadenoma might be a virus disease, and the experiment had been repeated, using as antigen a boiled extract of dried lymphadenoma gland, prepared by Wilson Smith. No reaction was obtained with the first antigen prepared from raw lymphadenoma gland, but the gland dried *in vacuo* was next extracted in the same way, and had been tested on some thirty patients, of whom ten were controlled and all negative. The great majority of cases known to be suffering from Hodgkin's disease had always proved negative to the test, but in three cases in which the disease appeared to be resting a small local reaction appeared in twelve hours. The best reaction of all, however, measuring 3 cm. in diameter, occurred in the case of a female, aged 34, whose gland showed histologically definite evidence of lymphadenoma, but gave a negative biological test. This patient had been ill for more than three years. She suffered much from pruritus.

Concerning the effect of modern treatment, mainly irradiation, Dr. Gow said that there could be no doubt that life was prolonged, and, what was perhaps more important, the periods of remission, particularly in the earlier stages of the disease, were lengthened, and the patients were able to resume their occupation seemingly well.

X-RAY TREATMENT

Dr. W. M. LEVITT sent a communication, which was read in his absence. He said that x-ray treatment of this disease presented many essentially medical problems. Further progress could only result from the help afforded by physicians and pathologists. When presented with a localized focus of lymphadenoma the radiologist could practically promise its disappearance with adequate x-ray treatment. The extent to which this process could be carried was only limited by the amount of x-ray energy which could be safely poured into the body. In spite of the success of x-ray treatment, however, lymphadenoma could not be cured by x rays, except, perhaps, in very rare instances. Recurrences appeared, either in the initial site or other glandular areas, and although these recurrent lesions also responded to x-ray treatment sooner or later, the disease became widely disseminated in the chest and abdomen—so widely disseminated that the x-ray dosage that would be necessary to secure regression of all the lesions could not be applied. The treatment was, however, frequently successfully undertaken for the relief of pain and other pressure symptoms even at this stage, and until late in the disease the characteristic cachexia improved along with the disappearance of the local lesions.

After the initial treatment the time which might elapse before recurrence varied greatly. Only too often it was a matter of a few months, but occasionally the patients might remain in health for one, two, or more years. The intervals became shorter with successive recurrences, and in the end the disease became more resistant. When the disease was generalized the duration might be measured by weeks rather than by months. The failure to maintain the x-ray results obtained in the early stages of lymphadenoma was one of the most disappointing things with which radiologists had to deal. Probably they had been too ready to assume, when their attention was first called to a lymphadenomatous mass in a given region without evidence of disease elsewhere, that the palpable mass must be the initial focus of the disease. Was it possible that the initial focus was really in some of the deeper glands, and the first discoverable lesion was really a secondary deposit? If it could be shown that in a substantial percentage of cases the disease began in

a certain group of glands, there would be a glimmer of hope that, if such a group were adequately irradiated, at least a certain number of cases would result in permanent cure. Arguing on these lines, the rare instances of cure by x rays could be explained on the supposition that the lesion to which the rays were applied was really the initial lesion.

For many years it had been taught that the mediastinum should be treated in every case, and that had been his practice at St. Bartholomew's. The difficulty arose, however, over the consideration as to whether the abdomen should be included in the irradiation, because of the effect on the patient's general condition. The effects of x-ray treatment on the abdomen, especially when such treatment was also being applied to other parts, were quite severe. So far it had not been the practice to apply x rays to the abdomen as a routine treatment. With regard to questions of dosage, the masses disappeared with doses of suitable quality which were considerably below the tolerance doses of the skin and other healthy tissues. He believed that nothing was to be gained by increasing the dosage in the hope of arresting the inevitable march of the disease. Efforts made in recent years to improve the results of x-ray treatment had consisted in methods of regional irradiation, to which Finzi had applied the term "radiation bars." These entailed the exposure of large regions to repeated small amounts of radiation, and it was known what dosage might be safely tolerated in the abdominal and thoracic bars.

GENERAL DISCUSSION

Dr. ULRICH FRIEDEMANN repeated some of the conclusions given in his paper published in the *Journal* of March 24th (p. 517), and indicated some doubts as to the nature of the agent. He also pointed out that it had now been demonstrated that the agent which was pathogenic for rabbits was present not only in human bone marrow and spleen, but also in human leucocytes. Dr. VAN ROOYEN also described some of the work set out in his paper in the same issue (p. 519). There were three factors to be considered with regard to the pathogenic agent: (1) that it was a living agent of the ultra-microscopic class in the cell; (2) that it was some toxic product of the living agent; (3) that it was a ferment. In the absence of inclusion bodies and of transmission it could not be said to be a virus infection; but nevertheless animal transmission had never been satisfactorily established in such well-known bacterial conditions as typhoid. It was possible that what was being investigated was a virus exhibiting a high degree of specificity for lymphoid tissue which it would never be possible to produce in the experimental animal. Dr. F. PARKES WEBER wished to put forward another possible explanation of Hodgkin's disease. He was familiar with the arguments for an infective origin, but he did not believe the evidence was by any means conclusive, and there was just as much probability that Hodgkin's disease was neoplastic—meaning by a neoplastic disease the proliferation of a cell or a system of cells which served no useful or conservative purpose for the organism, and so might be benign or malignant. In this class he would include myelosis, lymphadenosis, and Hodgkin's disease. He did not speak with dogmatism, but suggested as a possibility for discussion that Hodgkin's disease was a more or less malignant proliferation of the reticulum, and he would name it "reticulomitosi," separating it from other conditions to which the word might be applied by giving it the prefix "Hodgkin's." There was no type of Hodgkin's disease which could not be explained as a more or less malignant neoplastic disease of the reticulum, because the reticulum was able to, and did, form all the cells which occurred in every type of Hodgkin's disease.

Dr. MERVYN GORDON, in reply, admitted that as yet there was no conclusive evidence as to the aetiology from the laboratory point of view—to one person a virus was suggested, to another a toxin, and to a third, possibly, a proteolytic agent—but he thought some progress was being made.

FUNCTIONAL DISORDERS OF THE BOWEL

At the meeting of the Medical Society of London on March 26th, with Mr. R. DAVIS-COLLEY in the chair, the subject for discussion was "Functional Disorders of the Bowel."

Dr. T. L. HARDY of Birmingham, in opening, said that the subject was not only a large one, but somewhat confused. There was hardly any specialty, qualified or unqualified, which had not contributed something—and often something harmful—to the study of these disorders, which were, indeed, the happy hunting ground of the specialist, and too often the despair of the general physician and practitioner. He confined his remarks to the colon, the dysfunctions of which stood in need of some clarification. Terms such as visceroptosis, atonic constipation, perhaps even spastic colon, were often inaccurate, and did but emphasize different views of the same essential disturbance of muscular imbalance. With regard to ptoses in general, one authority declared, many years ago, that there was no more harm in a dropped kidney than in a dropped "h," and that represented the modern position regarding the colon. The passage of food residues through the colon by mass movements showed remarkable variations in health by whatever method it was examined, and it was well-nigh impossible to define the border-line between orderly and disorderly function. The function of the colonic musculature was the maintenance of tone. Surgeons were familiar with areas of contraction occurring in short lengths of exposed bowel; it was difficult to know what significance was to be attached to the areas of local spasm as revealed by the radiograph. Knowledge of colon function, so far as this aspect was concerned, was very limited. The results of sympathectomy in such conditions as Hirschsprung's disease were promising, though as yet little beyond the experimental stage. Disorders frequently manifested themselves in a soil prepared through the agency of an unstable nervous system. Dr. Hardy divided the disturbances into four groups of "unstable colon": (1) hyperirritability; (2) hypertonicity, either of certain sphincters or general or local spasm of the colon; (3) hypo-irritability and hypotonicity of the colon, either generalized or localized; and (4) achaliasias.

The frequency of functional disorders of the colon was difficult to estimate. Hospital statistics gave little help: the intestinal neuroses diminished in frequency as the social scale descended. The figures of certain observers in England and America showed that functional disorders of the colon accounted for 20 or 30 per cent. of the total of abdominal conditions. Female patients preponderated. In his own series of 157 cases, the females numbered eighty-nine and the males sixty-eight—a much higher proportion of the latter than had usually been recorded. It was now realized that males were beginning to take their place among these colonic dysfunctional cases with greater frequency than formerly. Early middle-age seemed to be the period of greatest prevalence; fifty-one of his patients consulted him between the ages of 30 and 40, and the remainder were spaced with more or less uniformity between the ages of 20 and 60. Of these 157 patients 106 complained of constipation, but of that number seventy-four were submitted to a barium meal examination, and actual delay was discovered in fifteen cases only; in the remainder the colon emptied in normal time. No fewer than seventy-seven patients were taking irritant aperients, commonly vegetable laxatives and preparations containing phenolphthalein. A preparation called agarol was widely used; its manufacturers described it as dependable, and so it was, but its continued use was distinctly harmful. These purgatives were of undoubted value for occasional use, but for daily use they could not be too strongly condemned. Abnormal mental reactions were characteristic of many patients with colonic disorder. This abnormal mental reactivity was frequently associated with a particular state of nutrition, as in tall and thin individuals. The link between the causative factor and the clinical manifestation in these disorders was still a

matter for speculation. There was practically no experimental evidence to support the view that chemical or bacterial toxins were absorbed from the colon in so-called intestinal stasis in sufficient amounts to cause symptoms. Food allergy was a very real thing, and in its acute form well recognized. In his own series a familial or personal history of migraine was obtained in three cases only, and of asthma in one. There was certainly a danger in the too facile diagnosis of allergy. It was well known that the chronic intestinal invalid was unable to tolerate certain articles of food, and little was gained by attributing obscure symptoms to equally obscure phenomena. The symptomatology of functional disease of the colon was varied. It was often sufficiently characteristic to enable a diagnosis to be made with confidence from the history and the manner of its telling alone. The symptomatology was both local and general. The local symptoms had reference to the gastro-intestinal tract; the general symptoms manifested themselves particularly in the nervous and cardiovascular systems. Pain of colonic origin was usually referred to the lower abdomen. In his own series there was abdominal pain on the right side in forty-three cases, on the left side in thirty-eight cases; there was epigastric pain in forty-nine cases, this being aggravated by food in eight, improved by food in twenty, and uninfluenced by food in twenty-one. The disorder known as muco-membranous colic was fast disappearing, and one was tempted to hope that modern teaching on the harm of the purgative habit was bearing fruit. The general symptoms showed themselves as fatigue or irritability of the cardiovascular system, and vasomotor disturbances, such as palpitation. Temporary dyspnoea and coldness and blueness of the hands and feet were occasional complaints. He emphasized that many of these patients were suffering from something more than a disordered colon, and just as diagnosis involved a greater responsibility than the determination of the behaviour of the lower bowel, so must treatment aim at arresting the primary cause and not be content simply with the relief of the local symptoms.

THE SPASTIC COLON

Dr. THOMAS HUNT said that of ninety-three cases of simple indigestion without organic lesion he had grouped sixty-two under the heading of irritable spastic colon. The symptoms were extraordinarily varied, and often the most severe cases might show little by radiography or other examination. Similarly, there might be very gross organic lesions of the bowel with very few irregularities and symptoms referable to them. Displacements might be very extreme with normal function. Of the symptoms he wished only to mention one or two which afforded help in differential diagnosis. The first were the increase of discomfort in cold and the frequency of backache, both of which were particularly common in these cases of irritable colon. Another symptom he had met with in a good many cases was multiple generalized aching or bruised sensations in the muscles, which was generally described by the patients as rheumatism, and treated as such. Another characteristic symptom was a sensation of incomplete defaecation, which he believed in many of these cases to be a purely mental obsessive feeling. Frequency of micturition was also a common symptom. Nevertheless, he thought that sometimes a full bladder might be capable of exciting colon spasm. Loss of weight and vomiting sometimes occurred to a very severe degree, and were particularly increased by injudicious handling from the psychological point of view. He remembered one patient who vomited steadily for five days, simply because the nurses and the doctor had managed to give her the impression that she was not trying. On examining a case of irritable spastic colon there were three main points of tenderness in the right iliac fossa, and often in the left iliac fossa, and the epigastrium—over the sigmoid, over the caecum, and over the abdominal aorta.

Causes might be considered under four headings: reflex, from organic disease elsewhere in the abdomen; bacterial, with organisms in the colon itself; allergic factors; and

nervous factors. The last category was by far the most important, and he gave particulars of certain cases which had convinced him of the significance of the nervous factor. With regard to bacterial infection, he had gone through a number of the cultures in twenty-six of his cases with irritable colon, and had found nothing significant; the organisms of greatest frequency were the non-haemolytic streptococci. The importance of bacterial infection might be overstressed and do great harm, by fixing the patient's attention upon some physical illness. With regard to the abuse of purgatives, there was also here a big nervous element. On going through seventy-five cases of patients whom he had seen for other than digestive disorders, he found that thirty-seven had taken purgatives every night for years, and were in no way adversely affected. They complained of no symptoms referable to the bowel. He believed there must be some added nervous factor as well as the abuse of the purgatives before marked symptoms were produced. He drew attention to the character of some of the literature broadcast. One circular stated: "A clean colon spells youth, power, and magnetism and brilliance in society." That sort of bait was a very clever one for people who were, in fact, of the inferiority type. Another statement was: "It is the accepted verdict of medical authorities that appendicitis is entirely due to constipation." What a powerful stimulus to fear was such a statement as that in the right kind of subject!

From the point of view of treatment it was important to distinguish between cases of local reflex origin and true psychoneurotic or emotional cases. Mere psychological treatment was likely to have little influence on cases of true reflex habit spasm; on the other hand, the true psychoneurotic patient could be very much helped by reassurance and explanation. Of the psychological causes in his own series the most important was fear. This could be a potent cause of colon irregularity. Fear of organic disease was frequent, though not as common as was sometimes believed, and it was well to remember that in only a proportion of cases would the assurance that there was no organic disease be effective. Sometimes there was a fear of insanity, also a sense of guilt, as, for instance, after masturbation. Another important cause was frustration, especially of the sex instincts among unmarried women; and, again, there was the "kicking against the pricks" of many middle-aged persons carrying on uncongenial work in a hopeless environment. He mentioned a case of one young married woman who suffered from attacks of severe abdominal pain and diarrhoea at night, with a good deal of indigestion and discomfort during the day. When he attended her he found that to get to her bedroom he had to pass through a corridor of coffins, her husband being an undertaker, and no doubt these macabre surroundings had influenced her malady. Another case, also that of a young married woman, cleared up completely after the death of her mother-in-law, who had lived in the household and had dominated her. Lack of work was sometimes a cause, and many of these cases occurred in patients who had little to do. Harm was sometimes done by the advice of doctors that the patient should have a long holiday, no account being taken of the choice of company, or the worry which might follow from the thought of loss of work and income. A faithless husband could be a more frequent cause of colonic irregularity than a host of bacteria, and a study of Marcus Aurelius might be as good as a dozen colon washouts with antiseptic solution. He believed that the diet should be as free as possible. The only important restrictions were hard residue-forming substances, like nuts and peel, and some restriction in the starchy and cellulose foods. It was probable that emotional causes might inhibit bowel motility and secretion, and the use of sedatives was comparable to the use of morphine in some cases of paralytic ileus by cutting off the nervous inhibitory impulse. He had found in some cases nitrites to be of value. He had tested adrenaline in a number of cases, and in quite a big dose subcutaneously he had not been able to show that it had produced any marked alteration in bowel tone. In a few cases insulin might be useful. Some appreciable gain in

weight in the undernourished type of person was of value as a psychological encouragement.

PHYSIOLOGICAL ASPECTS

Dr. A. F. HURST drew attention to some points in the physiology of the colon and what ought to be regarded as the limits of the normal. It was absurd to think that the appearance of mucus in the stools was a sign of disease, and that the case should be regarded as mucous colitis. Mucus was the only normal secretion of the colon, and it was secreted wherever the colon was irritated. The passage of mucus with solid matter was a perfectly normal phenomenon. Mucus was secreted in excess when the mucous membrane of the bowel was irritated by aperients. It could only be regarded as an abnormal constituent if it was associated with looseness or diarrhoea which had not been produced as a result of an aperient. Again, it was not sufficiently realized that the whole of the colon, even the caecum, took part in a normal defaecation. The vast majority of cases of constipation, if not all, were really due to deficient defaecation. Normal defaecation was a conditioned reflex, whereby the whole of the colon emptied, and if this reflex disappeared constipation of one sort or another developed. The cases could be cured by retraining the conditioned reflex. Sympathectomy was theoretically a good operation, but it did nothing more than relax the sphincter, which could be done in a less drastic way. Intestinal allergy was a rare condition, but a very important one. Although adrenaline had no obvious effect on the colon musculature, small doses would cut short an allergic attack almost immediately.

Dr. G. VILVANDRÉ, who showed some radiographs to illustrate his points, said that it was rather fallacious to look upon the barium meal as very helpful in the investigation of the colon. It could give the time of passage from the mouth to the anal canal, but not much valuable information on the appearance and function of the transverse colon. The best way to obtain a view of the colon was by giving a barium enema. A good surgeon would say that the best method was sigmoidoscopy, and as a radiologist he was inclined to agree with him. But after the sigmoidoscopic examination much could be learned from a study of the radiograph with the barium enema. He also stressed the fact that spasm of the ileo-sigmoid region did not necessarily remain functional always, and yet did not indicate carcinoma; it might be due to diverticula. He insisted that cases of alternating constipation and diarrhoea should be thoroughly investigated, and not regarded offhand as functional.

Mr. EARDLEY HOLLAND remarked on the extreme interest of these functional cases in gynaecology. Many women who came for supposed gynaecological lesions had this colon trouble, often as the result of emotional disturbance, a frequent characteristic in cases which appeared in the gynaecological consulting room. Retroversion of the uterus was often found in women who had spasm of the colon. In pregnancy these pains, especially in the right iliac fossa, were very common, and a great many women during pregnancy had their appendix removed for no better reason than these spasmodic pains.

ÆTIOLOGY

Dr. CAMPBELL McCLURE said that the nervous trouble might be one of two kinds: either strain over a long period or repeated emotional stress. But there were many people who had these strains and stresses without suffering any dysfunction of the intestine, and he thought that in those that did there must be an inborn imbalance of the vago-sympathetic relation. A spastic condition of the intestine might be induced not only by emotional excitement but by the exhaustion of the poisoning of the vagus centres. He also suggested that a colon which had lost its tone might act as a drag upon important ganglionic centres and produce reflexes of the most amazing kind. Retroversion of the uterus was not uncommonly, in a sensitive person, the apparent exciting

cause. One had always to remember, in the treatment of these patients, that, as they were naturally of a neurasthenic type, their suggestibility was extraordinary; and it was necessary to be careful not to attribute too much to actual treatment and too little to the effect of reassurance and the general strengthening of the attitude towards life.

Mr. W. McKIM McCULLAGH remarked that most gynaecologists declared that retroversion did not cause any intestinal or internal troubles; but other authorities had stated that in such cases they had found symptoms of indigestion and dyspepsia, the cause, no doubt, being pressure on the organs. The vast majority of patients whom one saw were women of about 45 or 50 years of age who had the common complaint of obesity, probably due to the cessation of ovarian function, but they also complained of intense flatulence. Whether this was due to lack of calcium or deficiency of mastication he had not made up his mind, but it was very commonly found among women at that time of life. Dr. CHARLES NEWMAN suggested that there were two groups of common bowel disorders. One of these was the group in which the bowel only was affected, and the other the group in which the bowel and other organs were effected. Cases in the first group, in which the disorder was limited to the bowel itself, were, he thought, emotional in origin, and here the incubus of the organic school was still too heavy. Concerning the second group, he said that, while investigating functional disorders of the gall-bladder and biliary tract, it was borne in upon him strongly how often these patients had colonic disturbances. He had also found irregularities characteristic of the vaginal region which were associated quite definitely with a spastic state of the colon. The colon part of the disorder did not respond to treatment with belladonna in anything like the way in which the rest of the condition did. When functional colon disorder was only part of a disorder of many organs, it was a pity to stress unduly the disorder of the colon. Dr. TWISTINGTON HIGGINS doubted the value of sympathectomy in certain cases.

Dr. J. E. A. LYNHAM drew attention to the extraordinary variations found in the anatomical relations of the pelvis. Complex curves in the transverse colon appeared to him very frequently associated with functional disorders. He had recently seen five cases of undescended caecum with retrocaecal appendix, and all of them presented a picture of colon upset. The patients appeared to him to be subject not to constant but to periodic attacks. They might go for months, or even years, without any disturbance, and then quite suddenly a subacute or acute attack, with pain, distension, and constipation, occurred. He did not wish for a moment to belittle the nervous or psychological element. The fact that in his own personal experience the majority of his cases had occurred in men between the ages of 40 and 55, when the stress of life was perhaps at its greatest, told its own tale. But he believed that the spastic colon was not a purely functional condition. It was due to some anatomical abnormality, which led to functional disturbance, or, more frequently, was associated with adhesion somewhere in the lower bowel. He believed the true spastic colon to be almost invariably due to some organic and not purely functional cause. He also referred to a number of cases which he had seen where the descending colon, instead of following a more or less straight line, took a complicated pattern, in which perhaps eight or ten angles could be counted. One patient had a complete figure of eight just below the splenic flexure, and he had seen cases where some of the intestinal contents were held in one of such loops. He believed that these anatomical considerations entered enormously into the question of functional disease of the colon.

Dr. T. L. HARDY, in reply, said that he fully agreed that cases of alternating constipation and diarrhoea should be carefully examined for any organic disease, if only for the reassurance of the patient. Dr. THOMAS HUNT also wished to correct any impression that he was prepared to attribute these disorders to nervous causes without the fullest investigation.

UTERINE CONTRACTIONS

A meeting of the Edinburgh Obstetrical Society was held on March 19th, with the president, Dr. OLIPHANT NICHOLSON, in the chair.

Dr. CHASSAR MOIR read a paper entitled "Recording the Contractions of the Human Pregnant and Non-pregnant Uterus." He demonstrated three types of apparatus: (1) an intrauterine bag and recording manometer by which contractions of the puerperal uterus could be recorded. (2) An abdominal apparatus which recorded changes in the shape of the uterus. (3) An intrauterine bag which could be used in the non-pregnant uterus. Suckling usually caused strong contractions of the puerperal uterus to appear. Ergotoxine, ergotamine, and the alleged new alkaloid, sensibamine, all caused strong contractions of the uterus, but there was a delay of half an hour or more before any effect was seen after intramuscular injection. This lessened their value in postpartum haemorrhage unless they were combined with a quick-acting drug. Histamine was not effective because in doses small enough to avoid unpleasant flushing effects it had a negligible action on the uterus. Pituitary extract was reliable early in the puerperium, but its effect was very erratic after the first week: in the late puerperium it often failed to produce any activity of the uterus. Liquid extract of ergot (*British Pharmacopoeia*, 1914, and also *British Pharmacopoeia*, 1932) had a powerful, quick action on the uterus, the effect sometimes appearing in as short a time as four minutes when given by mouth. It caused marked spasm of the uterus for an hour or longer. Its action was entirely different from that of the ergot alkaloids. It was this quick-acting factor in ergot which led to its use by midwives 200 years ago. Intrauterine injection of glycerin was not an effective means of causing uterine contractions.

By a double uterine apparatus contractions were simultaneously recorded from fundus and cervix. There was some evidence of a peristaltic wave in the uterus as the contractions of the cervix lagged about seventeen seconds behind those of the fundus. The non-pregnant uterus showed contractions at all periods of the menstrual cycle, but these gradually increased in force from the sixteenth day till the onset of menstruation. During menstruation the contractions exerted a pressure considerably in excess of that seen during parturition. The uterus always responded to pituitary extract. These results were contrary to Knaus's observations published in 1929. Oxytocin (pitocin) in doses of 10 units intramuscularly had no effect on the non-pregnant uterus, whereas vasopressin (pitressin) in the same dose had a very marked effect. In a case of dysmenorrhoea the intrauterine pressure rose to surprising heights. The significance of this in relation to pain was discussed.

CUTANEOUS METASTASES

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland on March 16th, with the president, Mr. HENRY STOKES, in the chair, Professor W. PEARSON showed a case of atypical cutaneous metastases occurring five years after operation for carcinoma of the breast.

Professor Pearson said that the patient, an unmarried woman of 48, had originally presented a firm spherical tumour in the centre of the left breast, with no fixation to skin or muscle and no evidence of enlarged glands. A radical operation was performed, the clavicular fibres of the pectoralis major being preserved. The patient continued in perfect health until a few months ago, when she noticed some small lumps in the scalp and on the skin of the back. On examination there was a hard, circular nodule, one inch in diameter, situated in the skin in the centre of the back. Its surface was reddened, the central part underlying a dry necrosis. Several other small nodules could be seen and felt in the back, most of them appearing to be in the skin, but two seemed partly sub-

cutaneous. A small nodule above the centre of the left clavicle was excised for microscopical diagnosis, and one small pink nodule was present in the skin of the scalp. The operation area appeared quite healthy, and the function of the arm was perfect. No evidence of any other metastases could be found, but radiographic examination of the bones was about to be done.

Mr. R. ATKINSON STONEY said that these metastases seemed to follow one particular system—sometimes the skin, sometimes only the lungs, and sometimes only the abdominal organs. For this reason he supposed there must be some kind of selectivity. Mr. F. J. HENRY remarked that it was interesting to speculate as to the mechanism by which these secondaries arose. He felt that both lymphatic permeation and blood embolism occurred, and had no doubt that bone secondaries, which usually appeared early, were haematogenous in origin. Mr. C. J. MACAULEY drew attention to the fact that the secondaries were so remote from the original lesion. As regards treatment, deep x rays might cause them to disappear, but this, he felt, would only be temporary.

HEART DISEASE AND WORKMEN'S COMPENSATION

At a meeting of the Medico-Legal Society on March 22nd Mr. D. H. KITCHIN (barrister-at-law) read a paper on "Heart Disease in Workmen."

Mr. Kitchin said that the Workmen's Compensation Acts provided that if personal injury by accident, arising out of and in the course of the employment, was caused to a workman, the employer might be liable to pay compensation to the workman or his dependants. A certain number of workmen, in common with other persons, suffered from grave disease of the heart or blood vessels, from which they might die at almost any moment; a very slight exertion might cause death, or the collapse might come when they were lying in bed. Under the legal position which had been reached through successive decisions of the Court of Appeal and the House of Lords, a workman who died at work from heart disease was nearly always held to have died by accident arising out of the employment, and the widow received compensation. This state of the law, suggested Mr. Kitchin, had not been contemplated by Parliament, was unjust to the employer, and might well cause hardship to workmen through inducing employers to reject men of doubtful physique. After outlining the procedure under the Act, the speaker cited the principal cases which had come before the appellate tribunals since the passing of the first Act in 1897. In *Hensley v. White* (1903), he said, a workman had died of gastric haemorrhage through straining at the flywheel of a gas engine on a cold day. His vessels had been chronically inflamed. The Court of Appeal, following an earlier dictum of Lord Halsbury, had decided that there was no accident, as there had been nothing "fortuitous or unexpected." This decision had been overruled by the House of Lords in *Fenton v. Thorley* (1903), where a healthy workman had ruptured himself straining at a wheel; an accident had then been defined as "an untoward event or mishap, not expected or designed." Whatever the condition of the workman, the employer had to pay compensation if the proximate cause was the work; that the disease had contributed did not matter (*Ismay, Imrie v. Williamson*, 1908). In *Clover, Clayton and Co. v. Hughes* (1910), the most important case of the series, a workman had burst an aortic aneurysm in tightening a nut with a spanner—an act involving the most trifling exertion. The county court judge had found as a fact that the work had contributed to the death, and the House of Lords, by the narrow majority of three to two, had supported his award of compensation: Lord Loreburn, then Lord Chancellor, had proposed the question which had governed the decisions in these cases ever since: "Did the man die from the disease alone, or from the disease and the employment taken together?" Broadly speaking, was it the disease that did it, or did

the work that he was doing help in any material degree?" The two dissenting Lords had expressed the opinion that an accident could only be caused by an external influence.

This decision, unsatisfactory in many ways, had led logically to the decisions in *James v. Partridge Jones*, and *Treloar v. Falmouth Docks*, in 1932.¹ In the first of these cases a dipper in a galvanizing shop had died of angina pectoris during a rest period after a morning's work. The judge had held that the work did not contribute, but the Court of Appeal, not satisfied, had ordered a new trial. The second judge had found that there had been no personal injury, but that the man's heart had merely ceased to function; nevertheless, he felt himself bound by the earlier decisions to treat the matter as though the man had undergone a rupture caused by strain. The Court of Appeal had accepted this finding as an award for the widow. In the second case a stevedore had fallen dead during a rest period when sitting on a sack, having just lifted his hook above his head to strike it into another sack. There had been no post-mortem examination. The judge had misdirected himself in finding that there was no accident because there had been "nothing fortuitous," and in not taking into account the whole of the work of the morning. Both the Court of Appeal and the House of Lords had ordered compensation. The Scottish courts, said Mr. Kitchen, still insisted that the widow should point to some specific exertion as the cause of injury, but this view, already rejected by the Court of Appeal, would almost certainly be contradicted by the House of Lords when the first Scottish case bearing on it came before their Lordships. He concluded by drawing attention to the great importance in these cases of the medical evidence, which was necessarily based largely on conjecture.

Mr. W. G. EARENGEY, K.C., said that the law had developed because medical evidence was available to help its growth, and to some extent responsibility rested on the doctor. The judge was practically bound to accept the medical evidence unless it were contradicted, but in the last resort the responsibility for applying the facts to the law rested with the judge. The question of accident was serious, because employers, under pressure from the insurance companies, would not employ men suffering from a known incapacity, and rejected men became "odd lots" on the labour market. Dr. PERCY SPURGIN agreed that the state of the law tended to increase unemployment. Medical witnesses should, he said, form conclusions only on certainty, and if they drew inferences should tell the judge they were doing so. Dr. LETITIA FAIRFIELD said that the law had taken the bit between its teeth and run totally ahead of any medical evidence. It did not matter what the medical evidence was, the Act had been turned into a kind of free life insurance for employees. As an intelligent and constructive doctrine of interpretation the decisions were sheer nonsense. Dr. A. S. MORLEY condemned the piecemeal legislation which had led to the anomaly that a workman with lumbago only drew 15s. a week health insurance while a workman with a sprained back might draw 30s. compensation. The result was, he said, confusion and dishonest dealing. Dr. R. K. HOWAR pleaded for a definition of accident instead of mere descriptions. Employers, he said, did not consider medical examination practicable. Dr. D. C. NOURIS remarked that Mr. Henry Ford had all his workmen examined and graded, but never rejected a man for bad health.

Mr. KITCHEN, in reply, said that Lord Atkin, whom he had fortunately met that afternoon, regarded the decisions as just and beneficial. The Law Lords considered that the earlier decisions, if followed, would have led to an unsatisfactory position, and had sought to interpret remedially the words of an Act which they regarded as having primarily been passed to benefit workmen and their dependants. His Lordship would even extend the meaning of "accident" to all industrial disease, including silicosis and nystagmus.

CORRESPONDENCE

Heredity and Mental Deficiency

SIR,—It is much to be regretted that Professor McNeil's article in the *Journal* of March 31st (p. 584) did not appear before the issue of the report of the Mental Deficiency Committee in July, 1932. If his article in the *Edinburgh Medical Journal* of October, 1931, and Dr. John Thomson's article in the same journal of May, 1924, had been before the committee they would have received the attention and criticism which their importance demanded. Perhaps his present article is more relevant to the work of the B.M.A. Committee than to the Report of the Departmental Committee to which he refers. The former committee was restricted by its reference to "the problems of mental deficiency," while the latter had a wider reference, "To examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency."

The arresting title "Heredity a Minor Factor in Mental Deficiency" is in direct opposition to the conclusions of both committees. The B.M.A. Committee said (para. 21): "In the causation of mental deficiency heredity plays an important part, but the evidence before the committee does not allow the expression of an opinion as to the exact percentage of cases which can be attributed wholly or partially to this cause." The Departmental Committee said [para. 33 (1)]: "In many cases of mental defect there exists in the family some abnormality—that is, insanity, psychoneurosis, epilepsy, defect, or dullness. In the majority of such cases there is evidence of heredity, but the mode of transmission is at present unknown."

Professor McNeil states that Dr. Thomson did not attempt to separate his clinical types into hereditary and non-hereditary classes. It may be that he did not investigate deeply with this object in view, and was only interested in the variety of clinical types and their aetiology, without going into great detail and inquiry as to family history. If this was not done by Dr. Thomson neither does it seem to have been done by Professor McNeil. Simply to classify 282 simple primary ailments as "doubtful hereditary" without going into the family histories with great care for at least two generations can hardly be regarded as evidence that heredity is a minor factor in mental deficiency.

While Professor McNeil's article stimulates thought it also diverts attention from the main problem—Are mental defectives increasing relative to the normal population? The Departmental Committee thinks they are. From this point of view Dr. Thomson's inquiry is not very important. It is not the numbers under 5 years of age but the number who reach adolescence and later ages that really matter. Again, many mental defectives are not recognized until the later years of childhood, and these are more important than those recognized under 5, and are probably more numerous.

I agree with Professor McNeil that the theory of inherited neuropathic constitution is not satisfactory. As there was nothing more definite before them this theory was accepted by both committees. But how are we to get more light on this obscure subject? At the Mental Deficiency Committee I made the suggestion that married mental defectives should be kept in institutions, where the environmental conditions were good and stable, and where they could work at such tasks for which they were fitted. The offspring of such matings could then be observed with accuracy and their condition compared with that of the parents. The suggestion was not received with favour. If it be an offence to human dignity to entertain such a

¹ *British Med. J.* 1933, i, 621.

notion—well, we cannot shut our eyes to the fact that such marriages are being solemnized in large numbers every year in the general community. But surely a sheltered life for married defectives is a humane proposition, and it might yield knowledge that could not otherwise be obtained.

Unless some convincing evidence be built up on direct research on man—animal experimentation is of little use in the problems of mental deficiency—this interminable argument on the force of heredity and the influence of environment will go on until the crack of doom.—I am, etc.,

Warrington, March 31st.

J. S. MANSON, M.D.

Nervous Complications of the Acute Fevers

SIR,—I have read with great interest the account of the discussion on this subject which took place at a recent meeting of the Royal Society of Medicine (*Journal*, March 24th, p. 550)—a meeting which I was prevented from attending to relate my own experience. I can say that this is in accord with that of Dr. Rolleston—namely, that nervous complications are rare in the acute infectious diseases of this country except diphtheria. These complications may be divided into two groups: (1) those due to the essential cause of the disease itself, and (2) those due to an infection with another virus or micro-organism. The complications contained in the first group occur frequently in diphtheria, less frequently in mumps, whooping-cough, influenza, and enteric fever, and very rarely in the other diseases. Those of the second group may occur in any of the acute infectious diseases. This group comprises such complications as meningitis following otitis media, cerebral embolism after cardiac thrombosis, and so forth.

To them may be added certain affections of the central nervous system which have been observed to arise in connexion with small-pox, varicella, vaccinia, measles, and rubella. Now in respect of these there is one important point to which none of the speakers in the debate appears to have alluded—namely, that they have been noticed to occur more frequently since those two stupendous historical events—the war and the influenza pandemic of 1918–19. It is since those calamities that epidemic encephalitis has also been more frequent. Is there any connexion between the nervous diseases and either the war or the pandemic? I confess to being impressed with the evidence brought forward by Sir William Hamer and the late Dr. Crookshank, which connects both sporadic cases and outbreaks of these nervous diseases with the great epidemics of influenza; and I agree with that opinion, which was referred to in the discussion by Dr. W. Gunn, that there is “a specific virus causing all forms of encephalomyelitis, the infectious disease merely activating this virus, etc.” From the epidemiological point of view the whole question is of great interest.

A minor point relates to diagnosis. I admit that I am suspicious of sporadic cases diagnosed as measles or rubella complicated with encephalitis or myelitis. Epidemic encephalitis may be accompanied by a morbilliform eruption. The first case of this form of encephalitis to come under my observation was that of an American officer who was sent to the Grove Military Hospital (of which I was then commanding officer) with the diagnosis of measles at the time when encephalitis was first appearing in this country and was being confused with botulism. Later I saw a similar case in a boy. Psychoses following, and presumably due to an acute infectious disease, are relatively uncommon. In my experience they have been observed most frequently after enteric fever.—I am, etc.,

Hampstead, March 24th

E. W. GOODALL.

Colonic Irrigation

SIR,—I am glad to see in the *Journal* of March 24th a letter from one with the authority of Mr. Wilfrid Adams drawing attention to the risks of colonic irrigation, especially when carried out indiscriminately or by those who are not expert. I hope that there will now be a further communication from some physician of wide experience and open mind telling us whether any harm, less obvious, may be the consequence of this treatment, and whether, if no harm is done, it is often useless or could be replaced by other methods more simple, possibly more effective and less inconvenient, and also less costly to the patient.

I am tempted to write this note because it is evident that colonic irrigation has now become a socially fashionable treatment. Other panaceas of equal notoriety, such as vaccines and the removal of tonsils and of every tooth, appear to be losing their precarious hold of this position, and there seems to be little left but to remove all the contents of the colon and this for all sorts of conditions. During the last year or so patients, within my own knowledge, who have been sent, or gone away, for further advice, suffering from rheumatism, fibrositis, anaemia, gall-stones, disseminated sclerosis, furunculosis, and last, but by no means least, high blood pressure, have all fallen victims to the fascination of this last satellite of fashion.

There is real danger in the vogue, for, though no one will deny the value of this treatment when rightly used, we all know the obloquy that follows the court favourite when he falls out of favour. A patient who consulted me three days ago told me that, for the treatment of so-called fibrositis, she had not only had all sorts of baths and medicaments and electrical treatment, but for thirty days had had on every other day a Plombières douche; she was no better.—I am, etc.,

Bradford-on-Avon, March 26th.

CHAS. E. S. FLEMMING.

The Milk Question

SIR,—Dr. W. S. Forbes, in his letter of March 24th, raises a number of points which I think cannot be accepted as a correct representation of the facts. As the subject is so large I will confine my remarks to tuberculosis.

He states as significant that in Scotland 2.8 per cent. of pasteurized milks contained living tubercle bacilli. If, however, the details of these positive findings are studied in the appendix it will be found that for none of them do the time-temperature factors correspond to those required for “official” pasteurization. All of us who advocate milk pasteurization as a satisfactory method of obtaining pure milk are insistent as to the need for accurate control of the pasteurization process and for a rigid observance of reliable temperature and time periods. The figures merely emphasize this need, and it is of interest to note that in spite of deviations from them in this series the danger of living tubercle bacilli in milk was reduced by over 90 per cent.

Dr. Forbes goes on to suggest that bovine tuberculosis in man is not necessarily derived from milk infection. Milk of course includes milk products, and I would ask from what other sources can bovine tubercle bacilli infect man? There is general agreement that the amount of infection from tuberculous meat is negligible. The only other source I know of is the possibility of infection from a human case suffering from pulmonary tuberculosis of bovine origin, and in view of the rarity of such cases this factor must also be insignificant.

Dr. Forbes's suggestion that to provide a clean milk supply will largely make it a safe milk supply, as regards

the risk of conveying tuberculosis is in direct contradiction to the very large volume of information we possess on the subject. The "application of conditions and methods which will ensure a clean raw milk" is a highly desirable aim, but by no stretch of imagination can it influence the infection of the milk supply from cows suffering from tuberculosis of the udder. Dr. Forbes's view is obviously based upon a later statement: "I am convinced that the tubercle bacillus enters the milk in the vast majority of cases not directly from an infected animal, but indirectly from contamination with dung, etc." It would be most interesting to have the evidence of this conviction, for all the facts are the other way. The point is important because, of course, if this is true, cleanliness would do what Dr. Forbes claims for it. We know that tubercle bacilli do get into the dung and obviously, therefore, some will get into the milk with gross lack of cleanliness. Our facts, however, show this cannot be more than a small factor in the infection. I can illustrate this best by quoting my experience with milk samples collected in Somerset directly at the farms from the mixed milk of all the cows in milk at the farm.

Taking the figures for the years 1931, 1932, and 1933, in thirty-two instances tubercle bacilli were found in the mixed milk. In twenty-six cases the veterinary surgeon at his first visit (with bacteriological assistance) picked out the infecting cow, while in four other cases the cow was detected after selected bacteriological testing. In all thirty cases the cows on slaughter showed extensive tuberculosis infection, together with definite udder tuberculosis. Of the two other cases, in one two aged cows had been sold between the sampling and examination and one was probably the cause of infection; in the other case a markedly tuberculous cow was found and slaughtered, but no udder disease could be found post mortem.

Considering the technical difficulties, a proportion of 94 per cent. traced directly to a cow with udder tuberculosis shows unmistakably that it is to the cow with a tuberculous udder that we must look for the source of tubercle bacilli in our milk supply. This experience can be paralleled by all who keep records of these investigations. Unless all the cows in a herd are free from tuberculosis and kept free no application of clean milk methods will remove the risk of tubercle bacilli in the milk, and nothing but efficient heat treatment of that milk will make the supply safe.—I am, etc.,

Weston-super-Mare, March 25th.

WILLIAM G. SAVAGE.

SIR.—In his letter on "The Milk Question" (March 24th) Dr. W. S. Forbes rocks on seas of controversy, but touches solid ground on two points. As both provide useful anchorage in a stormy voyage they deserve special charting. The first is noted in the words, "The country districts require the greatest consideration, as it is practically impossible to pasteurize all the milk consumed in them." The second reads: "Here is the opportunity of dealing with the whole question which may never occur again, and it must be grasped." As the Great War provided us with that remarkable by-product "daylight saving," so may the threatened devastation of the dairy industry supply the unexpected boon of cleaner and safer milk. Such chance for Government aid may truly "never occur again," but unless the medical profession shows itself as alert and united as the agricultural interests, the children's milk ration will be of very doubtful quality. How, indeed, can it be "pure" under existing conditions? If the Ministry of Agriculture looks out for "cleanliness" the Ministry of Health must be supported by the doctors when it demands "safety" as well. The country school must be fit its milk.—I am, etc.,

Peppel Corner, March 26th

ESTHER CARLSON.

SIR.—Last November my council instructed me to take a sample of milk from each cow-keeper and send it to the School of Agriculture, Cambridge, for examination every quarter. The following figures may be of interest to your readers as showing what can be done:

Sample	November, 1933		March, 1934	
	Count	Coli	Count	Coli
A	48,000	1,100	35,200	170
B	163,000	1,100	6,500	Absent
C	68,000	1 c.c.m.	141,000	1 c.c.m.
D	27,200	170	5,600	Absent
E	65,000	1,100	127,000	"
F	96,000	1,100	92,000	1,100
G	81,000	1,100	127,000	1,100
H	81,000	Absent	49,000	Absent
I	60,000	1,100	191,000	"
J	32,000	1,100	3,500	"

—I am, etc.,

St. Neots, Hunts, March 25th.

E. J. CROSS.

SIR.—Dr. W. S. Forbes's letter in the *Journal* of March 24th in a very able way seeks to sum up the situation. Pasteurization *per se* is probably the best way of supplying cities with milk under present conditions. Dr. Forbes deals with epidemics, and points out that evidence from milk is misleading, because diseases come from so many sources. Air-borne germs are difficult to control. Advocates of raw milk are concerned with vitamins, and possibly something more elusive (what it is may some day be discovered), which they claim are destroyed by heat.

It is interesting to note that the child on raw milk is very fit, that chilblains are practically eliminated, and that Dr. E. Sprawson has shown that teeth are less likely to decay owing to better dentine formation. Our experience, through a succession of years, shows that tubercle is not the result of drinking raw milk.—I am, etc.,

A. H. MACDONALD,

Stepney Causeway, E.1.

Chief Medical Officer, Dr. Barnard's Homes.

Hypochondriasis

SIR.—Dr. F. Gray's letter in your issue of March 24th (p. 558) raises questions which are of the utmost importance when we come to consider the limits of analytical psychotherapy. The neglect to respect these limits is responsible for much of the odium which has been cast on treatment based on analytical investigation.

It is a little difficult to deal critically with Dr. Gray's letter, as he has mixed the categories which were so clearly defined in Dr. Hutchison's article; but I should like to emphasize the danger and the uselessness of attempting any radical cure in the latter's "general hypochondriac." Has Dr. Gray really ever told a retired colonel that his abdominal discomforts were due to a wish that he had been a general, coupled with his failure in that respect? If he has I trust that he will publish the case in full, with the colonel's replies and reactions. It will hardly have been possible for the colonel to arrive at this conclusion through any analytical procedure, for patients of this sort and temperament are usually not analysable, and if they are the results are apt to be disastrous.

Not every elderly hypochondriac, however, has been even a relative failure in life. Many successful people

who have retired from active business life because they were tired of it develop hypochondriacal symptoms, and one patient whom I had under observation for many years had not retired at all, but was in busy practice as an accountant. More than once he sent for me to come to his house to inspect his urine, which had to be left undisturbed in the chamber-pot, so that I might see a curious film on its surface. At another time he wanted me to drive five miles into the country to inspect a series of stools of his, which he had arranged behind a hedge, and of which he did not like the colour. I have tried in the past to effect radical cure on these patients, and am convinced that the only therapy desirable or possible for them is that outlined by Dr. Hutchison, the psychotherapy which consists in giving the patient the feeling that he is being taken care of. The nosophobe is in a different category. I am sure that Dr. Hutchison is right in saying that many of them have been created by health propaganda, or by doctors giving unjustified hints about blood pressure and so forth. Patient explanation on the conscious level will relieve a considerable number. In others, as Dr. Gray suggests, the phobia is a cover for unconscious difficulties, and in these an analytical procedure may be very successful: I have published such a case in detail. There are, however, other examples where the phobia is a cover for a psychosis, and such must be approached with the utmost caution.

With regard to the vicarious hypochondriacs, I believe it is true that there is in most of them an unconscious factor of importance, the release of which would be beneficial, though I should doubt that this factor was necessarily connected with inferiority or insecurity. Surely there are guilt factors of all kinds—death wishes, incest wishes, and others—which cannot be subsumed under the general term of "inferiority." Now the difficulty here is that the patients feel quite well, and therefore will not submit to treatment. Why should they? Their anxiety seems to them proper and laudable; they will not enter a treatment which avowedly aims at removing their virtuous thoughts and acts. And if they did agree to be treated, it is well to note that analysts of all schools are at one in holding that the analysis of people who feel well is more difficult and lengthy than that of those who admit to illness. The old father will be dead, and little Philip will be a man, before the help which the analysis of the other person is to afford will be available. But much can be done on the conscious level to re-educate the vicarious hypochondriac, and it is really Dr. Gray and not Dr. Hutchison who is the pessimist here.

It is in the region of the compensation neuroses that the influence of environmental action in the creation of these disorders is most easily seen. If there were no compensation for accidents there would be no traumatic neuroses. The proofs of this have been given so frequently that they need not be repeated now. But as this is true for these special disorders it cannot be false that publicity and propaganda and any other morbid suggestion must have some effect in the genesis of neurotic illness. As a practical proposition we cannot have an analysis carried out on the whole population, and therefore it behoves us to do what we can to inculcate mental public health on the conscious layer. Freud has helped us beyond measure by his insistence on the importance of the unconscious in influencing our thoughts and actions; but he did not thereby abolish the importance of consciousness, which, after all, has a considerable influence on what we do and think.—I am, etc.,

Hypochondriasis, Labour, and Analgesia

SIR,—It is disappointing that Drs. John Elam and R. J. Minnitt (*Journal*, March 24th, p. 559) have paid so much attention to personalities rather than exercise a little logic on the principal question at issue. It was open to either, in advancing the claims of his pet form of analgesia in labour, to counter-argue that the knowledge of the existence and practice of a perfect form of analgesia would be a factor in helping women to secure an equitable frame of mind before entering labour. Neither has taken the opportunity. Instead, Dr. Elam offers facts either which are so rudimentary as to come within the knowledge of third-year undergraduates, or which have no bearing on the point whatever. Dr. Elam, if paternal, writes in friendly fashion, which I appreciate. It is otherwise with Dr. Minnitt, who seems to be in bad taste by casting thinly veiled aspersions on national learning and personal character.

In any case, Sir, I maintain that neither Dr. Elam nor Dr. Minnitt has contributed anything to a discussion on whether the profession is, by its methods, helping or hindering the presence of a desirable mental attitude in a woman towards her approaching labour. I thank you, Sir, for the courtesy of your columns, upon which I shall not trespass further.—I am, etc.,

Kilmarnock, March 27th.

JAMES W. HAMILTON.

* * We cannot publish further letters on this side-issue of Dr. Hutchison's lecture.—Ed., *B.M.J.*

Maternal Mortality in Maoris

SIR,—With reference to Dr. Kathleen Vaughan's letter in the *Journal* of November 18th, 1933, I am afraid that, in relying upon Mr. Elsdon Best's statement, she is relying upon conclusions derived from a too limited knowledge of obstetric conditions and results among the Maoris to allow of such conclusions being regarded as reliable. From what I have read it appears that Mr. Best drew his conclusions from one or two cases of remarkably easy labour with which he was acquainted. I think it would probably be more accurate if, instead of saying that "Maori folk did not die in childbirth," which is obviously a gross misstatement, he had said "the average Maori woman with normal labour had a more easy time than the European woman"; and I think we can conclude that their active life, their less civilized condition, possibly the squatting position generally adopted by them, and their walking bare-footed, with their peculiar rolling motion of the hips, were the principal causes. This, however, is, more or less, surmise. What is positively known is that:

1. The majority of Maoris still habitually use the squatting position during meals, during rest otherwise than in bed, during defaecation, and during parturition.
2. The maternal mortality of the Maoris who do not adopt European obstetric methods is approximately double that of Europeans.
3. The high maternal mortality is chiefly attributable to accidents of labour and sepsis following childbirth, septic abortion having a very minor influence on the death rate. We are also sure that sepsis in the Maori is not due to vaginal examinations or internal manipulations, which are practically never made, and that many of these cases of sepsis are due to retained placentas. Septic sores are common among the Maoris, and from these infection is probably conveyed to the lying-in woman by the Maori attendants on their hands or on the clothes used.

I quote the following deaths from puerperal sepsis following retained placentas: placenta retained for three

days, fourteen days, eighteen days, "till death occurred," "several days." Another unduly frequent cause of death is from shock, hæmorrhage, etc., due to obstructed labour. Taking twenty-nine consecutive cases of death, as reported by the Health Department's nurses attending or inquiring into these cases (they are so often called in too late), I find the following recorded: childbirth incomplete, two days; childbirth, two to three days; childbirth, four days; obstructed labour, three and a half days; obstructed labour (shoulder presentation), four days; ruptured uterus; and of the remaining cases nine deaths were from puerperal sepsis. I think it is safe to conclude that the only means of saving the above cases of obstructed labour was the use of better obstetric methods.

It may interest Dr. Vaughan to know that the Maori method of "helping" the woman in such cases is by external pressure. This is usually applied by a powerful man, who may squat in front of the seated woman and, with all his available power, press the abdomen against his shins and knees. I know of one ruptured uterus occurring in this way. Another method is by winding a thick rope tightly around the woman's body. In the above circumstances one cannot be surprised that the maternal mortality of the Maori is higher than that of the European.

Regarding the teeth, the impression one gets from general observation would lead one to suppose that the Maori generally has wonderful teeth, but accurate observation shows that among school children there is now considerable deterioration in the teeth, due to caries, the incidence of which, in the Maori school child in many districts, is higher than in the European. It is an axiom of the health workers among Maoris (school medical officers and nurses) that the nearer a Maori lives to a store the worse will the children's teeth be. I think it is safe to conclude that this deterioration in the teeth of the Maori is due to adoption of the dietetic habits of the Europeans and abandonment of the native diet customs and the native methods of cooking.—I am, etc.,

Department of Health, Wellington,
New Zealand, Feb. 15th.

T. L. PAGET.

Cerebral Oedema

SIR,—With reference to Dr. F. A. Belam's case (March 24th, p. 531) headed "A Very Rare Cause of Sudden Death," acute cerebral oedema is, of course, not an uncommon mode of dying, though rarely, in my experience, compatible with terminal consciousness. As for the cause behind it, though the kidneys are said to be normal, it would be interesting to know (a) whether there was any urine, and, if so, what was found in it; and (b) what was the urea content of the cerebro-spinal fluid.

Dr. Belam does not say what organism was found in the nasal and aural discharges or in the glands in the neck. I am thinking in particular of the Klebs-Loeffler bacillus. In a fatal case of nasal diphtheria examined by me quite recently (showing also a right adenitis) I found in the neck abscess abundant diphtheria bacilli.—I am, etc.,

The Prince of Wales Hospital, York Road, 1
17th Cliffe, E. 1, N. 10th 1934. THOMAS GREY.

Acute Thyroiditis following Teeth Extraction

SIR,—Mr. R. H. Paramore, in his letter in the *Journal* of March 24th (p. 539), seems entirely to have overlooked the fact, which I thought I had made abundantly clear, that the case which I described in your issue of March 10th (p. 428) presented symptoms—namely, rapid onset of acute pyrexia, toxic swelling, and elevated temperature—which in my opinion could only be pointed to as acute inflammatory process affecting the thyroid of the thyroid

gland: in other words, an acute thyroiditis, a rare but well-recognized clinical entity. That it was due to infection with pyogenic bacteria was, in the circumstances, reasonably certain, only lacking final proof in that, happily, the inflammation settled without suppuration.

What parallel is there, then, between my case and that which Mr. Paramore describes? His case was apparently one of Graves's disease, of six or seven months' duration; my case had no symptoms of thyroid intoxication, only symptoms of septic absorption, which disappeared in a few days with resolution of the inflammation. His later remarks about the misuse of the term "infection" with regard to disease in general seem, therefore, most inaptly applied to the case which I have described.—I am, etc.,

Glasgow, March 26th.

IAN B. THORBURN, F.R.C.S. Ed.

Chilblains

SIR,—Surely Dr. G. C. Gillison's paraphrase of the story of Naaman, in his letter to the *Journal* of March 24th (p. 560), misinterprets the original, in which Naaman was the patient and not the physician.

May I suggest several reasons why the modern Naaman should prefer the Abana and Pharpar of thyroid to the Jordan of passive congestion? Thyroid tablets, taken as they ought to be in the morning and at midday—not at night, because of their possible cardiac or metabolic disturbance—provide a simple and effective remedy, and savour less of symptomatic treatment of a condition which is, after all, a manifestation of metabolic inadequacy. Anyone who has attempted to bandage his right wrist must appreciate the difficulty of the operation, efficacious though it may be. Chilblains frequently occur on the feet, and may thereby render somewhat cumbersome the second part of the "congestion" treatment—namely, raising the limb "above the head for a minute or two."—I am, etc.,

W. MUNRO LESLIE, M.B.

Feltham, Middlesex, March 26th.

* * This correspondence is now closed.—ED., B.M.J.

Blood Pressure and Decubitus

SIR,—Dr. Barclay Dickson's observation, as reported in your columns of March 24th (p. 534), that the blood pressure in the later months of pregnancy, the patient lying on her back, is appreciably higher than when she is lying on her side, and that a similar difference occurs in non-pregnant people, is in line with my observation, published in 1913, that the pressure in the rectum, with the patient on the back, is appreciably greater than when in the lateral position. The evidence is that these two sets of phenomena are correlated—the pressure in the artery depending on the pressure in the abdomen.

Dr. Dickson, however, thinking the visceral weight the only force to reckon with in the abdomen, and that it is only operative in the dorsal decubitus, attributes the greater blood pressure when on the back to the factor, the viscera, in virtue of their weight, stimulate the sympathetic plexus, causing an increased constriction of the visceral arterioles. But the peripheral resistance beyond the arterioles lies not only in the abdomen, but elsewhere, that presented by the pressure of the capillaries caused by the vessels, capable of extreme vasoconstriction. It is also to be considered as a factor determining the arterial blood pressure. Moreover, one may assume that the amount of blood returned per unit time to the heart, especially in the supine position, is not only related to the volume of the venous output, and thus to the blood pressure. That both the pressure in the arterial circulation and in the lateral position is indicated by my experience.

Recently, with a new manometer, I have been measuring the pressure in the rectum and in the stomach of non-pregnant women, of women late in pregnancy, and in some after delivery. The fluid used has a specific gravity of 1050—approximately that of blood. To date, I have made forty-three observations with this new machine. Here are a few pertinent findings.

Case Number	Age, Height, and Weight	Condition	Pressure in Rectum in cm. of Fluid—Specific Gravity 1050	
			Left Lateral	Back
19	35 years; 4 ft. 10½ in.	Primigravida; near term. (Labour thirteen days later)	13/15	30/31
27	23 years; unmarried	Primigravida; six months pregnant. Denied pregnancy	15	33
37	Same case; two months later: 5ft. 3½ in.; 9 st. 6 lb.	Now married. Eight months pregnant	18	35
43	25 years; 5ft. 3½ in.; 9 st. 12 lb.	Multipara. Three or four previous pregnancies. Over eight months pregnant. Weak muscles; delicate build	19	16/17
24	18 years; 5 ft. 4 in.; 10 st. 7 lb.	Nullipara; fine specimen. Dysmenorrhoea (Stomach tube also passed)	6/7	20/21
25	Same case; seven days later		8/9	23

In two of these cases, the patient being on the back, note was made as to the height of the fluid in the manometer and the highest point of the patient's abdomen. In No. 27 the fluid column was sustained 12 cm. above the highest point of the abdomen; and in No. 19 it was sustained 9 cm. above that level.

Such readings put out of court the idea that gravity—the weight of the viscera—is the cause of the pressures: they indicate that the state of the abdominal wall muscles is much more important. That the compression these muscles produce, by its effect on the blood streaming through the abdomen, is a vital force, influencing general metabolism and playing a part when exaggerated in the occurrence of pathological processes, is shown by many considerations. Dr. Dickson's observation—that the blood pressure is greater when on the back than when on the side—affords, in my view, direct evidence of the former; and he is to be congratulated on having made a discovery of the first importance.—I am, etc.,

R. H. PARAMORE, F.R.C.S.

Rugby, March 25th.

Cost of L.C.C. Hospitals

SIR,—In the annotation on the "Cost of London Health Services" in your issue dated March 31st (p. 589), it is stated that the vote for maintenance expenditure for the general hospitals (L.C.C.) was put down at £469,000. This figure is taken from the Report of the Finance Committee to the London County Council, dated March 23rd, 1934, and is an estimate of the probable expenditure to be incurred by the Council on capital and on maintenance accounts under the headings of "Hospitals and Medical Services Committee" and "General Hospitals." This figure is an estimate for the ensuing financial year 1934-5. I would like to point out that this estimate is for two months' expenditure only, and that the maintenance of the L.C.C. general hospitals does not cost £469,000 per annum, but six times this amount.—I am, etc.,

London, N.W.1, March 30th.

GEOFFREY EVANS.

•• We regret the misapprehension pointed out by Dr. Evans. We understand, however, that the expenditure for the full year cannot be ascertained by multiplying the figures by six, because the incidence of certain items of expenditure is spread unevenly over the twelve months. For example, the £57,000 for the venereal diseases scheme represents half the annual expenditure.—ED. B.M.J.

Obituary

DAVID LEES, D.S.O., M.A., M.B.,
F.R.C.S.Ed., F.R.C.P.Ed., D.P.H.

The death took place on March 25th, after a short illness following an operation, of Dr. David Lees, who was clinical medical officer under the Edinburgh Public Health Department, and head of the department for venereal diseases in the Royal Infirmary of Edinburgh. He was an outstanding figure in public and medical circles of Edinburgh, and was one of the leading authorities in Britain upon venereal disease.

David Lees was born in 1881, the son of Mr. Robert Lees, M.R.C.V.S., of Lagg, Ayrshire, a well-known agriculturist. After preliminary education at Ayr Academy he studied medicine at the University of Edinburgh, where he graduated M.B., Ch.B. in 1907. Following a period as resident surgeon in the Royal Infirmary of Edinburgh with the late Dr. Freeland Barbour, then university lecturer upon gynaecology, he acted as resident in the Royal Maternity Hospital, Edinburgh, and house-physician at Bangour Mental Hospital. Thereafter for some years he engaged in general practice in the North of England. On the outbreak of war he joined the Royal Army Medical Corps as a temporary captain, and served until 1919. In France he was awarded the D.S.O. for conspicuous gallantry. While attached to the Guards Brigade he went out to "No Man's Land" under heavy fire, attended to a number of wounded men, and brought them back without assistance.



Towards the end of the war he took the special course on venereal disease provided by the R.A.M.C., and became specialist in this subject at Brighton Grove Military Hospital, Newcastle, and at Robroyston Military Hospital, Glasgow. Becoming a recognized authority upon this subject, he was appointed, after the war, adviser on venereal disease to the Derbyshire County Council, and a short time later joined the staff of the Edinburgh Public Health Department as the first specialist in venereal disease to be appointed by the Edinburgh Corporation. At the same time he was placed in charge of the department for venereal disease established at Edinburgh Royal Infirmary, and was appointed lecturer upon this subject in Edinburgh University. The great development which took place in these departments and the advances in treatment which originated there were due to his energy and influence. His eminence in this branch of medical science and treatment was universally recognized, and was manifested by the frequency with which he was consulted regarding the initiation and development of similar departments in other places. It was also evidenced by his appointment as chairman of the Medical Advisory Board of the British Social Hygiene Council, and as president of the Medical Society for the Study of Venereal Diseases in London. In these posts he wielded an important influence in the extension of their work, not only in this country but throughout the Empire, being frequently called into consultation by Government departments. During 1926-7, on the invitation of the Provisional Governments, he made a tour of India and Burma in order to lecture and advise them on problems connected with venereal disease.

David Lees had joined the Royal College of Surgeons in Edinburgh as a Fellow in 1918, and in 1928 he took the Membership of the Royal College of Physicians, proceeding to the Fellowship of the latter body in 1931. In 1930 he took the Diploma of Public Health at Edinburgh. He was the author of a well-known textbook on *Practical Methods in Diagnosis and Treatment of Venereal Disease*, which attained a great measure of success and went into a second edition in 1931. He also found time for various communications to current medical literature, such as articles on "Locomotor Ataxia" and "Vesiculae Seminales," in the *Encyclopaedia Medica* in 1924; "Clinical Treatment of Gonococcal Infection," in Thomson's *Gonorrhoea* (1923); and "Keratoderma Blenorragica," in the *Edinburgh Medical Journal* (1922). He was an interesting and vivid lecturer, and his demonstrations to students and to meetings of medical practitioners were always eagerly attended. An important figure in the administration of medical affairs, both in Edinburgh and in a wider circle, had been confidently predicted for him, and his death comes as a great loss to the medical profession. He took a keen interest in the British Medical Association, serving upon its Representative Body from 1928 to 1933, and upon several of its central committees, and his breezy personality, high qualifications, and judicious counsel were greatly valued in the deliberations of the Association. He was elected vice-president of the Section of Venereal Disease meeting in 1923 at Portsmouth, and president of that Section in 1927 at Edinburgh.

His kindly manner, ready humour, and dynamic energy in administration earned for him both the affection and the respect of his colleagues, and his presence will be greatly missed in the Edinburgh medical circles where he was best known. He is survived by a widow and one son. The interment took place in the Grange Cemetery, Edinburgh, on March 28th, and was attended by a large number of members of the medical profession, and by representatives from various public bodies with which he had been associated.

ARTHUR LYNCH, M.A., M.R.C.S.

The career of Colonel Arthur Lynch, who died in London on March 25th, was so varied and full of adventure with sword and pen that the fact that he was a medical man and had a general practice in North-West London for some years might well escape notice.

Arthur Alfred Lynch was born at Ballarat, Victoria, rather more than seventy years ago, and was educated at Melbourne University. For a time he practised in Melbourne as a civil engineer, and then made his way to Europe, studying in Berlin and in Paris, where he took a diploma in electrical engineering. From his Irish father—his mother was Scottish—he inherited a fervid patriotism, which, with his poetical and ardent mind, explains much in his subsequent history. In the stormy years of Irish politics, when Parnell was still in the ascendant, Lynch identified himself with Irish Nationalism, and sought, unsuccessfully, to enter Parliament for an Irish constituency. He resigned his political aspirations for a time to become the Paris correspondent of a London newspaper, but when the South African War was declared he threw up this post to go out and fight for the Boers. He commanded an Irish brigade under General Botha, and took part gallantly in some engagements against British troops. Towards the end of the war he was returned to Parliament as member for Galway City, and in a somewhat flamboyant letter to the Speaker of the House of Commons announced his intention of resigning his seat, and appealed for an oblivion of the past. On disembarking at Newhaven he was arrested, and in

due course was tried before three judges for treason, found guilty, and sentenced to death. The sentence was immediately commuted to imprisonment for life, and at the end of a year—according to his own story, at King Edward's personal intervention—he was released. In 1907 he was granted, by the new Liberal Government, a free pardon. His thoughts next turned to a medical career, for which he studied at St. Mary's Hospital Medical School in London and at the Hôpital Beaujon in Paris. He qualified when 37 years of age, and, having also been returned as a Nationalist member for West Clare, he settled down in London as physician and surgeon and as a Member of Parliament, which latter he remained until the Nationalist Party was swept aside by Sinn Féin. He was for some years a member of the British Medical Association.

During the Great War Lynch gave whole-hearted support to the Allied cause. Up to this time, in any reference to him in the Press, his rank of "colonel" appeared between quotation marks, but these were dropped when he became actually colonel of the 10th Munster Fusiliers, and was sent to Ireland to assist recruiting. He did excellent service there, although his achievements were far below his own expectations, as he found an Ireland quite different from that which had enlisted the eager sympathies of his young manhood.

In the field of literature Arthur Lynch was equally versatile. His output took the form of sonnets, biography (including an account of his own adventurous life), philosophical essays, and fiction. His most ambitious work—*Psychology: A New System*—was published in 1912, and was described as "based on the study of the fundamental processes of the human mind." This was followed, in 1920, by *Principles of Psychology*, a work later translated into French. His last achievement was *The Case Against Einstein*, in which he devoted 300 pages to the confutation of that philosopher.

Dr. F. W. EDWARDS-GREEN writes: As a very intimate friend of the late Colonel Arthur Lynch I should like to pay a tribute to his extraordinary intelligence. Like the late Lord Moulton, he had the power of immediately detecting the weak point in an argument. Again and again during the war, when a point of action was under consideration, he gave me the solution, which was afterwards adopted or pointed out in some book after the war as the correct procedure. It is easy to solve a problem when you have looked at the answer. In addition to his other accomplishments he was a mathematician of a very high order. On one occasion he sent a mathematical paper to a society and it was rejected. I took the trouble to try to find out why, and asked a very able man the reason. His reply was: "There was no one who could understand it." A very common but very silly reason for rejecting a paper. His two books, *Science Leading and Misleading* and *The Case Against Einstein*, are two splendid examples of his critical faculty.

Dr. SAMUEL LODGE, who died on March 19th at his residence in Harrogate at the age of 68, had been for many years a prominent figure in Bradford. He received his medical education at Durham, Leeds, and St. Thomas's Hospital, graduating M.B., B.S.Durh. in 1887. He proceeded M.D. two years later. After holding the appointments of resident medical officer to the Dunston Asylum, Durham, resident medical and resident surgical assistant to the Royal Infirmary at Newcastle-on-Tyne, and working at the Pasteur Institute, Paris, he commenced general practice in Bradford. For several years he held the appointment of senior assistant surgeon to the Royal Eye and Ear Hospital, Bradford, after resigning which he became ophthalmic and aural surgeon to the Royal Halifax Infirmary, being appointed consulting surgeon in 1924. He had devoted many years' service to the Territorial Army, and received the T.D. During the

first part of the war he held a commission in the 6th Battalion of the West Yorkshire Regiment. Later he was in charge of medical boards at Leeds and Bradford, and was awarded the O.B.E. He retired from the R.A.M.C. with the rank of major. Dr. Lodge was the author of several articles on eye conditions in the *British Medical Journal*. His eldest son, who died last year, was ophthalmic surgeon to the General Infirmary at Leeds. Three of the four surviving sons are in medical practice, one having succeeded his father in 1924 as surgeon to the ophthalmic and aural departments of the Royal Halifax Infirmary.

We regret to record the death of Dr. GORDON CALTHROP on February 20th. Dr. Calthrop was born on July 18th, 1867, and received his education at Felsted and Cambridge, where he graduated M.B., B.Ch., in 1891. He held house appointments at the London Hospital, where he completed his medical education, and at the Royal Northern Hospital, Holloway. He then went to Cross Hills (Yorks), where he lived for some years, before moving to Wells (Norfolk), in which town he practised for thirty years, retiring at the age of 65 in July, 1932. Dr. Calthrop was in no small measure responsible for the successful organization of the Wells and District Cottage Hospital, which was established in 1910. He also took a great interest in the town's affairs. Among his medical appointments were those of medical officer of health for the town and port of Wells and medical officer to the Wells and District Cottage Hospital. Dr. Calthrop had been a member of the British Medical Association for thirty-seven years.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

In the House of Lords, on March 27th, the Betting and Lotteries Bill was read a first time. It contains provisions to penalize traffic in foreign lottery tickets and counterfoils. The Marriage (Extension of Hours) Bill was read a second time, and the Shops Bill passed through report. On March 28th the Plymouth Hospitals Amalgamation Bill was read a second time. The Birmingham United Hospitals Bill and the Shops Bill were read a third time. The Royal Assent was signified to the Dyestuffs Import Regulations Act, Rural Water Supplies Act, Indian Pay (Temporary Abatements) Act, and Mining Industry (Welfare Fund) Act.

In the House of Commons, on March 28th, the Birmingham United Hospitals Bill was read a first time, and the Coal Mines Bill a second time. A Protection of Animals (Cruelty to Dogs) (Scotland) Bill was presented in the House of Commons on March 29th by Colonel Moore, supported by Dr. Hunter. Its purpose is "to enable courts in Scotland to disqualify from keeping dogs persons convicted of cruelty to them."

The House of Commons will resume on April 9th. The second reading of the Road Traffic Bill is set down for April 10th. The House of Lords will resume on April 11th.

The final revenue returns for 1933-4 show that the financial year closed on March 31st with a surplus of £31,147,000. The Budget will be presented on April 17th. In answer to a request that the Parliamentary Medical Committee should have an opportunity to make representations about the "cut" in the remuneration of insurance medical practitioners, the Chancellor of the Exchequer has intimated that this matter should be brought before the Minister of Health.

Slum Clearance: Lords' Debate

In the House of Lords on March 21st the ARCHBISHOP OF CANTERBURY moved a resolution welcoming the Government's proposals for slum clearance and against overcrowding, and hoping for early and effective operation of these measures.

He said that clearance of the slums, the provision of houses at rents which could be paid by the lower-waged workers, and the evils of overcrowding remained practically untouched, despite all the housing activity since the war. In London 150,130 persons lived three or more in a room. In fifteen cities more than 500,000 persons lived more than three in a room, but not all of these lived in slums. Lord BALFOUR of BURLEIGH said not fewer than 1,000,000 houses were needed to remedy the housing deficiencies of the country.

VISCOUNT GAGE, for the Government, said an essential condition of the slum clearance scheme was that effective action should be taken to prevent overcrowding of the new dwellings. The initiation of the slum campaign had had definite effect in inducing property owners to remedy housing defects. No figure could be given, but the Government estimated that houses thus improved were far in excess of the quarter of a million houses affected by the slum programme.

The BISHOP of WINCHESTER said that two-thirds of the families in London shared a house with one or two other families. In 1921 there were 137,000 more families not in possession of a separate dwelling than at the census of 1911; and at the last census there were 75,000 more families, in addition to the increase on the last occasion, which did not possess separate houses. Intense overcrowding—three or more to a room—increased by 45,000 in the last ten years. The L.C.C. and the local authorities had done a great deal in the past in providing splendid estates, but they had failed so far to deal with the poorest members of the community. While Birmingham and Liverpool built respectively 76 and 67 per cent. in proportion to the increase in population, London had only built 24 per cent. Lord LISTOWEL said that, accepting as a minimum standard of housing accommodation the standard approved by the Minister of Health, they discovered there were approximately 4,000,000 houses that did not satisfy the minimum requirements. Lord HALIFAX said that during the sixteen years since the war well over 2,000,000 houses had been built for a cost put at £450,000,000, while the population had only increased by some 2,000,000. As Minister of Education he had an illustration placed before him not long ago of the effect of slum life upon children in the schools. Out of 100 children from the slums compared with 100 children from better homes, not fewer than sixty-four slum children were below the standard, as against eleven of the others; thirty-four poorly nourished, as against nine of the others; and at the age of 11 only three slum children had reached a class attained at the same age by thirty-seven of the children from better homes.

The House agreed to the Archbishop's motion.

On March 22nd, in the House of Lords, Lord MOYNE opened a debate on the density of houses in the planned area of Greater London. Viscount GAGE said a standard average housing density of twelve to the acre did not mean that every house must have one-twelfth of an acre. The Minister of Health would always consider proposals for a higher density of building, but any proposal for building in a town planning area must be covered by a density schedule. Over 200,000 acres of vacant land suitable for building existed within fifteen miles of Charing Cross, and 7,200 acres of undeveloped land in that radius had been zoned at more than twelve houses to the acre.

Care of the Poor in Scotland

In the House of Commons on March 27th Mr. SKELTON moved the second reading of the Poor Law (Scotland) Bill. He said that the Bill was an indispensable step to a full and comprehensive modern Poor Law statute. Clause 4 provided that a local authority should, if required by the Department, provide suitable and separate poorhouse accommodation for each or any of such classes of inmate as might be prescribed by regulations made by the Department. At present the Department of Health for Scotland had no power to stimulate local authorities to proceed with the work of improving the poorhouses. Clause 9 provided for the removal, under full and proper safeguards, to a suitable hospital or other institution, of aged and infirm, or physically incapacitated persons who were unable to devote to themselves or to obtain from other persons proper care and attention. The procedure would be that, on a certificate by a medical officer, application might be made by the relieving authority to the

sheriff, who would have to be satisfied that there was a suitable institution to which the person could go. An order, which in no case lasted for more than three months, could then be made for the removal. Clause 10 gave a new right to the poor of Scotland—namely, that the first 5s. of friendly society sick pay should be disregarded in the assessment of their relief. It also incorporated a provision which the Scottish poor had enjoyed up to now—namely, that the first 7s. 6d. of national health insurance benefit should be disregarded. It was provided that a casual poor person should not be entitled to discharge himself from a poorhouse before 9 a.m. of the second day following admission. It was important that when a vagrant or casual poor person was in an institution the opportunity should be taken to cleanse him and his clothing.

Mr. C. MILNE said Scottish Poor Law authorities carried out their difficult duties with zeal, efficiency, and humanity, but had not always the accommodation necessary for detention. The first thing to do was to provide suitable accommodation. Mr. BUCHANAN said that the power to remove old people was capable of the worst abuses, and should be deleted from the Bill. At present, generally speaking, such old people went to the public hospitals.

The Bill was read a second time, and sent to a standing committee.

Silicosis Problems

On March 29th Mr. DAVID GRENFELL opened a discussion about silicosis. He said that in 1925 he had cited a number of cases to the Mines Department, which held an inquiry. The report was made to that Department in October, 1929, by Dr. Pirow, who now occupied a high position with the South African Government. Dr. Pirow confirmed the belief that silicosis in the United Kingdom was identifiable with miners' phthisis in South Africa. In February, 1929, a Home Office regulation appeared acknowledging the liability of employers to pay compensation for silicosis. Mr. Grenfell added that since then he had often indicated the dissatisfaction of the miners with the conditions under which compensation was payable. Silicosis was spreading in the mining industry. Twelve or fifteen years ago cases had been correlated with the operation of boring machines in the rock of coal mines. A short time ago the Secretary for Mines had reported that in a certain period 400 people had been certified as so disabled by silicosis in the mines of the United Kingdom as readily to obtain compensation. Mr. Grenfell believed that was only a small part of the incidence of the disease. He asked the Home Secretary to pursue and expedite inquiries which were being made by the medical staff of his Department, in collaboration with a medical man appointed by the Mines Department. Miners' representatives were convinced that silica was not the only mineral responsible for "silicosis." Experts reported—and the report was consistent with miners' experience—that sericite was present in siliceous rocks, and played a large part in producing this disease. He asked for that to be specially and quickly investigated, because in some districts of the British coalfields there was no stone which did not produce silicosis cases, whereas other districts had not the same incidence. Figures given by the Inspector of Mines showed that of 424 cases in Great Britain 386 were certified in South Wales—80 per cent. of the cases in 25 per cent. of the mining population. In certain parts of South Wales the incidence was still higher, and could not be explained by varying degrees of contamination with silica. Therefore the investigation of sericite as a cause of this disease should be carried further, and other causes should be observed. The regulations laid down that when compressed air was turned on in a pneumatic drill water must be turned on at the same time and the dust laid at the point where it was made. No effective dust-trap had yet been invented, and the miners' leaders in the United Kingdom were not satisfied that an effective and portable respirator was available. Mr. Grenfell believed the Secretary of Mines could by Order prescribe wet drilling wherever drilling was done. Miners' leaders would also like research pursued into the effects of the transplanting of the stone dust which was laid, as prescribed by regulations, to prevent the spread of explosion caused by gas.

Mr. DAVID DAVIES said that to secure compensation a man who became disabled had to prove he had been working

on rocks containing 50 per cent. of pure silica. This was exceedingly difficult to prove. Even with wet drilling men would suffer from silicosis. In the unloading process a man was compelled to inhale dust, and when old roads underground were filled the atmosphere was charged with it. To every ounce of coal dust on the roads an ounce of stone dust must be added. A man had constantly to inhale that dust when passing along the main airway, where the velocity of the air was high and where horses and "journeys" raised the dust. Stone dust used on the roads should be sampled much more often to ensure that it was free from silica.

Sir JOHN GILMOUR said that while much could be said for using water with drills or to lay dust the evidence for it was not conclusive. Special measures against silicosis had been brought into force for the refractory industries and for certain processes in the pottery industry. Work was only on the fringe of the problem as yet, but scientists were engaged with a common purpose and all possible expedition to improve matters. A mask or respirator would shortly be available for trial, but an educative process would be needed to ensure its use. Sericite had been found in certain cases to have deleterious effects, but no case had been established against it in which silica was not also present. Sericite, therefore, might be a contributory cause of the disease, but not a primary cause. The Minister of Mines would investigate why the trouble was largely confined to an area in South Wales. Better ventilation in the mines must be of immense importance, and the methods of limiting explosions were being investigated from all practical aspects. At present the Government was in communication with the mine owners on silicosis, and was also ready to accept representations from the Miners' Federation.

Small-pox Outbreak at Nottingham.—On March 20th Sir HILTON YOUNG told Mr. Groves that twenty-five cases of small-pox had been notified in the recent outbreak at Blackburn. Of these, eleven were unvaccinated; their ages were 1 month, and 4½, 7, 8, 16, 19, 24, 25, 27, 30, and 44 years respectively. Twelve had been vaccinated in infancy only; their ages were 22, 31, 33, 41, 43, 49, 55, 56, 59, 61, 62, and 64 years respectively. Two, both 38 years of age, stated that they had been revaccinated in 1917 and 1929 respectively; the former showed evidence of revaccination, but the latter did not. There were four deaths—three of unvaccinated persons, aged 7, 8, and 24 years respectively, and the other of a man aged 62, who had been vaccinated in infancy only.

Local Authorities without Slums.—Replying to Mr. Temple Morris, on March 22nd, Sir HILTON YOUNG said that the local authorities of four county boroughs, seven non-county boroughs and urban districts with a population of 50,000 and over, twenty-two other non-county boroughs, 157 urban districts, and 110 rural districts had reported that no slums existed in their areas. These returns had been accepted by his Department as correct.

Condition of a Mortuary.—Sir HILTON YOUNG told Mr. Thorne, on March 22nd, that his attention had been called to the insanitary conditions of the Cheam mortuary. He had received no report from the coroner, but had communicated with the urban district council. Replying to Dr. O'Donovan, he said he had not received complaints that a considerable number of mortuaries throughout the country were in an insanitary condition. He would be glad to hear of any specific cases.

Milk Publicity Fund and Supplies to Schools.—On March 26th Mr. Harcourt Johnstone asked the Minister of Agriculture what arrangements were contemplated, or had been made, to assist the supply of milk in schools by means of his proposed grant of £500,000, and if any provision was to be made to guarantee the purity of the supplies. Mr. ELLIOT said it was for the Milk Marketing Boards, in the first instance, to frame programmes for expenditure from the Milk Publicity Fund, which must include arrangements for the supply of milk to schools at reduced rates. There was no reason to delay the conclusion of contracts in the ordinary way for the supply of milk to schools for the summer contract period.

Death from Small-pox.—On March 26th Sir HILTON YOUNG, replying to Mr. Groves, said that during 1933 small-pox was registered as the sole cause of death of one male, aged 52,

and as a contributory cause in the deaths of two other persons, aged 2 and 35 years respectively. In the case of the child small-pox was associated with acute miliary tuberculosis, and in that of the man of 35 with chronic myocarditis. The deaths at 52 and 2 years had been classed as due to small-pox, that at 35 years as due to chronic myocarditis. Replying to Mr. Groves, on March 26th, the Minister said that six certificates were received during 1933 on which vaccination or vaccinia was entered as the cause, or one of the causes, of death. The ages of the persons concerned were 2 months, 3 months, 4 months, 6 months, and 17 years respectively. He said he was advised that no form, other than Form A under the Vaccination Acts, was handed to parents registering births at Paddington.

Medical and Nursing Services on the Western Isles.—On March 27th Mr. SKELTON informed Mr. T. B. W. Ramsay that there were no hospitals, nursing, or maternity homes on the islands of Harris, North Uist, Benbecula, and Barra, or on the smaller adjacent islands, with the exception of a casual sickhouse in Harris. Medical and nursing services were provided by doctors and nurses resident on the islands named. In sudden and serious illnesses, accidents, and maternity cases arrangements were made wherever practicable for the removal of patients from Harris to the hospital at Stornoway, and from the other islands named either to Oban or Glasgow. Cases from Benbecula were sometimes treated in the private hospital on South Uist. The doctor at Benbecula was specially selected for appointment because of his surgical knowledge and experience. In urgent cases; as an alternative to the removal of the patient, the surgeon from Stornoway, accompanied if need be by a nurse, might travel to the home of the patient.

New Formula for Surgical Spirit.—In reply to Miss Horsburgh, on March 28th, Mr. HORE-BELISHA stated that the withdrawal as from March 15th, 1934, of the formula permitted during the past years for the manufacture of methylated spirit known as surgical spirit and the substitution of two new alternative formulae was to achieve a still higher degree of unpalatability in the product.

Road Accidents: Increase in Metropolitan District.—Replying to Mr. Cadogan, on March 31st, Sir JOHN GILMOUR said that statistics of accidents involving death and personal injury in the metropolitan police district for the months of January and February of this year showed that the total in each of these months was higher than in the corresponding months in previous years. Figures for this year for the rest of the country were not available, and it must not be assumed that the metropolitan figures were typical of the country as a whole. Figures of accidents in the metropolitan police districts resulting in death and injury in January and February in each of the years 1930 and 1934 were:

Year	Fatal		Non-fatal		Total	
	January	February	January	February	January	February
1930	118	102	3,501	2,928	3,619	3,030
1931	86	87	3,016	2,804	3,102	2,891
1932	108	91	3,361	2,873	3,469	2,964
1933	126	89	2,978	2,981	3,104	3,070
1934	109	91	3,827	3,112	3,936	3,203

Small-Pox at Blackburn.—Mr. Groves asked, on March 29th, whether any members of the staff of the corporation hospital or any of the inmates developed small-pox in the recent outbreak at Blackburn; if so, how many, and what was their vaccinal condition. Sir HILTON YOUNG replied that the first case of the recent outbreak was removed not to the small-pox hospital, but to the ordinary isolation hospital before the illness was diagnosed as small-pox. Four members of the staff of the latter hospital and three patients subsequently developed small-pox. None of the three patients had been vaccinated. The four members of the staff had been vaccinated in infancy, and one of them stated that she had been revaccinated, but showed no evidence of revaccination. Replying, on March 26th, to Mr. Groves, the Minister stated that five of the Blackburn small-pox patients were vaccinated

shortly before removal to hospital. Two of these were vaccinated during the incubation period of the disease, six and ten days respectively before removal. Three were vaccinated after the illness had begun, one on the day of removal, one the day before removal, and the third four days before removal.

Notes in Brief

The Minister of Health will appoint a committee on the construction of tenement buildings.

A report from the Departmental Committee on Food Standards will be presented as soon as possible.

Mr. Elliot states that the methods to be adopted to utilize the grant of £750,000 to clear dairy herds from disease were under consideration by the Ministry of Agriculture and by the Cattle Disease Committee of the Economic Advisory Council.

Universities and Colleges

UNIVERSITY OF LIVERPOOL

On the occasion of the centenary of the incorporation of the Liverpool Medical School the University proposes to confer the following honorary degrees at a graduation ceremony on May 11th:

D.Sc.—Henry. Roy Dean, M.D., professor of pathology in the University of Cambridge and Master of Trinity Hall; Sir Thomas Lewis, M.D., F.R.S., physician to University College Hospital, London; Mrs. May Mellanby, investigator for the Medical Research Council; Wilfred Trotter, F.R.S., F.R.C.S., sergeant-surgeon to the King.

LL.D.—William Blair-Bell, F.R.C.S., emeritus professor of obstetrics and gynaecology in the University of Liverpool (professor 1921-31), first president of the British College of Obstetrics and Gynaecology; Henry Briggs, F.R.C.S., emeritus professor of obstetrics and gynaecology in the University of Liverpool (professor 1898-1921); Herbert Richard Hurter, M.D., past-president of the Liverpool Medical Institution; William Smith Paget-Tomlinson, M.D., late chairman of the Westmorland Public Health Committee.

UNIVERSITY OF GLASGOW

At the graduation ceremony, on June 20th, the honor degree of LL.D. will be conferred on Dr. René Lé professor of clinical surgery in the University of Lyons.

UNIVERSITY OF DUBLIN

TRINITY COLLEGE

The following candidates have been approved at the intensions indicated:

FINAL MEDICAL EXAMINATION.—Part I (Materia Medica and poetics, Pathology and Bacteriology): B. E. O'Brien (pass high marks), P. X. O'Dwyer, H. C. Bourke, S. J. H. D. F. J. C. Loughran, B. M. O'Sullivan, B. Rogol, R. A. J. T. Wellwood, P. Citron, B. Lapedus, J. C. Roux, Caithness. **Part II—M.B.:** R. B. Hunter, E. E. O'Malley Ryan, Mary E. Mansfield, J. J. Martin, Charlotte F. Pike, H. Deane, S. H. R. Price, B. Ch.; J. Bell, G. N. Taylor, Hunter, Agnes Monteiro, W. N. Whiteside, Esther C. L. Helena G. G. Bennett, Eva E. Moore, P. A. O'Callaghan, T. Gregg, J. A. M'Ilveen, A. Dolphin, B.A.O.; J. F. Q. C. (passed on high marks), T. D. O'Connell, Evelyn M. H. Marie J. S. O'Leary, F. J. B. Convery, R. F. Lurring, F. M. H. R. I. Shier, Agnes Monteiro, S. M. Freedman, J. Soret, Vaughan, H. G. Ellerker, M.D.; A. A. Cunningham, R. H. J. H. Hodgman, J. T. Robinson.

D.P.H.—Part II (Old Regulations): H. E. S. Richards.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the Royal College of Physicians, held on March 26th, Lord Dawson of Penn was re-elected President.

Mr. Augustus Andrewes-Uthwatt was appointed junior standing counsel of the College. Dr. H. Morley Fletcher was appointed to represent the College at the centenary celebration of the foundation of the medical school of Liverpool University; Professor G. Elliot Smith at the International Congress of Anthropological and Ethnological Sciences; and Dr. F. Dawtry Drevitt as representative on the Committee of Management of the Chelsea Physic Garden.

The Oliver-Sharpey Lectures on "Viruses in Relation to the Aetiology of Tumours" will be delivered by Dr. C. H. Andrewes at the College on May 1st and 3rd at 5 p.m.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Surgeons, to the following candidates:

H. W. Appleby, Edith D. Bower, W. G. Davidson, G. D. Gordon, H. D. Grove, J. N. Ismail, A. R. Khan, F. H. W. Lake, P. H. Maud, W. B. J. McCris, G. G. Patel, A. W. Patton, L. G. Scouler, J. Sterne, K. R. Singh, Eric Slater, P. I. Tenny, R. L. H. Townsend.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

Chemistry—A. J. L. Baker, J. L. Frer, J. C. Harvey, C. W. O'Donoghue, F. D. Peterson, J. D. Taylor, I. H. N. Whitehead.
Medicine—A. J. L. Baker, A. C. E. Cole, R. Frankling, J. Lapschitz, B. C. M. Palmer, I. H. N. Whitehead.
Pharmacology—A. J. L. Baker, M. J. Cerran, B. C. M. Palmer, H. Petroschakis, J. H. Payne, I. W. Trudwell, I. H. N. Whitehead.

Microbiology—A. J. L. Baker, R. N. Cressley, M. F. Curren, B. Dyal, J. H. Payne, I. H. N. Whitehead.

The diploma of the Society has been granted to A. J. L. Baker, A. C. E. Cole, B. Dyal, R. Frankling, J. L. Frer, J. C. Harvey, J. Lapschitz, B. C. M. Palmer, J. D. Taylor, and T. H. N. Whitehead.

Medical News

The one hundred and fourteenth annual general meeting of the Hunterian Society will be held at Simpson's Restaurant, Chancery Lane, E.C.4, on Monday, April 9th, at 7.15 p.m. After the annual meeting Sir Frederick Hobday will give an address on "The Debt Veterinary Science owes to John Hunter."

A meeting of the Eugenics Society will be held at the Linnean Society's Rooms, Burlington House, Piccadilly, W., on Tuesday, April 17th, at 5.15 p.m., when there will be a symposium on birth control. The speakers will be representatives of the National Birth Control Association and the Society for the Provision of Birth Control Clinics, with Sir Humphry Rolleston in the chair.

A course of lectures on pathological research in its relation to medicine has been arranged for the summer session at the Institute of Pathology and Research, St. Mary's Hospital, London, W. These lectures will be given in the lecture room of the Bacteriological Department of the Institute on Thursday afternoons at 5 p.m., from August 12th to May 31st, inclusive. The lecturers are: whist Almoth Wright, Professor A. Bethe (University of Marburg), Mr. Hugh Cairns, Sir Bernard Spilsbury, Professor J. B. S. Haldane, Professor J. C. Drummond, viator E. N. Da C. Andrade, and Dr. Leonard "Schubert. The course is open to all members of the medical profession and to students in the medical schools without fee.

A post-graduate course on the medical and hydrogeological treatment of diseases of the digestive system, diet, and nutrition in the light of recent research will be held under the direction of Professor Maurice Villaret at the Hôpital Necker, Paris, commencing on April 23rd and lasting for a fortnight, and will be followed by a visit to Vichy, where the last two lectures will be given. The fee is 200 francs. Further information can be obtained at the Laboratoire de l'Hydrologie et Climatologie, Faculté de Médecine, Paris.

The Fellowship of Medicine announces that Dr. Clark-Kennedy's thirteenth lecture-demonstration, at 11, Chandos Street, W., on April 17th, will deal with cardiac murmurs. On April 14th, at 3 p.m., Mr. Mortimer Woolf will demonstrate surgical cases at the National Temperance Hospital. On April 11th Mr. Lindsay Rea will give a demonstration on the fundus oculi for M.R.C.P. candidates. On April 11th, at 11, Chandos Street, at 8.30 p.m., Dr. Ellman will begin a series of lectures on the diagnosis and treatment of chronic diseases of the chest in general practice. An afternoon course in infants' diseases will be given at the Infants Hospital from April 9th to 21st. On April 14th and 15th the Southend General Hospital is holding a course in general medicine

and surgery. The British Red Cross Clinic has arranged a course in rheumatism on Tuesdays and Thursdays, from April 10th to 26th, at 8.30 p.m. Other forthcoming courses and demonstrations include ophthalmology, at the Royal Eye Hospital, April 16th to 28th; x-ray films and electrocardiograms (for M.R.C.P. candidates), at 11, Chandos Street, April 16th, 17th, and 19th, at 8.30 p.m.; and three lectures (free to members and associates of the Fellowship), at 4 p.m., on April 19th, 26th, and May 3rd. Brief particulars are given in the diary column of our Supplement each week.

At the next conference of the German Society of Internal Medicine, which will be held at Wiesbaden from April 9th to 12th, the main topics for consideration will relate to problems of inheritance and transmission in respect of the circulatory system, kidneys, and nerves, pulmonary diseases, and psychological conditions; the principles and problems of neurological localization; and the physiology, chemistry, and therapeutics of the sexual hormone. Vitamins will be discussed in a joint session with the German Society for the Study of Diseases of the Digestion and Metabolism.

The next meeting of the International League Against the Venereal Peril will be held at Madrid in May.

The Middlesex Hospital has received from Mr. E. W. Meyerstein of Dunton Green a gift of £30,000, to develop a new department of radiotherapy. The hospital has also received a new gift of £10,000 from Lord Woolavington, making Lord Woolavington's total benefactions to the hospital £135,000, and a new gift of £10,000 from Mr. W. H. Collins, donor of the Collins X-Ray Diagnostic Unit, which brings Mr. Collins's benefactions to £35,000.

Dr. H. B. Fletcher of Dronfield, Derbyshire, is retiring from the urban district council, of which he has been a member for fifty years. For twenty-one years he has been chairman, and for twenty-five years a J.P. In 1894, when the Dronfield local board became an urban district council, there were twenty-one candidates for nine seats, and he headed the poll. Dr. Fletcher is retaining his membership of the Derbyshire County Council, to which he was recently re-elected; he has been a member of it since 1919. In view of the widespread appreciation of his untiring work and many services to the local community, a testimonial fund has been opened. Dr. Fletcher, who is a member of the British Medical Association, received his medical education at Edinburgh.

In the *Journal* of March 24th (p. 565) reference was made to presentations to Dr. Luke Gerald Dillon upon his retirement after practising for fifty years in Seaham. A further presentation, in the form of a massive silver loving-cup from the medical practitioners of the county of Durham in recognition of his services as a practitioner and chairman of the local medical and panel committee, was made to Dr. Dillon by Dr. David F. Todd (honorary secretary of the committee) at a complimentary dinner at Durham on March 17th.

Dr. Walther has been elected president, Dr. Siredey vice-president, Professor Achard general secretary, and Dr. Brouardel annual secretary, of the Académie de Médecine for 1934.

Professor Burian of Prague and Dr. Clauoué of Paris have organized an international course in plastic surgery. The course will be held in Paris from May 14th to 18th and in Prague from May 19th to the 26th. The fee is 300 francs. Further information can be obtained from Dr. Clauoué, Rue Scheffer, 29, Paris.

The total number of doctors in Japan in 1932 was 50,068, an increase of 1,969 over that in 1931.

The following appointments have recently been made in foreign medical faculties: Dr. Richard Sirbeck of Heidelberg, professor of internal medicine at Berlin; Dr. Aubertin, professor of experimental medicine at Bordeaux; Dr. Serr, professor of medical pathology at Toulouse; Dr. Ladislas Melanowski, professor of ophthalmology at Warsaw; and Dr. E. Cylarz, professor of internal medicine at Vienna in succession to Professor J. Pal.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is **EUSTON 2111** (internal exchange, four lines).

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Paraesthesia in a Case of Aneurysm

"H. S. O." (London, S.E.) writes: I have a patient with abdominal aneurysm whose chief complaint is a sensation of burning all over the body, and worse in the lower limbs. I have tried numerous remedies, except opiates, and would be glad of suggestions. Aspirin gives some relief.

"Bee Wine"

"FERMENT" asks if any reader can tell him the nature of the ferment which is used in the manufacture of so-called "bee wine," how and where it is procured, and its action.

Signing Prescriptions for Dangerous Drugs

"M.D., M.R.C.P." (Hove), writes: On two occasions lately chemists have called my attention to the fact that signatures for drugs prescribed under the Dangerous Drugs Acts are not valid if made as a carbon copy, as is customary when using a duplicate prescription book, but that such signatures should be written separately on the prescription itself. I should be glad to know if this is the case. I have signed very many prescriptions in the ordinary way, using a duplicate prescription book in which the prescription and signature are actually a carbon copy, and they have not been queried before.

•• We understand from the above inquiry that our correspondent retains his original signed prescription, giving a carbon copy to his patient. Why not reverse the procedure and give the original prescription to the patient or, as an alternative, sign the copy instead of the original? This would save all anxiety to our friends the pharmacists, and avoid raising an awkward issue.

The Pox Doctor's Clerk

"R.A.M.C. (ret.)" writes from Reading: With reference to Dr. Philip Gosse's query in the *Journal* of March 24th about the phrase "Lucky as the pox doctor's clerk," and in amplification of the reply in the *Journal* of March 31st, which does not touch upon the "lucky" portion of the query, I inquired from a friend who served in the ranks of the K.O.S.B.'s, and he said that whenever there was any great piece of luck coming to a man in the battalion it was common to hear the remark, "He's as lucky as a pox doctor," the inference being that the V.D. specialist was always fully employed, and, in consequence, well paid, and therefore lucky. The greater including the less, it may be taken that his clerk (if any) was also in a fortunate position.

Income Tax

Payment or Part Payment of Locumtenent

"P. P." was unfit for work for three months, and unable to carry out the duties of an appointment he held or other miscellaneous professional work. During the period he received his salary, and the authority paid a locumtenent.

"P. P." also made payments to the same deputy for other work. How should "P. P." deal with his income tax return?

•• He should include all amounts received, and can deduct the cost to him of the locum services. That cost would include the cash payments and a reasonable sum for board and lodgings. Naturally the latter sum will vary according to the total cost to "P. P.," but a reasonable amount can usually be agreed with the taxing authority without much trouble.

Special Receipts—Liability

"W. G." inquires in the case of (a) an amount "received by way of adjustment when a company has reduced a stock to another stock," and (b) when a life assurance premium has after a long period ceased to be payable, and a certain sum is credited to the policy as a reversionary bonus, whether such receipts or credits are liable to income tax.

•• They appear to be capital receipts or credits, and not liable to income tax.

Board, etc., of Locumtenent

"A. B." wishes to know the usual amount allowed for board, lodging, and laundry of a locumtenent. He has claimed to deduct £2 2s. per week, but the inspector of taxes refuses to allow more than 25s. per week.

•• The amount should represent a reasonable estimate of the practitioner's out-of-pocket expenditure. Consequently the answer to "A. B.'s" inquiry must depend on (a) the total domestic expenses, and (b) the ratio applicable to the locumtenent, and obviously no definite rule can be laid down to cover circumstances which vary so much. Normally, however, "A. B.'s" estimate of £2 2s. would be nearer the mark than the inspector's figure of 25s.

LETTERS, NOTES, ETC.

Honour Where Honour Is Due

Dr. W. LEES TEMPLETON (London, N.) writes: The ingenious assumption of credit for amelioration of symptoms by the laity after the use of various external applications is illustrated by the two following cases seen on the same day. *Case 1.*—Male, aged 27, with lobar pneumonia, had his crisis on the third day of illness. To ensure that the patient should not be encouraged to take undue liberties the situation was explained to the relatives, when one of them (his mother) remarked with reference to the very early fall of temperature: "Of course, that must have been due to my grandmother's cure for temperature, which I applied—namely, wetting the back of the patient's back with vinegar!" *Case 2.*—Male, aged 30, with renal colic and blood in the urine. The cessation of the pain coincided with the arrival of the patient's mother, who promptly applied a mustard plaster to the affected area and claimed full credit for the cure. Needless to say, the patient has since gone into hospital for full investigation.

Aspirin Poisoning: Attempted Suicide

Dr. S. LITZT (Edinburgh) writes: It would perhaps be of interest to record a case of attempted suicide by aspirin poisoning in which 600 grains of aspirin were taken at one time without the desired fatal result. Martindale quotes a case of 485 grains, with recovery. In my case, a man aged 48 years, after a drinking bout, took 120 five-grain tablets at about midnight. One and a half to two hours later he became violently sick, and continued to vomit until about 11 a.m. There was no diarrhoea. When I first saw him, about 7 p.m. on the same day, he was comparatively well, with a normal pulse, and required no active treatment. His only subjective symptom at that time was a feeling of discomfort in his head and neck, which he described as "like water rushing through a large pipe." His only other symptom was a very acute but transitory attack of perspiration, which preceded the vomiting.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 44, 45, 46, 47, and 50 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48 and 49. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 144.

RADIUM TELETHERAPY

LATEST MODIFICATION OF THE WESTMINSTER APPARATUS* AND ITS USE*

BY

H. T. FLINT, D.Sc., Ph.D., M.R.C.S., L.R.C.P.

L. G. GRIMMETT, B.Sc. E. ROCK CARLING, F.R.C.S.

AND

STANFORD CADE, F.R.C.S.

(With Special Plate)

Westminster Hospital has made use of distance mass radiation with radium since 1929. In all, five different machines have been constructed and employed for treatment of patients and for research. Masses of 1 gram, 4 grams, and 2 grams have been used. Increased experience has dictated necessary modifications of the container, the distribution of radium within it, and the methods of treatment. The successive designs embody the results of our experience. A brief résumé of the earlier types will be of assistance in making clear the reasons for adopting the current form, whose successor will, no doubt, eventually incorporate further improvements.

When the work began the method of applying large quantities of radium placed outside the body was still at an early stage, and we were unable to discover that any definite principles had been laid down for guidance in the technique of treatment. For example, it was impossible to obtain any satisfactory answer to the question whether the beam of radiation should be broad or narrow. This question, put in another way, asks whether we should irradiate only the malignant tissue and its immediate surroundings or a wide area of healthy tissue. Our experience has taught us that it is better to concentrate on the malignant area and a small area of healthy tissue only. We adopt as an important principle the production of a narrow beam of radiation in contrast with the field of our early apparatus and of some of those in use on the Continent. In some cases these fields are more accurately described as clouds of gamma rays rather than beams.

The first "bomb" was rapidly constructed to utilize an unlooked-for loan of a gram of radium. The principles and measurements were those of Regaud's cupola, which was selected after seeing those of Sluys, Mallet, Cheval, and Perussia, and analysing their fields as well as those of Regaud and Failla. Berven's apparatus at that time was small: little more, in fact, than a method of surface application of a few hundreds of milligrams. Our second apparatus was a modification permitting three positions of the four one-gram aggregates at the "corners" of a field no longer strictly square.

In the third apparatus the radium (which was supplied in twenty tubes) was arranged in a circle, the circumference of which could be altered at will by drawing the tubes radially towards the centre. In all these three types the protective casing was very thick, and the weight of lead precluded movement of the whole bomb on more than one axis. Elaborate apparatus was therefore necessary to bring the patient to the bomb in any desired position. Notwithstanding the mechanical perfection of this device two difficulties arose: (1) the time taken in application was greater than should be permitted if the personnel engaged was to be entirely safe; and (2) allowances for the comfort and unavoidable movements of a patient treated for one or more hours made strict accuracy of orientation and distance impossible.

Before this instrument had been in use three months it was decided that a different principle must be adopted: (1) the field must be small; (2) the apparatus containing the radium must be brought to the patient and not the

patient to the apparatus; (3) the skin-radium distance must be variable at will within certain limits; (4) the diminution of lead screenage necessary to permit of free movement of container must be compensated by increased distance between personnel and patient. A much smaller cupola was therefore constructed, pear-shaped, supported and counterbalanced on long lever arms mounted on a wheeled stand. The container could be moved on any axis, and the radium approximated or withdrawn by mechanical controls at a distance of five feet from the radium. This bomb housed the fifth gram of radium at our disposal, and, though faulty in some respects, led the way directly to the design of the current model.

Adverse comments have been levelled at the design of our four-gram container by those who had no personal experience of the working of such an apparatus. For the most part these strictures were the echoes of our own criticisms, which were explained in detail to those who inquired, and were anticipated by our fourth apparatus, which was the experimental form for a new four-gram model had the radium remained with us. It was used for two years as a one-gram machine, and is now superseded by the current model, which contains two grams of radium.

THE PRESENT MODEL

When a radioactive source of small dimensions is placed at the end of a channel in a block of lead the rays penetrate the metal bordering the opening, and a spreading effect is caused outside the region which is the prolongation of the channel; lateral regions of appreciable intensity are produced, and tend to destroy the beam-like character of the gamma rays. It has not, in fact, the character of a beam of light, such as would be produced if the radioactive source were a light source. The effect of spreading can be reduced if the channel has thick walls, but when lead alone is used the apparatus becomes inconveniently large. We have overcome this effect to an appreciable extent by making the lower end of the channel of gold, which, being more absorbent of gamma rays than lead, causes the field to fall off more rapidly at the boundary. By this means we succeeded in producing a remarkably good beam. Platinum would produce an even better result, but at greater cost. The external diameter of the bomb is approximately 14 cm., the internal diameter of the radiation channel 3.5 cm., while the gold mouth is 1 cm. thick and 3 cm. long. Complete details and dimensions will shortly appear in *Acta Radiologica*.

A second point of importance concerns protection. With regard to the patient there is no difficulty. No harm has resulted up to the present from irradiation of normal tissues of the patient by the weak parts of the field bordering the intense regions in our bombs. The concern of those in charge of massive radioactive sources is chiefly for those whose duty it is to apply the treatment. Our calculations of fields permissible in the neighbourhood of the apparatus were originally based on our experience of the effects observed on the skin, and especially from the Radiumhemmet, Stockholm. However, upon such data as we could collect from other sources, rules have now been laid down and published in a pamphlet issued by the Health Organization of the League

* Continuation of articles in the *British Medical Journal*, May 11th and August 3rd, 1929; February 8th and July 19th, 1930.

of Nations (Geneva, 1931) for guidance of radium workers and with a view to safeguarding them. Our subsequent measurements with a calibrated celluloid-walled electro-scope have shown that we are within the safe limits. It was very interesting and satisfactory to us to note that calculations made by the simple application of the inverse square law and the absorption of the apparatus gave results agreeing with the electroscope. But whatever may be done to guarantee the safety of the workers the fact remains that the bomb is a weapon calling for careful handling. The chief factors in protection are ultimately distance and common sense.

APPARATUS AND METHOD OF APPLICATION

We have reduced the bomb to quite small dimensions and its weight to 38 lb. It is counterpoised over pulleys, and is able to rotate about an axis through its centre of gravity. It is thus easy to handle, and will stay in the position in which it is placed. The patient comes into the treatment room with a metal holder in the shape of a truncated cone of correct angle, fastened by elastic webbing already attached in such a position that when the bomb fits into it the radiation is directed to the lesion. Figs. 4 and 5 are intended to make clear the method of application. The patient sits on a couch, and is then swung into position under the bomb, and he can either push the apparatus into contact himself or it can be fixed by an attendant, who stands a few feet away and makes the necessary adjustments by means of a rod held in the hand. The actual fixing is at present made by means of an elastic band, which fastens the metal cone to the bomb and maintains the same relative position of bomb and patient, although the latter may make such slight movements as are to be expected from anyone stretched on a couch or sitting in a chair. The method of fastening is clearly capable of considerable variation, but it must be easy to work, and there should never be any need for the attendant to place his hand on the bomb, even though the amount of radiation through the upper half of it is very small.

CLINICAL APPLICATION OF MASS RADIATION

The object of mass radiation (or the use of a bomb) is to deliver to the tumour in all its parts gamma radiation of the highest practical intensity with the least possible damage to the skin and surrounding normal tissues, except the actual tumour bed. The advantages derived by the patient from such radiation are as follows:

1. No operative intervention is necessary, as in interstitial radiation.
2. Much more accurate treatment is possible than with plaques, collars, or other surface methods.
3. The depth intensity is greater.
4. The situation of the tumour is of less importance, as access to it is not so vital a factor, providing the quantity of radium available is sufficiently great.
5. The destructive effects on lymphocytes are less than with wide plaques of lesser intensity.

The efficacy of the method depends mainly upon the ratio between the quantity of radium and radium-tumour distance. From the experience gained in the use of the various bombs it can be postulated that for efficient mass or distance radiation it is necessary to make use of multiple ports of entry of small diameter, as it is thus possible to reduce the skin reaction to a minimum and increase the tumour dose to any desired quantity.

The selection of cases suitable for distance or mass radiation is dictated by practical considerations of the surface area to be treated, the radio-sensitivity of the growth, and the quantity of radium available. With the present apparatus and two grams of radium at a distance of 3 cm. erythema of the skin is obtained in six hours, and peeling in seven hours. Intermittent irradiation of

one hour per port of entry per day is found convenient and safe. Occasional periods of rest enable the total dose to be increased considerably. For the past year the cases treated consisted chiefly of pharyngeal cancer, malignant glands (neck, axillae, groin), metastases in the skeleton, mediastinal sarcoma, sarcoma of long bones, and selected cases of cancer of the breast. In a number of cases radium treatment and high voltage x-radiation were combined with great benefit to the patient.

The reactions in the skin and mucosa are similar to those obtained by other methods of radiation. With experience it is possible to control these reactions from a slight erythema to desquamation and selective radio-dermatitis. The degree of reaction permitted to occur varies with several clinical factors. An initial reaction occurs early in the treatment, and manifests itself by oedema and a primary erythema. The reaction proper occurs between the sixteenth and eighteenth days, with the methods at present used. The effects on the general health and on the blood picture are appreciably smaller than with the earlier machines. Radium-sickness at the Westminster Hospital Annexe has disappeared with improved technique. The blood counts show a progressive fall in the total number of white corpuscles, with a greater relative fall of lymphocytes. These changes, however, are far less marked with the present bomb than with extensive plaques—although the latter contain ten to twenty times less radium than the former—principally because less normal tissue is irradiated, and the total surface area treated is never extensive.

RESULTS OBTAINED FROM BOMB RADIATION

As we are not concerned in this paper with either statistical results or any other consideration except the possible value of mass radiation, it may be convenient to enumerate the results obtained, and contrast them with those of other methods of radium therapy.

1. Proved squamous-celled carcinoma of the buccal mucosa, floor of the mouth, palate, tonsil, lateral pharyngeal wall, pyriform fossa, and extensive carcinoma of the larynx have been made to disappear *in toto* with complete healing. They were undoubtedly selected cases; they represent so far early results; they are by no means a large proportion of the total cases treated; but they illustrate that squamous-celled carcinomata in these sites, irrespective of their clinical degree of operability, are amenable to a form of treatment not unpleasant to the patient, accurate, scientific, and safe both to the patient and to the personnel.

2. Cervical and inguinal glands secondary to squamous-celled carcinoma, fixed and inoperable, responded to treatment in certain cases. They are selected as illustrating a type of case which has proved a failure with collars, plaques, and needles, and which is by common consent "inoperable," even in the judgement of the most fearless and skilled operators.

3. Spheroidal-celled carcinoma of the breast, in selected cases, submitted to the bomb as unsuitable for surgery or needling, have led to disappearance of the primary growth and axillary glands. Inoperable tumours have retrogressed so satisfactorily as to permit surgical removal. This should not be taken as an indication that we consider the bomb to-day to be the treatment of choice for all, or even many, cases of cancer of the breast, and does not imply that surgery, or needling, or the two-stage irradiation by radium, are superseded; nor does it reflect on the results obtained recently by x-radiation alone in cancer of the breast. It is meant to convey only that the bomb has a useful place in the treatment of cancer of the breast. When and how to apply it requires judgement, knowledge of the disease, and appreciation of the likely failure or success of other methods.

4. Bone sarcomata, in the long bones and in the vertebrae, have been made to ossify, and have been seen to become replaced by apparently normal bone tissue for periods up to two and a half years, with relief of symptoms. Arrest of the disease locally, however, must not bring forth false hopes as to subsequent appearance of visceral metastasis.

It is therefore a legitimate conclusion that mass radiation at a distance by means of the so-called bomb is not only a useful weapon in the treatment of cancer, but a weapon so far unique in its possibilities and safe in its application. Besides the purely clinical use, the five bombs used at Westminster Hospital in the past four years have led to a much better appreciation of radium therapy. The bombs have been employed for the purpose of physical and biological research, and the following point to which we have paid attention is worthy of consideration.

From the observation of Spear and Grimmer (British *Institute of Radiology*, vol. vi, No. 67, p. 38) it would appear that, so far as inhibiting cell division is concerned, the most efficient way of using radium is to make use of a particular intensity, for, as a result of a series of experiments on tissue cultures *in vitro*, it is clear that biological response to gamma rays depends markedly on the intensity at which they are applied: if too great or too small an intensity is used the radiations are less effective. We have attempted to keep near to the useful intensity. The import of this observation is not yet completely clear, but we mention it here as a warning note to those who may be using large masses of radioactive material. For the natural tendency to produce the highest possible intensity with it may not necessarily be fruitful of good results.

This represents the progress we have made up to the present in the design and application of our apparatus. Daily use continually suggests improvements, and we have come to the conclusion that the best form of bomb would be one which contains the radium only during the period of treatment. This is certainly to be recommended in cases where 5 or 10 grams of radium are available. There is the obvious advantage that the patient can be placed carefully and accurately in position, since there is no haste on the part of the attendant to get out of the treatment room. There is also the advantage that the bomb can be much lighter, as almost the whole of the lead in its upper half can be removed; the latter is required to protect the attendants while making the final adjustment, and adds to the weight of the apparatus. It is possible to make up the active source in the form of a sphere, and to introduce it into the apparatus by rolling it down a tube. An alternative is to attach to the radioactive source a small motor-driven or pneumatic carrier, which would run into position when everything is prepared, and then run back again into the safe at the end of the exposure. Between treatments it would be kept in a lead safe, and when the patient was in position it would be projected into the bomb by an operation performed outside the room. In this way the attendants would be absolutely protected, and the efficiency of the treatment increased by the improvement in accuracy in placing the patient in the beam of gamma rays.

Daily personal experience over a long period of the difficulties and dangers attendant upon the accurate application of large masses of radium to the skin surface in all parts of the body, in such a way that the beam always traverses the tumour, has led, we hope, to some skill in the observance of the required "ritual": it has certainly led to increased respect for the dangerous possibilities inherent in its use by untrained or inexperienced people.

270 CASES OF FRACTURED SPINE RADIOLOGICALLY CONSIDERED*

BY

OWEN L. RHYS, M.D., B.Ch.

RADIOLOGIST TO THE CARDIFF ROYAL INFIRMARY AND TO THE
PRINCE OF WALES HOSPITAL

(With Special Plate)

Until x rays made it possible to discover with certainty fractures of the spine the diagnosis of such injuries was usually confined to those cases in which there was an obvious injury to the spinal cord, with or without bony displacement. Since the introduction of efficient x-ray apparatus, and particularly since lateral views of the spine became available, it has become apparent that fractures of the spine are infinitely more common than was generally supposed. Such injuries are rare in ordinary occupations, and even in London dock areas they are comparatively scarce. In such localities they usually result from buffer injuries, or from falling into the holds of steamers, and there is very little to be found in surgical literature dealing with these cases.

But in coalfields such as those of South Wales, fractures of the spine are so common as to constitute the most frequent form of grave accident. When the occupation of the miner is considered, this is only a natural result. He works with the constant possibility of a fall of roof, sometimes amounting to tons, suddenly pinning him to the ground. The resulting injury varies according to the position that the man is in at the moment, whether standing, kneeling, or lying. If the fall comes on his head or neck, he is likely to sustain a fractured skull or a fractured cervical spine, and the result is, of course, often fatal at once. One reads of these cases almost daily, and in South Wales and Monmouthshire alone about 220 miners are killed outright each year. These unfortunate men never reach a hospital at all, but, from inquiry, I find that many of them have fracture-dislocation of the spine. If the man is in a stooping or kneeling position he may sustain a fracture of any part of the spine, a fractured pelvis, a fracture or dislocation of the hip, or a dislocation of spinal or sacro-iliac joints. Sometimes the original fall knocks the man flat, and, further falls occurring, he may sustain fractures of any of these parts.

MATERIAL CONSIDERED

Many of these men sustain serious spinal cord injury without fatal results, and some of them remain bed-ridden for many years. I have not included any of these in the series I am dealing with. The 270 cases of fracture referred to in this paper have all walked into my consulting room in the last five years. They have been sent to me in connexion with claims under the Compensation Act, and the vast majority of them have been miners referred by the South Wales and Monmouthshire Coal Owners' Indemnity Society. A few of them have been in dock accidents and other types of injury. I have not included fractures or dislocations of the cervical spine, of which I have had several, but have confined this investigation to the dorso-lumbar region, and dealt only with the period of five years. The investigations were carried out entirely from the Compensation Act point of view and not from that of surgical treatment. The length of history of these cases when seen by me varied from a few days to very many years. As many as 201 of them had a history of under five years.

TYPES OF FRACTURE

The majority of the fractures have been of the indirect variety—that is, to say, the stone has fallen on the

* From a paper read before the Medical Society of South Wales, 1931.

shoulders and doubled the man up forwards, and the resulting injuries have been fractures of the bodies, of the transverse processes, and, rarely, of the laminae. The commonest type of fracture of the bodies has been the wedge fracture, sometimes referred to as Kummell's disease. In this condition the affected vertebra has received a squeeze on its upper and lower surfaces, the effect of which has often not appeared in a radiograph for many months after the injury. On admission to hospital the patient is found frequently to have a spine radiographically normal, but in a few months one vertebra, and sometimes two, show wedging. I have, however, seen a definite wedge fracture quite apparent within a week of the injury. The intervertebral surfaces remain smooth and the intervertebral spaces remain unaffected.

I think it is unfortunate that the name Kummell's "disease" has been given to this condition. When Kummell described this appearance in 1895—that is, before any x-ray examination was possible—he imagined that an injury had caused a rarefying osteitis of the body of the vertebra and that after a time the body collapsed, as it does in Pott's disease. I prefer to call this condition Kummell's fracture or "wedge fracture." The injury is originally a fissure, sometimes a stellate fissure, radiating from the centre of the body towards the rim, and it is easy to understand how the pressure of the very hard elastic intervertebral disks on this comparatively soft vertebral body would cause a gradually increasing collapse, with, finally, almost complete obliteration of the anterior portion. I have had shown me by Dr. Abeles of Frankfurt some excellent slides illustrating these changes. I think that to curtail the amount of wedging it is essential to prevent the pressure exerted by the disks by the use of steel and leather supports, which will prevent sagging of the spine.

The next common type of fracture is that in which there has been an immediate break in the body or bodies, usually with some displacement, and these cases—especially where there is comminution—are, of course, much more serious and rapid in their effects. Leaving out the effect on the spinal cord, one finds that the effect on the bones is usually that the normal vertebra above the broken one erodes the injured body and causes considerable distortion. Of the 270 cases under review 263 sustained fractures of bodies and 176 of fractured transverse processes. In some of the cases several bodies and several processes were broken in the same spine. Tabulating the frequency of these injuries, the following figures were obtained:

Bodies Involved			
8th dorsal	... 3	1st lumbar	... 58
9th dorsal	... 3	2nd lumbar	... 55
10th dorsal	... 2	3rd lumbar	... 37
11th dorsal	... 19	4th lumbar	... 29
12th dorsal	... 34	5th lumbar	... 23
Total	... 263		
Transverse Processes Involved			
1st lumbar	... 25	4th lumbar	... 46
2nd lumbar	... 33	5th lumbar	... 26
3rd lumbar	... 46		
Total	... 176		

CRITERIA OF DIAGNOSIS

I have confined the diagnosis of fracture to cases where there is: first, a definite wedge, not merely a very slight narrowing of the anterior border of the vertebra, which is frequently seen in working men; and, secondly, where the nature of the injury is such as might reasonably have caused a compression of the spinal column. Claims are frequently made of Kummell's disease in cases in

which the injury could not have possibly caused such a condition. As an example of this:

A man had a slight crush of his pelvis, which cracked his pubis without displacement. Some years later, when he was asked to resume full work, no trace of injury could be found in the pelvis, but a very slight wedging of the second lumbar vertebra having been found, it was claimed to be due to the crack, although the man had never had a symptom suggesting such an injury. In another case in which there was a general kyphosis of the spine, which had obviously taken many years to develop, a recent crush was alleged to have been the cause of the disability.

Again, before admitting any apparent separation of transverse processes to be the result of a crush, I would stipulate that the injury was applied directly over the particular processes involved, and that there was some evidence at the time, such as bruising. There are very many spines in which there are apparent fractures of processes, sometimes with separation, sometimes without, in which no history of injury has been given. In 1910 I published, I believe, the first case of this sort, and since then I have published several articles dealing with these pseudo-fractures. In spite of what one reads in textbooks, I do not know of a case in which a transverse process has been torn off by a muscular effort. In a discussion on this paper, Professor Hey Groves and others raised the point that muscular violence might tear off transverse processes, and with that I quite agree, but I maintain that a voluntary muscular effort will not cause this injury.

Cases are still cropping up in which, radiographically, a line thrown by the edge of the psoas muscle across a transverse process is claimed to be a fracture. As Dr. Gilbert Scott has pointed out, this should not be a mistake often made nowadays, but with so many small hospitals installing plants new users of x rays are constantly coming forward, and these little mistakes are naturally being repeated.

A curious feature in this series has been the rarity of injury to the laminae. I can only explain this by supposing that, where the laminae have been crushed, the spinal cord, too, has probably been injured, and the man has been partially or completely paralysed and unable to travel here for examination.

DISABILITY

As regards the capacity for work after back injuries, there are eighty-seven of these men now working—sixty-eight doing light jobs, seven doing the lighter types of labouring, and twelve doing their ordinary work. It is most difficult to assess the fitness for work owing to the varying personal factor. There must, in the old days, have been scores of men working with fractured spines apparently without serious disability.

In all the cases I am dealing with the question of compensation of course arises, back injuries being uncommon among the uninsured classes, and it is curious to notice how very much worse the complaints of pain become when the diagnosis of fracture has been communicated to the claimant. A very good example of this occurred quite recently.

A man who had been told after previous x-ray examination elsewhere that nothing had been broken, was found to have a fracture-dislocation of his lumbar spine, several fractured ribs, and three fractured transverse processes. He had expressed himself as almost well enough to return to work before another x-ray. The film showed, in addition to the above, a very interesting collection of gall-stones, and, in reporting on the man's case, I added a request to his outpatient doctor that he might send the man back for a face-down film to show the gall-stones more clearly. The man was given the form to bring back, and on his way he read the contents. He was in a state of collapse on returning to the x-ray department, and said his spine was torturing him.

To take the opposite type of patient.

Many years ago I saw an old Welsh collier who insisted on resuming work a few months after a fracture of one of his lumbar bodies. He had a fracture of his pelvis also. He died suddenly at his work from aortic disease. Another man, who was an old bare-fist fighter, worked very shortly after fracturing his spine. But the most interesting case of all was that of a particularly well built young collier who sustained a crush fracture of the second lumbar vertebra, with considerable displacement and fractures of several transverse processes. He enlisted in the Guards and served for six years. At the end of that time he returned to South Wales and claimed for an injury to the spine, which had been found at Aldershot and as a result of which he had been discharged. He was paid a lump sum by the colliery company, and then announced that he was going round the world as a servant to his company officer, and that his spine was perfectly right.

A large amount of displacement of adjoining bodies is possible without any cord lesion. This is particularly the case in the lumbar region, where the tube formed by the dura mater is looser. In several of the films which I showed to the Meynihan Club the vertebrae had been almost pulped and were sometimes lying side by side, so that the cord was displaced laterally at a right angle. In the last month I have seen a curious dislocation in the cervical spine, in which marked displacement is very clearly demonstrated. In this man movements of the neck were full and free, and the only symptoms were paralysis of the right deltoid and loss of the biceps tendon reflex.

A great deal naturally depends on the man himself, but I cannot see why, in the case of a wedge fracture, slowly developing, with smooth surfaces and no pressure on the spinal nerves, there should be any serious loss of working capacity. Compared with the distortion of the spine of the hunchback or some of the bony diseases, these wedge injuries are mild, and they are often as slow in appearing as many of the spinal diseases. But the fracture-plus-erosion type of accident is of course quite different. Here one has rough bony surfaces and an acute angular deformity, and it seems to me that until bony fixation has occurred, to form, as it were, a splint, such a man might suffer pain over a very long period. As regards transverse processes, where the displacement is considerable, they often never unite, though they occasionally may do so with considerable callus. I have one case in which several of them have united to form a solid bony column lateral to the spine. In a few months these separated processes are often painless, and the cracked process in which there is no displacement should cause no pain after, say, three months.

It is impossible to illustrate many of this series, but six skiagrams are reproduced on the Special Plate. The examples I have selected speak for themselves. Apart from the tragedy of these unfortunate men being injured in this way and often untreated surgically, there is the other more mercenary view to be taken, for it has a serious bearing in the low state of the coal industry. In compensation these 270 cases mean a tax on the local industry of about £20,000 per annum.

FULL-TERM ECTOPIC GESTATION

BY

E. BRUCE LOW, M.B., Ch.B., D.P.H.

MEDICAL SUPERINTENDENT, SOUTHLANDS HOSPITAL, SHORFHAM-BY-SEA;
ASSISTANT COUNTY MEDICAL OFFICER (HOSPITALS) AND CONSULTING
OBSTETRICIAN, EAST SUSSEX COUNTY COUNCIL

AND

H. J. MCCURRICH, M.S., F.R.C.S.

HONORARY ASSISTANT SURGEON, ROYAL SUSSEX COUNTY HOSPITAL;
CONSULTING GYNÆCOLOGIST, EAST AND WEST SUSSEX COUNTY
COUNCILS AND THE COUNTY BOROUGH OF BRIGHTON

(With Special Plate)

The treatment of a full-term ectopic gestation is probably unique in the experience of any individual practitioner, and for this reason it is relatively common in obstetrical records. Caldwell, in recording a case of extrauterine pregnancy, with mother and baby living and well, stated that 121 such cases had been reported previously. In 1929 there were actually three cases of full-term ectopic gestation reported in the *British Medical Journal*.

Consideration of the reports of cases of extrauterine pregnancy shows that it usually occurs in a multipara, that the left side is rather more commonly affected than the right, and that the sex of the child is not affected by the side involved. Pre-existing cervical endometritis has been held to be a predisposing cause, but this has not been really established.

In the following case certain unusual features were present. In the first place the case was observed at four critical periods: (1) in mid-pregnancy, probably at the time of secondary intraperitoneal rupture of a mesometric gestation; (2) in the late days of pregnancy; (3) at the spurious labour and subsequent period of devolution; and (4) at delivery by operation. Secondly, certain complications arose. The spurious labour was followed by an intermittent pyrexia, the operation was complicated by an irreducible ventral hernia, and finally there was the occlusion of a ureter.

CASE REPORT

The patient, aged 36, was admitted to the Southlands Hospital on April 6th, 1933. She had had six previous pregnancies—all living children, the youngest being 5 years old. She was sent in from an outlying district as a case of acute abdomen. There was a history of an acute onset of abdominal pain, rigidity, and vomiting twenty-four hours previously; these signs and symptoms rapidly subsided without operation. In the general examination at this time it was noted that she was about five months pregnant, and that the presentation was a breech. She was discharged ten days later free from symptoms. In the light of our subsequent knowledge it seems probable that this attack was one of peritonismus associated with the secondary (intraperitoneal) rupture of an already established and growing mesometric pregnancy.

On July 19th the patient was readmitted, being sent in by an ante-natal clinic as a case of hydramnios. On admission her temperature, pulse, and respiration were normal. The abdomen was pendulous, and there was a small irreducible ventral hernia containing, apparently, omentum only. The foetal tumour was large and tense. What was then thought to be the fundus was one and a half inches below the xiphoid. Neither foetal movements nor heart beats were noted, and the presenting part was indefinite. There was no vaginal bleeding or discharge. There was oedema of both legs associated with varicose veins, with ulceration on the outer aspect of the right leg. The Wassermann reaction was ++. No abnormalities were discovered in the urine. Her condition remained unchanged until August 11th, when she complained of indefinite pains in the back, which had started the previous evening; later she had abdominal pains. Her breasts were secreting.

On examination the foetal heart could not be heard and movements could not be felt, although the patient was convinced that she had felt movement; she "could feel it breathing" was how she expressed it. By vaginal examination there was a slight "show." The external os was softened and patent, and the cervical canal filled with necrotic tissue, which bled easily. On bimanual examination a definite tumour was palpable in the posterior and right lateral fornices, and extending up to the right side of the pelvis, with a smaller mass to the left and higher up. A piece

of the necrotic material was sent to the laboratory, and the following sketches of "possibilities" made (Fig. A).

The necrotic tissue was reported on (by Dr. Shera, County Pathological Laboratory, Hellingly) to show: "Finger-like processes of tissue, which is composed of large polygonal cells, having oval nuclei, some of which show mitosis. The cells are not epitheliomatous, but are probably foetal in origin, and resemble Langhans's cells. They may be derived from a chorion epithelioma, or from placental remains."

By August 13th all pains had ceased. The patient was comfortable, and no further vaginal bleeding occurred. On August 22nd the temperature rose to 100° F., and continued to swing between 99° and 102° for the next ten days; there was also malaise. There were no indications of acute chest

were reduced by blunt dissection, and by separating adhesions between ligatures. The neck of the sac was brought out anteriorly to the line of the peritoneal suture, so that it no longer communicated with the peritoneal cavity. A drainage tube was put into the pouch of Douglas. (Fig. C.)

The patient went on well for a week, and the wound rapidly healed. On the seventh day the temperature rose to 101.8°, and an irregular pyrexia continued for three weeks, for which no definite cause was found. There were some crepitations in the chest, which was later explored by a needle, without finding any fluid. The urine was clear and sterile.

Subsequently a cystoscopy was carried out, and a catheter failed to pass up the right ureter. The patient was then

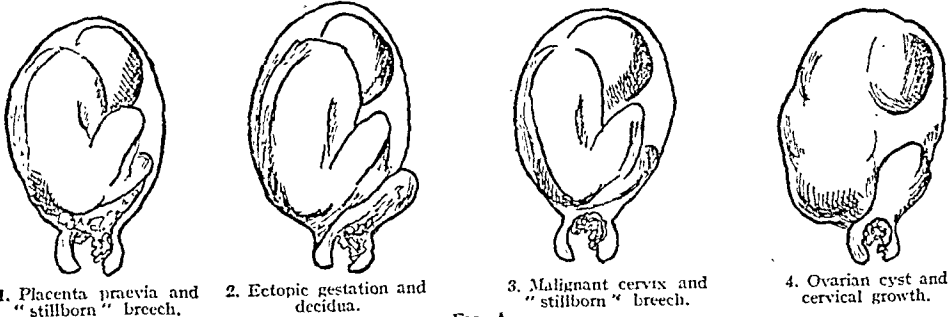


FIG. A.

or abdominal involvement, and no loss per vaginam. A catheter specimen of urine was sterile and without abnormalities. These negative findings lead now to the inference that the morbid features present were due to systemic intoxication by the products of foetal devolution.

On September 2nd there was a recurrence of haemorrhage and discharge per vaginam. It was found on examination that the external os had completely closed again, and that the same ill-defined masses previously felt were still to be made out on bimanual examination. Here again sketches of "probabilities" (Fig. B) were made for discussion of the case with the consulting surgeon (H. J. McC.) who was called in, acting as deputy for Mr. John Griffith, consulting surgeon to the hospital.

On the same day (September 2nd) a laparotomy was carried out (H. J. McC.) under general anaesthesia. Multiple peritoneal adhesions and bands were encountered, some of them connected with the hernia, and others going to a sac rising out of the pelvis. Exploration with the finger revealed a normal-sized (a non-pregnant) uterus on the left side of the sac. It was not found possible to extirpate the sac without opening it, and, rupture being imminent, the rest of the abdomen was packed off and the sac ruptured; a full-term dead female foetus was removed. Maceration had begun. The fluid in the sac was of a greenish, grumous nature, and appeared to contain meconium.

After removing the foetus the placenta and sac were gradually removed. The placenta was mainly attached to the right side of the pelvis, and between the layers of the right broad ligament. The appendix formed part of the wall of the

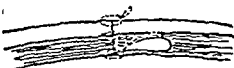


FIG. C.

sac, and was removed with it, the stump being invaginated into the caecum in the usual manner. There was a good deal of bleeding on separating the sac from the depths of the broad ligament. The separation was a laborious proceeding. The ureter was not seen, although it was realized that it lay in the vicinity of the attachment of the sac. It was not thought advisable to prolong an already lengthy operation by identifying the ureter. The contents of the ventral hernia

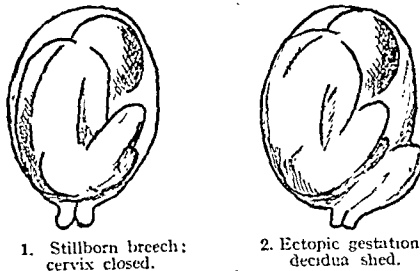


FIG. B.

transferred to the Royal Sussex County Hospital, and an intravenous urogram showed a good shadow of the dye in the left renal pelvis and ureter, but none on the right side. A subsequent cystoscopy (Mr. J. R. H. Turton, acting in the absence of H. J. McC.) with indigo-carmin, which had not been available at the first examination, confirmed the fact that the right ureter was occluded. The patient left the hospital on October 6th in good health.

COMMENTARY

In considering the case one wonders if it would have been better merely to have marsupialized the sac and drained it, which would have been a comparatively simple operation. But it was decided at the time not to leave so much necrotic and probably infective material behind, added to which that potential source of trouble—the appendix—formed part of the sac wall.

Photographs of the foetus and the adventitious gestation sac are reproduced on the plate. A skiagram of the ossification centres was also taken. These confirm that the foetus was a well-developed and full-term female weighing 6 lb. 12 oz. and measuring 19½ inches. Two congenital defects were present: a moderate degree of hydrocephalus and double pes calcaneus, much more marked on the left side.

BIBLIOGRAPHY

- Caldwell, E. V.: *South African Med. Journ.*, 1931, xlv, 729.
 Wilson, A. S.: *Journ. Med. Assoc. of South Africa*, 1930, iv, 761.
 Pillai, M. K.: *British Medical Journal*, 1931, i, 97.
 Thrush, A. W.: *Pennsylvania Med. Journ.*, 1930, xxxiv, 37.
 Wilcox, L. D.: *Canadian Med. Assoc. Journ.*, 1930, xxii, 60.
 Hantgath, K.: *Norsk Mag. Lægevid.*, 1930, xci, 304 (in Norwegian).
 Bunkley, T. F., and Brindley, G. V.: *Texas State Journ. Med.*, 1930, xxvi, 571, 573.
 Singleton, A. H.: *Canadian Med. Assoc. Journ.*, 1930, xxii, 679, 680.
 Driver, A. H.: *Indian Med. Gaz.*, 1930, lxx, 273.
 O'Donnell, A. E., and Ogilvie, T. A.: *British Medical Journal*, 1929, ii, 146.
 Ramsey, M. L.: *Ibid.*, 1929, ii, 954.
 Richards, A. M.: *Ibid.*, 1929, i, 807.
 Magid, M. O.: *Amer. Journ. Obstet. and Gynecol.*, 1928, xv, 859.
 861.
 Fairbairn, J. S.: *Proc. Roy. Soc. Med.*, 1919, xii, 186.
 Jessop: *Obstetric Trans.*, 1875.

UNTOWARD EFFECT OF PHENYLHYDRAZINE HYDROCHLORIDE IN POLYCYTHAEMIA

BY

A. M. KENNEDY, M.D., F.R.C.P.

PROFESSOR OF MEDICINE, UNIVERSITY OF WALES, AND DIRECTOR OF THE MEDICAL UNIT, WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF

Now a well-recognized therapeutic agent in polycythaemia vera, phenylhydrazine hydrochloride, has been employed with considerable success in many cases. It has a well-marked haemolytic effect, and reduces the volume of the blood. It has been suspected of producing serious toxic damage to the liver and kidneys, but conclusive proof is lacking. Clinical experience, however, has shown that administration is not always devoid of risk for certain types of patient—for example, those over 60 years, or with marked arteriosclerosis or advanced disease of the liver, kidneys, or other viscera. In them its use should be avoided, or, if tried, special caution is imperative, and the effect of a dose of $1\frac{1}{2}$ or 3 grains should be watched for several days before more is prescribed. In the case described below four short courses of treatment with phenylhydrazine hydrochloride were given without any untoward effect, but a fifth produced a severe haemolytic crisis.

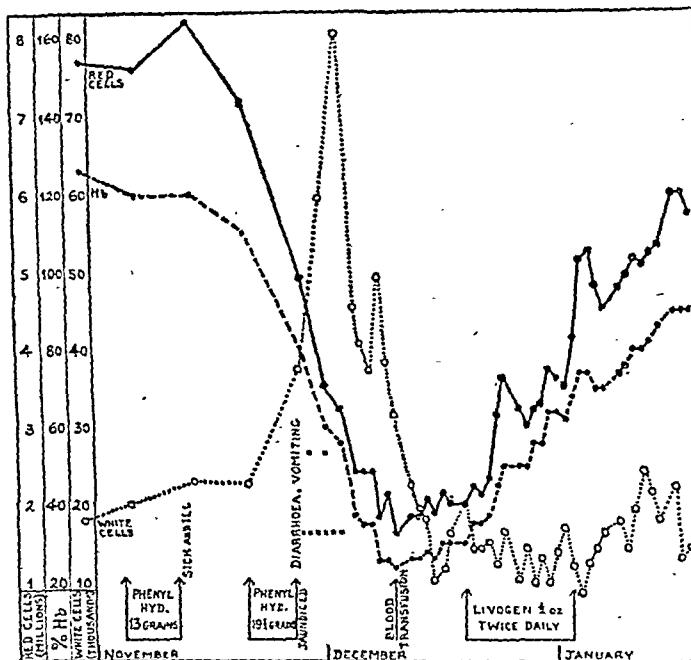


Chart showing the untoward effect of phenylhydrazine hydrochloride and the recuperative response to liver therapy.

HISTORY OF CASE

A collier, aged 38, first came under observation in July, 1932, with chronic polycythaemia, cyanosis, and some enlargement of the spleen. The blood (Group III) reacted negatively to the Wassermann and Kahn tests; the red cell count was 9,560,000 per c.mm. and the haemoglobin 150 per cent. Venesection on two occasions within the first week reduced the red cells to 7,970,000 per c.mm., and nine days later treatment with phenylhydrazine was commenced. Three courses, at intervals of eleven days, were given within a period of seven weeks. The blood count was practically the same before starting each course.

The first consisted of 33 grains administered over a period of eleven days, and as a result the haemoglobin fell by 10 per cent. only, but the red cells were unaffected. The second, 11 grains over four days, reduced the haemoglobin by 6 per cent. only, but the red cell count went up by about half a million per c.mm., and the patient got a severe throbbing headache, which was relieved only by venesection. The third, 33 grains over a period of eight days, reduced the red cell count from 7,400,000 per c.mm. to 5,860,000 per c.mm. and the haemoglobin from 120 to 100 per cent. The success of the third course might be ascribed to some cumulative effect, but the fall in the red cell count did not continue more than three days after withdrawal of the drug. The total amount administered in the first and third courses was the same, but in the latter

the period was shorter. No toxic symptoms appeared. The urine never became dark in colour, vomiting and diarrhoea were absent, and there was no jaundice.

The Haemolytic Crisis

After cessation of treatment the red cell count gradually rose again, the cyanosis became worse, and the spleen slowly increased in size. Four months later the patient lost one to two pints of blood in an accident, and as a result his condition was temporarily improved. He returned for further treatment thirteen months after the last course of phenylhydrazine. At that time (October 30th, 1933) he had 7,720,000 red cells per c.mm. and 126 per cent. haemoglobin. Thirteen grains of phenylhydrazine hydrochloride were taken over a period of seven days, and the red cells subsequently decreased by 560,000 per c.mm. and the haemoglobin by 16 per cent., but the white cells increased by 5,000 per c.mm.

The drug was left out because the patient felt sick and ill, but there was no jaundice and no diarrhoea. The urine contained urates, but neither blood nor albumin. A week after omitting the drug there was a faint trace of albumin in the urine for the first time, and the spleen was definitely more enlarged.

Nine days having elapsed, the phenylhydrazine was repeated for a fifth time, and $1\frac{1}{2}$ grains were given twice daily. After six and a half days — $19\frac{1}{2}$ grains having been taken altogether—the drug was stopped because the patient vomited, and he had diarrhoea with ten loose chocolate-coloured motions in the ensuing twenty-four hours. Next day the patient was slightly jaundiced, and the loose, chocolate-coloured motions were

more frequent. The blood count now (November 27th) was: red cells, 4,980,000 per c.mm.; white cells, 37,600 per c.mm.; haemoglobin, 80 per cent.; colour index, 0.8. This represented a drop of 2,180,000 red cells per c.mm. in the seven days during which the drug had been administered. The patient was looking ill, his countenance pale, earthy, and slightly yellowish, and the lips bluish. The loose chocolate-coloured motions (two to four daily) continued for four days after the omission of phenylhydrazine; the patient vomited once on the second and once on the fourth day, and the spleen grew still larger (two to three inches below the costal margin). The faeces were found to contain very large amounts of urobilin, but only a trace of bile pigment and no blood.

On the day before this last course was started there was a faint trace of albumin in the urine, and this persisted for twenty-four days. A few red blood cells were observed on the first day after the drug was withdrawn and on the succeeding seven days; urates appeared on the second day, and persisted for twenty-eight days; and, on the fifth day, the urine became deep amber in colour and contained a large amount of urobilin. This increased in amount as the number of red cells and amount of haemoglobin diminished, the colour of the urine becoming a deep reddish brown, but bile pigment was never detected.

Red cells and haemoglobin continued to fall *pari passu* and the white cells to rise at an alarming rate, attaining their

maximum (80,000 per c.mm.) seven days after stopping the phenylhydrazine, then declining as quickly as they rose. The red cells and haemoglobin reached their minima together fourteen days after the drug was left out. The blood count then (December 9th) was: red cells, 1,670,000 per c.mm.; white cells, 31,400 per c.mm.; haemoglobin, 23 per cent.; colour index, 0.7. Thus in nineteen days the red cell count had dropped by 5,490,000 per c.mm. and the haemoglobin by 87 per cent., and very large amounts of urobilin were being passed in the urine and faeces. This had resulted from the ingestion of 19½ grains of phenylhydrazine hydrochloride over a period of six and a half days.

Treatment

The patient was now very weak, his head felt "swimming," pallor was very marked, but the icteric tinge had almost disappeared. Diarrhoea, with chocolate-coloured motions containing large amounts of urobilin, recurred, and so, with the object of preventing further deterioration in the blood, a blood transfusion (10 oz.) was given. The downward progress of the case was arrested immediately. Within four days the red cells gained 430,000 per c.mm., the haemoglobin 5 per cent., and the white cells diminished by 13,000 per c.mm., but large amounts of urobilin continued to be excreted in the urine and faeces. As no further improvement was noted after another five days liver extract was administered. The preparation "livogen" (liver extract with haemoglobin and vitamin B) was given in half-ounce doses twice daily (= 4 oz. liver daily). Rapid and immediate improvement resulted. In one week the red cells increased by 1,230,000 per c.mm., the haemoglobin by 20 per cent., and the white cells dropped by 9,000 per c.mm.; the excretion of urobilin in the faeces became very much less, and only a small amount could be found in the urine. After another week the liver extract preparation was omitted, for the red cells were found to have gone up by another 1,940,000 per c.mm. and totalled 5,160,000 per c.mm., the haemoglobin had risen to 74 per cent. (a further increase of 24 per cent.), and the white cell count was practically normal. The faeces were now normal, and the urine contained the merest trace only of urobilin.

A week after stopping the liver extract the red cell count was found to be 6,000,000 per c.mm. and the haemoglobin 90 per cent. The spleen had diminished in size, being just palpable below the costal margin, and the patient was very well.

COMPARISON OF THREE CASES

The serious haemolytic crisis on this occasion resembled that reported by Giffen¹ and by Evans.² In Giffen's patient the red cell count fell 4,650,000 per c.mm. in four weeks; in Evans's it fell 4,000,000 per c.mm. in ten days. In my case the fall was 5,490,000 per c.mm. in nineteen days. In Giffen's case 58 grains (approximately) were taken over a period of thirteen days; in Evans's 12 grains over four days. My patient received 19½ grains during six and a half days; but if the last two courses (given at nine days' interval) are considered as one—making a total dosage of 32½ grains—then the fall in red cells was 6,050,000 per c.mm. in twenty-two and a half days. It is difficult to account for the rapid haemolysis in this case on this occasion. The dose was moderate and well case within the limits suggested by Giffen and Conner³ for initial dosage—namely, from 1.5 to 3.5 grams (23 to 54 grains). Besides, the patient had had three courses of 33 grains, 12 grains, and 33 grains respectively within a period of seven weeks over thirteen months previously, and a moderate haemolysis resulted from the third only. Evans's patient also had had a previous course—38 grains during twenty-five days—with a fall of only 600,000 red cells per c.mm., and an interval of twenty-four days elapsed before the second was started. In the latter, with the alarming haemolysis, the drug used had been freshly prepared, whereas in the former it was old, suggesting that the freshly prepared drug is much more potent; but in my case the same drug was employed on both occasions, so that the question of freshness does not

arise. In Evans's case, too, the capsules in which each dose of the drug was administered during the second course were larger than those in the first, and he feared a mistake; but, on reweighing, the dosage was found to be accurate. The discrepancy in size was accounted for by the fact that the original prescription had been "tamped" and the second "scooped." It is a curious coincidence that the same thing happened in my case. The doses given when the serious haemolytic crisis occurred were made up in larger capsules than those employed on the preceding occasion, but inquiry proved that there had been no error in dosage. The drug in the smaller capsules was firmly packed, whereas that in the larger was loose. It may be that the loosely packed drug was more readily absorbed than the firmly packed.

There were no advanced vascular, hepatic, or renal changes to contraindicate the drug, and the age of the patient was only 38 years. A faint trace of albumin, however, had appeared in the urine on the day before the last course was begun, and persisted until sixteen days after it was stopped. Albuminuria had never been observed in any preceding course. As a result of the haemolysis large quantities of urobilin (but no bile pigment) were excreted in the urine, which deepened in colour to a dark reddish brown. Large quantities of urobilin were also passed in the faeces, giving them a chocolate colour—which might be mistaken for melaena at a casual glance—and diarrhoea was present. The excretion of urobilin diminished as the condition of the blood improved. The first indication of anything untoward happening was vomiting, followed by diarrhoea—loose chocolate-coloured motions—associated with a marked fall in the red cell count, an abrupt rise in the number of leucocytes, and the patient's becoming ill-looking and pale, with a slight icteric tinge.

REGULATION OF DOSE

No hard-and-fast rule can be laid down as regards dosage for initial courses for patients, even otherwise healthy: 1½ grains twice, and possibly three times, a day should suit most cases. The total dosage suggested by Giffen and Conner (23 to 54 grains) is probably safe as a general rule, but individual patients vary, and must be watched carefully for the appearance of icterus, the colour of the urine observed daily, the amount of urobilin excreted noted, and, of course, frequent blood counts done. Once the red cells and haemoglobin begin to show a definite continuous fall extreme caution is necessary, and it may be wise to withdraw the drug, temporarily at any rate, for the fall may continue for a week or more afterwards. In any case it is always advisable to omit the drug when the red cell count approaches 6,000,000 per c.mm. A sudden and considerable rise in the leucocyte count is also an indication of possible danger approaching, although Sealy⁴ is inclined to think it unreliable.

Should the fall in the red cells become alarming it would appear that a blood transfusion will arrest its progress. This obtained in my case, but further improvement seemed to lag until the liver extract preparation "livogen" was administered. The rapid and remarkable improvement in the blood which followed would justify the use of liver extract, even without transfusion, in any other case presenting a similar haemolytic crisis from phenylhydrazine hydrochloride. The immediate and great response to liver therapy might be a matter for speculation, for, as the result of administering the equivalent of 1¼ lb. of liver daily, the red cells increased by 3,270,000 per c.mm. in fifteen days, suggesting that the marrow was hypersensitive to the intrinsic factor of Castle. The possibility of polycythaemia vera being due

to an excessive secretion of the intrinsic factor by the stomach, or to hypersusceptibility of the marrow to it, has been mooted by Morris.³ Whether phenylhydrazine might have some inhibitory or destructive effect on the intrinsic factor, or on the cells producing it, has not been suggested.

REFERENCES

- ¹ *Med. Clin. N. Amer.*, 1928-9, xii.
- ² *New York Journ. of Med.*, June 15th, 1932, xxxii, No. 12.
- ³ *Journ. Amer. Med. Assoc.*, May 4th, 1929, xcii.
- ⁴ *Ibid.*, May 14th, 1932, xcvi.
- ⁵ *Ibid.*, July 15th, 1933, ci.

SOME THEORETICAL ASPECTS OF COLLAPSE THERAPY

BY

F. H. YOUNG, M.D.CANTAB., F.R.C.P., D.P.H.

PHYSICIAN, CHARGING CROSS HOSPITAL, AND THE BROMPTON HOSPITAL
FOR DISEASES OF THE CHEST

A recent discussion on the results of collapse therapy in pulmonary tuberculosis was remarkable for the lack of attention which was paid to the exact consequences following on the various forms of collapse therapy, when considered in terms of anatomy and pathology. Collapse therapy brings about, primarily, mechanical and anatomical changes, and it is only when these changes react favourably for the individual that there is therapeutic benefit. At present our knowledge of the immunological processes which determine success or failure in the treatment of pulmonary tuberculosis is very slight, and hence a mechanical change may occasionally end in an unexpected result. The following case is a good example.

A man, aged 40, with diabetes and pulmonary tuberculosis in the upper half of the left lung, was admitted to the Brompton Hospital with a view to artificial pneumothorax treatment. While in Brompton the insulin requirement increased, and fresh disease appeared in the other lung, which spread rapidly, in spite of complete rest and large doses of insulin. After the patient had been going rapidly downhill for about six weeks he was allowed to go home, as I thought to die. Six months later he appeared in the out-patient department looking very well. His history and x-ray examination showed that he had had a spontaneous pneumothorax on the left side, with the result that the pulmonary tuberculosis became quiescent, and was so when I last saw him three years afterwards.

Although unforeseen results may occur, it is obvious that the clearer the idea the user of collapse therapy has of the exact anatomical changes he wishes to induce in the lung and of the effects which will follow these changes, the greater the benefit that is likely to accrue. The considerations put forward here are treated from a theoretical point of view, and cases are quoted merely as examples to illustrate the points made. The former may, however, throw some light on the fact that, while collapse therapy is universally considered to be beneficial, the details of its use are the subject of considerable controversy.

EFFECTS OF COMPLETE PULMONARY COLLAPSE

Given a free pleura and a lung without gross fibrosis, low-pressure artificial pneumothorax will produce complete collapse of the lung. The changes that occur cannot yet be said to be fully understood, but the following may be considered as proved.

1. The pulmonary circulation will be greatly reduced and probably cease, though the bronchial circulation will persist.
2. The lymphatic drainage will be markedly slowed.

3. The bronchial movement and internal movement of the lung tissue is greatly diminished and frequently stopped.
4. There is a relaxation of tension on the lung tissue.

PARALYSIS OF THE DIAPHRAGM

Under similar conditions diaphragm paralysis by evulsing or cutting the phrenic nerve cannot be expected to have the same consequences. The pulmonary circulation and lymphatic drainage will probably not be affected; movement of the lung will be only slightly diminished, and this may be at the apex if the "piston" theory is correct. Relaxation of tension will take place owing to the diminution in size of the thoracic cavity, and this will not occur only at the base. In the operation of lobectomy a comparatively large space is left with a pressure which rapidly becomes negative, but within twenty-four hours the space is obliterated by the lung: this is done by the rest of the lung expanding and "flowing" into it. Similarly, if there is any source of tension in the upper part of the lung, the rise of the diaphragm will allow the lung to "flow" upwards, till a pressure equilibrium is obtained. The importance of the relaxation of tension on damaged tissue is very great. Nature's method of dealing with established tuberculous disease may be said to be: to localize it, to get rid of local organisms and the dead tissue formed, and to repair by fibrous tissue. Repair by fibrosis can only take place with difficulty in a rigid structure or in one under tension, and it is in this last stage of natural healing that the relaxation of tension of damaged lung is so important. If, then, the mechanical sequels of diaphragm paralysis fall so far short of those of a complete artificial pneumothorax, the therapeutic effects are not likely to be the same, but not for this reason necessarily useless.

A complete artificial pneumothorax will normally check any toxæmia from pulmonary tuberculosis in the collapsed lung in a fairly short time, and unless some accident supervenes the absence of toxæmia will persist indefinitely, even if the patient is doing moderate physical work. The rapid reduction of toxæmia is probably mainly the outcome of the interference with the pulmonary circulation and lymphatic drainage, and not so much of the reduction in movement, as is sometimes thought. In favour of this are:

1. If the lung is collapsed rapidly it is not at all uncommon to find a dramatic reduction of toxæmia in such a short time that it is difficult to understand how it could come about by lack of movement.
2. In cases in which there is much toxæmia selective collapse, even if anatomically successful, is frequently not so therapeutically.

The slowing of the lymphatic drainage may possibly be of therapeutic importance from quite a different point of view if Wingfield's new theory of the causes of relapse is correct. If the drainage is slowed the bronchial glands will have less tubercle bacilli drained into them and hence be given a greater opportunity of settling down and a diminished probability of discharging tubercle bacilli into the blood stream. Aided by the absence of toxæmia the relaxation of tension will help the repair of destroyed lung tissue and probably lead to the formation of a healed scar.

It cannot be expected that such a result will be obtained by paralysis of the diaphragm, as its mechanical effects will not be such as to cause the disappearance of toxæmia. If, however, the diaphragm is paralysed in a case with little or no toxæmia in which the lesion is trying to heal by fibrosis and contraction, the immobile diaphragm will mechanically assist, and possibly turn the scales in favour of sound healing.

A fresh factor, however, is introduced if the patient is put on strict bed rest after phrenic evulsion. This introduces a small proportion of the results (1), (2), and (3) of the artificial pneumothorax, and therapeutically the issue will be similar to that of a complete artificial pneumothorax, though it will be less rapid and efficient. A diaphragm paralysis, then, is unlikely to do away with toxæmia completely if it is uncontrolled by bed rest. In some cases, however, in which toxæmia can be controlled only by rest in bed a diaphragm paralysis may be able, by its relaxation of tension, to promote healing of the lesion while the bed rest holds the toxæmia at bay, with the result that a permanent reduction or abolition of toxæmia results.

A girl, aged 21, was unsuccessfully treated for two months by bed rest for a mid-zone cavity and infiltration. Although the toxæmia was reduced it was not abolished, and x-ray examination showed no improvement. An artificial pneumothorax failed. A phrenic evulsion was performed, and after about a fortnight slight but steady improvement took place, with, finally, complete quiescence and disappearance of the cavity and of tubercle bacilli from the sputum. The diaphragm rise was only $2\frac{1}{2}$ inches after six months, which tends to confirm the presence of adhesions, though they did not apparently interfere with the therapeutic effect.

PLEURAL ADHESIONS

So far I have considered only those cases in which there is a complete freedom from adhesions. The influence of adhesions on cases treated by artificial pneumothorax is well known, ranging from complete frustration of its establishment to no effect in some cases in which the adhesions are thread-like and stretchable. Provided, however, that an artificial pneumothorax of considerable size can be obtained, the question that matters is whether the adhesion is of a type and so situated anatomically as to render impossible the result for which the artificial pneumothorax was induced. For example, in a lung with a dry apical cavity held by adhesions and a spreading toxic lesion in the mid-zone an artificial pneumothorax, complete except at the apex, might have a successful issue for the latter lesion, the adhesions at the apex in no way preventing the object for which the artificial pneumothorax was done. A clear idea, therefore, of just what is to be expected from an artificial pneumothorax will enable us to decide whether or not it has been successful. If not, we can then consider what further steps, such as adhesion cutting, should be taken. This is not a mere debating point, as every physician with experience of this work will have seen many adhesions cut unnecessarily. Speaking generally, the adhesion which calls least for cutting is the easiest to cut.

The question of the exact consequences of pleural adhesions on the results of diaphragm paralysis has not been extensively investigated, as only a pneumothorax or direct vision can demonstrate them. The only work of which I am aware which really has any bearing on this matter is the improvement in collapse brought about by paralysis of the diaphragm subsequent to the induction of a pneumothorax. It seems quite clear that in certain cases in which a pneumothorax is ineffective the phrenic evulsion allows the lung to shrink towards the adhesion, thus relaxing the tension on a cavity or diseased area. The unproved effect of adhesions largely invalidates all work in which estimates of the upward movement of the various parts of the lung are made by calculating the x-ray position of calcified spots before and after diaphragm paralysis. The only general conclusion that can be drawn is that the figures represent the minimum movement in a case with a non-adherent pleura and not extensively fibrosed lung. Again, in most papers the question of the length of time after the paralysis is not taken into consideration.

The part played by adhesions is possibly the cause of the dispute as to the value of diaphragm paralysis, as its detractors probably only use it when an artificial pneumothorax has failed because of adhesions, whereas its champions frequently employ it as a first choice, and thus do so in many cases in which the adhesions are absent or few in number. Taking the extreme case in which there is a complete synthesis between the parietal and visceral pleura, it is evident that no real benefit can be expected. At best, phrenic evulsion can only relieve tensions upwards and then to a slight degree at the extreme base, and can have no effect laterally, because of the thoracic adhesions. If individual adhesions only are present, the result of diaphragm paralysis will depend on their position in the pleural cavity and also on their relation to the lesion it is hoped to control. An adhesion between the lung and the side of the thoracic bony cage will exert a greater influence than a similar adhesion between the lung and the back or front of the cage at the same level, as a larger part of the lung will be free to retract upwards.

The main point, however, which will decide the issue of diaphragm paralysis is the level on the chest wall at which the adhesions are present. If there are adhesions in the diaphragmatic sulcus, the outcome will be similar to that of completely adherent pleurae. If, however, the adhesion is higher the diaphragm paralysis will have an effect on the lung at least up to the level of the adhesion, and probably higher if the adhesions are not very dense—for example, if the paralysed diaphragm is not prevented from affecting a mid-zone lesion by apical adhesions. Again, if a cavity in the upper part of the lung has an adhesion vertically to the apex, there is no reason to suppose that it will prevent a diaphragm paralysis from allowing retraction; but if the adhesion is to the lateral wall considerable interference may take place. Medial adhesions which are not much below the lesion do not seem to do a great deal of harm. The following case will illustrate the point.

A man, aged 28, had an apical cavity about the size of a golf ball, which had been present (without toxic effect) for two years following sanatorium treatment. The upper mediastinum was deflected towards the cavity. Later the cavity began to enlarge and a hæmoptysis occurred. A diaphragm paralysis was performed, and within three months the cavity had closed and the scar was nearly hidden by the mediastinum. The tubercle bacilli previously constantly present in the sputum disappeared.

It would seem, then, that on theoretical grounds a diaphragm paralysis should be useful in any case, including apical lesions, in which a relaxation of tension is required, provided that adhesions do not prevent it. Unfortunately these propositions, put forward on theoretical grounds, are difficult to prove, because they require that an artificial pneumothorax should subsequently be done to show where the adhesions are; but such evidence as exists is in their favour, and my own experience has not revealed cases which disprove it.

Rib resection methods of collapse have not been dealt with: their use depends so much on the technical skill of the operator and exact amount of and position of the ribs removed and their relation to the lesions.

It seems clear, however, that knowledge of the exact effects of collapse therapy is very incomplete, and until further information is at our disposal we shall employ it, to some extent, empirically. The procedures are primarily mechanical and anatomical, and lack of accurate knowledge in these subjects will always lead to inefficiency in results. This does not mean that the knowledge at our disposal should be neglected; and treatment based on a hypothesis which fits in with known facts, even if it is incorrect, is preferable to a "hit or miss" method.

A CASE OF HAEMOCHROMATOSIS

BY

S. WATSON SMITH, M.D., M.R.C.P.Lond., F.R.C.P.Ed.

HONORARY PHYSICIAN

AND

HENRY BLAIR, M.B., B.S.Lond., M.R.C.S., L.R.C.P.

RESIDENT MEDICAL OFFICER

ROYAL VICTORIA AND WEST HANTS HOSPITAL, BOURNEMOUTH

Bronzed diabetes is so uncommon, and this case so unusual, that its publication seems to us to be worth while, particularly because of the absence of diabetes mellitus, the extreme obesity, the deep bronzing of the skin, the atrophoderma of the face, all in a girl of 19 years; and because of the post-mortem findings.

CASE RECORD

A girl, aged 19, single, was admitted to the Royal Victoria and West Hants Hospital on 24/10/31 and discharged relieved on 14/12/31; she was referred by Dr. C. G. H. Morse. The diagnosis made was of suprarenal insufficiency, dyspituitarism, and Addisonian anaemia. The condition on discharge was "improved."

History.—Headache two days previous to admission; went to bed in the afternoon; slept soundly, but could not be wakened next morning. Continued comatose for twenty-four hours, and was then admitted to hospital. There was no evidence whatever that she had taken drugs of any kind. Her past history showed that she had always been large and obese, but grew rather suddenly fatter at the age of about 15 years. She had never menstruated. The mentality before this attack was fairly good; she had won prizes for music when at school.

Examination.—Comatose, but resented interference. Was inclined to throw herself about rather violently if attempts were made to rouse her. Would not, or could not, swallow. There was a large erythematous patch over the right thigh and buttock, with a less distinct patch on the left thigh; the patient was very obese, especially about the hips and thighs. Complexion was dark, skin of face coarse. On admission, temperature 102.5° F., pulse 100, respirations 22. There was no paralysis found in any muscle group; pupils reacted to light; knee-jerks were not obtained; ankle-jerks present; plantar response not definite; abdominal reflexes not obtained; ophthalmoscopic examination not possible. Lumbar puncture, although tried on four separate occasions, failed owing to patient's enormous bulk. The blood pressure was 140/90; the heart was clinically not enlarged; there were no murmurs. Urine: S.G., 1022; neutral; contained some albumin, a few red cells, and a trace of sugar.

Progress.—On 29/10/31 the patient had become conscious and seemed to be mentally unbalanced; gave way to silly laughter at times; erythematous patch on right buttock worse, and inclined to break down; had a loose cough; rales were heard at both bases, especially at the right. The pupils reacted to light and accommodation; no paralyses; muscle power seemed to be rather less on the left than on the right side. There was general dulling of sensation, though not a complete loss. There was no pain to be felt on pinprick. Reflexes as before.

20/11/31.—Pigmentation of skin and hair since admission, similar to that of a mulatto, had now an added jaundice. By the appearance of the abdominal striae there was still a considerable recent laying on of fat subcutaneously. There was no slowing of the pulse, or pruritus, or any abdominal pain, or vomiting. The blood count was now beginning to approach that of an Addisonian anaemia, and confirmed, the halometric reading of 4.3. A continuation of thyroid extract per os was ordered, and one daily dose of adrenaline mix with pituitary extract max was given.

1/12/31.—Atrophoderma reticulata symmetrica faciei, brought about by the too rapid stretching of the skin by overgrowth of subcutaneous tissues and skeleton. Blood cultures and subcultures were negative. 4/12/31: Much better during the past few days; extraction of dental stumps caused considerable bleeding, stopped only with difficulty.

7/12/31: Temperature normal for nearly three weeks now; mental condition fairly good, though a little silly; could get about on her legs quite easily; fit for discharge. On 19/11/31 her blood examination had been as follows: red cells, 2,260,000; leucocytes, 9,700 per c.mm.; haemoglobin, 48 per cent.; colour index, 1.06. The stained blood showed large lymphocytes 10 per cent., small lymphocytes nil, polymorphs 85 per cent., transitional cells 5 per cent.; very slight anisocytosis; halometer reading 4.3. Until 26/11/31 the temperature had been remittent, the diurnal variation being between 98.4° and 103.2°, the pulse rate was 76-110, and the respirations 20-24. The bowels moved each day.

Readmission

The patient was readmitted on 26/9/33 and died on 7/10/33. The history was that she had developed oedema of the legs; that she had felt well until January, 1932, and had then had headaches at night. In February, 1932, she found that she was losing her hair. In April albumin was found in the urine. In August, 1932, her father died suddenly and unexpectedly; he was found to have advanced arteriosclerosis and an unusually small pituitary body and fossa. In December, 1932, she complained of pain in the left side, and in May, 1933, of headaches and giddiness.

Present illness.—For two weeks the patient has had swellings of the ankles and thighs; has had puffy eyes in the mornings, and been excessively tired; she has also been very thirsty and has polyuria, with a nocturnal frequency of 5-6. She has indigestion, with flatulence and heartburn. The bowels are constantly constipated. Sleeps badly and invariably has headaches. No past illnesses.

Examination.—Deeply pigmented generally; obese, especially about hips and thighs; no loss of hair; has a number of vertical lineae albicautes on each side of the lower abdomen, and many over each hip region and thigh. Bitemporal hemianopia present. Heart: loud first sound at apex and a systolic bruit there. Appearances suggest dyspituitarism. 29/10/33: Disks and whole of retinae are pale in colour. There is marked atrophy of retinal pigment, which in places is gathered into small masses or thin lines lying in front of the retinal vessels. This pigment is in the deeper layers of the retina or in the superficial layers of the choroid. The condition seems more of a pigmentary retinal and choroidal degeneration than an active inflammatory state. On 6/10/33 Mr. Percy Ross reports that the condition of the fundi is unchanged; that the left external field shows a concentric contraction rather more marked on the temporal side, and in the right eye a twenty degree contraction of both temporal and nasal fields.

6/10/33.—Haematemesis of four ounces. Patient states she had haematemesis when an in-patient previously; spleen felt two fingerbreadths below the left costal margin. Pain in left loin, which has become oedematous; perinephric abscess believed to be present there. Temperature now varies between 100.6° and 102.6° F.; pulse, 100-136; respirations, 22; urine shows albumin in small amount, but no sugar, a deposit of many pus cells, some epithelium, many phosphate crystals, no red cells, and no casts. Blood count much as before, but the leucocytes now number 13,000. The fasting blood sugar 0.143 per cent.; bitemporal hemianopia; slight jaundice. On 7/10/33 she had repeated haematemesis, and gradually sank and died.

PATHOLOGIST'S POST-MORTEM REPORT

Dr. C. G. H. Morse, honorary pathologist to the hospital, kindly made an exhaustive post-mortem examination, and reports as follows.

The body is that of a dark-skinned and fat girl, very large and tall for her age. Face, neck, and hands are darker than the rest of the body. Skin generally is deeply bronzed, with pigmentation no more marked in axillae or folds of the skin. There are no localized masses of fat. Facies slightly mongol in type. Neck short, and thick at the base. No thyroid enlargement. Breasts small, nipples indrawn, and areolae deeply pigmented.

Skull.—Hair soft and black. Skin soft, and cuts like that of a child. Nothing abnormal in size or shape of head; calvarium of normal thickness; dura mater normal. There

is slight general oedema of the brain with some excess of cerebro-spinal fluid; no haemorrhage or tumour found. Pituitary gland normal in size. The right frontal sinus contained a calculus about the size of a pea lying loose in otherwise healthy surroundings. No disease of sphenoid, ethmoid, or cavernous sinuses. Cerebral vessels normal. Nasopharynx normal.

Neck and Thorax.—Thyroid gland slightly small for size of patient. Thymus gland not found. There is passive congestion of both lung bases; findings otherwise normal. Some small amount of clear fluid is present in both pleural cavities. The heart is normal in size, the muscle soft and greasy; the endocardium and aortic lining are stained red, and there are two small patches of recent aortitis near the coronary openings. The valves are healthy.

Abdomen.—The abdominal walls are fat. There are many lineae about the lower abdomen and hips; slight amount of clear fluid in peritoneum; no evidence of fat necrosis. Stomach very distended; contains much gas, and a small quantity of grumous fluid and mucus; no source of haematemesis found; intestines distended but otherwise normal.

Liver.—Small, contracted, green in colour, and feels very hard—weight 2 lb. Gall-bladder distended and full of green bile; contains two pigment stones. On section, the whole liver consists of pale yellowish-brown nodular masses in a thick fibrous stroma. The prussian-blue test is very markedly positive.

Kidneys.—Large, soft, and congested. The left kidney has a large perinephric abscess behind it, with one or two ounces of thick creamy pus; no pus found in the kidney itself.

Pancreas.—Quite black in colour and foul-smelling. On section the tissue does not appear diseased apart from the black colour. Prussian-blue test very markedly plus—in fact, rather more so than in the case of the liver. Great distension of splenic vein is present.

Spleen.—Not enlarged, very soft, and rotten.

Suprarenals.—The right cannot be found. The left suprarenal is very friable, and in a mass of fat, but some of it can be removed in pieces. These appear darker in colour than normal. Uterus, tubes, and ovaries are small, and of infantile type.

Microscopical Findings

Liver.—In addition to data already reported, sections of the liver show an active perlobular fibrosis. The interlobular fibrous tissue is very much thickened, and vascularity is increased. Near the external capsule of the organ, which is very thick, many small areas of six or seven cubical cells, resembling liver cells, are to be seen in the fibrous tissue. The cell outlines are indistinct, but the nuclei are clear and granular. Similar groups of cells are also seen in the dense fibrous tissue at the angles of the lobules near the vessels. There are no more than seven cells seen in one group, and such groups have a thin capsule. The liver tissue itself is completely degenerated everywhere. The cells have hardly taken up the stain; no nuclei can be seen. There are masses of fat globules, especially noticeable near the periphery of the lobules. In most of the lobules the central veins are not seen, but one area shows a sclerosed mass in that site, with a few small lymphocytes round it.

Pancreas.—Sections show an advanced fibrosis. The gland cells are atrophied and partly necrotic. No cells can be recognized at all; iron reaction very marked.

Pituitary Body.—Sections show a healthy gland.

Suprarenal (Left).—Sections show normal gland.

Thyroid.—No marked abnormality, except a slight thickening of the interacinar tissue, with some infiltration by small lymphocytes.

Ovary (Right).—Normal ovarian tissue with active ovulation; (This does not conform with the statement that the patient had no menstruation or menstrual symptoms.)

Spleen.—No marked change; passive congestion only.

Kidney.—Advanced cloudy swelling in almost every part. Glomeruli shrunken and cells indistinct. A few tubules only show almost normal structure.

The condition of the pancreas and liver, which are extensively fibrosed and necrotic, show this case to be one of atrophic cirrhosis of the liver. The origin of the condition is, however, obscure. The pathological findings agree with the diagnosis of bronzed diabetes.

DISCUSSION

From all appearances this was a case of bronzed diabetes. In only one specimen of urine was there any sugar to be found, and that simply a trace. With the skin pigmentation of considerable depth and of a definite bronze hue, especially on exposed parts, and with two occasions on which the patient was jaundiced so that the bilious conjunctiva was clearly evident and the cirrhosis of the liver suspected, one could only suppose that the girl, even at her age of 20 years, had died of haemochromatosis. At no time was the liver palpable; it had become shrunken and small, so that one was uncertain about its size on clinical examination. During life, although a provisional diagnosis of haemochromatosis was made, it was not then possible to confirm it; this was done only after the post-mortem examination. The cause and the pathogenesis of the atrophoderma of the face, rare as this condition is, are capable of easy explanation. In the case of this girl the subcutaneous tissues and skeleton increased so rapidly in growth that the skin could not accommodate itself to the increased bulk, and became overstretched, as it did at the same time about hips and thighs. The lesions of the face occurred in the course of two weeks or so, and, pinkish in colour at first, paled after some weeks.

Clinical Memoranda

EFFECTS OF UTERINE CONDITIONS UPON THE BARIUM MEAL: FIBROIDS SIMULATING CARCINOMA COLI

(With Special Plate)

Abnormal conditions of the uterus may at times have curious effects upon the barium meal examination. The following case is submitted as of possible interest in this respect.

The patient, who was in her fifty-sixth year, was on a visit to this country, and sought advice concerning "weakness, anaemia, and constipation," for which, during the previous year, she had been under constant treatment with practically no improvement. From the extreme pallor the anaemia was obvious; but investigation proved it to be of a secondary character. She was still menstruating somewhat profusely and slightly irregularly, but she did not appear to regard these symptoms as of importance, because she "had been accustomed to them all her life." The history of a myomectomy thirteen years previously was then elicited, and one naturally suspected further fibroid growth.

Attempts to carry out an ordinary examination per rectum or per vaginam met with scant success, for the patient at once and involuntarily fell into a state of clonic spasm, doubtless consequent upon an atresia of the vagina, which all operative efforts had failed to relieve. Her marriage, indeed, had never been consummated. Repeated attempts to examine would no doubt have been successful, for the patient was a sensible woman, and anxious to attain some measure of health; but, out of interest in the influence of uterine conditions upon the barium meal, I gave her a small meal, and asked her to return in eight hours. I felt reasonably certain that I should then obtain a radiograph, which would clearly demonstrate the abdominal condition, and which would be of use to me in discussing with the worried relatives the drastic treatment which I had in mind. The result is shown in the illustration (see Special Plate), which presents apparently the characteristic appearances of carcinoma of the bowel, itself a not unlikely diagnosis in this case. Another x-ray photograph was taken twenty-four hours after the meal, and this presents the same appearances, except that the ascending colon is empty, and a few small masses of the meal, roughly a half to one inch in diameter, have found a way into the rectum.

Mr. Aubrey Goodwin operated upon this patient for me a few days later, and removed by hysterectomy a mass of uterine fibroids. To the upper surface and sides of the uterine mass the colon was densely adherent, and was indeed most difficult to separate. This may have been the result of an artificial disposition of the omentum after the previous myomectomy, but, more probably, was due to peritonitis following that operation. There was no evidence of malignant disease either in the bowel or in the uterus. The skiagraphic appearance of colonic obstruction was thus well explained.

The more usual effect of fibroids upon the barium meal is to cause the mass of barium-filled bowels to be borne, as it were, upon an upward curving platform, situated just above the pubis—an appearance that is diagnostic to anyone keeping it in mind.

Radiographic examination in most cases of suspected fibroids would, of course, be a redundant measure; but a case such as has been described may have its value in suggesting the need for a more accurate knowledge of the manner in which the barium meal may be distorted by uterine, tubal, or ovarian conditions. These may well exist unsuspected, and, by complicating a routine barium examination, may give rise occasionally to erroneous and, perhaps, needlessly alarming diagnoses.

Kensington, W.

A. C. HILL, M.A., M.B., Ch.B.

PATHOLOGICAL FRACTURE IN GUMMA OF TIBIA

(With Special Plate)

The rarity of the condition in these days and the excellent skiagraphic evidence seem to justify a report on a case of pathological fracture in gumma of the tibia.

An ex-seaman and docker, aged 56, was admitted to Southmead Hospital, Bristol, on February 2nd, 1933. On the anterior surface of his left leg was a large oval ulcer, secondarily infected and foul-smelling. The edge had a "punched-out" appearance, the floor was covered partially by a dirty-looking slough, and bone was felt by a probe through a base of unhealthy granulations. The surrounding tissues showed pigmentation and "tissue-paper" scarring, and the distal part of the leg was markedly cedematous. The whole leg was painful and tender on palpation, owing to its neglected and inflamed state. The right leg showed similar scarring and some superficial ulceration. There was some inguinal adenitis in both groins, but no varicose veins. Further examination revealed nothing of importance beyond signs of neglect and undernutrition, associated with a mild pyrexia and malaise.

The history of the ulceration was vague, but the following was fairly certain. The condition started as a hard lump on the "shin bone" about eighteen months previously, which broke down and ulcerated a few months later. The patient did not consult a doctor, and, during this time (at least twelve months), he had no local or general treatment of any sort. He was out of work, and had recently remained in bed on account of pain in the leg on walking; this was also severe at night. Syphilis was denied. A diagnosis of gumma of the tibia, with possible malignant changes, was made. The patient was given a nourishing diet, and was put on gradually increasing doses of iodides and mercury. Rest and elevation of the limb, with suitable dressings, relieved the pain.

The blood Wassermann reaction was negative. The pathological report on a piece of the edge of the ulcer was as follows. "This is a chronic ulcer. The base is composed of dense fibrous tissue, partly necrotic in places. There is much plasma-cell infiltration, especially around the numerous small vessels. There is no evidence of tubercle or malignancy. The appearances suggest specific disease."

A skiagram of the left leg shows a fairly uniform localized destruction of the middle third of the shaft of the tibia, with several small sequestra in this area. There is dense sclerosis of the surrounding bone, and also subperiosteal new-bone formation. The appearances are characteristic of an inflammatory lesion. Finally, the pathological fracture, with little anatomical displacement and no signs of union, com-

pletes a fairly typical picture of a gumma of bone. This comparatively rare manifestation of syphilis is definitely confirmed by the biopsy, despite the negative Wassermann reaction.

Although there was a marked improvement in the general and local condition of the patient under medical treatment during the following weeks, it was obvious that the ulcer would never heal or the fracture unite owing to the gross sepsis. Amputation was refused, however, until two months after admission, when the leg was amputated above the knee-joint. The stump healed by first intention, and when the patient was seen six months after operation he looked fit and healthy.

I have to thank Dr. A. D. Fraser for the pathological report on the ulcer, and Dr. P. Phillips, medical superintendent of the hospital, for permission to publish this case.

L. ROLAND JORDAN, M.B., M.R.C.S.,
Late Assistant Medical Officer, Southmead
Hospital, Bristol.

LACTATION ASSOCIATED WITH BLEEDING FROM THE BREASTS

In the case described below it was not considered justifiable to excise a piece of the breast for biopsy, especially as in all the reported cases the condition has cleared up. In the absence of further evidence the condition is presumed to be due to an excessive engorgement.

A primipara, aged 29, was admitted a few hours after delivery on September 21st, 1933, to the Leeds Maternity Hospital for severe post-partum haemorrhage. She improved after restorative treatment, including blood transfusion. The next day the baby was put to the breast, and it was noticed that the secretion from both breasts was a dirty brown colour, suggesting the presence of blood. This suggestion was confirmed by a histological report from Dr. Hickman. The patient stated that no blood had come from the breasts previously. Examination revealed no lesion of the nipples and no palpable tumour. Owing to the patient's poor general condition breast feeding was not continued, but a little secretion was exhausted daily while the patient was in hospital. The amount of blood lessened progressively, until on discharge the milk was the colour of weak café au lait. The patient was seen again on November 10th, 1933; the breasts were re-examined, and nothing abnormal was detected. She stated that there had been no milk or blood from the breasts since she left hospital.

Very few cases of this type are to be found in the literature. Fitzwilliams¹ quotes two of those I have been able to find which resemble the present one, and considers the condition to be due to "apparently simple engorgement prior to the establishment of milk." One of the cited cases² was that of a 3-para, aged 26, who had had no abnormality of lactation with previous pregnancies. Oozing from the left nipple occurred during massage one week before the confinement. The right nipple discharged blood after the confinement. No milk appeared till the sixth day, when there were a few drops after oozing of blood from the right breast. The flow of blood ceased from the right breast on the next day. The left breast bled for another week before milk came. Buckle deduces that bleeding from the breast at the end of pregnancy or early in the puerperium need not occasion alarm. It is self-limited, produces no ill effects, and does not call for treatment. The other cited case is that of Habergritz.³ The patient, a primipara, noticed bloodstains on her underlinen near the breasts at about twenty weeks. It continued through pregnancy, and there was also epistaxis on two or three occasions. It ceased two days before labour, but reappeared the day after labour in increased amount. Breast feeding was stopped, as nothing but blood was drawn. The colour of the secretion began to change on the seventh day; by the eighth it resembled ordinary colostrum. The child was put to the breast, and nothing further abnormal was observed. The woman was quite healthy: there was no haemorrhagic diathesis.

Krauss⁴ describes a case in which blood-stained secretion was first noticed to be coming from the breasts during labour. Caesarean section was done for contracted pelvis, and the bleeding persisted until twelve days after the operation, when it gradually disappeared. It is stated that blood came from the upper ducts in the nipple of each side, while colostrum was secreted from the lower ducts. On the sixth day after the operation a small piece was excised from the upper half of one breast for histology. The microscopical picture resembled a "cystofibroma phyllodes mammae," which, from the description, appears to be like what we should call an intracanalicular fibroadenoma; there was some diffuse fibrosis of the breast. It is not stated whether there was a palpable nodule at the site of biopsy. Apparently once the blood had disappeared from the milk it did not recur.

REFERENCES

- ¹ Fitzwilliams: *Proc. Roy. Soc. Med.*, 1924-5, xviii, 100.
² Buckle: *Journ. Amer. Med. Assoc.*, 1909, lili, 2066.
³ Habergritz: Quoted in *Lancet*, 1890, ii, 110.
⁴ Krauss: *Zentralbl. f. Gynäk.*, 1931, lv, 165.

A. M. CLAYE, M.D., F.R.C.S.,
 Honorary Obstetric Surgeon, Leeds Maternity
 Hospital; Honorary Assistant Surgeon,
 Hospital for Women at Leeds.

A CAUDAL APPENDAGE

Owing to the comparative rarity of this condition the following case of a "tailed" child seems worthy of record.

A male child was born in the City of London Maternity Hospital, under the care of Mr. W. McKim McCullagh, on January 21st, 1934, and weighed 6 lb. 4 oz. It was perfectly normal, except that it possessed a caudal appendage, the attachment of which was midway between the posterior superior iliac spines. The appendage closely resembled a pig's tail and evidently contained muscle, because a stimulus, such as stroking the buttock, caused the tail to wriggle. X-ray examination showed no evidence of bone.



The question of treatment arose, and it was suggested that the appendage might be left, as its possessor could derive pecuniary benefit in later years as an exhibit in a travelling circus. However, it was felt that the presence of such an abnormality would affect the child psychically, with which view the parents concurred.

When the child was five weeks old, therefore, the appendage was removed under light chloroform anaesthesia, and was found to be attached to the deep fascia by a fibrous band. It measured approximately three inches, and apparently had lengthened in proportion to the child's growth. Recovery was uneventful. There was no history on either side of the family of any similar abnormality, and a previous child was normal.

Reference to the literature shows that a very similar case was reported by M. Errard.¹ The "tail," which was four inches long, was removed. There is no mention as to whether the child could wriggle the tail. B. Chatterton² reports a case which occurred in a male Hindu baby. The "tail" was three to three and a half inches long, and was attached to the base of the sacrum; it enjoyed some degree of movement. The parents in this case refused to consider removal because the fame of the child had begun to spread, and they had already benefited financially.

R. J. McNEILL LOVE, M.S.Lond., F.R.C.S.,
 Consulting Surgeon, London Maternity Hospital.

¹ Errard, M.: *Bull. et Mém. de la Soc. Anatomique*, 1922.
² Chatterton, B.: *Indian Med. Gaz.*, August, 1903.

Reviews

SURGERY OF THE SYMPATHETIC SYSTEM

The publication of a book devoted entirely to the surgery of the sympathetic nervous system is a notable milestone in the history of surgery and also an indication of the great advance which has been made in our knowledge of the subject since Alexander, in 1899, published his experiences in the treatment of epilepsy by cervical sympathectomy. It is well, therefore, that the writing of such a volume,¹ which we believe to be the first in the English language, should have been in the hands of Professor G. E. GASK and Mr. PATERSON ROSS, whose work in this branch is already widely known and accepted. In scope the book covers the whole range of sympathetic surgery, but, quite properly, the main feature is the space devoted to the methods of selecting suitable cases for operation and to descriptions of the various tests which form a part of the pre-operative investigation.

There are, unfortunately, still very wide gaps in our knowledge of the anatomy and especially of the physiology of this system, but the account given by these authors constitutes a very good summary of present ideas. There is a considerable divergency between Continental and English opinions upon some aspects of sympathetic physiology, but although this book very naturally shows a slight English bias the authors have taken a broad view of the whole question, as is well instanced by this quotation from the section upon the highly controversial subject of periarterial sympathectomy:

"At present the trend of surgical opinion in this country is opposed to it, owing largely to the inability of the anatomists and physiologists to reconcile this procedure with the results of their researches, and it has become fashionable to say that the operation has no place in surgery. There is no doubt, however, that in a certain small group of circulatory disorders the operation produces definite improvement, and it is foolish to refuse to recognize the improvement, and to refuse patients the benefit of the operation merely because there is no scientific basis on which to justify the procedure or to explain the results."

In view of the great weight of Continental opinion in accordance with this statement we recognize its wisdom, and its inclusion somehow gives one greater confidence in accepting the claims made elsewhere in the book for other methods, even if their moderation failed alone to do so. Particularly interesting to the operating surgeon is the description of the approaches to the stellate ganglion, for here the authors have evolved a modification of the anterior approach, which they have successfully practised on a number of cases, apparently to the exclusion of the more commonly adopted posterior route as described by Adson. Few will have had sufficient experience of both methods to be in a position to make a competent comparison, but there can be little doubt that the posterior operation is associated with greater loss of blood, the exposure is somewhat more limited, anaesthetization, both local and general, more difficult, and the convalescence rather more prolonged. From the point of view of difficulty or ease of performance there is little to choose, but anyone used to the posterior approach who tries the other method will at least be convinced that it merits much more attention than has been paid to it in the past. In previous anterior approaches, which this replaces, the second dorsal ganglion was often left, and so its contribution to the brachial plexus (nerve of Kuntz) remained; the newer method remedies this deficiency and ensures as complete a removal as the posterior route.

¹ *The Surgery of the Sympathetic Nervous System*. By G. E. Gask, M.G., D.S.O., F.R.C.S., and J. Paterson Ross, M.S., F.R.C.S. London: Baillière, Tindall and Cox. 1934. (Pp. xii + 163; 29 figures, 13 plates. 16s.)

In Raynaud's disease the authors, as a result of post-operative tests, reach the same conclusions as Lewis that the condition is a local arterial one and that a sympathectomy merely lowers the threshold at which the spasm occurs. The vexed question of why the results in the upper limb are less satisfactory than those in the lower is discussed, and the explanation put forward that this is a result of a greater normal vaso-constrictor tone in the lower extremity, and not attributable, as is often assumed, to a less radical operation. The authors, indeed, point out that the cervico-thoracic ganglionectomy is really the more radical operation, since it removes ganglion cells rather than preganglionic fibres; it is equally arguable, however, that the preganglionic fibre has a wider sphere of control than the cell itself, and is therefore the more logical point of attack. In the chapter on the visceral motor system chief attention is devoted to megacolon. A well-balanced account of the anatomical basis of the various operative procedures is given, but this does not suffice to explain why apparently good results are obtainable by so many different methods. Another question of interest is that of a left-sided bias in the supply of the colon; the authors state that "bilateral lumbar ganglionectomy has been carried out with good results, but there is little indication that the removal of the right trunk contributed any appreciable benefit, though on anatomical grounds the bilateral operation must be considered the more rational procedure." With this we agree: there can be no doubt that, whatever the anatomical and morphological considerations, many of the earlier cases in which a left-sided sympathectomy alone was performed gave very good results, which have remained permanent for many years, so that this question must remain *sub judice*. The aetiological relationship of certain types of bladder dysfunction, hydro-ureter, and hydronephrosis to megacolon is recognized, but the need for full investigation before embarking upon operation is perhaps insufficiently stressed. Oft-times a sympathectomy will give good results, but less radical methods of relief are frequently advisable. In any case, it would be futile to expect results from a sympathetic operation where secondary fibrotic changes have occurred.

A final chapter deals with sympathectomy in the relief of pain, and here we find a short but very clear discussion of the cause and treatment of causalgia. Angina pectoris is also considered and the conclusion reached that a cervico-thoracic ganglionectomy is the method of choice, although the only personal experience of the authors appears to be of a paravertebral alcohol injection, after the manner of White. That the injection was successful was indicated by the development of a permanent Horner's syndrome, and the result was freedom from pain up to the time of publication. Altogether we have nothing but praise for this book, which is excellently printed and produced. We congratulate the authors not only upon having written the first English book on the subject, but also upon a very notable contribution to surgical literature.

SHORT HISTORY OF PHYSIOLOGY

The publishers of a new series of short histories have been singularly fortunate in their choice of writers, and in none more so than in the latest volume² to be issued. Dr. K. J. FRANKLIN, a Fellow of Oriel College and the university demonstrator of pharmacology, is a distinguished member of that scientific school which has done so much to establish the reputation of the University of Oxford in this branch of knowledge. In the present little book he has compressed the age-long history of physiology in such

an interesting manner that it has to be read from preface to epilogue, for it is a fascinating story. Beginning with Alcmaeon of Croton, who flourished in the latter half of the sixth century B.C., he passes in review the work of Aristotle, of Erasistratus, and of Galen. Then comes a long interval, during which the work of Galen remained unquestioned until Leonardo da Vinci, Andreas Vesalius, and Michael Servetus overthrew the old teaching and opened up new problems, for they inquired of nature by experiment. The work of Harvey is commented upon, and for some reason Dr. Franklin assumes that he suffered as a young man from gout. Of this there is no evidence, and if Harvey really was laid aside for a time at the university, it is more likely to have been from some form of intermittent fever, then so frequent in Cambridge. Later in life he was gouty, but the gargantuan meals in Germany, when he travelled with the Earl of Arundel, were an all-sufficient cause. Then comes the wonderful period when Willis and Lower, Boyle and Mayow, were working in Oxford; Leeuwenhoek, Swammerdam, and Malpighi abroad. The stream of knowledge never again slackened. Haller and Hunter, by their teaching, Priestley, Lavoisier, and Scheele, by destroying the phlogiston theory, advanced physiology. Finally, there came the work of our own time, which has resulted in physiology becoming, in Dr. Franklin's words, "the experimental study of the normal function of living organisms or of their constituent parts." The book is well adapted to the beginner, for it is written clearly and simply; it is useful to the advanced student, for it shows in an orderly manner the various steps made in the progress of the science. There is a full index of names.

INTRODUCTION TO NEUROLOGY

The only introduction to the study of neurology which is of any real value to the student is a sound knowledge of the essentials of the anatomy and physiology of the nervous system. Until recently the only means the student had of acquiring this necessary groundwork was to search among the standard textbooks for such facts as seemed to be relevant. Here he found himself in two difficulties: the first was that of knowing what to learn and what to omit; the second—which has increased, owing to the recent strides made in neuro-anatomy—that of knowing where to find a summary of the newer work. *An Introduction to the Study of the Nervous System*,³ by HEWER and SANDES, combines in outline the necessary basis of topographical anatomy with a balanced summary of the more recent contributions to neurology which have appeared from time to time in various monographs and journals.

The first part opens with a brief account of the different types of neurone and supporting tissues, with an account of the effects of nerve section. Next follows a series of short chapters on fibre tracts, cerebellar connexions, connexions of the corpus striatum, and the autonomic nervous system, together with a description of the blood supply of the brain and a brief account of the cerebro-spinal fluid. This section is not intended as a complete description, for the reader is assumed to be already in possession of the main facts of gross anatomy. Much of the information, therefore, is presented in *précis* form under tabulated headings—an arrangement which, while making for brevity and ease of reference, is apt at times to give rise to ambiguity. An example of this appears in Chapter IX, where "the anterior and posterior cerebral branches of the carotid" are referred to as a part of the circle of

² *A Short History of Physiology*. By K. J. Franklin, D.M. London: J. Bale, Sons and Danielsson, Ltd. (Pp. 122. 3s. 6d. net.)

³ *An Introduction to the Study of the Nervous System*. By E. E. Hewer, D.Sc., and G. M. Sandes, M.B., F.R.C.S. Second edition. London: William Heinemann Ltd. (Pp. 147; 6s figures. 21s. net.)

Willis. In this part of the book will be found many excellent schematic diagrams in colour, illustrating the course of fibre tracts and the connexions of the various nuclear masses. It is these diagrams, themselves the result of considerable teaching experience, that give the book its distinctive character, and make possible the reduction of the text to a mere 130 pages of letterpress. Few of the usual illustrations are inserted, there being no figure, for example, of the arteries at the base of the brain.

The second half of the book is written from the physiological and clinical standpoint. Here will be found descriptions of the various kinds of sensibility and recent views as to their localization; the clinical effects of interference with motor and sensory tracts at various levels; the features of pyramidal and extrapyramidal rigidity; the role of the autonomic nervous system; and the various causes of aphasia. Though all these chapters are brief they are clearly written, and each section is provided with a short bibliography.

It will be seen from the above outline that this book, while making no claim to completeness, should prove most helpful for supplementary reading, as it furnishes in small compass so much that is apt to be overlooked by the average student.

VACCINE AND SERUM THERAPY

There is certainly room for a volume on vaccine and serum therapy in Churchill's Recent Advances Series, and the new book on this subject is a welcome addition to the set.⁴ It has been written by two authors who have special experience in this type of work. Dr. G. F. PETRIE, who contributes the chapters on serum therapy, is bacteriologist in charge of the Serum Department of the Lister Institute at Elstree, and Professor ALEXANDER FLEMING, the author of the sections on vaccines, is the assistant director of the inoculation department at St. Mary's Hospital, London. The general plan of the book is a consideration of serum and vaccine treatment in different diseases, which are discussed chapter by chapter. This is convenient for reference purposes, and readers can look up such a disease as lobar pneumonia and find what can be done in treatment or prophylaxis by serum and vaccines. Most of the chapters have a good list of references at the end, and the book is carefully documented. There is also a satisfactory index, both for subjects and for authors.

DIET IN HEALTH AND DISEASE

A reliable guide to dietetics for practitioners is at the present time sure of a welcome, and when it comes from the pen of Dr. JOHN D. COMRIE of Edinburgh, the author of Black's Medical Dictionary, its popularity can be taken for granted. In his *Diet in Health and Sickness*⁵ the author has aimed at giving precise directions for diets suited to different conditions. The first five chapters deal with the physiology of foods and dietetic principles in a simple, intelligible way, aided by graphic representation of various foodstuffs and their components. The sixth chapter is devoted to the preparation of food, and may have been passed for press before the publication of McCance and Shipp's report on the effects of cooking on flesh foods,⁶ for it speaks of the value of "sealing"

the surface of roast meat and the steaming of fish as if those processes had never been called in question. But the actual cooking directions are admirable, and neither too complicated nor too costly. Incidentally one is inclined to ask if any sane diabetic really eats bran biscuits nowadays.

The chapter on normal diet is short and to the point, and the diagrams showing the calories obtainable by pound weight and sixpennyworth are especially clear. In allowing oatmeal porridge for breakfast every day the cost of cooking is not mentioned, nor is the unsuitability of porridge for some English digestions reckoned with. Margarine is recommended without sufficient indications as to the method of securing that it shall possess either adequate nutritive value or vitamin content. The diets for expectant mothers, infants, and children are good; but, if space had permitted, the author's advice on how to cope with the practical difficulties of feeding abnormal infants would have enhanced the value of this chapter. The last seven chapters deal with diets in particular diseases and disorders. Here the directions are brief, sound, and free from fads or cranks. The author is probably wise to have given particulars of some special diets, such as Salisbury's, Tufnell's, and Gerson's, whose ultimate survival in our armamentarium against disease is already doubtful.

The book is most readably attractive, and contains in small compass many of the directions which the busy practitioner requires, and for which he might search long and vainly in more pretentious volumes.

ESCAPE FROM BOREDOM

When preparing his *Memoirs of a Camp-Follower*⁷ Dr. PHILIP GOSSE had the advantage of a box of letters written by him to his parents from the time he joined the R.A.M.C. in 1914 until the end of the war. He is, by inheritance, a naturalist as well as a writer, and birds and animals form the chief ingredient of his notes. This might have made a dull tale for the ordinary reader, but in fact the only dry thing about the book is the author's humour. One need not be versed in the ways of wild creatures to enjoy it, for there is a quality about the writing that brings reader and writer together. Philip Gosse found solace, amid the horror and the ugliness and the ennui of war, by the exercise of his trained and loving eye for bird and beast and flower. He had also more than a naturalist's eye for the oddities and absurdities of human behaviour, and his journal abounds in crisply told stories, quaint observations, and unexpected asides. From the medical point of view it is full of interest and amusement for those of us who have memories of service abroad as civilian members of the R.A.M.C. Some of the jokes against himself, arising out of collisions or misunderstandings with "authority," might, we suspect, have been told with greater truth, though with less fun, if he had made the other person appear as the butt. There are, however, enough conversations and half-comments to reveal the author's true opinion of the pompous kind of professional soldier and of Poona snobbery in wartime. Towards God's humbler creatures he is uniformly sympathetic and tolerant; though appointed Rat Officer to the Second Army, and energetic in their suppression, he cannot bring himself to write unkindly even about rats. The scene of the larger part of this very human book is laid in Flanders, where Captain Gosse served in and out of the trenches for three years; he was then moved to India, which provided him with a rich harvest of fauna to study.

⁴ *Recent Advances in Vaccine and Serum Therapy*. By A. Fleming, F.R.C.S., and G. F. Petrie, M.D. London: J. and A. Churchill, 1934. (Pp. 463. 15s.)

⁵ *Diet in Health and Sickness*. By J. D. Comrie, M.A., B.Sc., M.D. London: A. and C. Black, Ltd. 1933. (Pp. 240. 5s. net.)

⁶ "Medical Research Council, Special Report Series No. 187. 'The Chemistry of Flesh Foods and their Losses on Cooking.'" By R. A. McCance and H. L. Shipp. H.M. Stationery Office. (2s. 6d. net.)

⁷ *Memoirs of a Camp-Follower*. By Philip Gosse. London: Longmans, Green and Co. 1934. (Pp. xvi + 300. 10s. 6d. net.)

Notes on Books

Dr. ARTHUR P. NOYES, medical superintendent of Rhode Island State Hospital for Mental Diseases, has written a book entitled *Modern Clinical Psychiatry*,³ which is intended to meet the needs of medical students and practitioners. The volume is an elaboration of a series of lectures delivered by its author to senior medical students who, for the sake of experience, chose to spend their vacation period at the State Hospital. An effort has been made to avoid limiting its presentation to one of description only, but rather to include discussion also of some of the psychobiological forces and processes leading to the clinical pictures that confront the student. The author reveals himself throughout this book as an excellent teacher, and we do not doubt that those students who sacrificed their summer vacation to attend his lectures were amply rewarded.

A useful little book, entitled *A Medical Guide for Trawler Officers*,⁴ has been compiled by Dr. J. BURNS, the medical officer of the Hull Steam Trawlers Insurance

³ *Modern Clinical Psychiatry*. By Arthur P. Noyes, M.D. Philadelphia and London. W. B. Saunders Company 1934. (Pp. 486, 20s. net.)

⁴ *A Medical Guide for Trawler Officers*. By J. Burns, M.B., Ch.B. Issued by the Joint Amalgamated Arbitration and Navigation Committee, St. Andrew's Dock, Hull. (Pp. 124; illustrated.)

and Protecting Co., Ltd. The book is a guide in first aid for injuries and the elementary diagnosis and treatment of the diseases most commonly to be met with in trawlers at sea. These Hull trawlers are equipped with a standard first-aid outfit and medicine chest, and Dr. Burns explains how the best use can be got out of both of these very necessary articles. The opening sections of the book explain such elementary details of anatomy and physiology as are absolutely necessary for the understanding of the subsequent chapters on injuries and sickness and the proper application of the methods recommended for dealing with them. The book is admirably practical, and should be of the greatest assistance to trawler skippers and mates when they find themselves up against medical problems and have the sole responsibility for deciding what has got to be done about it.

The numerical summary in the *Medical and Dental Students' Register*⁵ for 1933 shows that 2,287 medical students registered last year, representing an increase of 340 over the figure for 1932, and of 644 over that for 1931; the entry was, in fact, by far the largest recorded during the past thirteen years. The number of dental students registered in 1933 was 383, an advance of 61 over the figure for the previous year, and the largest entry since 1920.

⁵ Published for the General Medical Council by Constable and Co., Ltd., 10, Orange Street, W.C.2.

Preparations and Appliances

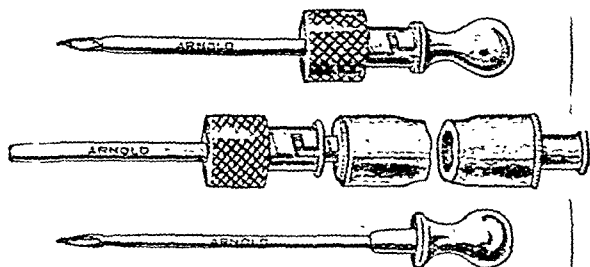
TROCAR AND CANNULA FOR INJECTION TREATMENT OF HYDROCELE

Mr. ROONEY MAINGOT, F.R.C.S. (London, W.), writes:

There are numerous types of trocar and cannula used for tapping hydroceles, but the one which I have had specially adapted for my own use has proved both practical and satisfactory. It consists of a trocar and cannula, made in two sizes (the large size equal to a 10 S.W. gauge, and the small size equal to a 12 S.W. gauge), and a rubber connexion piece with special bayonet-fitting mount.

The trocar and cannula is introduced into the hydrocele sac, and the finger-piece is firmly grasped between the thumb and index finger of the left hand. The trocar is then withdrawn. After all the fluid in the hydrocele sac has been evacuated a 10 c.m. syringe is charged with a suitable solution and

Secondly, they are so shaped that the abdominal wall as well as the bladder is retracted. Thirdly, they are of different sizes to meet the difficulties of alterations in depth of the bladder within the bony pelvis. Fourthly, the blade which holds back the postero-superior wall is so curved that the part immediately behind the interureteric bar is also retracted. Lastly, as the result of my adoption of the Harris technique for prostatectomy, Mr. Schranz of the Genito-Urinary Manu-



attached to the cannula by means of the rubber connexion. This connecting piece allows of a certain amount of flexibility in the manipulation of the syringe during the process of injection. At the completion of the injection the cannula is removed and the parts are massaged.

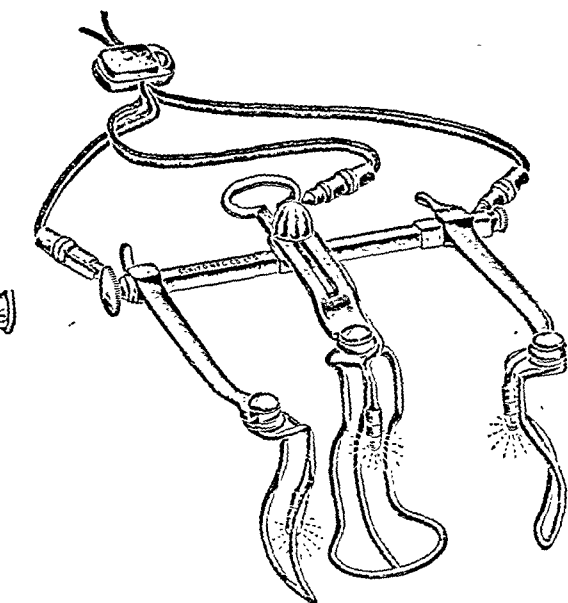
This trocar and cannula is made for me by Arnold and Sons (John Bell and Croyden), 52, Wigmore Street, London, W.1.

FLOOD-LIGHTING THE BLADDER

Mr. CLIFFORD MORSON, F.R.C.S. (London, W.), writes:

The technique for prostatectomy introduced by Harry Harris of Sydney, Australia, requires perfect illumination of the bladder. For the past six years I have used a special retractor which overcomes certain difficulties common to all vesical operations.

First, the blades are fenestrated so that a minimum of mucous membrane is covered when the retractor is in position.



facturing Company has electrified this retractor so that it flood-lights every nook and corner of the bladder as well as the prostatic bed, after removal of the prostate.

The accompanying illustration shows quite clearly how ingenious Mr. Schranz has been in adapting this retractor for flood-lighting purposes. It will be noted that the lamps are situated at different levels within the bladder, and that the wiring is cleverly concealed. The whole instrument can be boiled without endangering the efficiency of the electrical equipment.

HOSPITAL ADMINISTRATION AND THE LOCAL GOVERNMENT ACT

Dr. ALLEN DALEY'S REVIEW

The problems in hospital administration arising out of the Local Government Act, 1929, were the subject of a paper read by Dr. W. Allen Daley, Principal Medical Officer, London County Council, at a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine. The president of the Section, Dr. J. D. Rolleston, took the chair.

Dr. ALLEN DALEY said that it was now nearly four years since the county and county borough authorities in this country became responsible for the public hospital provision in their areas, and enough time had elapsed to consider the position and review successes and failures. The dovetailing of public medical services under the Local Government Act had proved no easy matter, and it would be some years yet before the process could be regarded as complete, even in the most progressive areas. There were advantages and disadvantages in the "appropriation" of hospitals. From the point of view of the patient the great advantage of appropriation was that he could be admitted simply by application to the medical superintendent; he had no need to apply to the relieving officer, which was the normal method of admission to a Poor Law institution. The appropriated hospital was free from the hampering restrictions of the Public Assistance Order. The most important point on the reverse side concerned the recovery of the cost of treatment of extra-district patients. Safeguards for this were provided in the Poor Law, but in the case of appropriated hospitals the legal position was by no means clear.

MUNICIPAL HOSPITAL SERVICES

The administration of a municipal general hospital service brought many new problems. The first was as to the amount and nature of hospital accommodation necessary in an area. The number of hospital beds per 1,000 of population varied enormously. For example, including the mental hospitals, the total hospital beds in England and Wales per 1,000 of population was 9.47, while in London it was 19. Up to a point which could not be determined with any accuracy, the demand for admission to hospital tended to grow with the provision of satisfactory accommodation. Such factors as domestic overcrowding, incidence of endemic and occupational diseases, and the liability to road accidents in the locality of the hospital had to be borne in mind in assessing the needs of an area. In London and the large cities and urbanized portions of county areas much could be done to provide special hospitals and special units in general hospitals which would be quite impossible in small towns or rural counties. Examples of such special units were children's country hospitals for prolonged treatment, hospitals for chronic skin or eye diseases, colonies for the epileptic, and convalescent homes. Special units might be required in only one of a series of hospitals where particular skill was needed on the medical or surgical side, or where equipment was very costly; examples were plastic surgery, the treatment of chronic rheumatism, and deep x-ray or radium therapy. Other special units such as maternity, tuberculosis, or venereal diseases wards and mental observation units were required for groups of hospitals. There could be no uniformity for many reasons, one reason of great importance being the varying provision of voluntary hospitals in the neighbourhood. There should be the fullest consultation on both sides as between the voluntary and municipal institutions. In London some very useful work had been done in the shape of two surveys, one of voluntary and the other of municipal hospital accommodation.

A general impression obtained some years ago that while voluntary hospitals had large waiting lists, Poor

Law hospitals always had large numbers of empty beds. The former statement was true, but the position in the municipal hospitals required explanation. A voluntary hospital could decline to accept any patient; a municipal hospital must admit on demand those who were medically destitute, including those sent on from a voluntary hospital. There were high and low tides of disease, and the municipal hospital had to be prepared for the high tide. In the months January to March the municipal hospitals were sorely pressed for room, and only in the summer months was there surplus accommodation. In certain towns, particularly where the honorary staff of the voluntary hospital were attached to the municipal hospital, the municipal hospital at periods of great demand dealt with patients on the waiting list of the voluntary hospital. As for out-patient departments, it would be a mistake for the municipal hospital to develop these on the lines of the voluntary hospital, and the London County Council set out the types of patients dealt with in its out-patient departments as follows: (1) casualties, accidents, and other emergencies; (2) continuation or after-care of former in-patients requiring further treatment after discharge; (3) patients referred for consultation by any duly authorized medical officer of the council; (4) patients requiring ante-natal or post-natal examination and treatment; (5) patients entitled to outdoor medical relief; (6) cases or classes of cases for special examination with or without treatment, authorized by the council's medical officer.

PRACTICAL PROBLEMS FOR SOLUTION

Dr. Daley touched briefly on other matters arising out of the change in administrative control. In many areas it was found that there was no definite relationship between the district medical officer and the medical superintendent. Closer co-operation was most desirable. A considerable number of residential Poor Law schools were transferred, and these brought with them their own problem. The best method of controlling infection, whether by quarantine blocks or by other methods, had not yet been finally settled. The transferred hospital service presented a great field for investigation and research. Cases could now be followed through and clinical research undertaken. In the largest authorities the opportunities for investigation afforded very wide scope. Investigation could be carried out on types of hospital building. He did not believe that the ideal ward block had yet been designed. There were hundreds of points in the design and structure of a hospital on which there was no authoritative opinion. The standardization of equipment and mass purchasing was important. In London before 1930 there were twenty-six different standards and as many different sets of contracts for hospitals. An illuminating sidelight was afforded by a study of costing returns. Laundry statistics, for example, showed that the total cost of laundry per occupied bed in different hospitals varied from 2s. 8d. to 5s. 3d. per week, and the cost per 1,000 articles washed from £2 7s. 4d. to more than double that amount. The same wide variations were found in crockery breakages. The breakages of teacups varied from 36 per 100 residents over a period of six months to 257. The cost of staff dietary varied per 100 boarded staff per week from £30 5s. 11d. to £44 16s. 4d. Another point was the training of medical superintendents. In a large hospital the medical superintendents might be almost entirely engaged in administrative work, but if provided with lay assistance they could still take part in some clinical work. It was wasteful to train a man to be an expert clinician or operating surgeon and then employ him almost entirely administratively, but there was a tendency for this to happen where the administrative officers were remunerated much more highly than the clinical. Facilities for pathological investigation were essential, and the London County Council had provided five group laboratories and a central histological laboratory, in addition to the small laboratories attached to individual hospitals. Each medical school in London was now linked up with one or more of the municipal general

hospitals. Classes of post-graduates were also held, and there were clinical demonstrations attended by general practitioners. At various units there was provision for clinical research, and statistical research was now being carried out on a large scale. In the case of each of the 200,000 patients admitted to London County Council hospitals in the course of a year, the essential features were recorded, and a method of mechanical tabulation had been worked out.

THE LOCAL GOVERNMENT ACT AND PREVENTIVE MEDICINE

The Local Government Act, Dr. Daley said in conclusion, was already having a marked effect on the progress of preventive medicine. Curative medicine was often regarded as a more attractive study than preventive. The triumphs of preventive medicine were unknown to all save the few. An arrested epidemic did not stir public opinion. There was a danger in the present situation lest they became so immersed in the fascinating problems of administering hospitals and curing disease as to forget that the primary function was to preserve health and prevent disease. He believed that some tangible results affecting the great problem of preventable disease would presently appear, and then the work of the framers of the Local Government Act would be fully justified. At present those concerned were in the process of moulding a large additional service on to the general public health service of the community; in some areas the addition was much larger than the original. Dr. Daley circulated an analysis of records of four large general hospitals, showing in five principal age groups of life the treatments given in different disease groups, the results obtained, the duration of treatment, and the approximate cost. These figures showed that the most expensive disease group was the respiratory (bronchitis, pneumonia, and pleurisy), followed after a long interval by injuries, close behind which came tuberculosis and venereal diseases as a single group, and diseases of the nervous system as another group. The duration of treatment for diseases of the respiratory system was 14.1 per cent. of the total for all diseases; for injuries, it was 10.6 per cent.; for tuberculosis and venereal diseases, 10.4 per cent.; and for diseases of the circulatory system, 9.9 per cent.

GENERAL DISCUSSION

Dr. J. D. ROLLESTON said that Dr. Daley had not emphasized the important work he himself had done in connexion with the transferred and special hospitals. He had been chairman of no fewer than eight of the ten Departmental Committees on the subject—namely, those on hospital standards, tuberculosis, pathological laboratories, forms of record, ambulance service, staffing of transferred hospitals, appointment of junior medical officers, and district work.

Dr. S. MONCKTON COPEMAN, a member of the new London County Council, said that in a short period of time the amount of hospital accommodation had not only been largely increased, but the accommodation and treatment in every possible way greatly improved. Although the number of separate institutions was not much greater, there had been an increase in accommodation, he believed, amounting to some thousands of beds. The linking up with the voluntary hospitals was an excellent idea, in order that the students could be definitely instructed by their own teachers in the wards of the municipal hospitals. He also mentioned that during the past year more than one-sixth of the total number of parturient women in London had been delivered in the municipal hospitals; this provision, in conjunction with the special laboratory work now proceeding, must have an effect in reducing the maternal morbidity and mortality rate.

Mr. A. F. MACCALLAN said that it struck him that it was rather difficult for a physician or surgeon to teach on other people's cases unless he had had considerable opportunity of examining the cases beforehand. Few of them had time for such study, even with the greatest

courtesy on the part of the medical superintendent and his staff, and therefore it did not seem to him that very satisfactory demonstrations could be given to students in these circumstances. That was a difficulty in linking up council with voluntary hospitals for teaching purposes.

Dr. J. A. H. BRINCKER claimed for the old Poor Law hospitals and the guardians that in addition to looking after sick persons they had an eye to the development of preventive medicine, and that preventive medicine originated with Poor Law officers and their hospitals. The Local Government Act was admirable in its working so far as London was concerned, because of the enormous number of institutions, but the position was not so easy in small areas.

Sir WELDON DALRYMPLE-CHAMPNEYS said that on a few occasions he had had the pleasure of serving on the Hospitals Standards Committee of the London County Council, and he had been astonished that nothing so comprehensive had ever been attempted before. A great saving could be effected by the standardization of equipment and by combined purchase. It would be interesting to know what Dr. Daley thought of the prospects of the system being applied to voluntary hospitals. The chief difficulty was that the surgeon, for example, got accustomed to various types of instruments, and was a little resentful when new instruments were presented to him. At the same time he thought the standardization of equipment had to come.

Dr. C. T. MAITLAND (Ministry of Health) said that naturally the bias of the paper was London; in the counties some of these things assumed different values. He thought that the main result of the Local Government Act was not so much the breaking up of the Poor Law as the opportunity which it gave to local authorities when they found themselves presented with hospital accommodation, from whatever source, to examine the whole question of general hospital treatment.

Dr. A. M. HEWAT (London County Council) expressed his gratification at the emphasis which had been laid on preventive medicine. The hospital administrator was apt often to lose sight of the preventive aspect. With a large hospital service one ought to be in a position to develop preventive medicine in a way in which it had never been developed before. A vast supply of information was accumulated on various points connected with different diseases and different classes of patients, and if this was dealt with properly and the information tabulated, a different outlook ought to be possible on the preventive side of many diseases.

Dr. F. C. SHRUBSALL said that as one who saw patients after they had passed through hospital he had noticed a remarkable psychological change since the new system came into being. A few years ago there was a feeling of terror among patients at the prospect of going into a Poor Law hospital (though not because they had any anticipation of being badly treated), but now he was often told that they would rather go into a council than into a voluntary hospital, because "the meals are served in a much more human fashion." Dr. ALEXANDER JOE remarked that now that medical officers of health throughout the country were being confronted with these big problems of hospital administration, it seemed to him that there might in the future be given a certain impetus to the theories put forward by Simon of Manchester, that the days of the medical officer of health were passing, and in the future there might be a lay officer of health. A great deal of the purely administrative work was almost entirely lay. Dr. E. W. GOODALL gave certain amusing experiences of investigation into wastage and breakages in hospitals.

Dr. ALLEN DALEY, in reply, said that in the work at the County Hall the departmental committees had been most valuable. Since April 1st, 1930, the council had increased the number of hospital beds by 2,000, and two extra hospitals had been brought into use. Maternity admissions were going up at the rate of 1,000 a year in the County of London. It was the council's policy to provide a hospital laboratory in every "acute" general hospital, and these were worked in association with the group laboratories.

AMOEBC DYSENTERY

THE OUTBREAK IN CHICAGO

(FROM A CORRESPONDENT)

So many conflicting reports of the now well-known outbreak of amoebic infection which commenced in Chicago on August 16th last year have been made that it is a relief to have published by those most directly concerned with it the actual sequence of events. Briefly what happened was this. On August 16th two cases of amoebic dysentery were notified from two hospitals. Inquiry showed that both the patients had fed at a certain hotel where cases of diarrhoea were found to have occurred. On the following day a laboratory was established in the hotel, and "stools from all the food-handlers were collected and examined, under the supervision of trained technicians who were experienced in the diagnosis of amoebiasis." The result was that, by the end of the month, fifteen clinical cases (we are not told if these were actual cases of dysentery) and eleven carriers were discovered among 364 food-handlers, a percentage of about 7.1. The situation was watched during September, and no new cases arose which could not be attributable to earlier infection.

PUBLIC HEALTH MEETING AT INDIANAPOLIS

On October 9th attention was called to this incident at the annual convention of the American Public Health Association in Indianapolis. It was given publicity in the local press, with the result that on the same day it was brought to light that two members of a family in Indianapolis had been affected with amoebic dysentery after a visit to the hotel in Chicago. Further inquiry in this city disclosed a total of eight such cases. This discovery, and the appearance of some new cases at the hotel, led to the institution of further examination of the staff and the dispatch of a questionnaire to 16,000 persons who had stayed at the hotel during June, July, and August, 1933. This last inquiry, which was followed up by long-distance telephone or telegram urging immediate medical care for those afflicted, resulted by November 8th in the discovery of thirty-five cases of "diarrhoeal disturbance" among those 16,000 guests who had stayed at the hotel.

"It was then decided that the situation was sufficiently serious to justify the issue of a general warning to the Press." This was carried out on November 9th, and again on November 10th, while on November 14th a special broadcast was made over the N.B.C. network from coast to coast and in Canada, with an appeal to those suffering from intestinal disorder to see their doctors, and to physicians to be on the look out for amoebic dysentery."

INVESTIGATION OF FOOD AND WATER

The second examination of the food-handlers at the hotel, completed by the middle of November, revealed the fact that, though those detected at the first examination had been removed, others were found to be infected who had not been so at first. It was therefore concluded that the control of food was not checking the infection. Examination of the water supply was then undertaken, and it was found that there were serious defects which might permit of the contamination by sewage of food and drinking-water. Another hotel is now mentioned in which a very serious condition of the water system was discovered, and in which a high incidence of amoebic infection also occurred. Finally, it is stated that in the hotel first considered five surveys of food-handlers and two surveys of non-food-handlers had been completed by the end of January. The result was the discovery of infection in 165 food-handlers and in 141 non-food-handlers out of approximately 1,100 employees. Exact

details of these examinations are not given, but it may be presumed that the food-handlers found to be infected at any time were at once removed and replaced by others, but we are not told if the latter were known to be uninfected individuals. Furthermore, we do not know if the well-attested fact was recognized that, owing to the intermittency of the appearance of cysts in the stool, a single examination of a group of people yielded a number of carriers which is only about one-third of those which can be discovered by repeated examination.

The broadcast mentioned above resulted in the report of 721 clinical cases of amoebic dysentery in 206 cities, including Chicago, as apparently originating from the same source. In addition, 1,049 carriers of *E. histolytica* were brought to light in Chicago, presumably in places other than the two hotels, by the investigations. A general laboratory survey of all the principal hotels and larger restaurants was also made, but no parallel to that of the two original foci could be found, though it is reported that in an industrial plant in Chicago employing 375 workers a connexion allowing river water to contaminate the water supply was made in December. This was followed shortly after by an outbreak of diarrhoea. Investigation by the Board of Health revealed seven cases of amoebic dysentery, seventy-one carriers of *E. histolytica*, and three cases of typhoid fever.

REPORT OF THE SPECIAL COMMITTEE

The interest taken in the infection was so great that the President of the Board of Health eventually appointed a special committee to examine the situation, and it met in Chicago from January 22nd to 26th inclusive. It reports that until 1933 amoebic dysentery had not figured largely in the morbidity and mortality reports in Chicago, or indeed in any city in the United States. The outbreak in 1933 embraced about 800 reported cases, most of which became apparent in cities other than Chicago. A large majority of these were traced to two hotels as probable sources of infection. The report says that the unprecedented nature of the outbreak must be borne in mind, for until this time amoebic dysentery had not been known to occur as an epidemic disease in a civil population. Though this is the case, the examination of the records and laboratory materials, preparations, and cultures led the committee to the view that the cases diagnosed as infected with *E. histolytica* were actually of this nature.

It is noted that the examinations (presumably single ones, and not repeated ones as made at the hotel) carried out have shown that 3.9 per cent. of employees in hotels and restaurants in general in Chicago are carriers of *E. histolytica* or suffer from amoebic dysentery—an incidence which is about equal to that among the population of the United States in general. In the hotel first examined the percentage of infection among the employees was at times as high as 18 per cent., that among the food-handlers being approximately the same as that among those with other duties. This fact suggested that structural defects, either permanently or intermittently operative in the two hotels, were associated with an unusual incidence of amoebiasis. Such defects, the committee states, no doubt exist in other hotels, but only special circumstances bring them into play to cause a severe epidemic. Such special circumstances are necessary, for it is known, the report says, that extremely large doses of *E. histolytica* have to be administered to both man and animals to produce infections comparable with those observed in this epidemic, in which the incubation period was short, the lesions were severe, and the exposure often minimal.

DO AMOEBIASIS EPIDEMICS OCCUR?

The above reports raise once again the whole question of the method of spread of *Entamoeba histolytica* and

of whether actual epidemics of amoebiasis arise. At the commencement of the war it was thought that amoebiasis was accounting for practically the whole of the invaliding from Gallipoli. This was due not only to lack of experience in the diagnosis of intestinal protozoal infections, which is notoriously difficult, but also to a misconception regarding amoebiasis on the part of those handling the cases. They considered it an acute infectious disease like cholera or bacillary dysentery, whereas actual amoebic dysentery is rather the periodic dysenteric manifestation of a chronic amoebic infection. It seems not improbable that the actual dysentery is caused or stimulated by some intercurrent bacterial infection, or other irritant, acting in a carrier, so that one is led to wonder, in the incident recorded above, whether, assuming that the diagnosis was correct, the occurrence of two cases of amoebic dysentery on one day in persons who had fed (we are not told when) at the same hotel is sufficient justification for the assumption that the amoebic infection had actually been acquired there. Even though inquiry had elicited the fact that there were cases of diarrhoea at the hotel, the immediate establishment of a laboratory there appears to indicate that amoebic dysentery was being looked upon as an acute infection apt to spread rapidly. Such a procedure is perhaps surprising to those who, from a long experience of the disease and its diagnosis, both in the Tropics and in more temperate climates, have never observed that amoebiasis spreads rapidly in epidemic form from case to case. One is also led to wonder how in a city like Chicago, where amoebiasis is said to have appeared so rarely in the past, it was possible to find, at such short notice, technicians with the necessary experience to carry out the examinations accurately. The laboratory nevertheless returned a high percentage (7.1) of carriers of *E. histolytica* in this hotel, and later in another hotel and in an industrial plant; finally, 3.9 per cent. of carriers were detected among employees of other hotels and restaurants in Chicago. Allowing for the fact that the repeated examinations at the first hotel were bound to yield a higher percentage of carriers than the fewer examinations of employees at other places, it seems clear that the action taken, whether justified or not by the circumstances, has revealed a widespread carrier condition in the city—so much so, that there is some ground for asking whether some of the individuals who were supposed to have been infected in the two hotels may not already have been carriers before coming to Chicago, while others may have become so at other places in the city, where, in the warm season, they must undoubtedly have taken food and drink outside their hotels. It is notorious that, under the conditions of tourism, diarrhoeic disturbances are far from uncommon.

A SUGGESTION

From all that is known of experimental infection and the dosage of cysts required to produce it, it is difficult to imagine any form of contamination of food or water with faecal matter, even when direct connexions exist between the water supply and sewage system, which will allow people complacently to ingest the enormous doses of cysts required to cause amoebic dysentery, and to lead to the development of amoebic infections to the extent they are supposed to have done after very short incubation periods, which in some cases, we are privately informed, were not more than two days.

On the other hand, bacterial infections, or food poisoning, or other intestinal irritants, may light up amoebic infections or even give rise in carriers to dysenteric symptoms. Therefore, though infections were undoubtedly taking place in the hotels examined to an undetermined extent, as well as in other parts of the city and in the United States generally, it would appear from the data available hardly necessary to revise our

conception of amoebiasis in the direction of looking upon it as an alarming disease demanding immediate preventive measures such as are necessitated by sudden and unexpected outbreaks of cholera, bacillary dysentery, or food poisoning. A possible explanation of the outbreak is that the immediate action taken, and the publicity given to it, aroused interest in an incident which otherwise would have passed unnoticed, and brought to light a condition of affairs in Chicago which had been in existence for a considerable time.

AUSTRALASIAN MEDICAL CONGRESS

FOURTH SESSION, HOBART, 1934

The fourth session of the Australasian Medical Congress (British Medical Association) was held at Hobart, Tasmania, from January 15th to 20th, some 300 members attending. The Patrons of the Congress were: the Governor-General of Australia and the Governor-General of New Zealand; the Governors of New South Wales, Queensland, South Australia, and Tasmania; the Lieutenant-Governors of Victoria, Western Australia, and the Territory of Papua; the Director of Education and the Premier of Tasmania; and the Mayor of Hobart. The president of the Congress was Dr. D. H. E. Lines.

The inaugural meeting, which was held in the town hall on January 14th, was opened by Sir Ernest Clark, Governor of Tasmania. The following message from the parent body of the British Medical Association was read:

"The parent body regrets its inability to appoint a delegate to the Australasian Medical Congress, but sends cordial greetings and best wishes for a successful session."

PRESIDENT'S ADDRESS

Among the subjects of special interest to the profession generally to which Dr. Lines referred in his presidential address were abortion, the education of the public in health matters, and the medical curriculum. Discussing abortion, he said that more women died in Europe after abortion than after parturition at full term. No penalties would prevent a desperate woman from taking any risks to get rid of a child she did not want to bear. Many thoughtful people were beginning to realize that something should be done, and that the indications for abortion should be extended. Dr. Lines emphasized the need for education of the public in health matters. The lay press, he said, could be of inestimable assistance; unfortunately, articles on health in certain newspapers were more often written by persons having no proper knowledge of the subject with which they were attempting to deal. Referring to the medical curriculum, Dr. Lines said there was an uneasy feeling abroad that the modern medical student was so crammed with facts and theories that he had no time for independent thought. It was being said that the present system aimed at making students "a kind of cell-colony of half-baked specialists and scientists." The medical student was unable effectively to use the knowledge he had laboriously acquired; he had a pathetic belief in the ability of laboratory procedures—which he was unable properly to perform himself—to solve his problems.

At the conclusion of the inaugural meeting the president held a reception at the Tasmanian Museum.

CANCER RESEARCH

On January 16th there was a full meeting of Congress for the discussion of the cancer problem. Papers dealing with various aspects were read by Drs. F. P. Sanders, J. H. L. Cumpston, H. G. Chapman, J. V. J. Dubiq, L. J. Clendinnen, and E. H. Molesworth. The following resolution was carried:

"That in the opinion of this Congress the time has arrived for a more active co-operation between Governments, medical organizations, scientific bodies, and the general public, in the prosecution of the Australian campaign against cancer."

At a full meeting on January 18th hospital problems were discussed, representatives of every State taking part. No resolution was carried.

MEETINGS OF SECTIONS

The following Sections held meetings each day during the session: Anaesthetics; Medicine; Naval, Military, and Air Force Medicine and Surgery; Obstetrics and Gynaecology; Ophthalmology; Oto-rhino-laryngology; Paediatrics; Pathology, Bacteriology, and Cancer Research; Public Health, Preventive Medicine, and Tropical Hygiene; Surgery; and X-Ray and Electrical Therapy. Among the many important subjects on which papers were read were: the microcytic anaemias; renal function tests; the source of muscle tone; prophylaxis of uterine cancer; endocrines and eye diseases; health of the child in pre-school and school age; tuberculosis in school children; and new evidence of relationship of cancer and tuberculosis.

SOCIAL EVENTS

On January 15th Sir Ernest Clark entertained the members of Congress and their wives at a garden party at Government House, Hobart. On the following day a mayoral reception was held at the City Hall, which was followed by a dance given by the members of the Tasmanian Branch of the British Medical Association. Various entertainments and excursions were arranged for the visiting ladies. A ladies' golf competition was held, also a competition for the Australasian Medical Congress (British Medical Association) Golf Cup, open to all members. The cup was won by Dr. G. C. Scantlebury, Melbourne.

Throughout the session cordial hospitality was extended to visitors by the members of the Tasmanian Branch, which was greatly appreciated.

SMOKE IN THE ATMOSPHERE

A LANCASHIRE STUDY

The town of Rochdale, as everyone knows, is situated in Lancashire, north-easterly from Manchester. It stands at an elevation of 475 feet, close up to the Pennine Range, and experiences a copious rainfall. Its population of 90,000 reside in 26,000 houses, mostly equipped with open fireplaces for the burning of bituminous coal. Its cotton mills, which derive their power from steam, discharge furnace smoke freely. These local sources liberate their smoke into air already polluted, for owing to the prevailing winds the town lies in the direct track of the smoke drift from what is perhaps the most densely industrialized district in Britain. Through the combined effect of these various forces the atmosphere of Rochdale provides an unrivalled field for smoke observation. Records were begun in 1916, and have been carried out on a systematic plan since 1927. Dr. J. R. Ashworth, in a book recently published,¹ sets forth some results of the investigations made, and usefully describes new forms of apparatus devised for the solution of special problems arising. Among these may be mentioned the twin atmosphere pollution gauge for determining the amount of impurity carried into and out of a given area; and the horizontal pollution gauge, which deals with the material borne along by the wind, as distinguished from that thrown down as deposit.

SOLUBLE AND INSOLUBLE DEPOSITS

The author finds that in industrial towns the insoluble precipitated matter in the deposit gauge is high, diminishing rapidly from the polluting centre outwards. Being composed largely of flue dust from factory chimneys, it is heavy and quickly falls. It is most in evidence in dry weather. The soluble deposit, which is lighter, carries further, and is in consequence more evenly distributed. Its amount is largest with high rainfall. Much tar is the special indicator of domestic smoke. The proportion of

the deposit from factory chimneys and domestic fires varies in different towns, but is given on average as half-and-half. The horizontal pollution gauge at Rochdale revealed that the impurity carried along by the wind was about six times the quantity deposited; also that the amount of wind-borne soluble matter was relatively large. The horizontal gauge, in the author's view, gives results which are nearer the truth than those of the deposit gauge.

SMOKE AND RAINFALL

Employing the daily deposit recorder, Dr. Ashworth observed that rain always brought down atmospheric impurities, but that this effect might be more than balanced by the laying of dust, which prevented particles from rising into the atmosphere. The effect of snow in precipitating solids was immediate and very marked. The automatic filter for determining the amount of suspended matter in the air revealed that smoke haze, with attendant diminution of light, was more frequent on Mondays than on other days of the week. This phenomenon is ascribed to greater household activities on that day, and the author adduces in partial confirmation the records of a group of mainly all-electric council houses where the maximum power for washing, drying, and ironing was consumed on Mondays and Tuesdays.

That smoke should favour the formation of water drops, and so conduce to rainfall, is likely not only by reason of the number of hygroscopic particles which it carries, but also owing to the quantity of combustion-derived water vapour which it launches on the air. The observations of rainfall at Rochdale over a period of thirty years fit in well with this hypothesis. Sunday, when the emission of factory smoke was least, emerged as the driest day of the week. Monday, when the boilers were being heavily fired for reheating after the repose of Sunday, was the rainiest day. It is noted, too, that the rate-of-rainfall curve and the rate-of-soot-fall curve tended to vary in the same direction. The increase of soot, the author concludes, is the cause and not the effect of the heavier rain.

INFLUENCE OF ATMOSPHERIC POLLUTION ON LIGHT

The closing section deals with the influence of atmospheric pollution on light as determined by the iodine method, the acetone methylene-blue method, and the photographic method, of which the two former do not distinguish the ultra-violet from the visible rays, while the last enables account to be taken of the ultra-violet rays alone. With the iodine method it was found that, year in year out, the light received in the city area of Manchester was only about 53 per cent. of the light at suburban Timperley. With the acetone methylene-blue method the observations published by the Sunlight League show St. Ives at the head of the list with an annual average value of 5.34 for effective radiation, while Torquay stands at 3.64, Bristol at 2.35, St. Andrews at 1.98, Larnie at 1.62, and Southend at 1.21. These results are, within limits, comparable, but much depends on latitude, and a good deal on dexterous siting of the test apparatus. With the photographic method it was demonstrated that during January, 1931, a part of Rochdale where the factories cluster received nearly every day less ultra-violet radiation than a suburban area. During a week of fog very little ultra-violet radiation reached either part of the town. The author notes that the loss of ultra-violet radiation is aggravated in winter owing to the fact that during that season smoke emission by factories covers the whole period of possible sunshine, whereas in summer the hours of smoke emission are only three-fourths of the period between sunrise and sunset.

Dr. Ashworth—not for the first time, as his previous writings show—has made a valuable contribution to our knowledge of the ways of smoke.

¹ *Smoke and the Atmosphere: Studies from a Factory Town.* By J. R. Ashworth, D.Sc. Manchester: University Press (7s. 6d.)

RADIUM TELETHERAPY: LATEST MODIFICATION OF WESTMINSTER HOSPITAL APPARATUS

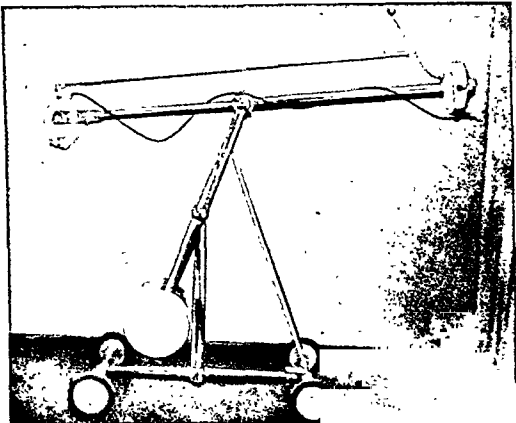


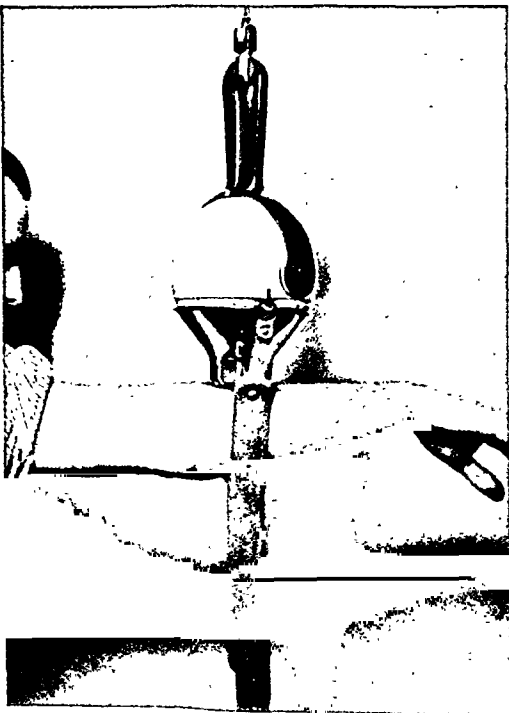
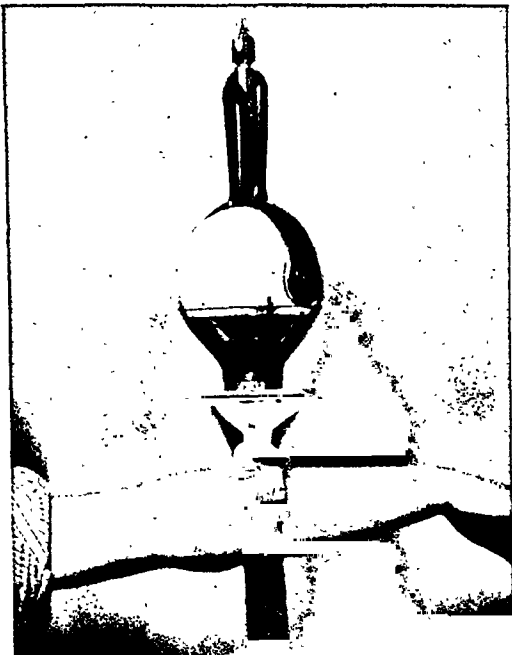
FIG. 1.—First apparatus of the new type.



FIG. 2.—Showing details of latest apparatus.



FIG. 3.—The apparatus in use. The head is here held away to facilitate the observer's view, but in practice would be comfortably supported in a natural pose.



FIGS. 4 AND 5.—To make clear the method of selecting site and direction for treatment with subsequent rapid fixation of the radium container.

APRIL 14, 1934]

[THE BRITISH
MEDICAL JOURNAL

OWEN L. RHYS: FRACTURED SPINE RADIOLOGICALLY CONSIDERED:



Examples from a series of 270 cases

E. BRUCE LOW AND H. J. McCURRICH: FULL-TERM ECTOPIC GESTATION

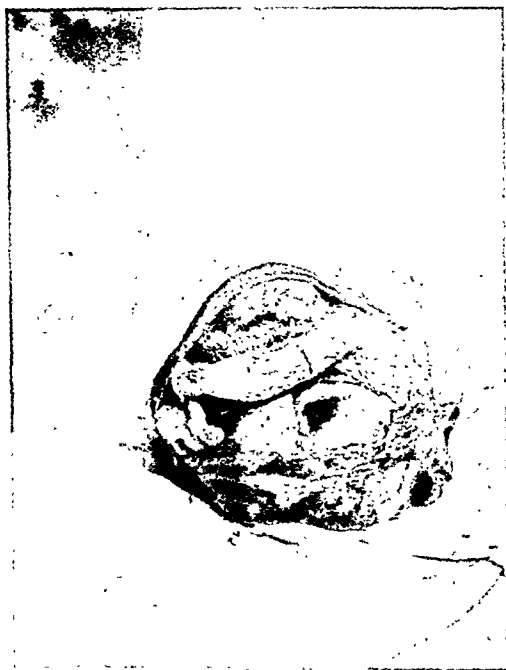


FIG. 1.—Foetus in gestation sac (posterior aspect).



FIG. 2.—Macerated foetus.



FIG. 3.—Gestation sac and placenta.



FIG. 4.—Foetus showing congenital defects.

ALEX. CAMPBELL HILL: EFFECTS OF UTERINE CONDITIONS UPON THE BARIUM MEAL



Fibroid uterus simulating carcinoma of bowel.

L. ROLAND JORDAN: PATHOLOGICAL FRACTURE IN GUMMA OF TIBIA

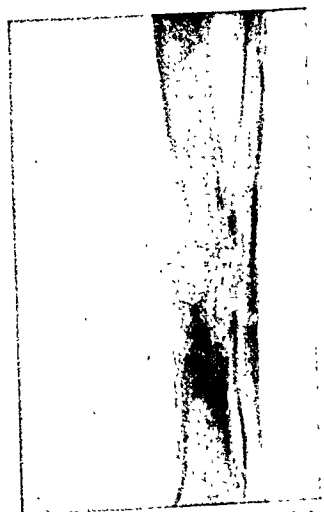


FIG. 1.—Skilgram of left tibia and fibula. Antero-posterior position.



FIG. 2.—Photograph of left leg on admission.

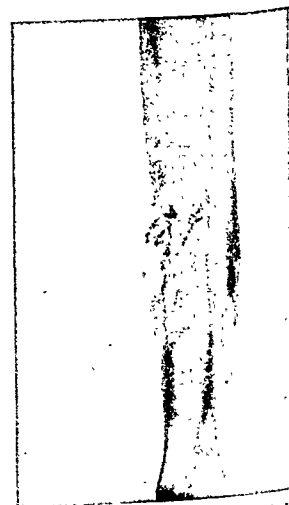


FIG. 3.—Skilgram of left tibia and fibula. Lateral position.

British Medical Journal

SATURDAY, APRIL 14th, 1934

MODERN EXTENSIONS OF BEAUMONT'S WORK

The year that has just passed was the centenary of the publication by Dr. William Beaumont of his classical book, *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*. This described his investigations on his patient with gastric fistula—Alexis St. Martin. Beaumont's studies became known throughout the world, and his methods were applied by Claude Bernard to lower animals and later by Pavlov to dogs. Of succeeding physiologists none in America has advanced our knowledge of the subject so much as Professor W. B. Cannon of Harvard, and in a small work compact with information he has brought up to date the modern extensions of Beaumont's studies.¹ The lectures formed a course in the Beaumont Foundation Lectures, and commemorate the hundredth anniversary of the publication of Beaumont's classical work.

Beaumont's book is essentially practical and descriptive of his actual experiments, but at times he was tempted to express certain theoretical opinions regarding the nature of processes which he could not fully determine by observational methods. Among the opinions were those included in a brief chapter entitled, "Of Hunger and Thirst." In regard to both of these sensations Beaumont took a view which was contrary to the accepted physiological teaching of his day, and, though his own explanations were incomplete, he did approach nearer to the truth than the authorities. Beaumont declared that thirst is a sensation arising from the mouth and fauces, a feeling of dryness due to evaporation of moisture from the surfaces of those regions because the passage of the respired air took up the moisture at a rate faster than it could be supplied. He suggested that the failure of a secretion adequate for keeping the surfaces of the pharynx moist was due to a viscid state of the blood resulting from an inadequate water supply. That thirst has a local source in the mouth and pharynx is shown by the relief obtained from painting the back of the mouth with cocaine; sipping a small amount of water will temporarily relieve, or holding in the mouth a substance which causes a secretion of saliva, like lemon, will lessen thirst. In thirst the salivary glands, whose secretion is about 98 per cent. water, are unfavourably affected by the deficient general water supply. Such a deficiency may occur in people deprived of water, or temporarily when large amounts of fluid are secreted into

the alimentary canal in the form of gastric and pancreatic juice during digestion. Naturally, in our ordinary eating habits we take water with food as we eat. This water is soon absorbed after its passage through the stomach, and serves to compensate for the loss of water from the body in the digestive secretions which are poured out as digestion continues after the meal is over. Instead of there being an increased viscosity of the blood as Beaumont suggested, there is a reduced blood volume and an attendant reduction of the flow of saliva. Beaumont's view of hunger was that it was "produced by a distension of the gastric vessels, or that apparatus, whether vascular or glandular, which secretes the gastric juice." He reasoned that the sensation must have its source in the stomach itself and that it was an expression of local congestion of the mucous membrane, and he cited the fact that application of food to the internal coat of the stomach results in an immediate throwing out of a quantity of fluid which mixes with the food. Careful observation, however, reveals that hunger is intermittent or recurrent in character, and Professor Cannon demonstrated in 1910 that hunger pangs were due to cramp-like tightening of the smooth muscle of the gastric wall. These may occur in the absence of nervous government from the spinal cord and brain, but they are influenced reflexly through the vagi, and may be abolished in strong emotional states. Alcohol and tobacco cause cessation of the hunger contractions, as do vigorous muscular exercise and the old habit of tightening one's belt, at least for a time.

Beaumont noted that in his patient Alexis St. Martin symptoms of general indisposition were associated with considerable disturbance of the processes of the stomach: "no gastric juice can be extracted, not even on the application of alimentary stimulus . . . food taken in this condition of the stomach remains undigested for twenty-four or forty-eight hours, or more, increasing the derangement of the whole alimentary canal, and aggravating the general symptoms of the disease." Not only debilitating disease but also exhausting labour is associated with failure of proper action of the digestive organs. Pavlov's experiments demonstrated the effect of the nervous system on the digestive secretions; not only was there a direct vagal secretory effect on the stomach and pancreas, but a psychic secretion took place when the higher centres of the brain were stimulated by sight or smell of food, and these higher centres then stimulated the vagal nuclei. Cannon showed that attendant on the psychic secretion from the digestive glands there is a psychic increase of muscular tone, both being consequences of vagal excitation. On the vagal and the sacral visceral nerves depend, therefore, important relations of digestion and health. But the digestive process may also be profoundly disturbed through the positive action of the sympathetic division of the autonomic system, a division which is commonly opposed in action to the cranial division and which has, consequently, an inhibitory effect on muscular tone and on the secretions

¹ Some Modern Extensions of Beaumont's Studies on Alexis St. Martin. By W. B. Cannon, M.D. Beaumont Foundation Lectures. Reprinted from the *Journal of the Michigan State Medical Society*, Detroit, March-May, 1933.

of the digestive glands. Beaumont reported the influence of extreme anger upon gastric digestion as observed in Alexis St. Martin. Not only emotion but also pain can affect the digestive process.

Professor Cannon's own work has shown that the inhibition of the digestive process is but a single item in a variegated picture produced by stimulation of the sympathetic nervous system. In addition to the well-known acceleration of the heart and rise of blood pressure, there is a complex of other changes, including redistribution of blood in the body, discharge of extra corpuscles from the spleen, more rapid coagulation of the blood, increase of blood sugar, and dilatation of the bronchioles. All these may be brought about by conditions which excite the sympathetic system; prominent among such conditions are external cold, hypoglycaemia, motion, and emotion. The sympathico-adrenal system is thus a protective agency in times of crisis; but much more an effective factor in maintaining constancy of the internal environment, rendering the higher mammals independent of external changes of temperature and likewise independent of possible disturbances which might be caused by our own actions. This fitness for flight or fight is of great value to the organism. The repercussion of the emotions on digestion suggests some practical advice. Since the total complex of bodily changes associated with emotional excitement is properly interpreted as preparation for struggle, we should try to take a rational attitude towards any exciting incident which may occur. We should decide that if there is action to be engaged in, the excitement should be allowed to run its full course without limitation. If there is nothing to be done in the circumstances, however, it is unwise to permit the organism to be deeply disturbed, and especially the fundamentally important functions of digestion to be inhibited. When an occasion arises which provokes a degree of excitement that cannot be controlled the reasonable behaviour is that of working off in hard physical labour the bodily changes which have occurred in preparation for vigorous effort. We should dig till we gently perspire. Often the excited state can thus be reduced and the body, instead of being upset, is restored to normal.

SILICOSIS

There have been important developments in the past few years in the study of lung disease due to the inhalation of dust. One of their effects has been to make the term "pneumoconiosis" appear almost redundant, since it is now clear that all harmful dusts contain the element silicon in some form, and when fibrosis of the lung follows the long-continued inhalation of dust the condition is, in fact, a silicosis. The hypothesis of mechanical irritation by hard particles of mineral dust has been exploded: the damage to tissue resulting in fibrosis and predisposing markedly to tuberculosis and other infection is known to be due

to the slow solution of silica (silicon dioxide) or other silicon compounds in the tissues. By what precise mechanism the presence of silica favours the progress of tuberculosis is unknown; the evidence that the mineral itself directly stimulates the growth of tubercle bacilli is unconvincing, and it appears more probable that the primary effect is on the tissues, impairing their resistance to infection. It is universally recognized that a large proportion of cases of frank silicosis succumb to tuberculosis; this is indeed implied in the term "miners' phthisis," but there is an uncomfortable suspicion that lesser degrees of exposure to dangerous dusts, insufficient to produce nodular fibrosis in the lung, or indeed any unequivocal signs of silicosis, may predispose to pulmonary tuberculosis. Lanza and Vane¹ furnish statistics which show that the mortality from tuberculosis in a variety of dusty trades is considerably greater than that of the general male population, and that in the male population as a whole, at least in so far as this is represented by a group of industrial policy-holders, the tuberculosis mortality rises steadily to a maximum in middle age, whereas among females it falls to a minimum at this period. These authors compute the number of workers in the United States exposed to a silica dust hazard at over half a million, a figure which may be a salutary shock to those for whom silicosis means only a disease acquired in gold mines and other geographically remote industries. It brings the subject nearer home when we remember that any quarryman or sand-blaster may be exposed to the danger.

Two recent publications threaten seriously to disturb the foundations of our present knowledge of the silicotic process. One is that of Dr. W. R. Jones,² who has revived and confirmed an observation first made by Watkins-Pitchford and Moir in 1916—namely, that the mineral residue obtainable from the silicotic lungs of gold miners includes a large proportion of sericite, or "secondary white mica." This substance, which is present in certain rocks in the form of numerous minute fibres, is a hydrated silicate of aluminium and potassium, and its fibrous structure, totally distinct from that of quartz (silicon dioxide), which has hitherto been regarded as the active element in dangerous dusts, is closely comparable to that of the silicate particles responsible for asbestosis. Jones's evidence that sericite produces silicosis derives not only from its demonstration in the mineral residue of twenty-nine silicotic lungs, but from its distribution in accordance with the frequency of silicosis: thus, in the rock in the Broken Hill Mines, New South Wales, where silicosis is frequent, there is little quartz but much sericite; in the Kolar goldfields, India, where the rock contains a large amount of quartz and sericite is absent, silicosis has hitherto inexplicably been unknown. These propositions have aroused a sharp controversy, and much remains to be done before the specific action of individual mineral constituents can be fully ascertained.

¹ *Amer. Rev. Tuberculosis*, 1934, xxix, 8.
² *Journ. Hyg.*, 1933, xxxiii, 307.

There are more fundamental and revolutionary implications in the experimental results now published by Professor E. H. Kettle.³ It is of interest in the first place that the mineral he used was kaolin, a substance which has not hitherto been classified among the dangerous dusts; chemically it is a silicate of aluminium, and the specimen employed contained numerous sericite fibres. The intratracheal injection of a suspension of this substance, a proceeding which forms a satisfactory and convenient equivalent to prolonged exposure in a dusting chamber, was not found 500 days later to have resulted in the production of nodular fibrosis, the characteristic feature of established silicosis. But when killed tubercle bacilli were added to the kaolin suspension, typical nodules of whorled fibrosis, each with a clump of tubercle bacilli at its centre, were found to have been formed in the short space of 112 days, a result quite unprecedented in any previous experiments with animals, in which it is notoriously difficult, even with long periods of exposure to dust, to induce the formation of true silicotic nodules. What these experiments appear to mean is that infection is an indispensable, or at least probably an almost invariable, factor in the formation of the silicotic nodule: "pure" silicosis, if it exists at all, must be rare, and the disease is properly to be regarded as the product of contemporaneous chemical and infective action. To speak of silicotic "predisposition" to tuberculosis and other infections is probably incorrect, and the distinction drawn in South Africa between "silico-tuberculosis" and "tuberculo-silicosis" may well be without real foundation. The importance of the infective factor is stressed also, though on more trivial immediate grounds, by Policard and Marion,⁴ the subject of whose paper is the lungs of two inhabitants of the Sahara Desert, which, although containing siliceous dust, exhibited no fibrosis, in their view because the infective factor was absent.

Among numerous other recent publications on this subject two more call for mention. Although it is doubtful whether anything justifying the term "acute silicosis" has previously been described, the cases observed by Gardner⁵ appear to merit it. These were fifteen workers who are said to have acquired silicosis after periods of exposure to dust under truly appalling conditions in the boring of a totally unventilated tunnel, and elsewhere, in periods as short as from eight to seventeen months. The lungs contained numerous very minute fibrous nodules, and the existence of coincident tuberculous infection was demonstrable in almost every case. A contribution by Riddell⁶ is notable for his emphatic pronouncement that silicotic tuberculosis is infectious. It has so often been said, particularly in this country, that miners' phthisis is not communicated to other members of the miner's family that Riddell's evidence to the contrary demands serious consideration.

FOOD POISONING

Two American writers, in a report¹ on outbreaks of illness in San Francisco, have expressed the view that the name "food poisoning" should be limited in its definition so as to describe that clinical syndrome resulting directly or indirectly from the ingestion of food contaminated with certain bacteria, and would thus exclude a number of disease conditions which are at present, with the consent of most, included under the title. It is necessary, of course, that there should be names for things. Indeed, *nomina si desunt perit et cognitio rerum*, and in cases in which no name exists it is often a clear advantage to find one. But where a name is already found and approved for use in a particular sense a proposal to alter its application should not, we think, be too hastily acquiesced in. Food, according to the Food and Drugs (Adulteration) Act, includes every article employed for food or drink by man, other than drugs or water, and "food poisoning," as the term is customarily employed, means poisoning by means of food. Such poisoning occurs in the most obvious way when the native food-stuff is itself poisonous or contains a poison. A formidable instance is the mushroom *Amanita phalloides*, which, when ingested, causes fatty degeneration of the viscera and induces symptoms which tend to death in the course of about a week. The leaves of the rhubarb plant, too, owing to the oxalic acid which they contain, are poisonous and have led to fatalities. The young shoots of the potato likewise are dangerous to the unwary, and some species of fish in Japan and the West Indies give rise to pangs at certain seasons. Even honey in the comb may prove a snare, as at Trebizond in 400 B.C., when Xenophon's soldiers, having plundered the local bee-hives, were all found lying about in various stages of illness, and the camp "looked like a battlefield." The description "food poisoning" fits in very well with such occurrences as these. Again, deleterious foreign substances may become artificially incorporated with food, through misadventure or ignorance, in the course of manufacture or preparation. In Lancashire there was a widespread outbreak of poisoning from beer, owing to the presence in it of arsenic as an impurity of the sulphuric acid employed to convert the original starch in the grain to sugar. Another example occurred at Stoke in 1930, when a number of children consumed sweets which had been inadvertently dusted with arsenious oxide. Happily, there was no fatal issue, though the children were sharply sick. In the same year the United States experienced the so-called "ginger paralysis," caused by the introduction of tricresyl phosphate as a flavouring agent into the fluid extract of ginger, at that period, owing to the restrictions on alcohol, a popular beverage. All the above were cases of poisoning by means of food, and so belong, by definition, to the category of food poisonings. Turning now to the forms of illness to which it is proposed that the name "food poisoning" should be restricted, we may note that the symptoms are generally gastro-intestinal in character, and that the infective agent belongs for the most part to the Salmonella group of bacilli. All members of the group, however, are not concerned, and other bacteria are implicated.

³ *Journ. Path. and Bact.*, 1934, xxviii, 201.

⁴ *Bull. de l'Acad. de Méd.*, 1934, cvi, 198.

⁵ *Amer. Journ. Pub. Health*, 1933, xxiii, 1240.

⁶ *Amer. Rev. Tuberculosis*, 1934, xxix, 36.

¹ C. Eger, J. C., and Gray, J. P.: *Journ. Amer. Med. Assoc.*, 1933, ci, 973.

Staphylococci have been incriminated in the United States. The source of the infection in the food may be a rodent or a sick meat animal, and milk has been known to convey *B. aertrycke* and *B. enteritidis* from the cow to man just as it carries *B. tuberculosis* and the *Brucella* of undulant fever. The process, therefore, is of an infective character, implying bacterial invasion of the tissues, though from this generalization botulism would require to be excluded and also certain cases due to the *Salmonella* group. Under the existing nomenclature the name "food poisoning," in its original sense most aptly applied to such attacks as those produced by *Amanita* and arsenic, has been enlarged, not inaptly, to include cases of the infective group under the title "bacterial food poisoning." The terminology, if not ideal, is at least convenient and sanctioned by usage. If, however, any rearrangement is thought necessary there would be no good case for withdrawing the description "food poisoning" from its original and obvious uses: rather, the infective cases should be excluded and a new name found for them. Not, indeed, that this is suggested. We are averse to removing a landmark without good cause. What is perhaps more important is that the term "ptomaine poisoning" should cease to be applied to cases of illness ascribed to food. Ptomaines are not poisonous when taken by the mouth, and in any event only make their appearance in foods so transformed by putrefaction as to warn off any intending consumer.

SCHOOLS TO-DAY

The National Union of Teachers has accomplished an effective presentation of history and a fine piece of propaganda in its new publication, *The Schools at Work*.¹ It is mainly a pictorial record or survey of what is now being done in schools which are maintained or aided by public funds. The illustrations are abundant and varied in character, well chosen, and excellent in themselves. They depict the activities of all classes of such schools—elementary, secondary, technical, central and special, urban and rural—and, in addition, show some characteristic features of what ought to be regarded as parts of the health, rather than of the education, services—nursery schools, and medical inspection and treatment of school children. There is useful letterpress among the many pictures, and short articles by three who have held the office of President of the Board of Education (Lord Halifax, Mr. H. A. L. Fisher, and Lord Eustace Percy), by Sir Henry Richards, late Senior Chief Inspector of the Board, by Dr. Cyril Norwood, and by Sir Frederick Menzies. Nothing could better exemplify the wisdom of the method chosen by the compilers of this publication and the efficiency with which it has been carried through than the contrast between the relatively commonplace content of these articles (though Lord Eustace Percy's thought on technical schools is worth developing), and the vivid and stimulating impression produced by the fifty pages devoted to the pictorial record. This striking effect is heightened by the inclusion of some views of schools or classes as they were fifty, forty, or thirty years ago. It is not without considerable emotion that the worker in the educational field in

the early years of the present century, like the writer of this note, in looking at these pictures will recall the struggle to get a piano, a sewing-machine, or a lath introduced into the elementary school, and the opposition these things encountered, even in some of the most progressive of education authorities. It must surely be a matter for general rejoicing to be enabled to realize so keenly the contrast between the interest taken by the public in the children of to-day and the varied and personal care devoted to them, and the hostility or grudging acquiescence which formerly characterized a large section of public opinion. There could scarcely be a better corrective than this publication to the lack of intimate knowledge and the sometimes ill-founded criticism of our educational system still too common among some members of the professional and upper classes of the community.

DINITROPHENOL

In an annotation on dinitrophenol for reducing weight, in the *Journal* of March 24th (p. 539), mention was made of the recent death of a young professional dancer from poisoning by an overdose of a nitrophenol compound. This matter was raised at the last meeting of the council of the Pharmaceutical Society, held on April 4th. It was reported that a letter had been received from the Home Office indicating that the Home Secretary would like to know whether the council, pending enforcement of the Pharmacy and Poisons Act of 1933, was prepared to initiate the steps necessary to add to Part I of the existing Poisons Schedule such nitrophenols and preparations containing them as were, in its opinion, likely to be retailed to the public. The council had before it also a memorandum from Professor E. C. Dodds on the therapeutic action and toxicity of these drugs. The council adopted a formal resolution, and directed it to be sent to the Privy Council for consideration and approval, declaring that the Schedule to the Poisons and Pharmacy Act, 1908, ought to be amended by the addition to Part I of the following words: "dinitrophenols, dinitrocresols, preparations or admixtures containing dinitrophenols, preparations or admixtures containing dinitrocresols."

ROYAL STATISTICAL SOCIETY CENTENARY

Next week the Royal Statistical Society celebrates its centenary. The Prince of Wales, honorary president, will take the chair at the centenary meeting on Tuesday, April 17th, and in the evening a distinguished company of guests from all parts of the world will be present at the centenary banquet. Statistics and statistical methods are of importance in so many fields of life that the society's presidents and officers have included men eminent in many subjects. Statesmen and civil servants have predominated, but members of our profession have been by no means backward. The following medical men have occupied the presidential chair: William Farr (1871-3); William Augustus Guy (1873-5), an enthusiastic statistician and generous benefactor of the society; T. Graham Balfour (1888-90); Frederic J. Mowat (1890-2). Of the present council of the society, three—Professor Major Greenwood (honorary secretary and vice-president), Sir William Hamer, and Sir Arthur Newsholme—are members of the profession.

¹ Published by Messrs. Evans Brothers, Ltd., Montague House, Russell Square, W.C.1. (2s.; 2s. 6d. post free.)

A TUBERCULOSIS SETTLEMENT

Dr. J. B. McDougall, medical director of the British Legion Village at Preston Hall, near Maidstone, has drawn up a report on the work there during the year ending September 30th, 1933, which is of exceptional interest and value in connexion with the administrative and preventive sides of the campaign against tuberculosis. The British Legion took charge of this institution in 1925, and the report gives a summary of the progress made since then, with special reference to the practical working out of the modern conception that successful treatment of tuberculosis implies adoption by the patients of a health-preserving mode of life. It has been estimated that of 100 tuberculous patients fifteen remain medical problems, needing for the remainder of their days some appreciable degree of rest; about fifty return to their previous employment or some modified branch of it; and about thirty-five middle-stage cases remain medical and economic national responsibilities, a completely new mode of life being necessary for them if the beneficial results of their initial treatment are to be conserved. Sanatorium treatment gives too often very disappointing results owing to lack of adequate after-care, and the claim is made for the village settlement scheme that it forms the only satisfactory method of prolonging life, preventing relapses, promoting complete arrest of the tuberculous process, detecting deviations from the normal in each individual patient, supervising the family life, providing occupation on a wage basis, and assuring the economic position of the patient and his children. Dr. McDougall brings forward a great deal of evidence in support of this contention. Preston Hall is conducted generally on the lines found so successful at Papworth. The records of the last five years show that at any given time there are approximately one-third advanced cases, one-third chronic ambulatory cases, and one-third first and second stage cases undergoing treatment. Preston Hall is limited to ex-Service men and their dependants, but the demand for beds exceeds the supply, especially during the summer months. It is now recognized that a large proportion of the patients need a residential period in the Settlement of at least five years. After such a period experience shows that the settlers should be able to take their places once again in the normal life of the community. The concurrent medical supervision of the families has resulted at Preston Hall in the appearance of a juvenile population of 285 without a single case of tuberculous infection. The Settlement comprises the sanatorium, accommodating 280, for the treatment of all cases admitted; workshops in which patients and settlers can find congenial employment suited to their physical resources; and the estate, accommodating unmarried patients in hostels and the married in houses. Occupational therapy, graduated for individual requirements, leads the patient from the sanatorium to the village settlement proper, and thence back to the outside world again. Dr. McDougall believes that it is better as a general rule to have several different industrial departments, each with a turnover of £5,000 to £10,000 annually, than to have one large department with a staple industry. The industries at Preston Hall include the manufacture of portable buildings, printing, the supply of suit cases,

attaché cases, and other articles in fibre or leather for the travelling public, graining wood and marble, the running of the village stores, soap stamping, and various kinds of work associated with the management of the estate, accountancy, and gardening. In September last there were 168 patients employed in the Settlement, of whom 140 were married. Every tenant pays rent, the minimum being 3s. 9d. a week and the maximum 16s. 3d., these rents including the local rates. The report includes suggestions for the expansion of village settlement work in Great Britain, and a recognition of the difficulties that have to be faced. Dr. McDougall considers that local authorities are at a distinct disadvantage in embarking upon settlement work. Few of the industrial ventures pay their way at the beginning, and capital has to be sunk.

COMMITTEE FOR RESEARCH IN MENTAL DISORDERS

The Medical Research Council, in consultation with the Board of Control, has appointed a new committee to advise and assist it in the promotion of research into mental disorders. The reconstituted committee will include representatives not only of psychiatry, medical psychology, and the study of mental deficiency, but also of neurology, physiology, biochemistry, pathology, and genetics.

The chairman of the committee will be Professor E. D. Adrian, M.D., F.R.C.P., F.R.S., a member of the Medical Research Council, and the following will also serve: Sir C. Hubert Bond, K.B.E., D.Sc., M.D., F.R.C.P., Board of Control; Bernard Hart, M.D., F.R.C.P., University College Hospital, London; Professor D. K. Henderson, M.D., Royal Edinburgh Hospital for Mental and Nervous Disorders; T. A. Ross, M.D., F.R.C.P., Cassel Hospital, Penshurst; E. O. Lewis, D.Sc., M.R.C.S., Board of Control; C. P. Symonds, M.D., F.R.C.P., Guy's Hospital, London; J. H. Quastel, D.Sc., Cardiff City Mental Hospital; J. G. Greenfield, M.D., F.R.C.P., National Hospital for Nervous Diseases, London; F. L. Golla, M.B., F.R.C.P., Maudsley Hospital, London; and L. S. Penrose, M.D., Royal Eastern Counties' Institution, Colchester. Sir David Munro, K.C.B., M.B., of the Council's staff, will act as secretary of the committee.

THE LATE PROFESSOR A. B. MACALLUM

News has been received of the death of Dr. Archibald Byron Macallum, F.R.S., the eminent Canadian physiologist, who retired from the chair of biochemistry at McGill University, Montreal, in 1929, and was then appointed emeritus professor. He had formerly been professor of physiology and physiological chemistry in the University of Toronto, president of the Royal Society of Canada, and administrative chairman of the Canadian Advisory Council for Scientific and Industrial Research at Ottawa. Professor Macallum was vice-president of the Section of Anatomy and Physiology when the British Medical Association met at Montreal in 1897, and of the Section of Physiology at the Toronto Meeting in 1906.

Sir Henry Dale, M.D., F.R.S., will deliver the Linacre Lecture in the department of physiology of the University of Cambridge on Saturday, May 5th, at 5 p.m. His subject is "Chemical Transmission of the Effects of Nerve Impulses."

Nova et Vetera

THOMAS SHORT, M.D.: AN EIGHTEENTH CENTURY PRACTITIONER IN SHEFFIELD

Thomas Short was a Scotsman who commenced to practise in Sheffield about 1728. He had become acquainted with Sir Hans Sloane before that date, and from the correspondence preserved in the Sloane collection it appears that he wrote to Sloane in reference to some of his wealthier patients. Possibly Sloane's influence was helpful to him, and he certainly obtained a very good practice. A curious testimonial to his success as a physician is given in the *Gentleman's Magazine*:

"The first Marchioness of Rockingham in a mischievous conversation at table, happening to say 'that she would trust her life in the hands of Dr. Short in preference to any one of the faculty,' Mr. Staniland, a clergyman from Worsboro', bluntly replied, 'I do not like him at all.' 'Why so?' 'Because,' answered Staniland, 'had it not been for the doctor I should have been rid of my wife several years ago.'"

All the local historians in describing Short agree in calling him eccentric; they mention not only that he retained his Scottish accent, but also, what is much more unusual, they allege that he stuck to the diet of his native land, and he is even credited with giving porridge parties to his friends. Another piece of information regarding him is that he always slept over a coal-house to preserve his lungs.

Short's chief activity apart from his practice was the production of a large number of books on medical and allied subjects. Unfortunately his writings are more numerous than valuable, and this judgement was passed as near his own time as 1807. He published five or six books on mineral waters; two books on epidemiology; various discourses on tea, milk, and wines; on medicinal plants; and his last work, *The Increase and Decrease of Mankind*, appears to be an incursion into vital statistics.

Two of the books on mineral waters (1734 and 1740) were intended to form a complete survey of the spas of England. In collecting the material for these books Short visited as many places as he could, taking with him various instruments and bringing away samples of the waters for examination at home. The demands of his practice, however, forced him to ask the help of friends in obtaining specimens. Richardson, a botanist of Bradford, was one to whom he appealed, and in writing to give instructions as to the transport of the samples, Short adds, "we have such a crowd of new physicians coming or come to this country that I dare not at present take my pleasure rides." He devotes many pages to the experiments he performed with these samples. Apparently the kitchen was his laboratory, and he surrounded the fireplace with cups or saucers full of mixtures of mineral waters with all sorts of things, including blood, serum, and bile. The results in some cases are measured by the sense of smell alone, and vary from "began fetid" to "past enduring in the house." Perhaps these accounted for his choice of a sleeping place. In later works he writes largely of a water from Holt Neville in Leicestershire. This he rented from the landlord, and he sent some of his patients from Sheffield there. Stukeley records that some of this water was sent to the Royal Society in 1748.

In finding the positions of springs Short made use of several books of reference, such as *Magna Britannia* and the "histories" of several counties. On two occasions he mentions inaccuracies in these sources of information. Speaking of Tibshelf he says it has a reputed purgative mineral water.

"but how the authors of the *Magna Britannia* have removed it to Stanley is hard to tell. For I could only meet with a large horse pond of common water; nor did the inhabitants ever hear of a spaw there, before the kind gentlemen presented them with an invisible one."

After describing some springs in Staffordshire he goes on:

"From Dr. Plat's long detail of sulphur waters in his history of Staffordshire, we expected to find a great many

others in this country. But to our great surprise they were all gone when we went carefully to each place in question, so that we must conclude, either that they were never there or the sulphur was all exhaled with the fume of his wine, or he buried them where the duck laid several eggs in a day or at Newport ominous bridge. The like dance, with near the same success, he led us in Oxfordshire. No Englishman ever had a capacity more equal to the work he undertook, and none could discharge it with less regard to the truth and their own reputation."

It is an extraordinary fact that the only writer of modern times who has tried to make use of Short's works makes similar complaints. The remarks of Dr. Charles Creighton on the two books on epidemiology are worth quoting for that reason.

"A General Chronological History of the Air, Weather, Seasons is the only book of the kind in English previous to my own. It is everywhere uncritical and credulous, and often grossly inaccurate in dates. His other work *New Observations on City, Town and County Bills of Mortality* shows the author to much greater advantage."

Speaking of the second book, Creighton says:

"Dr. Thomas Short, a man of great industry, about the middle of last century obtained access to a large number of parish registers, and worked an infinite number of arithmetical exercises upon their figures. His abstract results or conclusions are colourless and unimpressive, as statistical results are apt to be for the average concrete mind; nor can they be made to illustrate the epidemic history of England with the help of his companion volumes, *A General Chronological History*, for these extraordinary annals are for the most part loosely compiled from foreign sources, bringing into one focus that most scattered reference to disease in any part of Europe, and that too without criticism of authorities, but often with surprising credulity and inaccuracy. That so much statistical or arithmetical zeal and exhaustiveness (in the work of 1750) should go with so fatal a deficiency of the critical and historical sense (in the work of 1749) is noteworthy and perhaps not unparalleled in modern times."

Dr. Creighton made a close study of these volumes, but on each occasion when quoting them refers to "the laborious Dr. Short" or "Short, a professed epidemicologist." Short is supposed to have spent eighteen years on these two books.

Short and Dr. John Rutty of Dublin appear to have worked along similar lines. They both made observations on the weather; they took an interest in epidemic diseases, and frequently corresponded on the subject. Both made experiments to find a solvent for the stone, but these investigations no doubt were stimulated by the large reward paid by Parliament to Mrs. Joanna Stephens. Rutty's work on the *Mineral Waters of Ireland* is dedicated to Short, among others. None of Short's books gives any details of individual cases. "A loathsome miserable carrion" is as far as he gets in his books on water. He did, however, publish three cases in the *Edinburgh Medical Essays*, but the descriptions he gives are very poor. We cannot, therefore, obtain any idea of his attainments in clinical medicine.

In his later years the competition of other practitioners increased, and in 1762 he retired to Rotherham, a circumstance which has led to some confusion as to his real domicile. He died in 1772 in his eightieth year, we are told, in rather poor circumstances.

CHARLES L. SUTHERLAND.

Mohammed Shalin Pacha (*Bull. Off. Internat. d'Hyg. Publique*, January, 1934) states that typhus has been endemic in Egypt since 1911, reaching its height in 1916, when there were 30,507 cases. After the war there was a decline in its incidence until 1931, when only 265 cases were notified. In 1932, however, owing to the financial crisis with subsequent malnutrition of the poorer classes, lack of hygiene, and individual cleanliness, the disease assumed epidemic form, there being 2,298 cases in 1932, with a fatality rate of 17 per cent., and 6,621 cases from January 1st to July 24th, 1933, with a fatality rate of 12 per cent. The general condition was better, and severe nervous symptoms and the appearance of an eruption were rare, so that the infection resembled Brill's disease. Prophylaxis consisted in isolation, de-lousing of the patients, and disinfection of the clothes by steam.

SOCIETY FOR THE STUDY OF INEBRIETY

JUBILEE CELEBRATION

The Society for the Study of Inebriety celebrated its jubilee on April 10th, when Sir Humphry Rolleston, the president, delivered a commemorative oration on the aims and work of the society. The oration was preceded by a luncheon, at which Sir Hilton Young, Minister of Health, was the principal guest. Owing to parliamentary exigencies, however, the Minister had to leave without making a speech.

Sir Humphry Rolleston gracefully alluded to the principal guests present: the Bishop of Norwich, Lord D'Abernon, Sir Thomas Barlow ("the doyen of the profession and of our affections"), Sir Josiah Stamp, Sir William Willcox, Sir Holburt Waring, P.R.C.S., Mr. Warren Low, President of the Royal Society of Medicine, the Master of St. John's College, Cambridge, and two of the daughters of the founder of the society (Dr. Norman Kerr). He coupled the toast of "The Society" with the name of Dr. Harry Campbell.

Dr. Harry Campbell, in a brief reply, said that it might be asked, after fifty years, whether the question of addiction had not been completely thrashed out, but the fact was that new problems of addiction were constantly arising. One of the most recent forms was addiction to drugs for the purpose of slimming the figure—a habit which had led to quite serious illness, and even to suicide. One of the most remarkable forms of addiction of which he had had experience was to methylated spirit; in the old days it was reported that the anatomical attendant at his hospital was in the habit of drinking the methylated spirit which should have been used for the preservation of specimens. As for the treatment of drug addiction, it could not be said that much advance had been made. No medicament had been discovered as sure in its action in addiction as insulin in diabetes. In fact, addiction was altogether too severe a malady to be cured by mere drugs. What must be done was to endeavour to overcome the craving, and build up the patient in health and sanity. He added that as the years had passed he had become more and more convinced of the good which the society was doing, and he ended with a tribute to Dr. T. N. Kelynack, its honorary secretary for thirty-two years.

The Society in Retrospect

After the luncheon party the annual general meeting took place in the rooms of the Medical Society of London, when Sir Humphry Rolleston delivered from the chair a commemorative oration on the aims and work of the society during its fifty years' existence. He said that in the organization of the society, which started with a membership of 165, the guiding spirit was Norman Kerr, and the present year was not only the jubilee year of the society, but the centenary of its founder's birth. Norman Kerr was a Glaswegian who was at first a journalist, and afterwards entered the medical profession, graduating M.D., C.M. at Glasgow in 1861. During the whole of his career he carried on a vigorous campaign for total abstinence, at a time when the subject was looked upon as freakish, when real sacrifice was demanded of its apostles, and when the medical profession regarded alcohol with an indulgent eye. Norman Kerr was an energetic officer of the United Kingdom Alliance, an active member of the Church of England Temperance Society, and honorary secretary for more than ten years of the Homes for Inebriates Association, the body responsible for the Rickmansworth Home, which was the first institution of the kind in this country, and, Sir Humphry Rolleston added, had thoroughly justified the foresight of its founders. Norman Kerr was also chairman of the British Medical Association committee on legislation concerning inebriates, which reported in 1891.

But the foundation of the Society for the Study of Inebriety and his presidency of it for fifteen years, until his death in 1899, was Norman Kerr's outstanding achievement. At the inaugural meeting he himself clearly

defined inebriety as "a diseased state of the brain and nerve centres, characterized by an irresistible impulse to indulge in intoxicating liquors or other narcotics, for the relief these afford, at any peril." He regarded inebriety as essentially a disease allied to insanity, and insisted that it should be treated medically, and not as if it were a crime. His whole-hearted devotion to these principles was largely responsible for the amendment of the Habitual Drunkards Act of 1888 and the Inebriates Act of ten years later. He forged many links with American and Continental authorities on the subject, and in the year of Queen Victoria's jubilee he organized a colonial and international congress on inebriety, which ended with a banquet with non-intoxicating wines and twenty-five speeches!

Turning from the founder to the society itself, Sir Humphry Rolleston mentioned other presidents: among those who have passed away, William Wynn Westcott, Mary Scharlieb, T. Claye Shaw, T. B. Hyslop, and Sir Alfred Pearce Gould; and among those who remain, Dr. Harry Campbell, Lady Barrett, Mr. McAdam Eccles, Mr. C. J. Bond, Sir William Collins, Sir William Willcox, and Sir Arthur Newsholme. Still on the personal side, the orator mentioned how fortunate the society had been in having had the services, since 1902, of Dr. T. N. Kelynack as honorary secretary. During its half-century of activity the society, which was controlled by its medical members, well supported by their lay associates, had aimed at a scientific study of alcoholism and drug addiction. It had no declared policy of total abstinence, though some of its individual members might have strong convictions on the subject. The great change in the general attitude towards temperance which had marked the last fifty years, as also the change in professional opinion with regard to the therapeutic use of alcohol, owed not a little to the work of the society and to the influence of some of those just named, as well as of other noteworthy supporters, such as Sir Benjamin Ward Richardson, Sir Victor Horsley, Sir G. Sims Woodhead, and Sir Thomas Barlow. From its start the society brought out records of its meetings in pamphlet form, and in 1903 the *British Journal of Inebriety* was begun, since when it had been published quarterly.

Sir Humphry Rolleston then passed in brief review some of the subjects of the discussions. At the first ordinary meeting the aetiology of inebriety was introduced by that famous naturalist W. B. Carpenter. An early paper of interest was on ether drinking in Ireland, by Ernest Hart, then Editor of the *British Medical Journal*. The interlocked influences of heredity and alcohol had been discussed, and after a paper on that subject in 1899 a committee was appointed to investigate the conditions under which the tendency to inebriety was capable of transmission to offspring; the result was a great difference of opinion, only nine members out of fourteen signing the report, and five of those nine appending some reservation. The problems of alcohol, eugenics and race degeneration, female inebriety, and the relation between alcohol and prostitution had all provided matter for valuable papers. The bearing of the subject on disorders of the nervous system and on venereal disease had been studied; the treatment of alcoholism had been many times explored; and the thorny subject of the use of alcohol in medicine had not been shirked. Medico-legal aspects had been given their proper importance, and the still burning question of alcoholic indulgence in relation to motoring was the subject of a paper in 1925. Much useful information could also be gleaned from the society's transactions on the subject of drug addictions other than alcohol. Finally, tobacco made an early appearance in the discussions in 1885, in an address by Lennox Browne on the influence of alcohol and tobacco on the voice. The late Professor W. E. Dixon, in his Norman Kerr Memorial Lecture in 1927, deprecated the view that tobacco was a serious form of addiction, and gave a list of drugs in which heroin took the first place in seriousness, followed in order of importance by cocaine, morphine, Indian hemp, opium, alcohol, and tobacco; but a severe indictment of the cigarette habit was made by Dr. J. D. Rolleston before the society

last year. A healthy freedom of opinion has always characterized the society's proceedings.

A vote of thanks was accorded to Sir Humphry Rolleston on the motion of Sir Thomas Barlow, and the remainder of the proceedings was the formal business of an annual meeting.

FUTURE OF NURSING HOMES AND HOSPITAL PRIVATE WARDS

At a meeting of the West London Medico-Chirurgical Society on April 6th, with Mr. H. TYRRELL GRAY in the chair, a discussion took place on the future of nursing homes and private wards in hospitals.

Mr. B. SANGSTER SIMMONDS spoke of the revolution which had taken place since the beginning of the century in provision for sickness. At one time it was customary to be born at home, to pass through any infectious fever at home, to have even a major operation performed at home, and, finally, to die there. Now even minor ailments were treated in institutions, and it was rare for operations to be undertaken in a private house. Nursing homes thirty years ago were converted private dwellings, and for accommodation heavy fees were charged. To-day much attention was paid to construction and special equipment. The recently built London Clinic and Nursing Home, in Devonshire Place, had 200 beds, and it was contemplated to build another in the West End with 600 beds. Along with this had come the "pay-beds" in hospitals, so that the smaller and inferior nursing homes were beginning to feel the pinch. But the problem of accommodating middle-class patients was increased rather than diminished. The rich were able to command luxury homes and the poor had the public provision, but the difficulty was to find accommodation for people of moderate means. Was it possible for private enterprise to provide an adequate amount of nursing home accommodation on a remunerative basis with a scale of charges in the neighbourhood of seven guineas a week inclusive of everything except medical and surgical fees? A scheme had recently been suggested for providing 600 beds at seven guineas a week per bed, but this was only possible if the relatively low charge attracted a certain number of the more chronic and lighter cases, requiring little in the way of nursing and expensive dressings and drugs; or people who would go into a nursing home for a period of observation or special diet or rest. Nursing alone cost an average of £2 per week per bed. The economic unit for the nursing home had still to be decided. One of 50 beds was too small, one of 600 beds was probably too large. When the economic size had been found by experiment it was possible that a charge of seven guineas a week would produce a remunerative result in Central London, and in outlying districts the charge might be even less. To raise the necessary capital to build nursing homes of such a standard and size would be difficult; perhaps it would be more feasible to have a central institution in the West End, with subsidiary institutions in the suburbs, or even in the provinces. Now that so much of the treatment of the sick poor had been taken over by the authorities there was no doubt that the voluntary hospitals could provide accommodation equal to that of the best nursing homes on a profitable basis at about seven guineas a week, but there was the great objection that the voluntary hospitals would never receive the support of the whole medical profession so long as they managed their beds on the present system whereby the patient was removed from his regular doctor and placed under the care of a member of the staff. Could hospitals build nursing homes out of funds subscribed for that purpose, and allow general practitioners (or consultants) to send in their patients under their own care, such cases to have the laboratory and other assistance of the hospital (which would, of course, be paid for), and the consultants and specialists attached to the hospital to be available? If this plan were adopted the varying needs of London might be met by the establishment of

one or more large institutions in the West End and the extension of pay-beds in connexion with London hospitals.

Dr. E. A. GREGG said that the average general practitioner was in a position of complete bewilderment. His activities were being steadily circumscribed, and not the least of the "encroachments" were the activities of the hospital. Any movement for an extension of such activities, therefore, must be suspect. It was not to the advantage of the community to diminish the field of the general practitioner. In the nursing home the practitioner could follow his patient and remain the doctor in charge, the consultant coming in in the capacity of consultant only. But in hospital paying wards the practitioner was not as a rule welcome. One great obstacle which the medical profession had to overcome was the engrained idea that people were entitled to their "doctoring" without charge. They were ready to pay for articles of luxury, for motor cars and wireless, but their medical care in sickness must be obtained at a cheap rate or for nothing at all.

Mr. W. McADAM ECCLES said that there were about 1,300 pay-beds in connexion with the 140 voluntary hospitals in the area of King Edward's Hospital Fund for London. The number was totally inadequate for the persons of the intermediate class, the class between the poor, for whom there was public provision, and the well-to-do, who could afford the best nursing home accommodation. The number should be multiplied at least by three. The disadvantage of voluntary hospital provision for these cases was that, when the hospital had a closed staff, the general practitioner could not follow his patient into the paying ward. One of the fundamental principles in the British Medical Association's proposal for a general medical service for the nation was that "Every effort should be made to provide medical and nursing service facilities in institutions (home hospitals) where the family doctor may treat those of his own patients who need such provision and who could thus remain under his care." At the same time, it would be regrettable if paying wards attached to voluntary hospital disappeared, for they served a useful purpose, and, so far as the smaller hospitals were concerned, it was not quite true that the general practitioner had no opportunity of coming in and, partially at any rate, treating his patient. But there was a need outside the centre of London for institutions which the practitioner could look upon as the "home hospital" for the locality. With regard to the financial provision, he had had the honour of being a good deal concerned in the working out of the plan for the British Provident Association, which suggested, some years ago, a method of obtaining the capital necessary by means of a Founders' scheme. Mr. Eccles took as an example such a typical middle-class district as Ealing, on the periphery of London, and suggested the size and cost of a home hospital to serve the population. The basis of computation was that two persons out of every hundred during the year would need, and ought to have, institutional treatment under their general practitioner. The capital cost per bed, including the help of physician or surgeon and all ancillary services, the due apportionment for administrative and nurses' accommodation, together with, what was very important, a sinking fund charge, was something like £1,000. It was somewhat difficult to run a "home hospital" at a moderate charge to patients and cover all cost. It could not be done, so far as one could see at the present time, under six guineas. This, however, was not an unduly large sum for a person of this class faced with the emergency of serious illness, provided that he had in some way insured against such emergency up to a certain limit. Even if the grant in aid was only up to £5 a week, and the nursing home charges were six or even eight guineas, the extra should not be beyond the compass of the persons for whom this provision was intended. Mr. Eccles spoke with some impatience of those who, while ready to spend freely on non-necessities, grudged any provision for serious illness. That very day a man had confessed to him that he spent seven shillings a week on cigarettes, and yet could not afford a guinea or so a year subscription to the British Provident Association! That association, by the way, also provided for the cost

of certain services, consultations, operation fees, and the necessary attendance of the consulting physician. It was of some importance, if only for the psychological encouragement of the patient, that the consulting physician should see the patient more than once in any really serious illness; while the surgeon, of course, was compelled by the nature of the case to see the patient more frequently. Mr. McAdam Eccles thought that such a development as he had indicated was long overdue, but he had to remark that the real stumbling-block was the medical profession itself in quite a number of areas.

Dr. F. J. McCANN said that twenty-five years ago he endeavoured to induce the Samaritan Hospital to acquire premises next door and start an independent hospital where general practitioners could be admitted to treat their patients; but the idea was then too far in advance of the times, and one of the chief objections came, not from the medical but from the nursing staff, the matron of that day declaring that there would be too many people "interfering." That idea still existed in nursing homes, where the general practitioner was not always very warmly welcomed. What was required, in his view, was a separate institution in connexion with hospitals, running entirely on its own, for the reception of paying patients, but with access to the ancillary services provided by the hospital.

Dr. G. C. ANDERSON said that there were three main reasons for the demand for pay-beds: the progress of scientific medicine, the domestic difficulties of middle-class households, and the inability of some sections of the community to provide medical attendance of a specialist nature from their own unaided resources. He looked forward to the extension of the contributory scheme movement to the middle classes. But if pay-beds were to be provided through some system of insurance a scheme must be developed for giving all sections of the profession the same opportunity of participating in the arrangements. Every practitioner did not want to be an operating surgeon, but he did want to be able to follow his patient into an institution and treat him as he would have done in private, calling in a consultant if the needs of the case demanded it. As for the development of the "pay-bed" system, he believed in the principle of separate blocks attached to the hospital. It must be remembered that the doors of the municipal hospitals were open to every member of the community, and unless the voluntary hospitals did develop this pay-bed provision in separate blocks or institutions the municipal hospitals would take their place.

Dr. H. H. SANGUINETTI mentioned that at the London Temperance Hospital the general practitioner was allowed to come in. It seemed to him that if this plan could be worked in the ordinary nursing home it could be worked in the general hospital. Mr. DUNCAN FITZ-WILLIAMS spoke of the rivalry between voluntary and municipal hospitals, in which, in his view, on account of the large resources of municipal provision, the voluntary hospitals were bound to be worsened. At his own voluntary hospital the state of funds was such that the staff hesitated to make any requests for desirable provision, whereas the L.C.C. would accede, say, to the appointment of a couple of new assistants in the pathological department "without looking over its shoulder." Mr. HOWARD STRATFORD urged that the public be educated to regard charges for illness as a capital expenditure, instead of, as now, trying to meet them out of income.

A layman, Mr. N. G. LOUGHNANE, pleaded the case of the man with £500 a year, nearly half of which went on income tax, rent, rates, insurances, and the education of his children. Such a man very often had no capital, or when he had it was jealously guarded, and if there was a doubt in the case he would prefer to wait for his operation, and in the end consider it a duty to his family to have it in the public wards of the general hospital. The weekly charge at the nursing home was not the deterrent, but the additional fee of the operating surgeon. If instead of seven guineas a week for accommodation a man were called upon to pay ten guineas a week, including every fee for every doctor, he would be much

more amenable. A hospital of fifty beds, always full—that was merely a matter of rationalization—would yield an income of £26,000 a year, out of which £3,000 could be afforded for the consulting surgeons, £3,000 for the nurses, and £500 or £1,000 for rent charges. He saw no reason why a small hospital like that should not be as self-supporting as a hotel, and it was no more expensive to run, for although it had a nursing staff it had not the "side-shows" which were necessary to hotel administration.

Dr. G. SLOR, who had visited nursing homes and clinics in France, Germany, and Holland, said that these compared favourably with the average nursing homes in London, which were miserably furnished, badly equipped, and expensive. Many of the Continental clinics were household words in their locality, and sought after by rich and poor on the same principle as the Mayo Clinic in America, where the standard charge was 10 per cent. on income. Dr. VAUGHAN PENDRED spoke with approval of a recent leading article in the *British Medical Journal* in which the causes of the diminution of the demand for the general practitioner's services had been analysed, depressingly, but truthfully. Mr. TYRRELL GRAY thought that their lay visitor, in complaining of the amount of the surgeon's or specialist's fees, had overlooked the large expenditure of capital on education and equipment to which these members of the profession had been put.

Mr. SANGSTER SIMMONDS, winding up the debate, said there appeared to be general agreement that in nursing homes or private wards, where the patient contributed the whole cost, the general practitioner should remain in charge of the patient, calling in the consultant if necessary. He agreed with Dr. Anderson that the homes for paying patients should be entirely separate institutions from the hospitals, but the ancillary services of the hospitals should be open to them. No private institution, limited to one building, could bring down the charge to lower than seven guineas, but an institution in association with a voluntary hospital might bring it to six guineas, and without recourse to charity. An inclusive fee of ten guineas would "drive the consultants and specialists to the workhouse."

England and Wales

Milk for School Children

Commenting on the Government proposal to distribute a daily ration of milk to children in the elementary (and perhaps other) schools, a recent letter from Miss Olga Netherlands, honorary organizer and founder of the People's League of Health, states that the science, medical, and veterinary councils of the League desire to emphasize the urgent necessity of steps which will ensure that the milk will not be a medium for the conveyance of tuberculosis and other milk-borne diseases. A memorandum on the subject, prepared by a special committee of the League, is now available, and it is urged that the recommendations contained in it should be put into operation. The memorandum pays tribute to the nutritive value of milk for growing children, and outlines the dangers which it may offer in transmitting infection. It states that at least 40 per cent. of the cows in this country are infected with tuberculosis, and at least one in every 100 cows is actively discharging tubercle bacilli into the milk or elsewhere. It is suggested that 500 fresh cases of undulant fever occur each year in England and Wales, and at least twenty to thirty out of every 100 samples of raw milk can be shown to contain the causative organism. Precautions advocated to secure safe milk are as follows. (1) Pasteurized milk is recommended, and should be labelled "Grade A Pasteurized" or "Pasteurized." (2) Ordinary milk should not be given raw to children, but should be rendered safe by boiling. (3) If raw milk is to be used it should be labelled either

"Certified" or "Grade A (T.T.)." (4) Grade A milk is milk produced under cleanly conditions, though not from tuberculin-tested cows, and cannot be recommended in the raw state. It is pointed out that the guarantee of clean milk from pasteurization is only obtained when the milk is pasteurized under conditions laid down by the Ministry of Health, with the proper supervision which this implies, and is sold under licence as "pasteurized milk."

The General Infirmary at Leeds

In connexion with the great appeal that is being made for the large sum of £250,000 to carry out the extensions of the General Infirmary at Leeds which have been outlined in these columns, the table of statistics which will be presented at the annual meeting may prove of interest. The figures show that the hospital is working at very high pressure. The total number of beds and cots at the Infirmary and at the two semi-convalescent hospitals, known as the "Ida" and "Robert Arthington" hospitals, is given as 628. This figure is, however, based on the assumption that all the emergency beds, such as those for special cases in the sitting rooms attached to the large wards and those used for isolation purposes, are in commission. The average daily number of these beds occupied last year was 559, leaving a margin which is by no means a large one in these days of emergencies and motor accidents. The smallest number of patients in the two institutions on any one day was 456, and on one day the total reached 626, which, in respect of what has been said above as to the distribution of the beds, meant serious overcrowding in some of the wards. The total number of patients admitted during the year 1933 was 13,654, of whom 2,425 were children. Receiving attention in the hospitals at the beginning of 1933 there were 500 patients, so that the total number treated during the year was 14,154. It is of interest to note that in the year 1910 the total number of patients admitted was 7,494, which, with the number in the hospital at the beginning of the year—namely, 355—gave a total of 7,849 treated during the year. This great increase has been made possible by the use of the King Edward memorial block, which was begun before, and opened shortly after, the war, and the figures for the year which has recently closed, taken along with the formidable waiting list, provide the fullest justification for the appeal now being made. The number of patients admitted in respect of accidents and other emergencies was 2,083. Apart from these there were 2,580 admissions to the medical wards, 4,333 to the general surgical wards, 824 to the eye wards, and 1,812 to the aural department. To the beds reserved for skin cases 178 patients were admitted, and to the department for orthopaedics 1,235. For special radium treatment 446 patients were admitted into the wards. The figures dealing with patients suffering from affections peculiar to women require explanation; in 1932 they were 634 and in 1933 they were only 163. This, however, is due to the scheme of co-operation between the General Infirmary and the Hospital for Women having come into partial operation during the year upon which the figures are based. In future all such cases will be dealt with at the latter institution. The number of deaths occurring at the Infirmary was 823, which is a percentage mortality of six; when, however, the deaths which occurred within forty-eight hours of admission are deducted the mortality works out at 4.1 per cent. Under the superintendence of the senior officer of the West Riding Mental Hospital at Wakefield, an out-patient department was started during the year for patients with mental symptoms of a kind that do not demand or justify

certification. It is conducted by two of the assistant officers of the Wakefield Mental Hospital, and its progress will be watched with interest.

Mental Welfare Clinics in the Isle of Wight

During 1933 the mental welfare clinics at Newport and Ryde in the Isle of Wight dealt with 118 patients, of whom 102 came for the first time in that period. In comparison with the previous year there was a decrease in the number of those requiring to be certified, whilst the number entering the mental hospital voluntarily was doubled; this result is attributed to the co-operation that has been secured with local general practitioners, and the consequent larger proportion of early cases referred to the clinics for treatment. A large majority of the patients were in the first forty years of life; nineteen were of school age, and only three of these could be classed as definitely mentally defective. The clinics are thus shown to be functioning also to some extent as child guidance clinics; valuable preventive work is being accomplished, but it is felt that the clinics should be more concerned with adult neuroses, the children being dealt with elsewhere. Dr. C. Davies-Jones, medical superintendent of the County Mental Hospital at Newport, who has reported on these two clinics, adds to his statement a note on the suicide rate in the Isle of Wight during recent years. There were decided increases in 1931 and 1933. He thinks that in many cases suicide is a result of the urges of selfishness, while a minority appear to be psychologically, if not morally, justified. Incarceration is an unsatisfactory preventive; an attack on the determining factors, many of which are clearly economic in origin, would appear to be the better path to follow. Five cases were sent to the clinic in 1932, and seven in 1933, with suicidal wishes dangerously evident. At the time of reporting none of these had broken down. Dr. Davies-Jones doubts whether the publication of reports of suicides in the Press has much determining effect on causation; he believes there is an underlying psychological basis in these cases which requires attention and treatment. Anxiety states and hysteria are frequent, with purely psychological factors, or with such organic diseases as influenza, as an important complication. The critical age of 45 to 50 was prominent in female cases.

Local Government Officers

The Report of the Departmental Committee appointed by the Minister of Health and presided over by Sir W. H. Hadow, to consider the recruitment, qualifications, training, and promotion of local government officers has now been issued. Under the heading of recruitment, the committee states that all vacancies for the local government service should be widely notified, so as to avoid any suspicion that appointments are being "jobbed," and the rule against canvassing should be strictly enforced. Candidates should be required to disclose whether they are related to a member or an officer, and where there is relationship the appointment should be closely scrutinized. Important recommendations with regard to the recruitment of professional and technical officers concern the system of articulated pupilage. On the question of technical qualifications, the committee doubts whether the officers responsible for giving technical advice to local authorities are in every case sufficiently well qualified, and concludes that a thorough investigation is needed. Finally, the committee urges the establishment of a standing central advisory committee to investigate and advise in all questions affecting the local government service. It regards the absence of such a central organization as "one of the most serious defects in the existing system."

Scotland

Edinburgh Municipal Hospitals

At a meeting of the Public Health Committee of Edinburgh Town Council on March 27th a report was submitted of the conference between representatives of the Corporation and Edinburgh University concerning the work of the municipal hospitals. A suggestion had been made by the directors of medical units in these hospitals involving a further expenditure of £775 per annum for additional staffing. It had already been agreed that the Corporation should pay to the University in respect of services of medical teachers provided by the University a sum not exceeding £2,000 per annum, and the actual amount paid in the past year had totalled £1,825. The Public Health Committee agreed that the figure of £2,000 should be increased to £2,500. A representation had been made by Dr. John Guy, medical officer of health, that certain alterations were desirable in the municipal general hospitals, and these had been estimated by the city architect to cost about £50,000. At the conference the University's representatives had suggested that instead of alterations a new general hospital should be erected to take the place of the three existing municipal hospitals, and, in view of this, further consideration of the alterations was delayed. The University had also proposed to establish a child welfare centre under the joint control of the Corporation and the University, and under the medical direction of the professor of child life and health, for the purposes of the supervision and care of healthy children, the clinical teaching of medical students and graduates in matters connected with the health of children, and the clinical investigation of problems concerning the health of infants and children. It was agreed that the University should be granted these facilities at one or more of the existing child welfare centres already established by the Corporation. The report of the medical officer of health stated that a careful survey of the future of the municipal hospitals should be made, having regard to the following: (1) better lecture-room accommodation; (2) provision of an operating suite; (3) additional small wards for paying patients; (4) reconditioning of the sanitary annexes; (5) installation of hand basins in the surgical wards; (6) rooms for the examination of new cases; (7) cubiculization of one surgical ward; (8) mortuary provision; (9) further provision for resident students; (10) provision of a nurses' home; and (11) open-air balconies for children's wards.

Larbert Institution for Mental Defectives

At the seventy-third annual meeting of the Royal Scottish National Institution at Larbert, the Earl of Mar and Kellie referred to the progress which had been made during the year in the construction of the colony for mental defectives. The administrative block had been erected, and there were now five houses with 150 inmates in the colony. The increase in population of the institution during the year had been seventy-nine, and it was hoped that money would soon be forthcoming to build a special hospital. Local authorities had recognized the value of the institution, and arrangements were being made with various councils to earmark a certain number of places for the mental defectives coming from each of the burghs concerned. Dr. R. D. Clarkson, medical superintendent of the institution, stated in his report that there had been 555 pupils on the register in February, 1933, and this number had increased by January, 1934, to 634. There had been 103 admissions during the year, fourteen discharges, and ten deaths. Expenditure amounted to £51,917, and a sum of £525 had been realized from work done by the inmates. Dr. Clarkson

said a stigma attached to mental deficiency because it was supposed that the condition was hereditary, but he had found that mental deficiency should not be regarded as a disease, and was seldom inherited. The greatest number of mentally defective children appeared in otherwise normal families.

Falkirk Infirmary

At the annual meeting of Falkirk and District Royal Infirmary Dr. John Young, chairman of the board, referred to the fact that a year ago the expenditure for the preceding year had exceeded the income by £1,000. The managers had then issued a special appeal, to which there was a very satisfactory response. During the past year the total income was £18,163, an increase of £1,013 over that of the previous year. The expenditure was £17,971, so that there was a surplus on the year's working. The endowment fund also increased from £23,689 to £25,353, while the total subscriptions from employees was £8,985, an increase of £562. The number of patients admitted to the wards during the year was 2,043 as compared with 1,555 in 1932, and the average number of beds in daily occupation was 116 as compared with ninety-three in the previous year. The average cost per patient per day was 7s. The total number of admissions to the maternity home was 304 as against 270 in 1932, and the average daily cost of the patients was 8s. 3d. The directors had acquired eleven acres of ground to the west of the Infirmary with a view to extension of the buildings.

Reports of Societies

CEREBRAL PNEUMOGRAPHY

A joint meeting of the Liverpool Medical Institution and the Manchester Medical Society was held at Manchester on March 7th, with Dr. C. PAGET LAPAGE, president of the Manchester Medical Society, in the chair.

Dr. HENRY COHEN read a paper on "Cerebral Pneumography." He emphasized that cerebral pneumography was based on two principles: (1) That no gross lesion can exist in the brain without deforming the fluid-containing spaces with resultant changes in their size, shape, position, and communication; and (2) that it is possible to replace the cerebro-spinal fluid by air, by either the lumbar route (encephalography), or the ventricular route (ventriculography), and thus visualize accurately by radiography the normal or deformed fluid spaces. He described in detail the methods he employed in both encephalography and ventriculography, and emphasized that the most notable contraindication to encephalography was the suspicion of a subtentorial tumour. Ventriculography was necessary to define the ventricular system, however, if any obstruction to the passage of air from the subarachnoid space to the ventricles was present. A large series of lantern slides were shown, illustrating the types of pneumographs obtained in cerebral tumours, epilepsy, degenerative lesions (including cerebral arteriosclerosis), and the traumatic encephalopathies. In only 25 per cent. of "tumour suspects" was cerebral pneumography required: occasionally, to differentiate vascular lesions and degenerative processes from expanding lesions, but more frequently to help in the localization of those cerebral tumours which showed no localizing signs or had given rise to false localizing signs. Dr. Cohen insisted that clinical examination must not be subordinated to pneumography; a careful anamnesis and physical examination could never be supplanted by mechanical procedures of this type, but cerebral pneumography had proved not only a useful and worthy addition to the diagnostic armamentarium of the physician, but it had thrown a flood of light upon the pathological basis of some of the epilepsies and traumatic "neuroses."

Immobilization of Fractures

Mr. R. WATSON JONES read a paper on "Inadequate Immobilization and Non-Union of Fractures." He said that recent enthusiasm for early mobilization and functional activity in fracture treatment was entirely justified, in that incapacity periods were reduced and many permanent disabilities avoided; but it should be recognized that joint mobilization must not interfere with absolutely complete and uninterrupted immobilization of the fracture. There was no more constant cause of non-union than inadequate immobilization. Hyperaemia of bone caused decalcification. If the initial hyperaemia of the trauma of injury was perpetuated by the frequently repeated trauma of movement of the fragments on each other, decalcification continued until a crack became a cavity, and a linear fracture became a gap fracture. Even slight movement, and especially rotatory movement, was sufficient to account for excessive decalcification. The Whitman plaster for fracture of the neck of the femur did not as a rule prevent rotatory movement of the pelvis and head of the femur, and for this reason, even in the 50 per cent. of cases which did unite when so treated, there was usually evidence of excessive decalcification in the shortening of the neck of the femur. On the other hand, a Smith-Petersen nail completely prevented rotatory movement, and in the speaker's series of twenty-eight subcapital fractures treated by operation over 90 per cent. had united. In fractures of the lower shaft of the ulna, non-union was due to attempted restoration of radio-ulnar movement after six or eight weeks of immobilization; before the fracture was consolidated. The radio-ulnar joint had become stiff, so that the movement could occur just as easily at the unconsolidated fracture as at the stiffened joint. For this reason, in three years the speaker had seen eighteen ununited fractures of the lower shaft of the ulna, although in every case the associated fracture of the radius—which was not subject to rotatory strain—had united. If these fractures were completely immobilized for the three or four months which were necessary to show radiographic evidence of consolidation, non-union never occurred. Fractures of the scaphoid bone in the wrist illustrated the same principle. Recent fractures usually united in six to eight weeks, but sometimes it was necessary to continue immobilization for many months, and if the institution of treatment was delayed, twelve to eighteen months of absolute immobility might prove necessary. If the surgeon was prepared to wait for it, bony union could be secured in practically every case. The speaker's conclusion was that whatever other factors might affect the union of fractures, non-union was only seen if immobilization was incomplete, or if it was not continued for a sufficient period.

PATHOLOGY OF FAT METABOLISM

At a pathological meeting of the Liverpool Medical Institution, held on March 22nd, with the president, Dr. J. MURRAY Blich, in the chair, Professor J. HENRY DIBLE read a paper on "Some Problems and Investigations in the Pathology of Fat Metabolism."

Professor Dible said that he wished to speak almost entirely of personal work which he had carried out during the past few years. A condition of fatty change was one of the most frequently encountered pathological conditions in certain organs, more particularly the liver, at post-mortem examinations in very diverse conditions. It was often seen in wasting diseases, such as infantile summer diarrhoea. This apparent anomaly was explicable upon an understanding of the changes which occurred in the liver fat in starvation. Experiments to elucidate this had shown that starvation caused a notable accretion of fat to the liver, but that the amounts infiltrating the organ were very variable and independent of the length of the starvation process. Careful quantitative investigations had shown that under similar conditions the quantity of fat infiltrating the liver in starvation was determined by the quantity of fat available in the

animal's storage depots. These results had been obtained in the first instance in the rat, but with Dr. Libman the same results had been shown in the rabbit. Since in most cases of disease an element of starvation occurred in the terminal stages, it might well be that this was a major factor in inducing the common fatty degeneration, equally with poisons or anoxaemia. This question had been investigated with the help of Dr. Gerrard, and a definite relationship established, in man, between the quantity of fat appearing in the liver and the degree of inanition present before death. In such cases a relationship had also been established between the degree of fatty infiltration and the adiposity of the subject.

Turning to the question of fatty degeneration of the heart, Professor Dible pointed out that in experiments carried out with Dr. Gerrard on phosphorus poisoning, a quantitative increase in fat in the degenerated cardiac muscle was constantly demonstrable. In work he had carried out upon the human heart in disease the same held good, very large increases being sometimes demonstrable and some increase, related to the histological picture, being constant. The significance of the histological changes in heart and liver showing fatty degeneration was discussed and the general conclusion given that in both organs fatty change was of the nature of an infiltration, there being no evidence for the existence of the process usually designated "phanerosis."

CORRESPONDENCE

Hereditary Scoliosis

SIR.—I am gratified to learn that Dr. Clement Belcher (March 31st, p. 596) has also observed familial scoliosis. As I said in my original paper my own cases were, to the best of my knowledge, the first to be recorded, though I have no doubt that the condition is not uncommon. Dr. Belcher's inferences, however, are a little startling, and I would suggest that he has allowed his ingenuity to triumph over common sense. He would have us believe that this anatomical abnormality can be acquired by both males and females of succeeding generations. But even assuming this strange hypothesis to be true, why invoke totally different environmental factors in each generation? Further, his imagination has accounted for scoliosis in three generations of women only, whereas in my pedigree men and women were affected in equal proportions.

The statement that "if the condition were hereditary we should expect the malformation to be still more marked in the third generation" makes one question Dr. Belcher's knowledge of human genetics very seriously. If an inherited abnormality increased from one generation to the next it would soon become lethal and self-limiting, which is clearly not the case with Mendelian dominant defects. In point of fact such inherited defects always show varying grades of severity, and in any generation there may be cases which merge into the normal. I would like to point out that, far from the condition being "practically absent, or, at any rate, not a noticeable deformity" in the third generation, my case, D.I.S, that of a female aged 32 and of the fourth generation, did not know of her deformity until I pointed it out, but a brother and two sisters were known to have been affected from birth.

When a skeletal defect occurs in five generations, affecting males and females equally, the ratio of affected to unaffected offspring of an affected parent being approximately 1 : 1, the condition is inherited as a Mendelian dominant, and one can forecast with reasonable accuracy that in the future half the children of affected parents will themselves be affected, despite any variable environmental factor.—I am, etc.,

HUGH G. GARLAND.

Leeds, April 3rd.

Pathogenesis of Cancer

SIR,—In the *Journal* of February 24th Mr. Frank Paul out of his life-long clinical experience and special knowledge of the surgery and pathology of cancer, contributes an interesting and instructive communication upon this subject, and emphasizes from his observations the existence of a natural control or suppression of growth, exemplifying this process in various cases. On March 31st another correspondent, "M.D.," from his clinical observations, suggests this aspect of the cancer problem to be one of biochemistry, and that "a lead from Nature" is urgently needed.

During the past thirty years numerous investigations have shown the presence of biochemical factors in the blood, which suggest that there is always present in normal persons an active and efficient natural control or prevention of cancer, and that in those who develop the disease these essential defensive factors are deficient. The observations and findings of these observers seem to be strangely forgotten, and the possible importance of their clinical application to the cancer problem overlooked. Shaw-Mackenzie, in no fewer than twenty-two papers and communications between 1905 and 1931, Freund in 1913, Corran and Lewis in 1928 (confirming Shaw-Mackenzie's work), Begg and Aitken in 1932, and Green in 1934, have all shown, either in experimental animal research or in clinical serological investigations, that the presence of cancer or its recurrence after removal, is almost invariably associated with a deficient lipolytic or fat-splitting enzyme content of the blood, and, conversely, that recovery from cancer, either after removal of the growth or by regression or occasional spontaneous cure, is associated with a recovery of the normal lipolytic activity of the serum. Vernon in 1905, von Leyden and Bergell in 1907, Marcus, Breiger, and Trebing in 1908, similarly have shown changes from the normal in the proteolytic enzyme content of the blood. By demonstrating the constant presence of active biological agents in normal blood and their deficiency in the serum of those that develop cancer, all observations suggest that these are natural defensive enzymes. Bendien in 1931 introduced a blood test for cancer, which Begg and Aitken in 1932 showed to give parallel findings to those of Shaw-Mackenzie's test in experimental animals. I modified Bendien's test (1933), and find that both in animal experiments and in numerous clinical observations it gives, because of the presence of abnormal alterations in the protein and lipid content of the serum, indirect but equally clear evidence of deficiency in the serum of cancer cases of those essentially necessary protective and controlling enzymes.

It is generally accepted that cancer results from some form of damage and irritation of normal cells. Such injury may be traumatic, whether physical, thermal, chemical, electrical, or radiological, etc.; infective, whether bacterial, protozoal, or viral; or due to toxic or senile changes. Cramer and Bullock (1919), Warburg (1923), Ewing (1929), Kreyberg (1929), and Sampson Handley (1930) have all demonstrated various bio-physical, biochemical, and pathological alterations that occur in, or accompany the conversion of, an injured normal cell into what Blair-Bell so aptly describes as a dedifferentiated cell—a trophoblastic cancer cell. This does not, however, explain why, as these "accidents" to cell life are so common, only about 15 per cent. of people develop cancer. Why do we not all die of cancer; for who, if he lives long enough, does not suffer the results of trauma, infection toxicity, etc.? This question is, however, answered by admitting that there is present, in the 85 per cent. who remain cancer-free, a natural cancer-cell-destroying agency, and it is the deficiency of this factor which allows cell injury and irritations, etc., to result in cancer in the unfortunate ones.

In the *British Journal of Radiology* (April, 1933) I gave reasons for assuming that such a natural cytolytic defence exists. As a working hypothesis, the embrio-

logical observations of Teacher, Bryce, Fairbairn, etc., and the suggestions of Blair-Bell (1924), have been adopted as providing at present the most satisfactory explanation of the problem of cancer, and divide life for this purpose into intrauterine and post-natal experiences. In the former the differentiating somatic cells of the unborn foetus during its earlier months of existence are successfully inhibiting, controlling, correlating, cytolysing, and finally converting the previously invasive, erosive, "malignant-like" undifferentiated chorion epithelium into the inert physiological placental membrane found at full term, so that at birth presumably every infant starts life having learnt in its mother's womb the way to control, suppress, and destroy undifferentiated trophoblastic cells. In about 85 per cent. this invaluable heritage of cytolytic defence remains good throughout life, so that whenever as the result of tissue injury somatic cells revert by dedifferentiation to the trophoblastic type, with their abnormal contents (highly lipoidal, hydrophilic proteins, increased water content, and cell membrane permeability), the normal somatic tissues are as able efficiently to cytolysise these new-formed would-be cancer cells as their predecessors dealt with undifferentiated chorion epithelium in the pre-natal period. In the other 15 per cent., although efficiency may continue nearly normal for the first thirty years of life, in the subsequent decades a loss in cytolytic defence sooner or later develops, and the associated inability efficiently to control or destroy dedifferentiated cells when they occur is demonstrated by the increasing liability to cancer developing in these later years. Thus will be explained the infrequency of cancer during earlier life and the well-known age-incidence in the middle and later decades, also the recognized tendency to its increase under modern civilized conditions; for failure of a natural endocrine, enzymic, hormonal function might be expected when the strains and stresses of life tend to be most exhausting.

The serum tests of Shaw-Mackenzie and Bendien frequently show variations from, and recovery of, normal findings, and it is quite feasible that in certain cases a temporary lapse of cytolytic defence may have allowed of the development of cancer, but the re-establishment of normal control caused arrest and regression or even spontaneous cure of the growth. Further, as a result of repeating blood tests upon a number of cases of cancer, it is often found that in spite of a temporary return to a normal, defensive efficiency, as the result of surgery, radium, etc., the enzymic content is not maintained—in some cases quite shortly, while in others not for a year or two, and presumably in some only after five, ten, or more years—the regained defence again fails, and recurrence, metastasis, or a new primary cancer may develop.

The work of Gye with regard to the presence of a specific virus, and of Schmidt, Sambon, and others, of protozoa, all need consideration as providing evidence of possible specific causes of somatic cell dedifferentiation, but their importance as causal agents of cancer will depend upon the presence or absence of an efficient cytolytic defence in the blood of the person whose tissue cells are being stimulated to abnormal activity. Many research workers have shown that the result of artificial lysis of cancer tissue *in situ*, whether from diathermy, radium, x rays, lead, sodium alkate, etc., raises the enzymic efficiency of the serum, and confers a certain degree of immunity, while Professor Russ (1933) has suggested that the result of radiation in cancer treatment may produce a generalized somatic stimulation apart from its local effect, and the improvement in the serum tests following such treatment suggests that successful and graduated cytolysis is associated with a defensive endocrine stimulation.

Even in this scanty review of the large amount of serological and other research referred to above, it would appear, that the "lead from Nature" as regards the prevention and cure of cancer suggests the need of discovering how to maintain effectively a normal cytolytic defence in those whose serum shows it to be deficient. From this point of view cancer appears as

a deficiency disease, somewhat in line with pernicious anaemia and diabetes, but instead of being a deficiency of metabolic supply for normal cell life, as in the latter, it seems to depend upon a deficiency in the power to inhibit or destroy cells of a certain embryonic type. This normal controlling factor is likely to be complex, may be a hormonal secretion to which all normal tissue contributes, or may be supplied by a group of endocrine glands such as the pituitary, adrenals, thyroid, and liver. It thus becomes a problem for the biochemist and pharmacist to show how an efficiency can be maintained, and thereby support and enhance the result of local removal or destruction of malignant growths.—I am, etc.,

Liverpool, March 31st.

E. CRONIN LOWE.

Leucocyte Counts

SIR,—Your editorial in the *British Medical Journal* of March 31st (p. 586) on the normal leucocyte count quotes largely from a paper by Simpson (*Brit. Journ. Radiol.*, 1933, vi, 705), which is claimed to confirm the work of Sabin and her co-workers, purporting to demonstrate large fluctuations in normal leucocyte counts. It appears to have escaped the notice of the writer of the editorial and Dr. Simpson that Sabin's results have been shown by Ponder, Saslow, and Schweizer (*Quart. Journ. Exper. Physiol.*, 1931, xxi, 21) to have been due to technical error. After a detailed study of technique by statistical and experimental methods these workers found that normal fluctuations were less than ± 8 per cent., apart from the well-known afternoon rise. Sabin counted generally 100, and occasionally 200, cells. Simpson counted the cells in 1 c.mm. of blood diluted 100 times, so that where the counts were 3,000 and 6,000 per c.mm. of blood he would count only thirty and sixty cells respectively. It is doubtful, therefore, if the conclusions stressed in your editorial are justified. In the standard methods of the Association of Clinical Pathologists the cells in three times the above amount of blood are counted, and in this laboratory, in routine clinical work, about 400 cells are usually counted. I should be surprised, therefore, if Simpson's counts are "leucocyte counts performed in the usual way."

It is of interest that similar claims have been published from time to time for normal fluctuations in other blood constituents, such as platelets and sugar content, which have subsequently been shown to be due to defective technique, in spite of the fact that a few preliminary experiments have been stated by the authors to show that the technique gave reliable results. Such papers have been encountered sufficiently often in the past to raise immediate doubt in the present instance as to the accuracy of the technique employed. The tone of your editorial appears to me unfortunate, in view of the relative backwardness in the application of haematology in this country as compared with America and Germany. This is strongly suggested by the paucity of recorded cases in England of agranulocytic angina, which even technically defective leucocyte counts can scarcely fail to demonstrate if employed at all.—I am, etc.,

Bradford Royal Infirmary, April 5th.

C. J. YOUNG.

SIR,—There are few clinicians, one would imagine, who would accept as final the conclusions drawn in your leader of March 31st, on the subject of the normal leucocyte count, unless it is understood that these conclusions refer only to non-febrile conditions. Though one is aware that it is the normal count which is discussed, still, without a normal, one is left to conclude that the so-called abnormal counts may be included in such strictures as are made on some clinicians' reliance on laboratory reports.

Without a knowledge of the exact method used, one may perhaps be allowed to suggest that the method of faking blood from the fingers, as is mentioned, may, unless all constriction be avoided, which is difficult, to some extent explain the discrepancy obtained in the figures noted. During a research into possible variations in the leucocyte count during abnormal mental states made some years ago, taking blood only from the lobe of the ear and with the minimum of pressure, one found that the variations were so small as to warrant no conclusions being drawn therefrom, and though counts were made daily (not necessarily at the same hour in the same individual), no such discrepancy as was noted by Simpson was found in the figures obtained. Method apart, clinical experience surely does show that in many febrile states the leucocyte count is affected on the average in a definite direction for each disease, and that, for example, in influenza, typhoid, measles, whooping-cough, and septic conditions generally, the trend of the leucocyte count is of the utmost value in early diagnosis before the other signs and symptoms may be present. This, of necessity, leads one to inquire if it is possible that, though there may be no normal average in health, in disease—particularly febrile disease—the figures for each diseased state are more constant.—I am, etc.,

London, N.7, April 8th.

W. LEES TEMPLETON, M.D.

Radiology and Chronic Appendicitis

SIR,—With reference to Dr. C. H. C. Dalton's letter in your issue of February 24th (p. 353), following Mr. Muir Dickson's article on the diagnosis of chronic appendicitis in the *Journal* of February 3rd (p. 184), may I be permitted to add that much has been written on this subject about the direct and indirect radiological signs of the disease of the appendix, and often due emphasis has not been laid on the possibility of the coexistence of associated duodenal or gall-bladder disease. It is true that Mr. Muir Dickson alludes freely to the clinical difficulties of the differential diagnosis, but he does not suggest the obvious remedy.

Realizing the great value that x-ray examination has become as a diagnostic aid in so many and varied pathological conditions, it seems only right as a first step to examine our methods of examination of the appendix to see if any fault can be found there. I will deal with this subject from two aspects: (1) the failure to discover that the appendix is pathological; and (2) the failure to recognize that the pathological changes discovered may not be the cause, or the sole cause, of the patient's symptoms.

1. The identification of the barium-filled appendix is essential to the diagnosis, and, as Dr. Dalton points out, this means careful preparation of the patient. This is best done, in my opinion, by administering a laxative thirty-six hours before the examination, and not by giving castor oil twelve hours beforehand, as he suggests; for a drastic purge taken at so short a time before the meal is likely to give a false impression of the motility of the meal, which latter may be an important indirect sign of disease. Stasis of barium in the appendix does not appear to be of any great significance *per se*, and I have seen lead shot remain in the appendix for many weeks before passing on. In cases in which the caecum is placed abnormally low it is often not possible to identify the appendix, and it is certainly impossible to palpate it satisfactorily until it is dislodged from its position in the pelvis. In these cases attempts may be made to dislodge the caecum from its abnormal position by sustained pressure in the left iliac fossa; should this fail the patient may be tilted into the Trendelenburg position. In obstinate cases the knee-elbow position can be tried, or the rectum may be distended with air by a Higginson syringe; or, finally, the patient may be given copious fluids

and asked not to empty the bladder. The x-ray investigation of the appendix is primarily fluoroscopic, but often the appendix can be demonstrated on subsequent radiograms, taken as a rule while palpating the right iliac fossa with a gloved hand to hold the parts in the optimum position. The most reliable sign of chronic inflammation is tenderness localized over the filled appendix; but in its absence—and it is important to be sure that such tenderness is real—there may be found to be permanent kinks or constrictions, bulbous deformities, faecoliths, or evidence of adherence to the colon or small bowel. The appendix may be discovered in any relation to the caecum, and the caecum may be situated in any position between the right hypochondrium and the left iliac fossa.

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diagnosed as a case of trigeminal neuralgia, and had taken large doses of analgesics. The four patients reported on originally have had no further attacks.

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Flight Lieutenant R.A.F.M.S.

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SIR,—The following case illustrates the cumulative effect of repeated doses of the barbiturate group of drugs.

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Belfast, March 26th.

STAFFORD GEDDES.

The Election to the Council of the Royal College of Surgeons

SIR,—In April, 1928, you published a letter of mine giving my views on the utility of the canvassing in vogue for this election. I was grateful because I was subsequently left in peace until some two years ago, when I received a mass-production letter from a body of gentlemen who happened at that time to be examining together. As far as I can remember, it was to the effect that the salvation of the College and my own could only be assured if one of their number was elected to the Council, that they had selected Mr. X for this purpose, and that it was my duty to vote for him. I can only suppose that my salvation is still in jeopardy.

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a deficiency disease, somewhat in line with pernicious anaemia and diabetes, but instead of being a deficiency of metabolic supply for normal cell life, as in the latter, it seems to depend upon a deficiency in the power to inhibit or destroy cells of a certain embryonic type. This normal controlling factor is likely to be complex, may be a hormonal secretion to which all normal tissue contributes, or may be supplied by a group of endocrine glands such as the pituitary, adrenals, thyroid, and liver. It thus becomes a problem for the biochemist and pharmacist to show how an efficiency can be maintained, and thereby support and enhance the result of local removal or destruction of malignant growths.—I am, etc.,

Liverpool, March 31st.

E. CRONIN LOWE.

Leucocyte Counts

SIR,—Your editorial in the *British Medical Journal* of March 31st (p. 586) on the normal leucocyte count quotes largely from a paper by Simpson (*Brit. Journ. Radiol.*, 1933, vi, 705), which is claimed to confirm the work of Sabin and her co-workers, purporting to demonstrate large fluctuations in normal leucocyte counts. It appears to have escaped the notice of the writer of the editorial and Dr. Simpson that Sabin's results have been shown by Ponder, Saslow, and Schweizer (*Quart. Journ. Exper. Physiol.*, 1931, xxi, 21) to have been due to technical error. After a detailed study of technique by statistical and experimental methods these workers found that normal fluctuations were less than ± 8 per cent., apart from the well-known afternoon rise. Sabin counted generally 100, and occasionally 200, cells. Simpson counted the cells in 1 c.mm. of blood diluted 100 times, so that where the counts were 3,000 and 6,000 per c.mm. of blood he would count only thirty and sixty cells respectively. It is doubtful, therefore, if the conclusions stressed in your editorial are justified. In the standard methods of the Association of Clinical Pathologists the cells in three times the above amount of blood are counted, and in this laboratory, in routine clinical work, about 400 cells are usually counted. I should be surprised, therefore, if Simpson's counts are "leucocyte counts performed in the usual way."

It is of interest that similar claims have been published from time to time for normal fluctuations in other blood constituents, such as platelets and sugar content, which have subsequently been shown to be due to defective technique, in spite of the fact that a few preliminary experiments have been stated by the authors to show that the technique gave reliable results. Such papers have been encountered sufficiently often in the past to raise immediate doubt in the present instance as to the accuracy of the technique employed. The tone of your editorial appears to me unfortunate, in view of the relative backwardness in the application of haematology in this country as compared with America and Germany. This is strongly suggested by the paucity of recorded cases in England of agranulocytic angina, which even technically defective leucocyte counts can scarcely fail to demonstrate if employed at all.—I am, etc.,

Bradford Royal Infirmary, April 5th.

C. J. YOUNG.

SIR,—There are few clinicians, one would imagine, who would accept as final the conclusions drawn in your leader of March 31st, on the subject of the normal leucocyte count, unless it is understood that these conclusions refer only to non-febrile conditions. Though one is aware that it is the normal count which is discussed, still, without a normal, one is left to conclude that the so-called abnormal counts may be included in such strictures as are made on some clinicians' reliance on laboratory reports.

Without a knowledge of the exact method used, one may perhaps be allowed to suggest that the method of taking blood from the fingers, as is mentioned, may, unless all constriction be avoided, which is difficult, to some extent explain the discrepancy obtained in the figures noted. During a research into possible variations in the leucocyte count during abnormal mental states made some years ago, taking blood only from the lobe of the ear and with the minimum of pressure, one found that the variations were so small as to warrant no conclusions being drawn therefrom, and though counts were made daily (not necessarily at the same hour in the same individual), no such discrepancy as was noted by Simpson was found in the figures obtained. Method apart, clinical experience surely does show that in many febrile states the leucocyte count is affected on the average in a definite direction for each disease, and that, for example, in influenza, typhoid, measles, whooping-cough, and septic conditions generally, the trend of the leucocyte count is of the utmost value in early diagnosis before the other signs and symptoms may be present. This, of necessity, leads one to inquire if it is possible that, though there may be no normal average in health, in disease—particularly febrile disease—the figures for each diseased state are more constant.—I am, etc.,

London, N.7, April 5th.

W. LEES TEMPLETON, M.D.

Radiology and Chronic Appendicitis

SIR,—With reference to Dr. C. H. C. Dalton's letter in your issue of February 24th (p. 353), following Mr. Muir Dickson's article on the diagnosis of chronic appendicitis in the *Journal* of February 3rd (p. 184), may I be permitted to add that much has been written on this subject about the direct and indirect radiological signs of the disease of the appendix, and often due emphasis has not been laid on the possibility of the coexistence of associated duodenal or gall-bladder disease. It is true that Mr. Muir Dickson alludes freely to the clinical difficulties of the differential diagnosis, but he does not suggest the obvious remedy.

Realizing the great value that x-ray examination has become as a diagnostic aid in so many and varied pathological conditions, it seems only right as a first step to examine our methods of examination of the appendix to see if any fault can be found there. I will deal with this subject from two aspects: (1) the failure to discover that the appendix is pathological; and (2) the failure to recognize that the pathological changes discovered may not be the cause, or the sole cause, of the patient's symptoms.

1. The identification of the barium-filled appendix is essential to the diagnosis, and, as Dr. Dalton points out, this means careful preparation of the patient. This is best done, in my opinion, by administering a laxative thirty-six hours before the examination, and not by giving castor oil twelve hours beforehand, as he suggests; for a drastic purge taken at so short a time before the meal is likely to give a false impression of the motility of the meal, which latter may be an important indirect sign of disease. Stasis of barium in the appendix does not appear to be of any great significance *per se*, and I have seen lead shot remain in the appendix for many weeks before passing on. In cases in which the caecum is placed abnormally low it is often not possible to identify the appendix, and it is certainly impossible to palpate it satisfactorily until it is dislodged from its position in the pelvis. In these cases attempts may be made to dislodge the caecum from its abnormal position by sustained pressure in the left iliac fossa; should this fail the patient may be tilted into the Trendelenburg position. In obstinate cases the knee-elbow position can be tried, or the rectum may be distended with air by a Higginson syringe; or, finally, the patient may be given copious fluids

and asked not to empty the bladder. The x-ray investigation of the appendix is primarily fluoroscopic, but often the appendix can be demonstrated on subsequent radiograms, taken as a rule while palpating the right iliac fossa with a gloved hand to hold the parts in the optimum position. The most reliable sign of chronic inflammation is tenderness localized over the filled appendix; but in its absence—and it is important to be sure that such tenderness is real—there may be found to be permanent kinks or constrictions, bulbous deformities, faecoliths, or evidence of adherence to the colon or small bowel. The appendix may be discovered in any relation to the caecum, and the caecum may be situated in any position between the right hypochondrium and the left iliac fossa.

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The Election to the Council of the Royal College of Surgeons

SIR,—In April, 1928, you published a letter of mine giving my views on the futility of the canvassing in vogue for this election. I was grateful because I was subsequently left in peace until some two years ago, when I received a mass-production letter from a body of gentlemen who happened at that time to be examining together. As far as I can remember, it was to the effect that the salvation of the College and my own could only be assured if one of their number was elected to the Council, that they had selected Mr. X for this purpose, and that it was my duty to vote for him. I can only suppose that my salvation is still in jeopardy.

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But now the private begging-letter writer has cropped up again. I have recently received a communication which appears on the surface to be a personal, though typewritten, letter. Closer investigation reveals it to be printed in the form of typescript, presumably in sufficient numbers to circularize every Fellow of the College. My name and the suggestion that I am "Dear" have been added at a later date with a typewriter. This letter enumerates the good qualities of a gentleman who is well known to me. It goes on to point out that a hospital, other than my own, is at the moment unrepresented on the Council, a situation which appears to

cause acute distress to the writer. But such is his *naïveté* that he does not explain why I should regard it with equal misgiving.

The statements about the gentleman in question, who is a wholly admirable person, are in fact true. But that does not affect my point of view. I resent the implication that I am unable to make up my so-called mind about the disposal of my votes without the help of others; and I deplore the introduction of pseudo-political methods into the election to a body so august as the Council of the Royal College of Surgeons of England. If we cannot conduct the election with the dignity to which it is entitled, why should we not go the whole hog? Why should not each candidate issue a manifesto over his own signature, proclaiming his merits, adducing the benefits which would accrue if he were successful, and exposing the imperfections of his competitors?

In the meantime, I shall adhere to my policy of withholding my vote from any candidate on whose behalf I am vicariously assailed by his friends or colleagues.—I am, etc.,

London, April 7th.

IVOR BACK.

The Tuberculosis Problem

SIR,—Many tuberculosis workers will, I believe, be interested to learn from Dr. Waldron (March 31st, p. 598) the names of those who have stated "authoritatively" that "adult infection is impossible," and that "tuberculosis constitutes no problem in the school child." Tuberculosis is an interesting study at all ages and in all places. If Dr. Waldron will consult pages 64 to 69 of Dr. J. B. McDougall's report on the British Legion Village for the year ending September, 1933, he will find the subjects of conjugal infection and disease, childhood infection and disease, and Mantoux tests adequately discussed. The great majority of tuberculosis officers use the Mantoux test when they consider it will help them. I have used it regularly in the clinical examination of children for many years, and occasionally in adults, correlating the test with my x-ray findings.

Dr. Waldron states that the tuberculosis officer suffers "the explicable contempt of the general practitioner." Well, perhaps some of us have deserved that fate. But our experience in the North and West has not been so humiliating. When a case of disease of the chest is referred to me by a general practitioner I do not let it go until a diagnosis has been established, even if this sometimes involves my trespassing on the time and kindness of my friends in the London chest hospitals, when the necessary technical investigations are beyond the powers of our own organization. Out of my last 1,500 cases referred by general practitioners, over 53 per cent. proved to be suffering from non-tuberculous conditions. In Wales and in Lancashire the proportion of non-tuberculous cases referred for diagnosis by general practitioners is even higher. It is our business to diagnose the cases, and to indicate, and, when practicable, to carry out, treatment—not merely to write a chit: "No evidence of active tuberculosis."

Treatment would appear not to enter into the consideration of Dr. Waldron. Our enlightened public authorities now provide hospital beds, which are in charge of their tuberculosis officers. In Wales medical men in the tuberculosis service take district work and institutional work in turn. And our sanatoria are true "chest hospitals." As Dr. David Stewart of Manitoba says: "The days of the shack-sanatorium are over."

During the year 1932, according to Sir George Newman's report, the certified causes of death per 1,000 deaths from all causes in this country were as follows:

	Per 1,000 deaths
Diseases of the heart and circulatory system	264
Malignant disease	125
Bronchitis, pneumonia, and other respiratory diseases	113
All forms of tuberculosis	69

There is obviously scope for those medical men who specialize in diseases of the chest.

Finally, suppose Dr. Waldron's Mantoux survey undertaken. We can safely forecast from our present accumulated knowledge that the positive reactors would vary from at least 50 per cent. positives in congested cities to nil in certain isolated rural areas. What does Dr. Waldron suggest should be done with the positive reactors—pole-axe them, isolate them, or banish them from the country?—I am, etc.,

P. HEFFERNAN, M.D.,

Tuberculosis Office, Derbyshire County Council; President, North-Western Tuberculosis Society.

Buxton, April 2nd.

SIR,—May I enjoy the hospitality of your columns once more to epitomize this correspondence since my original letter and to elaborate slightly some of the points raised therein? The hornets have buzzed and we have learned the particular sting of each; let us hope that they will not be content to settle into their nest again. The correspondence has gone a little off the rails at times; the majority are agreed, however, that anti-tuberculosis organization in this country is very imperfect, and it would not seem that lack of adequate finance is entirely to blame.

The profession is evidently uneasy. It is apparent that there are good and bad tuberculosis dispensaries. Why? It is fairly obvious that this must be due to a misapplication of those bureaucratic principles which we all hate, but which are, nevertheless, a necessary evil in modern scientific organization. It seems to me that what is required is more co-ordination between the various local authorities responsible for these dispensaries, with a supreme authority, say, the Ministry of Health, in ultimate control. Impartial inspectors could then visit the various areas and ensure that the standard of efficiency would be uniform—the best. Thus, the anomaly of "E. N. R.'s" prayer for patients and mine for assistance might be removed. Visits would be made to all centres, official and otherwise, and details of the methods of each, proved good by the results, collected and adopted by all.

Dr. Camac Wilkinson's letter is full of sound common sense, but in thanking him for his invitation may I point out that any clinics organized in opposition to those existing would be courting failure without the moral and financial backing of the Government. The organizers must get a living wage from somebody, and their jobs would necessarily be whole-time. Adaptation of the present system would be surer of success, and would also enable the disciples of blood sedimentation, complement-fixation, Mantoux, etc., to offer their contribution as well as the champions of tuberculin.

It is too much, I presume, to hope that the Ministry or other authoritative body will take the initiative in this matter, so I appeal to the profession at large to give the necessary punch to a campaign for improvement. For my part I am proposing to make representations on the lines of this correspondence to our chief tuberculosis officer and to the Minister of Health himself, when I can find the time.—I am, etc.,

Greenford, April 4th.

ALISTAIR R. FRENCH.

* This correspondence is now closed.—ED., B.M.J.

BRITISH EMPIRE CANCER CAMPAIGN

In the absence of Lord Reading, Sir HOLEBURY WARING, President of the Royal College of Surgeons, presided at the quarterly meeting of the Grand Council of the British Empire Cancer Campaign, held at 12, Grosvenor Crescent, on April 9th.

A report was received from the judges concerning the essays on "The Biological Effects and Mode of Action of Radiations upon Malignant and other Cells" which had been submitted in connexion with the Garton Prize of £500 and gold medal. It was decided that the prize of £500 and the gold medal should be awarded to Dr. H. A. Colwell, M.R.C.P., D.P.H. As one of the other essays was of such high merit, Grand Council, under the rules and regulations, decided that a second award of £100 should be made to its authors, Dr. F. G. Spear in association with Dr. R. G. Canti, Mr. L. G. Gammitt, Dr. B. Holmes, Miss S. F. Cox, and Dr. W. H. Love.

The following were elected members of the Grand Council and of the Executive Committee of the Campaign: Sir Frederick Menzies, medical officer of health to the London County Council; Sir Peter Chalmers Mitchell, secretary to the Zoological Society; Mr. W. H. Ogilvie, assistant surgeon to Guy's Hospital; Captain Ian Fraser, M.P., chairman of the executive council of St. Dunstan's; Sir Frederick Hobday, principal and dean of the Royal Veterinary College; Dr. Malcolm Donaldson, gynaecologist to St. Bartholomew's and Mount Vernon Hospitals; and Mr. Eric L. Pearce Gould, surgeon to the Middlesex Hospital.

A grant of £150 to the Holt Radium Institute, Manchester, for the part-time services of Dr. R. McWhirter for the purpose of the continuation of his cancer research, was confirmed.

A report was received that the meeting convened by the Lord Mayor of London, to be held at the Mansion House on May 1st, in aid of the Empire Day Appeal, would be attended by H.R.H. the Duke of York, President of the Campaign, who will be supported by Sir Hilton Young (Minister of Health), Lord Reading (chairman of the Grand Council), Lord Dawson of Penn (President of the Royal College of Physicians), Sir Holburt Waring (President of the Royal College of Surgeons), Lord Horder of Ashford (chairman of the Scientific Advisory Committee), Lord Moynihan of Leeds (Past-President of the Royal College of Surgeons), Sir Charles Gordon-Watson, Sir Richard Garton, and other members of the Grand Council. Lord Moynihan will make a broadcast appeal on Sunday, May 20th, throughout the British Empire. Apart from the flag day to be held in the metropolitan area and the City of London, over 700 centres at home and over-seas are co-operating in a series of flag days, house-to-house collections, and similar activities.

Universities and Colleges

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE

Bayliss-Starling Memorial Scholarship

This scholarship has been founded by old students, friends, and admirers in commemoration of Professor Sir William Maddock Bayliss and Professor Ernest Henry Starling. Its annual value is about £120, with exemption from tuition fees, and it is tenable at University College, London. The scholar will be required to follow a course of study approved by the Jodrell Professor of Physiology, involving a training in the principles of, and methods of research in, physiology and/or biochemistry. Candidates must send their applications to the secretary of University College (Gower Street, W.C.1) not later than May 12th.

Bucknill Scholarship

The examination for the Bucknill Scholarship, value 160 guineas, and for two exhibitions, value 55 guineas each, will begin on May 14th. The subjects for the examination are chemistry, physics, botany, and zoology. The scholarship and the two exhibitions are tenable at University College, London. Entry forms should be obtained from the secretary of University College (Gower Street, W.C.1), and returned not later than April 27th.

UNIVERSITY OF ABERDEEN

The following degrees were conferred on April 4th:

Hon. LL.D.—Herbert Ritchie Spencer, M.D., F.R.C.P., Emeritus Professor of Obstetric Medicine, University of London.
D.Sc.—Captain Hugh Waddell Mulligan, M.D., I.M.S. (*in absentia*).

M.D.—W. C. Davidson (*in absentia*), *F. Hunter, D. Duncan, A. D. Macdonald.

M.B., Ch.B.—P. H. R. Anderson, H. S. Brady, W. M. Davidson, D. J. Fraser, R. S. Garden, W. N. Gilchrist, Mary E. Harrow, H. McB. Henderson, Marjory I. Lawrence, G. G. Lennon, A. MacLennan, J. D. MacLennan, J. S. MacKae, A. M. Mair, G. C. Milne, G. P. Milne, J. P. Milne, Rosalind M. P. Milne, J. R. Mutch, M. J. Schultz, W. Stewart, J. C. Thom, D. Wilson, J. S. M. Wilson.

* Commended for thesis.

UNIVERSITY OF ST. ANDREWS

The Senatus Academicus has resolved to confer the honorary degree of LL.D. on Sir Frederick Gowland Hopkins, Sc.D., F.R.C.P., President of the Royal Society, and Professor of Biochemistry in the University of Cambridge; and on Lord Moynihan of Leeds, K.C.M.G., C.B., F.R.C.S. The graduation ceremony will be held on June 29th.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At the monthly meeting of the College, held on April 6th, J. F. Cunningham, A. G. Thompson, G. C. Dockery, and A. H. Thompson were admitted to the Fellowship.

Professor T. G. Moorhead, past-president, was elected to the office of President of the College for the remainder of the current academic year.

The president nominated Dr. William Boxwell as vice-president of the College.

The following successful candidates at the Conjoint Final Examination with the Royal College of Surgeons in Ireland were admitted to Licences in Medicine and Midwifery: D. T. Broolly, Marie T. Carton, W. A. Cavanagh, J. A. Dorran, K. A. Evans, J. Hempenstall, T. P. Murray, Augustine McGennis, P. McKenna, K. G. Reynolds, S. A. Segal, P. J. Shields.

The Services

INDIAN MEDICAL SERVICE DINNER

The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, London, on Wednesday, June 20th, at 7.15 p.m. Major-General Sir Leonard Rogers, K.C.S.I., C.I.E., F.R.S., will preside. Tickets and all particulars may be had from the joint honorary secretary, Sir Thomas Carey Evans, Hammersmith Hospital, Ducane Road, W.12.

HONORARY PHYSICIAN TO THE KING

Brevet Colonel J. W. L. Scott, D.S.O., R.A.M.C., has been appointed Honorary Physician to the King, vice Lieutenant-General Sir Harold B. Fawcus, K.C.B., C.M.G., D.S.O., who has retired.

DEATHS IN THE SERVICES

Surgeon Commander Samuel Conner, R.N. (ret.), died at Twyford, near Winchester, on March 18th, aged 61. He was the youngest son of the late Daniel Conner, Royal Marines, of Ballybricken, County Cork, was educated at Queen's College, Cork, and graduated M.B., B.Ch., and B.A.O. of the Royal University, Ireland, in 1896. Entering the Navy soon after, he reached the rank of surgeon commander on May 26th, 1913. He served throughout the war of 1914-18.

Surgeon Commander Robert Howard Nicholson, R.N. (ret.), died at Blackheath on March 19th. He was the son of the late Captain Huntly Nicholson, Grenadier Guards, was educated at the London Hospital, and took the M.R.C.S., L.R.C.P.Ed. in 1882, after which he entered the Navy, attaining the rank of fleet surgeon on February 26th, 1899. He served as surgeon of H.M.S. *Albacore* during the Sudan campaign in 1884-5, at Suakin, and received the Egyptian medal and the Khedive's bronze star. After retiring from the Navy, during the war of 1914-18 he served as a temporary major in the R.A.M.C., and afterwards as a deputy commissioner under the National Service Ministry.

Medico-Legal

DUTIES OF THE MEDICAL WITNESS.—IV

TECHNICAL LANGUAGE*

Sir John Collie warns the doctor to avoid any suggestion that he is speaking down to the intelligence of the court or that he considers the judge and jury ignorant of the matter in hand. Nevertheless, one of the hardest tasks of the medical witness is to explain the medical facts fully, in plain, non-technical language, without seeming to patronize the court. A doctor habitually thinks and speaks the language of his profession, and it is difficult for him suddenly to express himself on technical subjects in plain English—perhaps the more so if he is given to writing papers in the medical press. But he must try to put himself in the position of the persons to whom he is speaking, whose occupations are very different from his own and who perhaps just for this one hearing come into contact with an entirely strange language and habit of thought. Let him recollect his own feelings when he was last buttonholed by an enthusiastic constructor of wireless receivers or by a friend who had just started to learn to fly an aeroplane. The judge certainly, and counsel possibly, know a good deal more about medicine and its language than they care to give away. Their general attitude is to assume ignorance in order to keep the medical witness down to earth. This is obviously necessary if there is a jury, because the jury has to try the case as far as the facts are concerned, and the judge must be most careful to see that it is given every opportunity to understand those facts. He can best do this by assuming no more knowledge of medicine than the collective knowledge of the jury, which is certain to be scanty and erroneous. There cannot be any doctors on the jury. Moreover, technicalities are a convenient cloak for lack of precise knowledge. Not only should the witness be sure that he is not using them in this way, but he should be careful not to give anyone in court a reason to say, "I don't know what the man is talking about, and I don't believe he does either."

So the medical witness, in addition to his other troubles, must give his evidence in what for him amounts to a foreign language. Instead, for example, of saying, like the witness in "Taylor," that the victim was suffering from "a severe contusion of the integuments under the left orbit, with great extravasation of blood and ecchymosis in the surrounding cellular tissue, which was in a tumefied state; and also from considerable abrasion of the cuticle," he must simply say that the man had a black eye. On the other hand, he must on no account give the slightest sign of impatience with or contempt for a collection of persons whose intelligence is so low that they have never heard of a sacro-iliac joint and do not even know what is meant by a supracondylar fracture. He might not be happy himself if he were required to translate the expressions "0.5 per cent. lagging power factor," "lying four points off the wind under a single jib and close-reefed main," or "tenant in tail with possibility of issue extinct." He ought rather to convey an apology that doctors use a language which ordinary men cannot understand. If he has to use a strange word, he should follow it up with an explanation; for example: "pain in the left sacro-iliac joint, where the lower part of the backbone is attached to the haunchbone on the left side." He can always make himself much clearer if he can take the appropriate bones, a diagram, or a model into the box with him.

Just as the medical witness should prepare himself for cross-examination by argument with a medical friend, so he should prune his evidence of unconscious technicalities by trying it on a lay friend. He could probably not find a better critic than his wife, unless she is also medical, for lay women are even more impatient of technicalities than lay men.

THE WHOLE TRUTH

Finally, counsel for the witness's side will sit down and leave his witness to the tender mercies of cross-examining counsel for the other side. It sometimes happens, though not very often, that he has left untouched some point of evidence which the doctor thinks is essential to the proper understanding of the case by judge and jury. The doctor has then a right, if he thinks fit, to state to the judge that he has something important to say in order to satisfy his oath to tell the whole truth. He should not thus take the conduct of the case out of the hands of his own counsel unless as a conscientious but a sensible man he feels that he would not be playing his part properly if he kept silent. The instances in which he is justified in taking the initiative are rare. The judge will probably tell him to answer cross-examining counsel's questions first and then afterwards invite him to say what he wishes to—if he has not already told it to cross-examining counsel. It is perhaps fairer that the witness should give this unasked evidence in chief and not in cross-examination, so that his own counsel may know what he has to meet, and may by further examination put the most and not the least favourable complexion upon it.

CROSS-EXAMINATION

When cross-examining counsel gets up, the medical witness should brace himself for a contest, but not one between the two parties to the dispute. Counsel is fighting for his side; the witness for the truth as he sees it. Therefore, although he must of necessity treat counsel as an opponent, he must not for one moment, from first to last, regard him as an enemy. He must use the same courtesy, maintain the same helpful and constructive attitude, as he did when he was being examined in chief by counsel for his own side. He must treat cross-examining counsel in exactly the same manner as he treated the more friendly counsel who called him. The cross-examination may be a very severe test of his patience and dignity, but he must accept the ordeal and on no account allow himself to show irritation, even in the smallest degree. Counsel may try to make him lose his temper, and the witness must not let him succeed. As the learned editor of "Taylor" puts it, nothing can tend more to lower the witness in the opinion of the court or diminish the value of his evidence than the manifestation to deal with his examiner as if he were a personal enemy, to evade the questions, or to answer them with flippancy or anger. Such exhibitions invariably end in the discomfiture of the witness.

Of the two chief methods of cross-examination the bullying method, so well described in *Pickwick Papers*, has steadily lost favour, and has more and more given place to the alternative and subtler method known as "leading up the garden." Counsel is fully aware that a resolute witness can often be cajoled into indiscretions which the most savage attack would not force him to commit. Witness should therefore be even more on his guard against clever attempts to make him contradict himself and say what he does not mean than against attempts to make him angry. A favourite device of counsel is to repeat evidence that the witness has already given in chief, but in a slightly different form, just a little weaker or a little stronger than the witness actually gave it. If the witness accepts this variation, counsel will proceed to expand the apparently trifling verbal difference into a vital contradiction. The doctor should therefore be particularly careful not to accept as his own evidence anything but what he has actually said.

When the witness was being examined in chief he was probably encouraged to speak at some length, to give his evidence in his own way, and to make what explanations he chose. In cross-examination he will be expected to go to the opposite extreme, for counsel will ask him a series of leading questions and try to make him rest content with an answer of plain "Yes" or "No," which will nearly always leave him committed to some statement which is quite different from the evidence he means to give. Witness must resist this attempt. He has sworn to tell the whole truth; few medical questions can be truthfully

* The first of this series of five articles by a legal correspondent appeared on March 3rd (p. 407), the second on March 17th (p. 508), and the third on March 31st (p. 600).

answered by "Yes" or "No," and he has a right to qualify or amplify this answer. He should therefore give his "Yes" or "No," immediately followed by a short, precise explanation. Sir John Collie writes that that eminent expert witness Sir Frederick Bramwell, when pressed to answer "Yes" or "No," got out of the difficulty by answering "'Yes' and 'No,'" and adding, "Now I will explain what I mean by that." The explanation should be as brief and clear as possible, for a long, rambling one is apt to make the witness appear to be not quite candid.

The opponent's counsel is given a very free hand, and can practically ask what questions he likes. Nevertheless, the court recognizes certain limits. A judge can, for instance, disallow irrelevant and vexatious questions, such as questions the object of which is to make a witness admit that he did something improper a long time ago, or questions which are damaging without really affecting the witness's credibility, and the doctor may appeal to the judge if he considers that a given question comes into this class. The medical witness should bear in mind, however, that he is expected to stand on his own feet under cross-examination as in other unpleasant situations in life. He should, generally speaking, be as reluctant to appeal to the judge as he would be to appeal to the referee in a game of Rugby football. The judge will always intervene if the rules are really broken.

CONFLICT OF LOYALTIES

The medical witness's chief difficulty comes when he is asked a question which he cannot truthfully answer without offending against medical ethics. He is sometimes invited to criticize another medical man. If he is asked whether, upon the evidence he has already heard, he considers that another medical man has shown a lack of due care and skill, he need not answer the question (*Collier v. Simpson*), but this authority will not excuse him from giving such an opinion on facts observed by himself. His best attitude is complete frankness. If he has a good reason for not expressing an opinion on the work of another medical man—if, for example, the work is outside his own practice or knowledge—he should say so to the judge. If he is prepared to give a favourable opinion, well and good; but if a truthful answer means asserting that a brother medical man has, in his opinion, not exercised sufficient care or skill, he had far better not beat about the bush or make half-hearted attempts to "whitewash" his colleague: to do so will not help the other man and will discredit the witness. He should insist on keeping to concrete details, and not, if he can help it, be led into general expressions of criticism. In dealing with matters of care, he may well confine himself to a statement that he, in the other man's place, would have done so-and-so; on matters of skill he may not be able to avoid comparison with a hypothetical average standard. If the whole action turns on whether the doctor in question has behaved negligently, the witness can properly ask the judge to excuse him from answering the question which the jury is there to try.

(To be concluded)

A new edition of the *Official Guide Book of Medical Post-Graduate Work in Hungary* has just been issued by the Hungarian Medical Post-Graduate Committee (VIII, Máriáutca 39, Budapest). This excellently illustrated volume contains full details, in English, of the various hospitals and clinics where all kinds of medical post-graduate work can be undertaken. It is stated that all the professors and chief physicians speak English, French, or German. In addition to its main office in Budapest, the Post-Graduate Committee has subcommittees in the other university towns, and arrangements for study can be made wherever desired. Much modernization of the existing institutions has been effected in the last few years, and several new medical buildings have been erected. The *Guide Book* also contains information about places of historic interest in Hungary. There are now in that country four medical faculties, with 4,520 beds available for medical and post-graduate training, as well as 21,534 beds in the large public hospitals.

Obituary

STANLEY MELVILLE, M.D.

President, British Institute of Radiology; Formerly Radiologist to St. George's and the Brompton Hospitals

Dr. Stanley Melville's sudden death from heart trouble, on April 6th, came as a great shock to a wide circle of close friends, particularly among radiologists. A man endowed by nature with a genius for friendship, his loss is felt as keenly as any that his specialty has sustained for many years.

Melville was born in 1869, qualified L.S.A. in 1891 and M.R.C.S., L.R.C.P. in 1893, and obtained the degree of M.D. at the University of Brussels, with distinction, in 1899; he was also called to the Bar by Lincoln's Inn. As a pioneer in x-ray work he did as much as any other man to bring this, the youngest of the medical sciences, into its rightful place as an

invaluable aid to all the others. He gave up a flourishing general practice when the fate of radiology was so problematical that only men of great enthusiasm and courage dared to stake their career on it, and it is fitting that his devotion and labour should have been rewarded by his appointment to leadership and direction in practically every radiological movement of any importance. When, as the result of his efforts, and those of a number of his colleagues,



Cambridge University established its Diploma in Medical Radiology and Electrology, Stanley Melville was made an original member of the Diploma Committee; he frequently acted as examiner, and until his death took great interest in the diploma and in the training of candidates for it. One of the foundation members of the Röntgen Society, the forerunner of the British Institute of Radiology, he acted as its honorary secretary for many years, and was president this year. In conjunction with Professor Sidney Russ he was also honorary secretary of the X-Ray and Radium Protection Committee, which he was largely instrumental in founding. Melville joined the British Medical Association in 1923, and rendered valuable service as vice-president of the Section of Radiology at the Manchester Meeting in 1929 and as president of that Section at the Centenary Meeting in 1932. He was a member of the Consultants Board in 1932-3. His hospital appointments were too numerous to catalogue, but among the most important of his activities were: his post of honorary radiologist to St. George's Hospital, which he had to relinquish some years ago on account of failing health; his advisorship to the London County Council; his membership of the Radiological Committee of the British Red Cross Association, for which he and the late Dr. Robert Knox were to a large extent responsible; and his work at the Brompton Hospital for Diseases of the Chest. Dr. Melville made radiology of the chest his special study, and in his association for many years with the Brompton Hospital he, perhaps more than any other man, helped to bring this branch of radiology to its present state of perfection.

As a man, Melville possessed a very great charm. He had a warm, mellow personality, combined with a sincere and robust character; and while he was completely uncompromising and fearless in controversy, he remained a firm friend of those with whose opinions he differed most keenly. Two months before his death he suffered an

overwhelming blow in the loss, after a long and painful illness, of his wife, to whom he was devotedly attached. He elected, however, to remain at work, but his heart was not equal to the strain, and he died, as he would have wished to die, whilst still actively following his profession.

At the funeral service on April 10th Dr. F. D. Howitt represented the British Medical Association.

We are indebted to Sir HUMPHRY ROLLESTON for the following appreciation:

As Stanley Melville's former colleague at two hospitals in London, and as a friend from the time when, a general practitioner in Nevcrn Square, he began radiological work at Charing Cross Hospital with the late Dr. Ironside Bruce, may I emphasize the outstanding importance of his long-continued interest and active influence in connexion with the development of British radiology—the standards, education, and qualifications of those engaged in this branch of medicine, radiologists and radiographers. He was much concerned in the preliminaries which led to the establishment of the first diploma in this country for radiologists, that of Medical Radiology and Electrology (D.M.R.E.) at Cambridge in June, 1919, and was a constant and energetic member of the joint committee of teachers in London and Cambridge which is responsible for the instruction and examinations for the diploma. After the death from aplastic anaemia in 1921 of Ironside Bruce, he was the moving spirit in the formation of the X-Ray and Radium Protection Committee—the first in the world to issue recommendations to prevent the harmful results of irradiations. With Professor Sidney Russ he was honorary secretary of this committee since the start; its recommendations formed the basis of those which were adopted internationally in 1928 at the Stockholm congress. The eventual establishment in 1927 of the British Institute of Radiology incorporated with the Röntgen Society, after long-drawn-out negotiations, owed much to his persistent efforts to overcome difficulties, and he was deservedly the president at the time of his death. The amount of quiet and unobtrusive labour he devoted to these objects will probably never be known; but his friends recognized that he carried them out under the handicap of painful physical disabilities, of which those due to x rays were by no means the sole, and that in addition the long illness of his charming wife, which terminated fatally this year, had profoundly affected him.

[The photograph reproduced is by Russell, London.]

ROBERT SEPHTON, M.R.C.S.

Atherton, Lancs

On Easter Monday, April 2nd, Dr. Robert Sephton died very suddenly at his home, the Manor House, Atherton, near Manchester. He was born on March 3rd, 1844, and was therefore in his ninety-first year. He retired from practice in 1920, but enjoyed remarkably good health almost to the end. He joined the British Medical Association in 1870, and had thus been a member for sixty-four years.

Robert Sephton began his medical career as an apprentice to a doctor in Liverpool and went to Atherton on October 1st, 1866, obtaining the M.R.C.S. in the following year. When he first started in general practice it was as assistant to his elder brother, the late Dr. Richard Sephton of Culcheth, near Warrington. This arrangement, however, was not of long duration, and the Atherton practice was soon made entirely independent. Dr. Sephton proved to be a most popular doctor in the district, and his practice became very extensive. His genial manner and happy disposition won the hearts of his patients, and even after his retirement, he was always regarded by them

with sincere affection. He took a great interest in public life, serving continuously as a member of the Leigh Board of Guardians for the remarkable period of fifty-two years (1875–1927), during which period he was many times chairman. He was elected in 1895 to the Lancashire County Council, of which he became an alderman in 1913, holding that position until his death. He served on many committees of the Council, among which reference may be made to the fact that he was for some time chairman of the Public Health Committee of the county. He was also a member of the County Mental Hospitals Board and of the Midwives' Committee. In addition, he was a justice of the peace for the County of Lancaster for twenty-seven years. The record of his public service is much too long for this brief statement, and must be almost unique. Dr. Sephton was interested in the industries of Lancashire, more especially in cotton-spinning and in the manufacture of nuts and bolts. He was, further, a prominent Freemason, being a member of the West Lancs Provincial Grand Lodge. Few men have won more universal regard and esteem. Public life always involves criticism, but those who most strongly disagreed with the policy followed by Dr. Sephton were always ready to acknowledge his absolute honesty and his unflinching justice. He was never ruffled, and his good humour and kindness of heart made him a man who will be very greatly missed.

Dr. Sephton married in 1872 Eliza, daughter of the late Ralph Poole of Atherton; his wife died five years ago. He leaves two sons and three daughters, his elder son being medical superintendent of the County Mental Hospital at Lancaster, while his younger son is the deputy chief engineer of the G.I.P. Railway in Bombay.

G. ARTHUR CARDEW, O.B.E., M.R.C.S.

Cheltenham

By the death of Mr. George Arthur Cardew on March 29th, aged 77, Cheltenham has lost one of its outstanding citizens, the profession one of its ablest and most valuable members, and the writer of this notice a friend of nigh fifty years' standing.

He was educated at University College, London, and Queen's College, Birmingham, and qualified M.R.C.S. and L.S.A. in 1877. In 1879 he became house-surgeon to the Cheltenham General Hospital, succeeding the famous Dr. David Hartley, who for forty years had occupied the post. Mr. Cardew's zeal and his efforts to bring the hospital up to date by instituting modern methods of treatment brought him a certain amount of opposition. With persistence and tact he soon, however, overcame this. In 1881 he vacated this appointment to take up private practice in the town. Soon afterwards he became the energetic honorary secretary of the Gloucestershire Branch of the British Medical Association, and later on its president. He then joined Mr. L. Winterbotham, an honorary surgeon to the hospital and a member of that well-known Gloucestershire family. Able, honest, and sincere, Mr. Cardew inspired confidence, and he soon built up an extensive and first-class practice. To those who did not know him he might perhaps seem a little brusque, but when you got to know him he was a loyal and kind friend. In 1910, when the council of the Ladies' College appointed a medical staff, he and I, who were already medical attendants at the college boarding-houses, were among the first members. We were also trustees of the Delancey Fever Hospital, both before and after it passed into the hands of the Cheltenham Corporation. Both these appointments he held until his last illness. A recital of the various other appointments and positions he held is simply a record of his wonderful activities and the diversity of his interests.

Mr. Cardew was for many years an officer of the Gloucestershire Royal Engineer Volunteers, and in 1903 he became lieutenant-colonel in command of the battalion. He held this rank until the battalion was disbanded under the Territorial Army scheme. Afterwards he became president of the G.R.E.V. Union. He was one of the first lecturers for the St. John Ambulance in Cheltenham. Shortly after the Great War broke out he took charge of the St. John Hospital at the Gloucester Road Schools. His splendid services there were recognized by the bestowal of the O.B.E., and he was also made an esquire of the Order of St. John of Jerusalem. He held the Volunteer Decoration and also the Diamond Jubilee Medal. In recent years he was chairman of the Cheltenham District Nursing Association (Victoria Home). When the British Medical Association met at Cheltenham in 1901 he acted as joint local secretary of the meeting. Mr. Cardew was a keen student of archaeology, had written many articles on the subject, and possessed a fine collection of flints. It was always a mystery to me how, with such an extensive practice, he could find time for all this outside work.

The death of his younger son, a lieutenant in the Royal Navy, in 1917 after a long and painful illness, and the death of his dear wife in 1930, affected him deeply, and he was never quite the same man afterwards. I was privileged to be near him in these times of trouble and sorrow, and I shall never forget his courage, fortitude, and resignation. The family—father, mother, two sons, and daughter—was an ideal one, so united, kind, and considerate to each other. It was therefore comforting and fitting that in the sunset of his life he had the tender care of a devoted daughter. His passing has left a deep sense of personal loss in the hearts of many.

R. K.

Dr. GEORGE ROBERT SEAGER THOMAS, who died suddenly at his home in Southampton on March 31st at the age of 46, was a well-known pathologist and police surgeon. He received his medical education at Cambridge and the Westminster Hospital, obtaining the diplomas M.R.C.S., L.R.C.P. in 1914, and graduating M.B., B.Ch. in the following year. His first appointments were resident surgical officer in the military wards at the Westminster Hospital, medical officer in charge of the children's out-patient department and superintendent of the pathological department at that institution, and bacteriologist to the City of Westminster. He was also for a time pathologist to the Norfolk War Hospital, and to the Royal Victoria Hospital at Netley. In addition to being senior police surgeon at Southampton, Dr. Seager Thomas was, at the time of his death, honorary pathologist to the Royal South Hants and Southampton Hospital, and the children's and ophthalmic hospitals in that town; consulting physician to the Hythe Memorial Hospital; and pathological specialist for the South-East region of the Ministry of Pensions. He performed the necropsies and gave expert evidence in a number of murder cases, including the Southampton garage murder in 1929. He frequently worked in co-operation with Sir Bernard Spilsbury, and at the time of his death was assisting him in the pathological investigation of the death of Mrs. White, in her bungalow at Hordle. He was to have been a witness at the adjourned inquest next month. One of his chief hobbies was botany, and he spent much of his spare time in the New Forest searching for rare specimens.

By the sudden death, on March 26th, of Dr. R. D. MACKINTOSH the borough of Barnes has lost a physician who was greatly loved. Robert Dunbar Mackintosh, who was born in 1865, came of old Highland stock, but his parents migrated to Ayrshire during his childhood. He was educated at Ayr Academy and Glasgow University, where he graduated M.B., C.M. in 1888. Shortly afterwards he succeeded his brother in the practice of Dr. William Marshall of Barnes. "Dr. Mac," as he was

affectionately known in Barnes, was a patient and skilful practitioner, and his ability would have become more widely recognized but for an accident which befell him at the height of his powers: a severe infection, caught from a patient, nearly cost him his life, and permanently affected his hearing. He was unfailingly generous: it was said that "he never charged a fee without first having a peep into the larder," and he had a genius for friendship with the young. He was a notable benefactor of local charities; hardly a year passed but one of his plays was performed in a good cause, and his pageant, *Queen Bess in Barnes*, was produced in many parts of the district. Dr. Mackintosh never forgot his Highland origin; he was a keen student of Gaelic and of Scottish history and romance.

The Right Rev. JOHN EDWARD HINE, D.D., D.C.L., M.D., Assistant Bishop of Lincoln since 1930, who died on April 9th on the eve of his seventy-seventh birthday, studied medicine at University College Hospital, and qualified M.R.C.S. in 1879. He then held for two years the post of resident medical officer at the Radcliffe Infirmary, Oxford, graduating M.D. Lond. in 1883. In 1886 he was ordained, and, after two years as curate at Richmond, Surrey, went out, under the Universities Mission to Central Africa, to Likoma, of which he was consecrated bishop in 1896. Five years later he was translated to Zanzibar, and from 1909 to 1914 was first Bishop of Northern Rhodesia. Bishop Hine told the story of his life in a book published ten years ago under the title *Days Gone By*.

We regret to announce the death, from pneumonia, in his twenty-eighth year, of Dr. VICTOR T. PARKINSON on April 1st, at the Leasowe Open-Air Hospital for Children. In December, 1930, he graduated M.B., Ch.B. at the University of Liverpool, and, after serving at the Royal Infirmary and Mill Road Infirmary as house-surgeon and resident medical officer, he took up the position of assistant medical officer at Leasowe. A short time later, when the senior medical officer resigned, he was appointed to take charge of the hospital. Up to the time of his death he had thrown himself into the work and devoted himself to increasing the scope of the hospital while maintaining its high standard. "P. H. W." writes: Parkinson was a keen worker, and his flair for administration made him the ideal man for the position he held. He was loved by all the children and the staff, and was very popular with his colleagues and those with whom his work threw him into contact in the surrounding counties. He was a keen golfer, and was always popular in whatever circles he found himself. His untimely death has left an irreparable gap in the medical work which he so faithfully carried out.

The Federated Malay States Division of the British Medical Association suffered a severe loss by the death, in a motoring accident on November 26th, 1933, of Dr. M. Y. LUM, at the early age of 40. Dr. Lum, who was born in Canton, received his general education at the Methodist Boys' School, Kuala Lumpur. He took his medical degree at Hong-Kong, where he had proved himself a distinguished student. Returning to Malaya, he entered the Malayan Government service, and three years later started in private practice. For many years he devoted considerable time to the executive, scientific, and social work of the British Medical Association in Malaya, and at the time of his death was chairman of the Division. He took a keen interest in the Chinese Maternity Hospital in Kuala Lumpur, where his work and influence will be greatly missed. His untimely death has left a gap which will be difficult to fill.

The following well-known foreign medical men have recently died: Professor RODOLEO STANZIALE, director of the dermo-syphilitic clinic of Naples University; Dr. JACQUES LE GRAND, professor at the medical school at Rouen and surgeon to the Rouen hospitals; Dr. ALEXIS

VICTOR MOSCHCOWITZ, formerly professor of clinical surgery at Columbia College, New York, aged 68; Dr. J. M. TROYA, one of the pioneers of ophthalmology in Ecuador; Professor CARL BRUHNS, director of the dermatological clinic at Berlin-Charlottenburg, who took an active part in the campaign against venereal diseases, aged 65; Dr. FRITZ HABER, professor at the Kaiser Wilhelm Institute at Berlin-Dahlem, and winner of the Nobel prize for chemistry in 1919; Dr. ALFREDO LARGUIA, an eminent paediatrist of Buenos Aires; and Dr. L. PIERCE CLARK, a New York authority on epilepsy.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons resumed on April 9th, and the House of Lords on April 11th. In the Commons the Road Traffic Bill was read a second time, and a Water Shortage Bill introduced. Debate arose on slums. The discussion on the resolution allotting money to aid the production of pure milk and for other purposes was postponed because of the illness of Dr. Elliot, Minister of Agriculture.

Corrigendum

We regret that the paragraph in last week's issue (p. 649) giving the Minister of Health's reply concerning the outbreak of small-pox at Blackburn was incorrectly headed "Small-pox Outbreak at Nottingham."—*Ed. B.M.J.*

Dinitrophenols

Captain Erskine Bolst gave notice that on April 12th he would ask the Home Secretary what time would elapse before action was taken to place on the appropriate poisons schedule dinitrophenols and dinitrocresols, drugs the use of which for "slimming" purposes had proved fatal in several recent instances.

The Government's Housing Policy

On April 9th, during a debate on the Civil Estimates, Mr. Hicks called attention to the administration of the Ministry of Health, in relation to housing. Sir HILTON YOUNG expressed the hope that the House, the local authorities responsible for housing, and public opinion as a whole would follow from month to month and year to year, during the five-years' programme of the Government, the actual achievements of the housing authorities to make sure that the programmes were carried out in time to achieve what the Government believed to be possible within the five years. It should be realized, he continued, that we were still in the period of acceleration in regard to pulling down the slums and putting further houses in their place. We had, however, already increased the speed of the work sufficiently to assure us that, if it was continued, we should complete the programme in five years. The actual acceleration of slum clearance was best shown by the figures of the resolutions declaring clearance areas. That was a critical point—the point at which the slum was actually declared to be a slum, and its clearance and the provision of fresh housing accommodation were made inevitable and certain. In the year which began on January 1st, 1933, 200 local authorities declared 894 fresh areas. In the three months from January 1st of the present year to the end of March the number of fresh areas had been nearly 1,000. Therefore, in the last three months more areas had been declared than in the whole of the preceding year, and we had already multiplied the rate of progress in slum clearance by four in the carrying out of the programmes. The curve was going up, because some of the biggest figures we had ever had were those for last March, when 347 fresh areas were declared. He hoped it would be possible to shorten the time which it took to get the schemes through, and, with experience of the working of the Act, he believed that the local authorities would be able so to organize their machinery as substantially to accelerate the progress of the work. In the six months to the end of last September between 55,000 and 66,000 small houses for the lower-paid wage-earners were built by local authorities and private enterprise combined. That compared quite favourably with

previous years, and it was encouraging to observe that this activity continued, to the best available information, undiminished. The lesson experience taught was that an uncontrolled subsidy was useless to cure the housing difficulty. That was the basis of the Government's policy, and it was being developed stage by stage. The second foundation stone of the Government's policy was that, with the assistance of public funds, backed by the whole housing energy and public opinion of the country, the slums should be no more. When that organization was completed and the attack launched on the slum evil, the Government could go on to deal with overcrowding. That was a matter which, when the time was ripe, as it would be before long, he would develop to the House.

Water Supplies: Emergency Measures

Mr. ATTLEE asked the Prime Minister what was the present position with regard to water supplies in the country, and what measures were proposed to meet the conditions arising out of the drought. Mr. MACDONALD said that the reserves of many water undertakings had fallen to a low level for this time of the year. The Government had been carefully watching the situation and, because of the continued absence of abundant rains, was satisfied that emergency measures must be taken. The Government therefore proposed to bring legislation before the House immediately. The Minister of Health would present a Bill on the following day. The second reading would be taken on April 12th instead of the Milk (Money) Resolution and other business announced for that day. Replying further to Mr. Attlee, Mr. MacDonald said that the Rural Water Supplies Act, which Parliament had just passed, was sufficient for its purpose, but the situation had worsened since, and required measures of a different character.

Sir HILTON YOUNG introduced the Bill on April 10th, under the title of the Water Supplies (Exceptional Shortage Orders) Bill. It applies to England, Wales, and Scotland, and is to be valid until the end of 1935. It will authorize the Minister, on or without a prior local request, to make orders for the supply of water from one undertaking to another, the development of new sources, the entry on land for this purpose, the pooling or rationing of supplies, and the reduction or withdrawal of "compensation" water. The Ministry of Health is advised that the March rains did practically no good in replenishing supplies; the summer rains will add little, and the effect of the drought on underground sources will not be manifest for some time. The normal expectation of rain is no longer sufficient to put supplies right, and the Bill is designed to put the remaining supplies to the best use. A special belt of drought is reported from North Wales, through parts of Lancashire and the West Riding, and many of the Pennine supplies are much depleted. Shortage is also reported in the Midlands, as at Kettering, and, apart from the provisions of the Bill, appeal is made for general economy by water undertakers and consumers. The recently passed Rural Water Supplies Act will remain operative, but the objects of the Supply of Water in Bulk Bill will, during the emergency, be more quickly achieved under the new Bill.

Medical News

Sir George Newman will deliver four lectures on "The Special Hospital Services" at Gresham College, Basinghall Street, E.C., on April 17th, 18th, 19th, and 20th, at 6 p.m. The lectures will be illustrated by lantern slides. Admission free.

The St. Cyres Lecture for 1934, on "Cardiac Arrhythmias," will be delivered at the National Hospital for Diseases of the Heart, Westmoreland Street, W., by Dr. J. M. H. Campbell on Wednesday, May 9th, at 5 p.m. Members of the medical profession are invited.

At the next meeting of the Chelsea Clinical Society, to be held at the Hotel Rembrandt, Thurloe Place, S.W., on Tuesday, April 17th, at 8.30 p.m., Mr. E. G. Boulenger will give an address on "Behind the Scenes at the Zoo Aquarium" (with lantern slides). The meeting will be preceded by dinner at 7.30 p.m.

The Queen will open the new wing (comprising the new Radiological Department in Granard House) of the Cancer Hospital, Fulham Road, S.W., on Wednesday, May 9th, at 3.30 p.m.

A meeting of the Medico-Legal Society will be held at 11, Chandos Street, W., on Thursday, April 26th, at 8.30 p.m., when a paper will be read by Mr. Claud Mullins, metropolitan police magistrate, on "How should Sexual Offenders be dealt with?" which will be followed by a discussion.

The sixty-first annual public meeting of the National Temperance Hospital, Hampstead Road, N.W., will be held in the out-patient hall on Wednesday, April 18th, at 4.30 p.m., with the president, Sir H. Percy Shepherd, in the chair.

A meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, April 18th, at 5.30 p.m., when papers will be read by Mr. F. Haynes and Mr. B. K. Johnson.

A post-graduate course on diseases of children will be held at the Hospital for Sick Children, Great Ormond Street, W.C., from April 30th to May 12th, from 10 a.m. to 1 p.m. and from 2 p.m. to 4 p.m. daily, except Saturdays (10 a.m. to 1 p.m.). The course will consist of fifty clinical lectures and demonstrations and six laboratory demonstrations; the fee is £6 6s.

The Fellowship of Medicine announces lecture-demonstrations by Dr. Clark-Kennedy at 11, Chandos Street, on April 17th on "Murmurs," and on April 24th on "Cardiac Irregularity." Dr. Ellman will lecture on "Pleural Effusions" on April 18th, and on "Intra-thoracic New Growths" on April 20th, both at 8.30 p.m. Dr. Edridge-Green will lecture at 4 p.m. on April 19th on "Vision and Colour Vision." A week-end course in gynaecology will be given at the Samaritan Hospital for Women on April 28th and 29th. Other forthcoming courses include psychological medicine, at the Maudsley Hospital, April 23rd to June 1st; dermatology, at St. John's Hospital, April 30th to June 2nd (afternoons and evenings); a week-end course in medicine and surgery, at St. Mary's Hospital, Plaistow, all day, June 2nd and 3rd. Inquiries should be addressed to the secretary of the Fellowship, 1, Wimpole Street, W.1.

The following German congresses will be held in May: Society of Oto-Rhino-Laryngologists, May 17th to 19th at Würzburg; Pathological Society, May 22nd at Rostock; Society for Psychiatry, May 23rd to 26th at Tübingen; Society for Welfare of Cripples, May 25th to 26th at Berlin.

The first Spanish Congress of Health will be held from May 6th to 12th, when the following subjects, among others, will be discussed: the organization of the services of rural hygiene, infantile hygiene, the campaign against tuberculosis, and centres for research and education in hygiene. The subscription is 50 pesetas. Further information can be obtained from the general secretary, Dr. L. N. Angulo, Dirección General de Sanidad, Plaza de España, Madrid.

The second French Congress of Phoniatri will be held in Paris on May 12th, under the presidency of Professor Moure, when Dr. Labarraque will read a paper on rhinological operations and phoniatri. Further information can be obtained from the general secretary, Dr. Tarneaud, 27, Avenue de la Grande Armée, Paris, 16e.

The Minister of Health has been informed by the Treasury that by a further agreement of the National Whitley Council for the administrative and legal departments of the Civil Service the arrangements for stabilization of Civil Service remuneration embodied in the memorandum of August 15th, 1932, will continue to apply on and from April 1st, 1934, pending the conclusion of negotiations for their replacement. The effect of this decision is to extend for a further period the operation of the Minister's circular letter of March 7th, 1932.

A medical tour is being organized for Whitsuntide to four of the Rhineland spas, including Bad Nauheim and Wiesbaden. Particulars may be had from the London representative and organizing secretary, Mr. Robert O. Rohme, 90, Sheaveshill Avenue, N.W.9.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

"A Terrifying Yell"

"J. F." (Manchester) writes: I have under my care a girl, aged 12½ years (first menstruation at 12 years), who for seven weeks past has been emitting a terrifying yell at intervals of five minutes for twelve hours daily. The "yell," which lasts on an average for six seconds, is accompanied by an extreme extrusion of the tongue. She has no warning of its onset, and becomes normal almost immediately it has passed off. The "yell" can be heard in the street at a distance of thirty yards, even when the bedroom window is closed. Fortunately, up to the present, it does not occur at night time. The nearest approach to a description of the yell is what I could imagine would be the "last terrifying shriek of someone being murdered." No treatment so far has been of any use. Can anyone help with a suggestion as to either diagnosis or treatment?

"Bee Wine"

Dr. C. T. ROE (Lincoln) writes in reply to "Ferment" (April 7th, p. 652): "Bee wine" is a fermentation of sugar and water by means of *Saccharomyces pyriformis* and *B. vermiciforme*. The ferment is sold dry by chemists; when active it looks like "bees" floating in liquid. The mixture is usually placed on the mantelpiece to ferment.

Dr. R. CRAIK (West Ealing) sends fuller information. "Bee wine," he writes, is a name given to cane-sugar solutions fermented by a bottom yeast, of which, during fermentation, small lumps keep rising to the surface like bees in flight. The classical example is Old English ginger-beer, the fermentation of which was proved, by the late Professor Marshall Ward, to be due to the symbiosis of a yeast (*Sac. pyriformis*) and a bacterium (*B. vermiciforme*). Lafar (*Technical Mycology*, vol. ii, p. 280) gives a description. I am told that working samples are often on sale in London during the summer at the Caledonian Market. The different names—"Californian bees" and "Macedonian bees"—suggest that the English ginger-beer plant has no monopoly of the process. And I have a yeast, recovered from sputum, which gives an active dancing fermentation in cane-sugar solutions—otherwise it resembles fruit yeasts of the *Sac. marxianus* type.

Income Tax

Pay during Leave—Special Study

"H. R." maintains a house in England, and was here on leave during 1932-3. He "took a course of study for four months, and during that period was granted an allowance of 12s. a day . . . to cover the cost of the course." The expenditure actually incurred amounted roughly to about 7s. a day. Can he claim that as a deduction?

* On the assumption that the allowance of 12s. a day was given on condition that the course of study was undertaken, and would not otherwise have been received, we are of the opinion that "H. R." can claim to deduct the

expenditure as incurred as outlay to enable him to obtain the allowance.

Cost of Visiting Hospitals

"F. G." writes to say that he has been refused—after appeal to the Commissioners—the deduction of the expense of travelling from the town in which he practises to London, where he holds an appointment as senior clinical assistant.

** Legally that is correct. There is, however, a general practice which has long official sanction of pooling appointment receipts with those of the general practice, and allowing the whole of the gross expenses against the aggregate gross receipts. But the normal case is one where the appointment is a local one. In the present instance there is a distance of seventy to eighty miles between the residence and the place where the work of the appointment is carried on, and the Revenue authorities may very well regard that as outside the usual arrangement, and follow the strict legal course of making separate assessments. In that case our correspondent appears to have no remedy.

LETTERS, NOTES, ETC.

Aetiology of Silicosis

Lieut.-Colonel G. FOWLER, I.M.S. (ret.), writes from Ghatsila with reference to the report on silicosis and tuberculosis in South Africa (*Journal*, January 20th): An excellent article has been written on the causation of silicosis by Dr. W. R. Jones, in the *Bulletin of the Institution of Mining and Metallurgy* (published at 225, City Road, E.C.), and any of your readers interested in this disease should read it. It clearly shows that the disease is due to the presence of sericite (a hydrous silicate of aluminium and potassium) in a fibrous or acicular condition. The comparison between the South African gold mines and the Kolar gold mines in India is interesting, as in the Indian mines the dry method of drilling is still carried on, and yet the disease there is extremely rare, whereas with wet drilling in the South African mines silicosis still exists and is a menace to the workers. [See page 676.]

Ether Convulsions

Dr. MARGARET H. ELLIOTT (Belfast) writes: I have seen several occurrences of ether convulsions such as described by Dr. D. Masters Brown (*Journal*, March 31st, p. 579). They appear to occur when the patient is lightly anaesthetized, and sometimes a pre-existing toxic condition exists. When toxicity is present the patient seems, during the administration, suddenly to pass from the first stage of anaesthesia to what is apparently the third stage, but what is more probably a state of anaesthetic shock, apart from operative intervention, and which on these occasions does not encourage one to deepen the anaesthesia (as one would if operation was in progress), although hardly enough anaesthetic has been administered as would ordinarily produce the third stage of anaesthesia.

Professional Telephone Facilities

CETEX LTD. (19, Grosvenor Place, S.W.1), an organization operating an auxiliary exchange under licence from H.M. Postmaster-General, announces the extension of this service to medical men living in the London area. The system, which is already used by commercial concerns, offices, private individuals, and one London newspaper, offers a day-and-night service to each subscriber. There are two types of service—automatic and non-automatic. The former obtains within a radius of roughly a mile from Hyde Park Corner, the latter extends over the whole London area. With the automatic service a switch is fixed to the subscriber's telephone, so that if he has to leave his instrument unattended, all in-coming calls can be diverted on a special line to the Cetex exchange. These calls are answered by operators in that exchange who, using the formula "Mr. —'s secretary speaking," will take messages, fix appointments, advise as to the whereabouts of the doctor in question, and, following instructions previously given to them, get in touch with him if required. When the doctor returns to his consulting room it is only necessary for him to switch back the telephone, ring the Cetex exchange, and take whatever messages there may be waiting for him. This automatic service costs £52 annually, and includes line rental, engineering charges, maintenance costs, etc. Facilities in respect of the subscriber's home telephone number are included under this charge, so that he need not notify any numbers other than that of his home and his consulting room. For those who live outside the "automatic" area the non-automatic service can be arranged for ten guineas a year. By this system the doctor

gives as an alternative number that of the Cetex exchange. In the event of no answer being obtainable at his own house the caller rings up the alternative number, and messages, etc., are taken as in the case of the automatic service. Here, of course, it is necessary to notify on the stationery and in the telephone directory that the alternative number (Sloane 4554) must be rung if "no reply" is obtainable from the first number. It is pointed out that all messages, etc., are treated in strict confidence, and that each subscriber has a private code number.

The Meaning of "Vegetarian"

The secretary of the London Vegetarian Society (8, John Street, W.C.2) writes: The text of Dr. Robert Hutchison's Hastings Popular Lecture, as published in the *British Medical Journal* of March 10th, contains no reference to vegetarianism, as such, nor is the word "vegetarian" once included. The fact, however, that leading representatives of the lay press, in publishing their reports of the lecture, assumed that vegetarianism, as invariably defined in this country by those who practise it—that is, as implying abstinence from "fish, flesh, and fowl"—had actually been disparaged, seems to call for some comment. "Doctor critic of vegetarianism," says one; "It is difficult to secure good nutrition by vegetarianism"—on the supposed authority of Dr. Hutchison—declares another. It seems plain, however, that at some point in the lecture the word "vegetarian," in one or other of its forms, was inadvertently used to denote the practice (so far as such, in this country, may be said to exist at all) of living entirely on the produce of the vegetable kingdom, but the fact, Sir, that the word, bearing such erroneous implication, did not actually appear in your own pages, is, in itself, significant. Whether or not the choice of terminology in the first instance was a wise one is now beside the mark; clearly, the word is now well understood, and, also, it has come to stay. The current meaning—denoting, that is to say, abstinence from flesh foods, with or without the use of dairy produce—as adopted by all the vegetarian societies in this country, has been in force at least as far back as 1847, and its employment with quite a different connotation by the lecturer on the occasion above-mentioned seems singularly unfortunate. Moreover, etymologically, the position would seem to be quite clear, the derivation being from the Latin *vegetus*, which means "strong," "vigorous." If, by courteous publication of the present letter, you should see your way to help in clarifying what is to many a not unimportant issue, a good many of your readers, I feel sure, would be duly grateful.

"Periodical Sterility"

Dr. MARIE C. STORES (London, W.1) writes: In the letter under the heading "Ovulation and Menstruation," in the *British Medical Journal* of March 31st, Dr. Denzaburo Kato mentions, as though it were an established fact, that "periodical sterility was a great relief to those people who are not allowed to use any mechanical or chemical contraceptive methods, and who want to limit their families"—in short, what has long been popularly called "the use of the 'safe period.'" May I state the results of an extensive experience at a birth control clinic, and of confidences from every country in the world from people of all classes, that the so-called "safe period," far from being a relief, is a snare and a delusion, and I am much surprised that it should be spoken of in your *Journal* as though it were an established fact.

Limits of Cosmetic Medicine

A correspondent sends us the following extract from a London evening newspaper of April 6th. "Miss Bankhead has just had five months in hospital. She is the same Tallulah. The same husky voice. The same dark eyes and the same pallid complexion." Is this to be regarded as a failure on the part of American laryngologists, ophthalmologists, and dermatologists?

The Marmite Food Extract Co. Ltd. (Walsingham House, Seething Lane, E.C.3) has recently issued a pamphlet on the medical uses of marmite. According to a recent estimation one ounce of this product contains 840 international units of vitamin B₁.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 50, 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 54 and 55. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 160.

ON THE CONTROL OF OBESITY*

BY

A. H. DOUTHWAITE, M.D., F.R.C.P.

ASSISTANT PHYSICIAN, GUY'S HOSPITAL

Sixty million pounds are spent annually in the beauty parlours of London. A considerable proportion of this sum is devoted to preventing the development of obesity or to combating an unsightly rotundity which has crept insidiously upon its victim. Yet this aim can be achieved with certainty without expense—in fact, with the exercise of economy. Two widespread fallacies in treatment should be at once exposed. The first is the wholesale exhibition of thyroid extract even though the gland be functioning perfectly. The other is the prescription of strenuous exercise to individuals already exhausted by the task of carrying about several stone of surplus fat.

DANGERS OF OBESITY

The obvious danger to a fat-laden body of microbic infection, or major operation, is too well known to need emphasis. On the other hand, the association of rotundity with many minor disabilities is less widely recognized. For instance, an extraordinary degree of impairment of muscular efficiency and signs indicative of cardiac embarrassment can be found in many people whose increase of weight at first glance appears to be trivial. All who have conducted post-mortem examinations will testify to the deplorable condition of the heart in the fat person. Not only are the usual pericardial deposits increased a hundredfold, but we find fat penetrating and destroying the myocardium relentlessly. The resulting impairment of the heart's action is almost always accompanied by deficient diaphragmatic movement, which is itself induced by the masses of omental fat which bulge the abdominal wall. No doubt it is a combination of these factors which is responsible for the high incidence of bronchitis and the invariable basal catarrh in the fat middle-aged individual.

The effect of fatness on mental processes is an interesting one. The old dictum of "Laugh and grow fat" should not be taken too seriously. In fact, it is questionable whether the cart has not been put before the horse. The fat person, as a rule, avoids effort, mental and physical, his critical faculties are dulled, and a tendency to laugh rather than to grumble shows his bias towards taking the easier path. This is why women urge their husbands to overeat. They exhibit the same attitude with regard to smoking. The affectionate term "fatty" conjures up a picture of the beaming subject of practical jokes. Yet, from time to time the habitual unruffled serenity of the obese is violently disturbed by an outburst of rage not infrequently occasioned by some quite trivial slight. Few persons realize what they are losing in respect of alertness by being fat until they take measures to restore their normal girth. It is during recovery that these patients exclaim with delight at the return of energy, interest in life, and the sensation of youth which accompanies it.

Loss of sexual attraction is an important consideration in keeping the population from obesity, but it is a feature which has not always been operative. At certain times in the world's history and in certain countries, extreme obesity in women has been regarded as attractive. Conversely, until recent years we have seen the younger females abolishing so far as possible every typical feminine curve. The explanation of this remarkable state of affairs is to be found in the increase of frankly or potentially

homosexual males, who arose from a childhood spent during the war, when they were subjected purely to feminine influence. We see now how cause and effect are on the wane.

The effect of obesity on fertility is more worthy of study. I have several patients whom I have assisted to normal outline whose temporary delight was marred by unexpected pregnancy. These women, having had one or two children, had become very fat and had gradually discarded contraceptive practice on the assumption that they could no longer bear children. The reduction of weight by dieting alone has restored fertility. In the male, impotence is more prone to arise.

Infiltration of the abdominal and perineal muscles with fat is responsible for the constipation and, in women, moderate incontinence of urine. The latter, in its turn, aggravates the existing intertrigo inherent in the flexures of every fat person. The bad stance induced by a pendulous abdomen commonly results in osteo-arthritis of the spine. The mere effect of excess weight and interference with the vascular supply of the joints by deposits of fat will induce osteo-arthritis of the knees in many cases. The alterations of the metabolism in the obese are still but imperfectly understood. It is certainly a fact that in the majority the basal metabolic rate is found to be normal, or even raised, provided the calculations take into account the increased body surface arising from the dead weight of fat in which metabolic processes are, to all intents and purposes, absent. A subnormal temperature is very common, and is quite compatible with a raised basal metabolic rate. From time to time outbursts of fever relieve the monotony as an expression of a spasmodic attempt on the part of the organism to destroy the material which is threatening its existence. Dyspepsia of a peculiar kind is to be observed in most of the gross obesities. It is characterized by a spurious appetite, by which I mean an inordinate desire to eat large quantities of food in an attempt to alleviate a sinking feeling in the epigastrium. As the meal progresses this sensation is overcome by drowsiness, and the victim is usually to be found snoring through a very liberal "forty winks" in the afternoon. If, added to all this, we recall the unpleasant body odour of the fat person, we need no more to convince us that obesity, if avoidable, is disgusting.

CAUSES OF OBESITY

It may be accepted as an axiom that fatness is due to excessive eating or to endocrine deficiency. Gluttony may, of course, be relative—that is to say, food intake has to be considered in relation to energy output. This is too obvious to need further stress. The excuses for over-indulgence are many and ingenious. The commonest is a denial that it exists. Nearly all fat people say they are small eaters, and often they are right. What they fail to recognize is that bulk and calorie value do not run parallel. It is worth while taking down from the patient's description a note of a day's food and analysing its energy equivalent. To find 500 calories in excess of requirements is quite common.

The necessity of keeping up strength, the sinking feeling without a meal, sleeplessness, or the remarks of neighbours that the patient is looking so ill—all or any of these may be used as an excuse for overfeeding. The most difficult of these arguments to overcome is that of sleeplessness.

*Address to the East Sussex Medical-Chirurgical Society, February 20th, 1934.

Prompted by posters of alluring beauties asleep with the aid of a hot drink of considerable food value, our patient, already disturbed by the indigestion of obesity, flies to the remedy and finds that it works—for a time. The sleep is induced, no doubt, by the diversion of blood to the splanchnic area, but in three hours the victim is wide awake again. What does she do? Reaches out for her thermos flask of hot milk, and so adds more fat to her greasy deposits.

Malt liquors are well known for their fattening properties, which are only slightly related to the trivial alcohol content. On the other hand, the avoidance of alcohol and smoking often drives the excessively righteous to an orgy of feeding which is more revolting than any vice he may have abandoned.

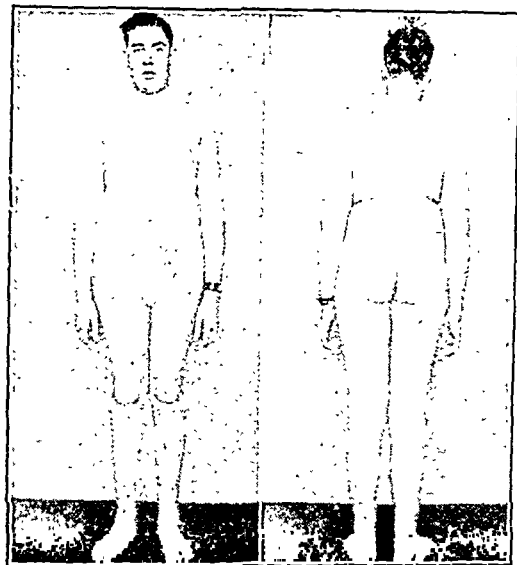


FIG. 1.

FIG. 2.

January 26th, 1934

to function through glandular insufficiency. As an example, the photographs of a case of Frölich's syndrome are instructive.

This boy is aged 14, measures 5 ft. 10 in., and weighed 13½ stone. The feminine distribution of fat is well seen on the buttocks and flanks. The distribution of pubic hair and tendency to knock-knee is likewise characteristic. The remarkable height of the boy is due to the disproportionate development of the lower limbs—namely, 38½ in. as compared with 31½ in. from pubes to the crown of the head. This feature is the result of testicular insufficiency secondary to pituitary failure. Note the typical venous stasis in the lower limbs. To give such a boy thyroid would be futile. The absence of thyroid involvement is always clearly shown by the normal shape of hands, fingers, and toes, the healthy condition of the hair, and the facies. Actually this purely glandular

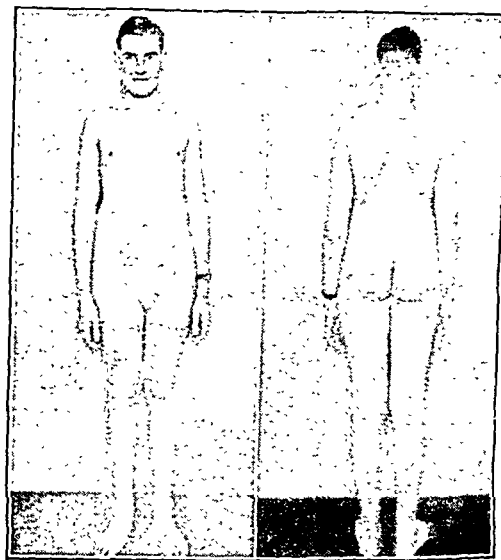


FIG. 3.

FIG. 4.

March 2nd, 1934. Note change in facial expression.

As to endocrine complicity in the development of obesity, my experience has been that this is present in some 20 per cent. of cases in clearly recognizable form. In a series of ninety-four cases seen privately, endocrine deficiency was present in eighteen, and of these there were ten examples of hypopituitarism, five of myxoedema, and three of gonadal insufficiency (two post-operative). Of twenty-eight hospital cases there were two examples of myxoedema, four of hypopituitarism (Frölich's syndrome), and the remainder were alimentary in origin.

It is particularly instructive to note that thyroid deficiency was unquestionably responsible for only seven out of 122 cases of obesity in view of the widespread and mistaken habit of prescribing thyroid extract to all fat patients. I quite realize that many of the other cases which I have classed as "alimentary obesity" had also some evidence of hypothyroidism, particularly those women whose pre-menopausal obesity increased rapidly with cessation of the periods. To these the administration of thyroid is justifiable, but it should be appreciated that by suitable dieting, if the case has not gone too far, all the symptoms can be abolished, and a moderately low basal metabolic rate may right itself in the process. This can never be said of true myxoedema.

It is unnecessary for me to describe in detail the characteristics of the various types of endocrine deficiency. In any case they are so often combined that it is impossible to be certain of the extent to which one of them contributes. Any hereditary factor which is present appears

obesity, with its associated drowsiness and lethargy, has been overcome in a few weeks solely as the result of dieting.

In hypopituitarism of later life the fat is deposited in masses on the body from the waist downwards, and often on the arms. Characteristically, the hands and feet are quite normal, as also are the forearms, ankles, and wrists. The face is not affected proportionately. The great increase in weight which affects many women after they have given birth to one child, and attacks a minority of patients after an acute illness or even operation, is presumably to be attributed to loss of activity of the anterior pituitary. The distribution of fat certainly favours this.

TREATMENT OF OBESITY

Whether endocrine or alimentary, the treatment of obesity is almost entirely a matter of dieting, with the one exception of the fatness of myxoedema. Preparations of pituitary, given by mouth and by injection for weeks on end, have proved valueless. Dr. P. Bishop, experimenting on rabbits with a well-known preparation of whole pituitary, has shown that it is in no way protected from digestion by the use of a keratin capsule, although the same material given intravenously displayed well-marked activity.

DIETETIC TREATMENT

What, then, is the principle of dietetic treatment? It is to give a diet of calorie value below that required for the optimum (not actual) weight of the patient. The

deficiency of calories is made up by the subject's using his own fat. It follows that all forms of obesity can be corrected by dieting. A gentle, but very efficacious diet, for which no calculation is essential, is as follows:*

On Waking.—A glass of water.

Breakfast.—Tea or coffee, sweetened with saccharine; one slice of dry toast, no butter; 3 oz. of cold tongue, boiled sole, haddock, or whiting; fresh fruit.

1 p.m.—A tumbler of water.

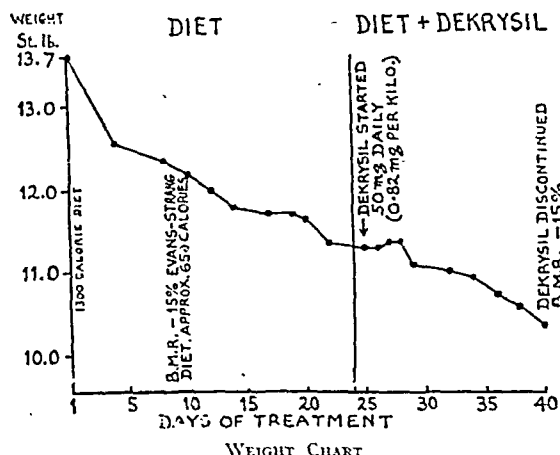
Lunch.—4 oz. of chicken or meat (except pork), but no gravy; vegetables as given below, cooked without fat; salad without oil; one square of vita-weat; fresh fruit.

5 p.m.—Tea without milk or sugar.

Dinner.—Bouillon; fish; 2 to 3 oz. of game or meat (except pork), no bread-sauce or bread crumbs; vegetables as mentioned below; salads; one slice of toast; dry wine; fresh fruit; coffee with saccharine.

Condiments Allowed.—Worcester and anchovy sauces, ketchup, pepper, mustard, vinegar, walnut pickle, horse radish, salt sparingly.

Vegetables Allowed.—Green vegetables (except peas), celery, seakale, asparagus, and salsify.



Anything not mentioned above may be assumed to be forbidden. This is safe even for elderly subjects with cardiac weakness, although the heart should always be carefully watched during reduction of weight.

A more accurate and much more rapid treatment has been devised by Evans and Strang.¹ Their diet is built up around 1 gram of protein per kilo body weight. This is necessary to maintain nitrogen equilibrium, provided that some carbohydrate is given with it. Without carbohydrate some of the protein would be diverted for its antiketogenic properties. Thus, not less than 0.6 gram is given for each gram of protein. One of these authors' diets which has been quoted recently² allows about 8 calories per kilo instead of the normal 25 to 30 calories. It is very efficacious, though drastic.

Evans and Strang Diet (about 650 calories)

Breakfast.—One egg and 1 oz. of bread.

Lunch.—One egg and 4 oz. of vegetables as below.

Dinner.—One cup of bouillon and 3 oz. of lean meat; 4 oz. of vegetables as below.

Vegetables Allowed.—Lettuce, cucumber, spinach, asparagus, endive, celery, mushrooms, tomatoes, sprouts, watercress, cauliflower, radish, cabbage.

Water as much as needed; no fried foods; a teaspoonful of bicarbonate of soda daily.

It is essential to eat all the amount mentioned in this diet.

The tendency to acidosis is relieved by the use of bicarbonate. Many patients on this Diet lose 1/2 to 1 lb.

* Modified diet from *Obesity*, Leonard Williams.

a day, but may feel listless and suffer constipation. This is the diet used for the patient illustrated above.

Kenyon's modification³ is a useful alternative, though capable of less accurate control. Its food value is approximately 1,000 calories. It allows of high protein, vitamin, and mineral salt content, and leaves the patient to consume his own fat.

Breakfast.—One portion of fruit; one egg and white of one egg; coffee, tea, bread substitute (for example, Heudebert's breadsticks).

Luncheon.—3 oz. lean meat, fish, or fowl; 1/2 pint 5 per cent. vegetables; one portion fruit.

Tea.—Tea.

Dinner.—3 oz. of meat, fish, or fowl and vegetables as at lunch.

9.30 p.m.—Half-cup orange juice; 1 oz. bemax.

In addition, 1 1/2 glasses skimmed milk daily (for calcium content); one capsule haliverol t.i.d. (for vitamin content).

A fruit portion = one orange; half a grape-fruit; one medium apple; two medium peaches; one small pear; one cup strawberries; one cup blackberries.

When the desired weight is attained the diet should be slowly increased with vegetables, and later butter and bread. With the exercise of a little care, weight may be maintained at the ideal figure.

DRUG TREATMENT

Cutting, Mehrtens, and Tainter⁴ investigated the pharmacological action of a yellow dye, alpha-dinitrophenol, which had given rise to fatal poisoning in the munition factories of France during the war. They found that the metabolic rate of animals could be raised 50 per cent. by a dose of 10 mg. per kilo, and over fourfold by larger doses, which would produce death from hyperpyrexia. In human beings the drug in doses of 3 to 5 mg. per kilo daily promptly raised the basal metabolic rate by 40 per cent., and this was accompanied by an average loss of weight of 2 lb. a week. Dodds and Pope,⁵ working with dinitro-o-cresol (dekrysil), found that it would produce the same effect as dinitrophenol, but in appreciably smaller doses—namely, 1 mg. per kilo daily.

Following this publication I tried the drug* in various doses on ten patients. With 1 mg. per kilo body weight given thrice daily, the temperature rose to 101° in two days, and this was accompanied by tremor, tachycardia, and profound malaise. On the third or fourth day the patients (three in all) were yellow in colour, just as if they were jaundiced. This is presumably due to the drug, which is a yellow dye; there was no true jaundice. The pigmentation passed off completely in five days to three weeks; the symptoms subsided in two days after cessation of administration. The remaining seven patients were treated with 1 mg. doses per kilo body weight once a day. No general constitutional effect was noticeable, but weight was lost, if at all, very slowly—for example, 1/2 to 1 lb. weekly.

Judging by Cutting's experiments with the more toxic dinitrophenol given for three months in full doses to animals, it is probable that the regular administration of dinitro-o-cresol is a safe procedure, if given in small doses. Subsequent to my somewhat alarming experiments, an illuminating article by Dodds and Robertson⁶ appeared showing how impossible it was to judge the effect of the substance on the metabolism by temperature or pulse readings; only estimation of the basal metabolic rate can be of help. The metabolic rate can be raised 50 per cent. or more, and yet be unaccompanied by any appreciable alteration in the heart rate or body temperature.

It view of the fact that it is possible to control obesity even if of frankly endocrine origin by means of dieting

* Supplied by the courtesy of British Celanese Ltd.

alone, it is clearly undesirable to use a drug which is poisonous in doses only a little above those which are effective. In obstinate cases its use may be countenanced, but only when strictly controlled by the doctor, who must be guided by knowledge of the basal metabolic rate. If these capsules be given to patients in bulk it will not be long before one of them doubles or trebles the dose in the same light-hearted way with which thyroid is treated, and then we shall have further scares from the coroner's courts.

REFERENCES

- ¹ Evans, F. A., and Strang, J. M.: *Amer. Journ. Med. Sci.*, 1929, cxxvii, 339.
² Dodds, E. C.: *Practitioner*, 1934, cxxxii, 61.
³ Kenyon, J. H.: *Journ. Amer. Med. Assoc.*, 1933, ci, 97.
⁴ Cutting, W. C., Mehrtens, H. G., and Tainter, M. L.: *Ibid.*, 1933, ci, 193.
⁵ Dodds, E. C., and Pope, W. J.: *Lancet*, 1933, ii, 352.
⁶ Dodds, E. C., and Robertson, J. D.: *Ibid.*, 1933, ii, 1137.

CUTANEOUS SENSITIVITY TO ACID-FAST BACILLI IN SUSPENSION

BY

PROFESSOR S. L. CUMMINS, LL.D., M.D.

AND

ENID M. WILLIAMS, M.D.

TUBERCULOSIS DEPARTMENT, WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF

Muir in India and Mitsuda and Hyashi in Japan have shown that, while advanced cases of nodular leprosy are negative to intradermal injections of "leprolin," a suspension of leprosy nodule in a state of fine division, the mode of preparation of which has been described in their articles on the subject, the more resistant types of anaesthetic lepers react positively to these injections. They report also that, while infants and young children are negative, healthy non-leprosy adults are usually positive to such injections, just as are the more favourable anaesthetic cases. Muir, being anxious to ascertain for certain whether healthy adults in countries where leprosy is no longer endemic reacted as do non-leprosy adults in India, suggested to one of us that he would be prepared to supply "leprolin" if these tests could be performed. We received from Calcutta a supply of Muir's "leprolin" early in October. This preparation, examined microscopically, was found to contain very large numbers of acid-fast bacilli irregularly distributed as single rods, small clumps, and large bundles. Tested for sterility, it gave no growth either aerobically or anaerobically, and a guinea-pig, into which 1 c.cm. was inoculated subcutaneously, has remained free from signs of infection to date.

RESULTS OF TESTS

Through the kindness of Dr. P. K. McCowan and his staff it was possible to carry out these tests on a group of twenty-five non-tuberculous male adults at the Cardiff City Mental Hospital, where successive series of tuberculin tests, designed to throw light on the degree of sensitivity of the population of a mental hospital, have been in progress for some years. As the tests proceeded it became clear that we ought to discover, as far as possible, how far the positive reactions noted were comparable, not only with tuberculin sensitivity, but with sensitivity to a suspension of killed tubercle bacilli, and our tests were accordingly supplemented to allow of this comparison.

On October 30th, 1933, each of the twenty-five men received in the skin of the right upper arm an intradermal injection of 0.1 c.cm. of "leprolin," diluted to 1 in 5 in sterile carbol

saline, and, at the same time, 0.1 c.cm. of a 1 in 2,000 dilution of old tuberculin in the skin of the left arm. The results were observed, and, where positive, measured in extent of raised palpable reaction area, on the third day and afterwards at weekly intervals up to the end of the sixth week.

All those tested gave the usual positive response to tuberculin, which reached its maximum in most cases on the third day, was still well marked, though fading, after one week, and, except in five cases, ceased to be measurable by the end of the second week.

With the "leprolin," thirteen cases were recorded as negative on the third day, and twelve gave more or less marked positive reactions, but the majority had become positive by the end of the first week, five only being recorded as negative or doubtful on the eighth day. All, with the exception of one patient, a Dane, who attained to a "doubtful" only on the eighth day, and was negative at all other dates, were "positive" sooner or later during the time of observation. Their reactions will be considered in greater detail later. The rapid disappearance of the well-marked reactions to old tuberculin, a filtrate containing the soluble elements of acid-fast organisms, as compared with the persistent though less extensive reactions following the inoculation of a suspension of whole leprosy bacilli, led us naturally to attempt a comparison between these latter and a suspension of unbroken tubercle bacilli, killed by heating, as had been the leprosy bacilli. To this end an egg culture of "human" tubercle bacilli, eleven days old, was suspended evenly in distilled water, counted, killed by heating, and diluted with carbol saline so as to contain 100 million bacilli in 1 c.cm. The sterilization was effected at a temperature of between 90° and 95° C. for one hour.

On October 20th, the remains of the tuberculin tests having by now practically disappeared, each of the twenty-five already tested were given an intracutaneous inoculation of 0.1 c.cm. of tubercle bacillary suspension, equivalent to 10 million dead bacilli, into the skin of the left upper arm, thus permitting a comparison with the leprolin reactions, many of which still persisted. As before, the results were read on the third day and at weekly intervals up to the end of the third week.

In examining cutaneous sensitivity to suspensions of acid-fast bacilli, the reactions, both to leprolin and to tubercle suspensions, were found to fall into three types, the distribution of these types, however, being very different in the tested group. These types are as follows:

- Type A.—"First high." Maximum reaction on third day.
 Type B.—"First low." Maximum reaction on eighth day.
 Type C.—"First negative." Negative on third day developing later.

The distribution of these types to leprolin and to tubercle bacilli respectively was as follows:

Reaction Type	Leprolin		Tubercle Bacilli	
	No.	%	No.	%
Type A ...	6	24	21	84
Type B ...	6	24	2	8
Type C ...	13	52	2	8

It will be noted that the great majority gave their maximum reaction to tubercle bacilli on the third day, just as they had done to old tuberculin; whereas the majority of the group were negative to leprolin on the third day.

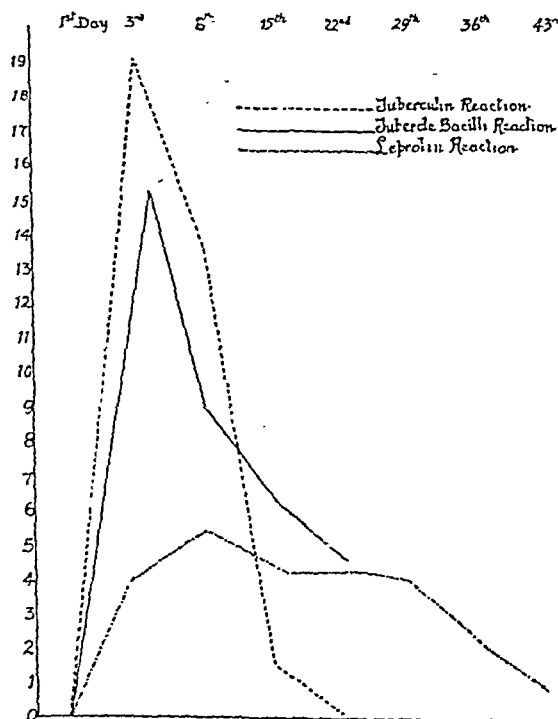
The reaction size in millimetres—maximum transverse measurement—is given, as the average for those included in each type, on each day of observation up to the end of the third week, by which date all the reaction areas were rapidly diminishing in intensity.

Average Reaction Size in Millimetres

Reaction Type	Antigen	3rd Day	8th Day	15th Day	22nd Day	No.
Type A ...	Leprolin	9.7	7.5	4.3	4.3	6
	T. B.	17.6	9.5	7.7	4.2	21
Type B ...	Leprolin	6.8	9.5	6.4	6.0	6
	T. B.	9.0	13.0	12.0	8.5	2
Type C ...	Leprolin	0	3.2	3.5	3.8	13
	T. B.	0	5.2	6.0	5.2	2

It will be noticed that, in addition to the fact that, a much larger proportion reacted; in the "Type A" manner, to tubercle bacilli than to leprolin, the reactions to tubercle bacilli were more extensive than those to leprolin in all the types, and on every day of observation. It is interesting to see that the "Type B" reactions persisted longer as a fairly extensive area of inflammatory thickening than the other types, both for leprolin and for tubercle bacilli. "Type C" was characterized by consisting, on the whole, of weak reactors. It is worth noting that the two persons giving a "Type C" reaction to tubercle bacilli were both "C" types to leprolin also, and were the two who reacted least to leprolin, both being so poor in response that it was a matter of some doubt as to whether they should be recorded as positive.

It seems from the results recorded that, in the "healthy" persons tested, the typical reaction to tubercle



bacilli is, like the reaction to tuberculin, one of early development with a maximum on the third day, while the typical reaction to leprolin is characterized by a slow development, being at first negative or doubtful, and only generally reaching its maximum at the end of the third week.

The relative extent and duration of the reactions to tuberculin, tubercle bacilli, and leprolin respectively is illustrated in the chart; but it is to be added that the reactions to tubercle bacilli had all the appearance of persisting quite as long as, or longer than, those to leprolin when the observations were brought to an end at the twenty-second day.

To see how tuberculous patients reacted to a tubercle bacillary suspension it was decided to test the same suspension, diluted so that 0.1 c.cm. contained 1 million bacilli only, in a series of clinically definite cases.

Five adult males with relatively chronic pulmonary tuberculosis, and three children with non-pulmonary lesions, were inoculated intradermally on November 27th, 1933, two children with "doubtful" non-pulmonary lesions being included as controls. All the definitely tuberculous cases

reacted according to the "A" type, while the two "doubtful" children proved negative. Tested with a dilution of 1 in 5,000 of old tuberculin on December 6th, the two "doubtfuls" were again negative, all the definite cases being markedly positive on the third day.

It is to be noted that, where bacillary suspensions were used for intradermal injection, there was a decided tendency to a central necrosis, a small loss of substance at the centre of the reaction area in certain cases, not necessarily those who had reacted most extensively at first. In the leprolin series five showed this central lesion on the twenty-second day, two more on the twenty-ninth, and still another on the thirty-sixth. In the tubercle bacillary series this central necrosis was earlier in appearance and more common, six cases showing it on the eighth day, while a further eleven persons had central loss of substance by the fifteenth day, the remaining eight having unbroken reaction areas up to the twenty-second day, after which observations ceased. By that date the majority of the reaction ulcers resulting from the necrotic process and noted on the eighth day had already dried up or healed, and the leprolin reactions, too, had scabbed over or disappeared by the forty-third day of observation.

SUMMARY OF OBSERVATIONS

The factors determining the responses noted to the intradermal inoculation of heat-killed acid-fast bacillary suspensions in persons free from the signs of clinically active tuberculosis call for further study, and can only be discussed as a part of the larger subject of bacterial hypersensitivity. Here it will suffice to summarize the points brought to light in the series of observations described.

1. The typical reaction to tubercle bacillary suspension resembles the typical intradermal tuberculin reaction in reaching its maximum on or about the third day. It differs from the tuberculin reaction in persisting longer and showing a tendency to late central necrosis. The writers have noted central necrosis as a rare occurrence after intracutaneous tuberculin tests, but these have been marked at the third day at the height of the reaction, whereas the central necrosis caused by bacillary suspension comes on as the initial inflammatory reaction is fading.

2. The typical reaction to leprolin (suspension of heat-killed leprosy bacilli and leprous tissue), when applied to healthy persons in an area free from endemic leprosy, differs from the intracutaneous tuberculin reaction in remaining for some days negative or doubtful, gradually developing to a maximum between the eighth and the fifteenth day, and lasting on for from four to six weeks as a diminishing zone of inflammatory oedema, often showing late central necrosis.

3. Six out of twenty-five persons tested with leprolin reacted to the injection in a manner similar to the usual response to intracutaneous tuberculin or to tubercle bacillary suspension, showing that they were hypersensitive to a bacillary antigen to which, presumably, their tissues were "virgin soil." This result suggests that "group" sensitivity must play a definite part in reactions to acid-fast bacillary constituents.

4. It is of interest that, in two probably non-tuberculous children tested with intracutaneous tubercle bacillary suspension, no reaction was observed either late or early, the bacilli being disposed of without inflammatory response.

BIBLIOGRAPHY

- Muir, E.: *Leprosy in India*, October, 1933, v. 204.
Hyashi, F.: *Internat. Journ. Leprosy*, 1933, i, 31.

The Bulletin of the Institute of the History of Medicine, which forms a supplement to the March issue of the *Bulletin of the Johns Hopkins Hospital*, contains articles by Professor H. E. Sigerist, Dr. Fielding H. Garrison, and others, in commemoration of the eightieth birthday of Professor Karl Sudhoff.

THE CAUSE OF HYPERPIESIA

PRESENTATION OF A HYPOTHESIS

BY

C. P. DONNISON, M.D.LOND.

Of the several theories that have been presented as an explanation of the common type of high blood pressure two alone receive an appreciable degree of general support. These are: (1) the toxæmic theory, and (2) the mental stress theory. The toxæmic theory may be subdivided into two groups, according to the suggested origin of the toxin. One suggestion is a focus of chronic infection, whilst the other postulates absorption of derivatives of protein digestion. The mental stress theory maintains that hyperpiesia arises as the result of an over-responsive vasomotor system consequent upon a high-pressure existence or of mental stress.

The aetiological factors established regarding hyperpiesia do not help much towards consideration of these theories, but one such factor, the geographical and racial distribution of the disease, affords some definite facts that require consideration when any theory is presented. The distribution of hyperpiesia is not world-wide. The condition is exceedingly common in Europe and North America. In Egypt¹ it is common among certain classes, more particularly the educated, whilst among the hospital classes it is rare. It is rare among Chinese and Orientals,^{2,3,4} who have apparently lower average blood pressures than Europeans. Conception and Bulatao⁵ have made similar observations in the Philippine Islands, whilst my own findings⁶ among the natives in Kenya Colony were of the same nature. The native of South Africa apparently only very seldom develops a high blood pressure,⁷ whilst in the African in America there is quite an appreciable incidence of the condition.^{8,9} The distribution of hyperpiesia throughout the world does not demonstrate a clear racial distribution, but shows an incidence that corresponds more closely with civilization. The African native seems immune from hyperpiesia whilst he lives in primitive conditions in Africa, but when he has been transported to America and adopts a mode of living associated with civilization, he becomes subject to it. Foster records,² among 4,000 hospital patients in China, one case only of hyperpiesia, that of a nurse, a highly nervous woman, who had gone to America to finish her education, and had returned with the habits and attitudes of a "Westerner."

I have stated elsewhere⁶ that my observations amongst African natives afforded evidence that, in my opinion, lent support to the mental stress theory. A consideration of other observers' findings, together with some observations that I have made in general practice in England, have led me to form some tentative conclusions regarding the manner in which mental stress might lead to hyperpiesia. I propose to present my conclusions in the form of a hypothesis, and will subsequently consider the evidence bearing on it.

CANNON'S EMERGENCY REACTION

The theory that mental stress can be held responsible for the development of an established high blood pressure suggests that Cannon's emergency reaction might have a bearing on the problem. Cannon's observations¹⁰ have demonstrated that a rise in blood pressure occurs in animals as a result of an emotional stimulus, and that such rise serves the purpose of preparation "directed towards efficiency in physical struggle." An animal confronted with a situation embracing features of an emergency receives an emotional stimulus which produces a

characteristic physiological reaction dependent on stimulation of the sympathetic nervous system and an outpouring of adrenaline into the blood stream, and manifested by general vaso-constriction, rise of blood pressure, rise of blood sugar, increased cellular content of the blood, and inhibition of motility and secretion in the alimentary tract. This reaction is essentially a physiological one, and cannot be held responsible for the development of a pathological condition without qualification.

The most outstanding fact known regarding the aetiology of hyperpiesia is its dependence upon civilized conditions for its incidence. Cannon's emergency reaction appears alike in the civilized and the uncivilized. What factor dependent on civilization can lead to a variation in the response to this reaction? Human evolution has reached a stage where the struggle for existence has ceased to be a physical one, and the first contrast in the changing circumstances of human evolution is the fact that Cannon's emergency reaction continues to be called into play, but often is not followed by physical struggle. Crile¹¹ and McDowall¹² have suggested that the muscular activity of the physical struggle that follows an emergency may act as a safety-valve for relief of the rise in blood pressure by causing widespread vaso-dilatation in the voluntary muscles. In civilized conditions this natural safety-valve action often would not arise.

The hypothesis is suggested, therefore, that the development of hyperpiesia depends upon the following sequence of events: (1) repeated mental stimuli bearing factors of "stress"; (2) the induction of Cannon's emergency reaction by such stimuli; and (3) the absence of physical struggle following the reaction. Resulting from the consideration of this hypothesis certain questions arise which require careful consideration.

REPEATED STIMULATION AND PATHOLOGICAL CHANGE

Can repeated stimulation of Cannon's emergency reaction give rise to the pathological changes associated with hyperpiesia?

It is generally accepted that the initial structural changes that arise in hyperpiesia take place in the arterioles, and manifest themselves by hypertrophy of the musculature of the media and also by some intimal hypertrophy. Degenerative changes appear secondarily to the hypertrophy in both intima and media. Turnbull¹³ has indicated that, whilst medial hypertrophy is apparently directly proportional to the height of the blood pressure, intimal hypertrophy is less directly dependent on the height of the blood pressure, and more dependent on other factors, such as age of the patient, and he concludes that intimal hypertrophy and degeneration are a result of, and not a cause of, high blood pressure. It is in the arterioles that the fall in pressure occurs from the arterial pressure of about 120 mm. Hg to the capillary pressure of about 20 mm. It is in the arterioles that the sympathetic vasomotor system exerts its chief influence upon the vascular system.

Cannon's emergency reaction is brought about by an outpouring of adrenaline into the blood stream and by stimulation of the sympathetic nervous system. That excessive secretion of adrenaline can produce pathological changes closely resembling those found in hyperpiesia has been demonstrated by the report of cases of tumours of the suprarenal glands causing a high blood pressure, and in some cases removal of the tumour has resulted in a fall of the blood pressure to normal levels.⁹ That there is an excessive secretion of adrenaline in hyperpiesia is distinctly doubtful. Vaquez¹⁴ first put forward the view that overaction of the suprarenal glands was the cause of hyperpiesis, but this view has been subjected to much criticism, mainly on the ground that several

observers have tried to demonstrate an excess of adrenaline in the blood of patients suffering from established hyperpiesia without success,¹⁵ and transfusion of blood from people with high blood pressure into normal individuals does not lead to a rise in blood pressure.¹⁶ Cannon's experiments have only demonstrated an outpouring of adrenaline as a response to an emergency. Some more recent experiments have demonstrated that, in addition to a rapid response to an emergency induced by the influence of adrenaline, there is a delayed response dependent on sympathetic stimulation and independent of the suprarenal glands.¹⁷ Consequently the failure to demonstrate an excess of adrenaline in the blood of cases of hyperpiesia does not exclude the possibility of Cannon's emergency reaction as a fundamental factor in the causation of that condition.

The effect of repeated stimulation of the sympathetic nervous system has been demonstrated by Goormaghtigh's experiments.¹⁸ By removal of the carotid bodies and section of the depressor nerves he claims to have produced not only a high blood pressure but lesions in the renal glomeruli exactly resembling those found in hyperpiesia. There is no evidence that these structures are interfered with in any way in hyperpiesia,¹⁹ but these experiments, and also the vascular changes in thrombo-angiitis obliterans,²⁰ do show that structural changes can arise from overaction of the sympathetic system.

EMOTION AND THE EMERGENCY REACTION

Is Cannon's emergency reaction produced in human beings by emotional stimuli?

No one would dispute that an emotional stimulus readily gives rise to an increase of blood pressure in human beings. This is a characteristic of all races, irrespective of civilization. The question as to whether this increase of blood pressure is a specific response to an emotion or is part of a more general reaction such as that described by Cannon is not an easy one to decide, as it depends upon demonstration of a coincident rise in blood sugar and other manifestations. Indirect evidence that there is an elevation of the blood sugar in emotional reactions in human beings has been obtained by Folin, Denis, and Smillie,²¹ who demonstrated sugar in the urine in about 18 per cent. of students after they had sat for important examinations. Of seventy students tested, one only had a trace of sugar before the examination, whilst afterwards thirteen showed glycosuria.

More striking evidence of the relation of both blood pressure and blood sugar to emotional conditions was obtained in a case of mine in which a fortunate coincidence enabled me to make a series of observations.

Mrs. P. first consulted me in September, 1929. She was then 24 years of age. She had two children, the younger being 2 months old and breast-fed. She came to me complaining of attacks suggestive of migraine. Blood pressure was found above normal for her age, the lowest readings obtainable being 152/96. Nothing else abnormal was found on examination except a faint trace of sugar in the urine. Owing to lactation it was concluded that the sugar was probably lactose, but the patient was advised to have her urine examined again after cessation of lactation. This she failed to do.

She consulted me again in February, 1932, for further typical migraine. Attacks varied in incidence from about once every three weeks to daily occurrences, and they tended to come on more readily if she was worried. She had had two attacks just prior to the consultation. In between attacks she felt quite fit. On examination she was found to have a blood pressure of 145/100, and glycosuria was present.

Six days later she was seen again. She had had no migraine in the interval. Her blood pressure was found to be 128/85 and the urine contained no sugar. On this occasion close questioning revealed the fact that she had been considerably

agitated and worried, owing to the fact that her mother-in-law, who lived with her, had been somewhat trying and difficult to get on with. The mother-in-law went away about the time of the previous consultation. It was considered that the glycosuria required investigation, so a sugar tolerance test was carried out. Blood sugar examinations were carried out by MacLean's method and revealed the following figures:

	Per cent.
Fasting blood sugar	0.070
Three-quarters of an hour after 50 grams glucose	0.100
One and a half hours after 50 grams glucose	0.088
Two and a quarter hours after 50 grams glucose	0.082

The glycosuria was thus dependent on a low renal threshold, and some subsequent observations confirmed its coincidence with mental stress.

It thus appears that in this case we have mental stress leading to a tendency for migraine attacks, a raised blood pressure, and glycosuria. In the absence of mental stress the blood pressure is within normal limits, and glycosuria does not normally occur. The presence of a low renal threshold afforded the opportunity of demonstrating the fact that the blood sugar rose with the blood pressure and fell with it in response to the emotional condition of the patient, thus suggesting that the rise of blood pressure in response to emotional stimuli is part of the more general reaction as described by Cannon.

REPEATED STIMULATION OF CANNON'S REACTION

What evidence is there that repeated stimulation of Cannon's emergency reaction can produce hyperpiesia? Repeated stimulation of Cannon's emergency reaction should lead to establishment of high blood pressure by means of vaso-constriction in the arterioles, and we should also expect some indication of effects on the blood sugar.

There are theoretical reasons, pointed out by Fishberg,² for supporting the view that vaso-constriction is the essential factor in the pathogenesis of hyperpiesia. The laws governing the flow of fluids through tubes have been studied by Poiseuille, and, though they may not hold exactly for branching tubes, it has been shown that they do apply fairly closely. These laws demonstrate mathematically that the radius of the vessel is the factor, variation of which would have most influence on blood pressure. Vaso-constriction would imply muscular activity, and the pathological finding of medial hypertrophy as the earliest morbid change affords strong support. That overaction of the sympathetic system can lead to a high blood pressure and the morbid changes characteristic of hyperpiesia has already been demonstrated.

Further consideration of the question of the bearing of Cannon's emergency reaction upon hyperpiesia can arise out of the blood sugar changes. If repeated stimulation of the reaction can produce, in certain circumstances, an established rise of pressure, then one would want to know what would happen to the blood sugar. O'Hare²² reports on a series of twenty-three cases of hyperpiesia in sixteen of which he observed diminished sugar tolerance. On the other hand, Marshall²³ records that he could find no relation between blood sugar and blood pressure, but his investigations were carried out on elderly people, all over 65. Musser and Wright²⁴ found marked lowering of sugar tolerance in a group of thirty obese subjects of hyperpiesia compared with a control group of obese people with normal blood pressure. Other references in the literature seem to reveal very varying standards of normality in sugar tolerance, and, when referring to hyperpiesia, are very indefinite regarding the nature and stage of the condition. Marshall has indicated that in elderly people diminished sugar tolerance is usual,

so that conclusions based on advanced cases of hyperpiesia must be accepted with caution. It is the sugar tolerance of the early case of hyperpiesia that might afford information of value regarding the hypothesis, and on this point the literature seems to reveal no definite information. A thorough investigation upon this point has been beyond my facilities, but I have managed to make scanty observations on one case.

Nurse R., a district nurse, who had worked in co-operation with me and who had been overworked throughout the winter, consulted me on March 4th, 1932, on account of headaches, dizziness, and mental depression. The only abnormality of importance that I found was a blood pressure of 170/110. Thinking that I had here an early case of hyperpiesia I took a specimen of blood for examination at between four and five hours after breakfast. Blood sugar was 0.122 per cent. The blood pressure remained high for several days, so I sent her for a month to the South Coast. On her return she felt much better, and her blood pressure was 135/105, so I arranged to repeat the blood sugar estimation under identical conditions. It was 0.058 per cent. (Both analyses were of venous blood.)

To sum up the evidence bearing upon repeated stimulation of Cannon's emergency reaction as a cause of hyperpiesia, theoretical and pathological considerations are considerably in favour of the hypothesis, but confirmation from sugar tolerance in the early hyperpietic seems at present to be lacking. Literary references seem indefinite and conflicting. One case of my own lends some support to the theory, but clearly further investigation on this point is indicated.

ABSENCE OF PHYSICAL STRUGGLE

What evidence is there that lack of physical struggle, that should naturally follow Cannon's emergency reaction, is an essential factor in the development of hyperpiesia? Attention has already been directed to the suggestion that the physical struggle that usually follows stimulation of the emergency reaction under primitive conditions acts as a sort of safety-valve for the raised blood pressure. Civilization has led to changes in the response to emergencies, which are comparatively infrequently followed by physical exertion. That this factor may be an important one in the causation of hyperpiesia is suggested by the fact that that condition shows an incidence dependent on civilization rather than on race, and on mental rather than on manual labour.

In order to obtain further evidence on this point an experiment was carried out on a volunteer. The aim of the experiment was to arrange to stimulate the emergency reaction and to follow such stimulation with vigorous exercise on one occasion and with rest on another. Then observations were made at intervals on the blood pressure and blood sugar in order to contrast the effects of exercise and its absence on the reaction. It was almost impossible in practice to devise a method of giving on two occasions emotional stimuli that could invoke reactions of equal intensity in a subject who was aware that he was being experimented upon. Consequently subcutaneous injections of adrenaline were given, as by this means stimuli of equal intensity could be applied on two occasions under controlled conditions.

The volunteer for the experiment, a healthy man aged 27, was given a light breakfast. Two and a half hours afterwards he was given a subcutaneous injection of 1/2 c.cm. of adrenaline chloride (1 in 1,000). Blood pressure was recorded before the injection and at half-hourly intervals afterwards for two hours. Blood was taken from a vein for estimation of sugar at the commencement of the experiment and at one hour and two hours after the injection. The blood sugar determinations were made by MacLean's method. In the first experiment, immediately after the injection of adrenaline, the

subject began some vigorous exercise, digging during the first half-hour, a brisk walk during the second half-hour, and more gentle walking in the remaining intervals. The exact figures obtained are shown in the following table.

EXPERIMENT 1.—With Exercise

	Systolic Blood Pressure	Diastolic Blood Pressure	Blood Sugar. Per cent.
Before injection ...	132	85	0.097
1/2 hour after injection ...	135	85	
1 hour after injection ...	118	78	0.097
1 1/2 hours after injection ...	116	78	
2 hours after injection ...	116	76	0.085

EXPERIMENT 2.—With Rest

	Systolic Blood Pressure	Diastolic Blood Pressure	Blood Sugar. Per cent.
Before injection ...	118	78	0.092
1/2 hour after injection ...	135	70	
1 hour after injection ...	128	75	0.125
1 1/2 hours after injection ...	124	76	
2 hours after injection ...	115	80	0.105

The first blood pressure reading in the first experiment was apparently elevated, evidently due to apprehension, as subsequent observations revealed that the normal blood pressure of the subject of the experiment was nearly constantly about 118/78. In both experiments the systolic blood pressure rose to about 135 mm. shortly after the injection. With exercise, however, it fell to normal within one hour, whereas without exercise it fell much more gradually, and did not reach a normal figure until two hours after the injection. This demonstrates how exercise acts as a sort of safety-valve after an emergency reaction in leading to a rapid lowering of the blood pressure to normal levels. No very definite variations of the diastolic blood pressure appear in the experiment. Blood sugar estimations serve as a useful confirmatory observation regarding the effects of the reaction, and effects similar to those on the systolic blood pressure are noted.

The subjective sensations of the subject were interesting. The dose of adrenaline was quite sufficient to produce subjective symptoms, such as slight shakiness and a sensation of being "strung up" in both experiments within the first half-hour. In the experiment without exercise these symptoms were definitely more marked and of longer duration, lasting about an hour.

These experiments demonstrate how stimulations of the emergency reaction without subsequent muscular exertion, as must occur repeatedly in the lives of many civilized human beings, must have effects differing from those obtained when such stimulation is usually followed by physical struggle. The difference may probably be more marked than this experiment would suggest, since these results are demonstrative only of the effects of adrenaline, whereas a delayed response dependent on sympathetic stimulation and independent of the suprarenal glands also occurs,¹¹ and this may conceivably result in still further delay in the fall of the systolic blood pressure to normal levels in the absence of physical exercise.

NATURE OF STIMULUS TO CANNON'S REACTION

What is the nature of the stimuli required to induce Cannon's emergency reaction in civilized conditions?

The hypothesis here presented implies that the causation of hyperpiesia is essentially psychological. An analysis of the factors requisite for the induction of Cannon's emergency mechanism reveals three stages as defined by

psychologists: first, cognition or perception, by means of one or more of the sensory systems, that an emergency has arisen; secondly, affection; and, finally, conation—a striving to influence factors for the benefit of the individual concerned. Cannon's emergency reaction is essentially a part of conation, in that it prepares the individual for dealing with an emergency by physiological anticipation of the imminent need for violent physical struggle. It will be helpful to consider the nature of the stimuli required under civilized conditions in the light of this psychological classification. Excessive induction of Cannon's emergency reaction would imply an excess of one or more factors in the process of cognition, affection, and conation.

Cognition depends on (1) environmental factors bearing features of the nature of an emergency, and (2) sensory perception thereof. Disorders of sensory perception involving an excess of cognition independent of environment would imply some form of delusions, and need no further consideration as a factor bearing on the aetiology of hyperpiesia. Environmental factors bring up many considerations. It has already been mentioned that civilized conditions have led to circumstances that favour the development and dissemination of factors calculated to present features of an emergency. Occupations involving heavy responsibility are clearly going to be fruitful in suitable cognitive factors, often referred to as factors involving mental "stress." The process of affection involves association of the emergency factors perceived with past experience, by which we recognize that a given combination of sensory perceptions implies something that is potentially harmful. This association with a past experience may be a conscious association, as when an emergency indicates a known danger; or it may be an unconscious association, such as may occur when the memory of an unpleasant experience has been repressed into the unconscious, but association invokes the emotion coupled with that experience. This is the essential mental process at work in psychoneurosis, and hence it would appear that in a condition of psychoneurosis, and particularly in that type referred to as an anxiety state, the disordered process of affection would increase the facility for suitable stimuli.

The stage of conation leads us into the realm of physiology, and manifests itself by a characteristic response to the condition that invokes the appropriate stages of cognition and affection, or, in other words, a conditioned reflex, as described by Pavlov, is induced. This reflex, or Cannon's emergency reaction, serves the purpose of preparation for physical struggle, which under primitive conditions is usually necessary when an attempt is made to influence the environmental factors in favour of the individual. This reflex reaction is subject to certain principles and laws governing reflex actions, among which facilitation, or "Bahnung," is of special significance in this instance. According to this, when an impulse has passed once through a certain set of neurones to the exclusion of others it will tend, other things being equal, to take the same course on a future occasion, and each time that it traverses this path the resistances in the path will be smaller.²³ This establishes on a scientific basis what the clinician refers to rather loosely as vasomotor instability. Often repeated stimulation of the emergency reaction would lead to a lowering of the threshold for that reaction and a heightening of the response to it. This would account for the variability of the blood pressure that is so frequently observed in the earlier stages of hyperpiesia, usually manifesting itself as an excessive reaction to emotional stimuli.²⁴ It has been suggested by Millais Culpin, in connexion with the causation of asthma, that an originally emotional stimulus could evoke a reflex

response by which a number of physiological reactions become abnormally labile. Such an explanation of a psychological aetiology of a physical condition is clearly capable of wider application.²⁵

To summarize considerations of the stimuli that would induce Cannon's emergency reaction and hyperpiesia in civilized conditions, it seems that the main initiating factors would be environmental conditions involving "stress" or heavy responsibility, and psychoneurosis. It would appear that these two factors would act as alternatives, though in any given case some element of each could be present. Vasomotor instability or facilitation of the emergency reaction serves as an important accessory factor in the causation of hyperpiesia, but it is probably incorrect to regard it as a primary factor. The readiness or otherwise with which facilitation would supervene in a given instance might determine whether, in a given set of circumstances, a high blood pressure would develop or not.

CLINICAL EVIDENCE FOR HYPOTHESIS

Having considered theoretical implications of the hypothesis in the last section, I shall now consider to what extent those implications are supported by clinical evidence. It is often stated by clinicians that high blood pressure is most prevalent among mental workers, and the city business man is often cited as the typical example. Literary evidence in support of this fact is scanty. In my own series of 117 cases collected in general practice sixty-three were in women whose occupations were household duties, in which the degree of mental stress involved is difficult to estimate. Of the remaining cases thirty were in occupations in which there was clearly an element of mental stress (for example, manager or owner of private business, nurse, accountant, teacher), whilst only two cases occurred in heavy manual workers.

With regard to the incidence of psychoneurosis in the early stages of hyperpiesia, literary references afford information of value. O'Hare, Walker, and Vickers²⁶ report a series of cases in which there was an early history of nervous temperament or vasomotor weakness in 42 per cent. and, in a smaller series, studied in greater detail, in 87 per cent. A control series of people with normal blood pressure gave 23 per cent. of cases with such a history. Stieglitz²⁷ describes several cases of patients complaining of physical distress dependent upon psychic strain in whom marked emotional rise of blood pressure was recorded. Ayman and Pratt²⁸ stress the fact that the earlier symptoms in hyperpiesia are of psychic origin, and that emotional stress is usually found as an antecedent. Davis²⁹ and Riseman and Weiss³⁰ make similar observations. Barton Hall³¹ investigated the blood pressure in various forms of psychoneurosis, and demonstrated that in neurasthenia and psychasthenia blood pressure is abnormally low, whilst in cases of prolonged mental strain and anxiety neurosis it may be abnormally high, falling with treatment of the neurosis. In my own series of cases a perusal of the histories reveals the existence of symptoms suggestive of past neurosis in 65 per cent. In many cases in which no such record exists I find that they are advanced cases that have probably been established for many years, and no report has been made of inquiry into more remote history of symptoms of neurosis. I am of the opinion that if such inquiry had been made in every case the percentage would have been distinctly greater.

As has already been mentioned, Ayman²⁸ has drawn attention to the lability of the blood pressure in early stages of hyperpiesia. Backer³¹ mentions the same fact. Both authors suggest that the hyperpiesia subject has a

vegetative nervous system which reacts excessively to slight stimuli. Ayman adds that

"in a limited number of observations it has seemed to me that the patient with essential hypertension tends to walk and work faster than the average; he is often more sensitive and more easily embarrassed than the average. Whereas the blood pressure of the normal person may rise from 10 to 30 mm. of mercury during excitement, that of the hypertensive patient more often rises from 30 to 100 mm."

Barton Hall has drawn attention to the variability of the blood pressure in anxiety neurotics. In my own series of cases I find notes of fairly decided variability of the blood pressure recorded in 54 per cent. In many of the remaining cases it was probably observed but not recorded, as it used to be my custom to ignore an initially high reading and to record only the lowest pressure obtained after several observations.

In the last section, when considering the stimuli likely to lead to development of hyperpiesia, I indicated how an occupation involving mental stress and psychoneurosis were to be regarded as alternative factors in aetiology, but vasomotor instability was probably itself not a primary factor, but was dependent for its development on one of the other factors. Consequently it would be helpful to analyse my series of cases regarding an occupation involving mental stress and a history indicative of psychoneurosis as alternatives. It was found that a number of those cases in such occupations presented no history of psychoneurosis. Grouping the two factors together, eighty-nine out of the 117 patients gave a history of one or both factors (76 per cent.). In the remaining twenty-eight, nine presented evidence of vasomotor instability, which some authors have accepted as evidence of nervous instability, and which at all events suggests that more careful inquiry would probably have led to evidence of this being found. The figures quoted in this series have been compiled from ordinary case notes collected over a period of four years. During the major part of this period the present inquiry was not foreseen, and no special attempt was made to elicit a history of significant symptoms. It is noteworthy that a number of the remaining twenty-eight cases were of elderly people in whose notes no evidence was afforded regarding conditions which would have been remote; sixteen of them were 65 years of age or over. There remained a small, clearly defined group of cases that fail to present features that support the hypothesis presented. These cases were in women at or after the menopause in whom adiposity was a characteristic feature. It would appear that the possibility of a different aetiology might have to be considered in this type of case.

SUMMARY

1. A hypothesis as to the causation of hyperpiesia is presented for consideration. This hypothesis suggests that hyperpiesia arises as a result of: (1) repeated mental or emotional stimuli bearing factors of "stress"; (2) the induction of Cannon's emergency reaction by such stimuli; and (3) the absence of physical struggle following the reaction. Evidence bearing on the hypothesis derived from literary references and from personal observations is reviewed.

2. The importance of the absence of physical struggle is demonstrated by a consideration of the geographical distribution of hyperpiesia. An experiment is described comprising observations on blood pressure and blood sugar after injections of adrenaline. It is demonstrated that the rise of blood pressure and blood sugar that follows an injection of adrenaline falls to normal levels much more rapidly if the injection is succeeded by vigorous exercise than in the absence of this.

3. Detailed consideration is given to the nature of the stimuli required to induce Cannon's emergency reaction in civilized conditions, and it is suggested that such stimuli either are mental stress in a life involved in heavy responsibility or arise as a result of a psychoneurosis. Vasomotor instability, which often appears to occur in the earlier stages of hyperpiesia, probably results from facilitation, and is dependent for its development on one of the foregoing factors.

REFERENCES

- ¹ Ismail, A.-el-A.: *Lancet*, 1928, ii, 275.
- ² Foster, J. H.: *Arch. Int. Med.*, 1927, xl, 38.
- ³ Cadbury, W. W.: *Ibid.*, 1922, xxx, 362.
- ⁴ Kilbourne, L. G.: *China Med. Journ.*, 1926, xl, 1.
- ⁵ Conception, I. and Bulatao, E.: *Philippine Journ. Sci.*, 1916, B, xi, 135.
- ⁶ Donnison, C. P.: *Lancet*, 1929, i, 6.
- ⁷ Heimann, H. L., Strachan, A. S., and Heyman, S. C.: *British Medical Journal*, 1929, i, 344.
- ⁸ Gager, L. T.: *Hypertension*, Baillière, Tindall and Cox, London, 1930.
- ⁹ Fishberg, A. M.: *Hypertension and Nephritis*, second edition, Baillière, Tindall and Cox, London, 1931.
- ¹⁰ Cannon, W. B.: *Bodily Changes in Pain, Hunger, Fear, and Rage*, second edition, Appleton and Co., New York and London, 1929.
- ¹¹ Crile, G. W.: *The Origin and Nature of the Emotions*, W. B. Saunders Company, Philadelphia and London, 1915.
- ¹² McDowall, R. J. S.: *British Medical Journal*, 1927, ii, 862.
- ¹³ Turnbull, H. M.: *Quart. Journ. Med.*, 1914-15, viii, 201.
- ¹⁴ Vaquez, Arch. Gênéral de Méd., 1904, xciv, 2786.
- ¹⁵ Janeway, T. C.: *Amer. Journ. Med. Sci.*, 1913, cxlv, 625.
- ¹⁶ Høst: *Acta Med. Scand.*, 1931, lxxvii, 28.
- ¹⁷ Newton, H. F., Zwemer, R. L., and Cannon, W. B.: *Amer. Journ. Physiol.*, 1931, xcvi, 377.
- ¹⁸ Goormaghtigh, N.: *Ann. d'Anat. Path.*, 1931, xviii, 585.
- ¹⁹ Keele, C. A.: *Quart. Journ. Med.*, 1933, new series, ii, 213.
- ²⁰ Telford, E. D., and Stopford, J. S. B.: *Brit. Journ. of Surg.*, 1931, xviii, 557.
- ²¹ Folin, Denis, and Smillie: *Journ. Biol. Chem.*, 1914, xvii, 519.
- ²² O'Hare, J. P.: *Amer. Journ. Med. Sci.*, 1930, clx, 366.
- ²³ Marshall, F. W.: *Quart. Journ. Med.*, 1930-1, xxiv, 257.
- ²⁴ Mueser, J. H., and Wright, D. O.: *Journ. Amer. Med. Assoc.*, 1933, ci, 420.
- ²⁵ Starling, E. H.: *Principles of Human Physiology*, third edition, J. and A. Churchill, London, 1920.
- ²⁶ Ayman, D.: *Journ. Amer. Med. Assoc.*, 1931, xcvi, 2692.
- ²⁷ Culpin, M.: *Lancet*, 1933, ii, 975.
- ²⁸ O'Hare, J. P., Walker, W. G., and Vickers, M.C.: *Journ. Amer. Med. Assoc.*, 1924, lxxxiii, 27.
- ²⁹ Stieglitz, E. J.: *Amer. Journ. Med. Sci.*, 1930, clxxxix, 775.
- ³⁰ Ayman, D., and Pratt, J. H.: *Arch. Int. Med.*, 1931, xliii, 675; Ayman, D.: *Amer. Journ. Med. Sci.*, 1933, clxxxvi, 215.
- ³¹ Davis, D.: *Ibid.*, 1931, clxxxii, 850.
- ³² Riseman, J. F. F., and Weiss, S.: *Ibid.*, 1930, clxxx, 47.
- ³³ Hall, S. Barton: *Lancet*, 1927, ii, 540.
- ³⁴ Backer, M.: *Amer. Journ. Med. Sci.*, 1931, clxxxii, 648.

At a meeting of the New York Board of Health, on March 20th, the whole question of bathing in the tidal waters of New York City was considered. It was shown that there was as yet no agreement among sanitary authorities as to the bacterial standards which should be adopted for bathing beaches. A study of the 557 cases of typhoid fever in the city last year showed that only fifty-one of these were ascribed to bathing in polluted waters. In practically all of these cases the victims had bathed in Jamaica Bay, Gravesend Bay, or the Harlem River, areas in which the water is heavily contaminated with sewage. A report concerning the sanitary conditions and bacteriological examinations of the waters at the Bronx beaches and Orchard beach was considered. This, together with the fact that the local waters are so largely diluted with the waters of the Sound, led the Board to sanction a continuance of bathing at these beaches, at least for the coming summer. The Board directed that a determined effort should be made to control direct sewage pollution of bathing beaches generally. It also decided that sanitary and bacteriological surveys should be undertaken during the summer in order to gain more definite information as to the bacterial standards to govern the waters of bathing beaches.

CERTAIN INJURIES OF THE KNEE-JOINT*

BY

T. P. McMURRAY, M.Ch., F.R.C.S.Ed.

HONORARY ORTHOPAEDIC SURGEON, NORTHERN HOSPITAL, LIVERPOOL;
DIRECTOR OF ORTHOPAEDICS AND LECTURER IN
ORTHOPAEDIC SURGERY, LIVERPOOL
UNIVERSITY

The injuries and strains sustained by the knee-joint are legion, and their signs and symptoms are often so indefinite that a diagnosis is made with the very greatest difficulty, and with no great confidence. Indeed, it is because of the medical man's want of confidence in his knowledge that in many cases the patient turns away from the qualified and seeks the unqualified practitioner. There is no doubt that we of the medical profession are very largely to blame for this loss of confidence on the part of many members of the general public. Instruction in joint surgery is not given the prominence it deserves in our medical education. Our surgical teachers have for the most part stressed the great advances in abdominal surgery, and the newly qualified doctor is allowed to find out for himself what he considers the best methods of dealing with joint lesions. Fortunately there has been a great improvement in this branch of teaching during the past ten years, but much more is necessary before we cease to hear what was told me by two patients during the last fortnight. They stated they had been to unqualified practitioners, but added in explanation: "Of course, my doctor acknowledges he does not know anything about bones and joints."

We must not be content with this one-sided knowledge of the human body and its ailments; we must not only recognize the lesion which is present, but must know the best method of correcting it. It is only when we have a sure knowledge of ourselves that we are able to convince our patients of our ability to give them the correct form of treatment, and so wipe away this slur from our profession.

I now propose to discuss in turn the different types of lesions to which the knee is subject.

CRUCIAL LIGAMENTS

These ligaments, which may be taken as the sole representative of the normal bony interlocking in a large weight-bearing joint, are usually injured only as a result of very severe trauma, and such an injury is diagnosed by the possibility of an abnormal amount of active or passive gliding of the tibia on the femur. In no other lesion of the knee-joint is speed so essential in making a correct diagnosis and starting treatment, because the prognosis depends largely upon the time which elapses between the accident and the commencement of treatment. When the knee is flexed to an angle of 45 degrees both anterior and posterior crucial ligaments are relaxed, and a partial or complete rupture of either crucial ligament is best treated by prolonged immobilization of the knee at this angle for a period of three or four months.

If the ligament is completely torn and the ends separated from each other this method of immobilization is bound to fail, but fortunately in the great majority of cases the rupture is not complete, and in my personal experience there have been several cases of clinically complete rupture in which this treatment has resulted in a sound joint with no sign of ligamentous weakness. There are other cases, however, for which adequate treatment has not been adopted, or in which it has failed, and the problem arises whether any operative measures can be employed to suture or replace the injured ligament with other structures.

Many ingenious operations have been devised to deal with the condition. These have varied from the suture of the ruptured ligament *in situ* with catgut, silk, or even wire, but the end-results in every case have been disappointing. When catgut has been used the result has usually been a slow absorption of the gut and reappearance of the primary laxity. When silk or wire has been used the result has been even more unsatisfactory, because the presence of these foreign bodies has led to the formation of a definite osteo-arthritis and an increase of disability. Hey Groves devised an ingenious operation by which, through drill holes in the femur and tibia, a portion of the ilio-tibial band—which had been rolled into a cord—was used to replace the injured ligament, but unfortunately this new ligament gradually stretched, and after twelve months or so the laxity again appeared. In fact no satisfactory and reliable operative measure has been devised by which we can replace the action of either crucial ligament after a complete rupture. We are left, then, with the problem of an unstable knee in which at any moment the tibia may shoot forwards on the femur. This instability may be somewhat relieved by the wearing of a knee cage, which will prevent the shooting forwards, but the wearing of this inevitably leads to wasting of the important muscle groups surrounding and governing the joint. It is far better to attack the instability by developing these muscles by voluntary exercises and carefully regulated massage, which usually results in an astonishingly sound and useful knee-joint. When, however, both crucials are divided, or for any reason it is impossible to produce a sound muscular control, the problem of arthrodesis of the joint has to be considered very carefully.

INTERNAL LATERAL LIGAMENT

When any ligament is strained or ruptured the lesion usually occurs, not in the middle of its course, but near one or other of its bony attachments. This is a point of the very greatest clinical importance, for after a strain or tear of the internal lateral ligament the area of tenderness is found at the femoral or tibial insertion, more often the former.

Strains or tears of the ligament should be treated by complete rest for a period of fourteen to twenty-one days, during which the newly forming scar tissue is allowed to consolidate, but after that time complete fixation and want of use are inadvisable. In other words, the patient should then be allowed to walk and exercise the leg, but with the proviso that the injured ligament is protected from all strain. The increased circulation caused by use is helpful in strengthening the union and in the prevention of adhesions round the injured area. While this line of treatment is quite satisfactory in those cases where the injury of the ligament is only partial, it will fail when the rupture is complete. Just as in the instance of rupture of the crucials, simple suture of the divided ligament usually leads to a disappointing result. In such a case the ruptured ligament may be reinforced by the tendons of the neighbouring semitendinosus or gracilis muscle, which are freed from the fascia holding them to the posterior aspect of the internal condyle, and one or both are implanted into a deep groove cut into the internal condyle of the femur. In this manner the muscles become inserted into the femur and not into the tibia, their lower portions being sutured to the substance of the injured ligament and reinforcing this structure. There are, however, cases in which, after a strain of the knee, tenderness is found over the middle of the internal lateral ligament about the level of the knee-joint. These are not true cases of strain of the ligament, but strain of the attachment of the internal semilunar cartilage to the deep aspect of the ligament, and they should be treated for this lesion.

* Lecture delivered to the Nottingham Medical Society, November 22nd, 1933.

We can say, then, that in any recent injury of the internal lateral ligament, in addition to the instability of the joint, there is tenderness, either at the insertion of the ligament into the femur or into the tibia. Later, when the inflammatory reaction has disappeared, this tenderness will also disappear, and only a greater or less amount of laxity is left to indicate the previous lesion.

EXTERNAL LATERAL LIGAMENT

Injuries and tears of this ligament are much rarer than those of the internal, probably because in most people there is a slight tendency to knock-knee, and because the external lateral ligament is protected by the powerful ilio-tibial band of fascia lata and the strong tendon of the biceps femoris. These, of themselves, are almost capable of supporting the outer side of the joint without the help of the external lateral ligament. If, however, the ligament is strained the tenderness is not usually so marked, and this absence of tenderness is probably more apparent than real, owing to the difficulty of finding the tender spot which lies under the cover of these protecting structures. Just as in the case of the internal lateral ligament, a strain or tear is accompanied by tenderness at the insertion of the ligament into the femur or the fibula, the latter being the usual site of the lesion. Strains of the internal lateral ligament are frequently accompanied by strains, or displacements, or even tears of the internal semilunar cartilage, because of the close association of the two structures, but similar injuries of the external lateral ligament are not generally associated with any lesion of the underlying meniscus, because there is no definite connexion between the two structures.

SEMI-LUNAR CARTILAGES

By far the commonest derangements of the knee-joint are injuries or displacements of one or both of the semilunar cartilages. These two fibro-cartilaginous bodies are placed between the articular margins of the femur and tibia, apparently in order to deepen the surface of the tibia on which the femur articulates. They are both firmly attached to the upper surface of the tibia, firstly by the very firm attachments of their anterior and posterior horns to the upper surface of the bone, and secondly, along their periphery to the non-articulating circumference of the tibia by short fibrous bands known as ligamenta coronaria. In addition, the internal cartilage has the accessory attachment to the deep surface of the internal lateral ligament already mentioned, and the external cartilage sends some fibres into the posterior crucial ligament.

The two cartilages follow very closely all the movements of the head of the tibia, but there is also permitted a slight gliding movement of both cartilages on the upper surface of the bone. In the normal knee-joint this movement is very slight, but where there has been repeated effusion into the joint, and there is a generalized ligamentous laxity, the movement may be very definitely increased.

We know certain facts regarding the mechanism of cartilage injury, but there are many points on which we cannot at present dogmatize. Twists or strains of the joint may cause injury of a cartilage, usually the one on the side towards which the strain has been directed. Thus, if the knee is strained on the inner side the internal cartilage may be injured, and similarly the external cartilage may be injured by a strain applied to the outer side of the joint. Such a displacement or injury of the cartilage never occurs, however, unless the knee-joint is flexed at the time of receiving the strain. The reason for this is obvious—the cartilages are so firmly fixed to the head of the tibia that they follow that bone in all its

movements. If, however, the knee-joint is bent at the time of receiving the strain, then a lateral or rotary strain on the joint may easily displace the cartilage from its attachment to the tibia, or may cause a definite bursting strain of the cartilaginous fibres. A close study of the histories of patients suffering from lesions of the semilunar cartilages will soon convince us that these injuries always occur when the knee-joint is in a position of flexion.

DISPLACEMENT OF INTERNAL CARTILAGE

Let us take a textbook description of a displacement of the internal semilunar cartilage, which is by far the commonest lesion.

The story is that whilst the knee was in a position of flexion the foot was suddenly twisted outwards, or the femur twisted inwards, and the patient felt a sudden acute pain in the antero-internal aspect of the joint, so that he was unable to bear his weight on the leg, and fell down. On attempting to rise, straightening of the knee may or may not have been possible, according to whether the cartilage had in the meantime remained displaced or had gone back into its normal position. This trauma was followed in a few hours by swelling of the joint, which gradually disappeared in the course of a week. At the end of that time the joint appeared normal, except, possibly, for some tenderness on pressure over the antero-internal aspect, just to the inner side of the ligamentum patellae and post-patellar pad. This displacement may only have occurred once, but usually the primary injury was the precursor of many more of a similar nature, each one occurring with slightly less cause than the last and being followed by less reaction in the joint, as indicated by the swelling. In the intervals between the occurrences no gross abnormality can be found in the joint. There may be tenderness on pressure over the antero-internal aspect, but there is no sign apart from the fact that the patient usually says the joint feels unstable and likely to give way on any similar twist.

Here the diagnosis must rest on the history, on the localized tenderness, and possibly, if we are lucky, on seeing the patient directly after one of these displacements has occurred.

DISPLACEMENT OF EXTERNAL CARTILAGE

The story of a displacement or injury of the external cartilage varies very little from that of an internal, except that the knee—again in flexion—has been twisted in the opposite direction, so that the tibia is rotated inwards, or the femur outwards, with the result that the knee is useless and there is pain on the outer side at the joint level. The subsequent story, however, is different. "Locking"—by which we mean the impossibility of straightening the joint—is extremely rare, and subsequent displacements cause a "uselessness," or feeling of extra weakness of the joint rather than the painful locking seen in the case of the internal cartilage. Sometimes there is, in the case of the external cartilage, an additional sign of "clicking," which is of the greatest help in diagnosis. This is a definite and loud click, which can be felt, or even heard, when the joint is straightened. There are two important points to be noted in regard to this diagnostic click: (1) it always occurs at the same angle of flexion of the joint, and (2) this angle is usually the last 10 degrees of full active extension.

DIAGNOSIS OF CARTILAGE LESIONS

I have deliberately gone over these signs at length because they are the only indications of cartilage trouble which are given in our textbooks, and apparently without their presence we are supposed to consider there can be no cartilage lesion.

Let us consider these signs in detail. The only way in which we can mechanically reproduce the series of signs and symptoms of a displaced internal cartilage is

by having the whole or part of the anterior end of the cartilage bent backwards and reduplicated, so that it acts as a wedge between the femur and the tibia when an effort is made to extend the leg. From this we must deduce that either a lesion of the internal cartilage never occurs behind the level of the internal lateral ligament, or if, as we know, such does occur, then its diagnosis without inspection *in situ* is impossible. In regard to the click, or cluck, sometimes caused by the abnormal external cartilage, this can only—on mechanical grounds—be due to the sudden squeezing outwards from between the extending bones of a cartilage with abnormally lax attachments. I have had the opportunity of examining the mechanism of its production on many occasions at operations, and in my experience the method of production has always been the same.

We are left, then, in a very unsatisfactory state. A lesion of the middle or posterior end of the internal cartilage, or a tear of the external cartilage, will certainly not give these classic signs and symptoms; but, nevertheless, they have an equally definite series of signs and symptoms which we must know and appreciate before we can consider ourselves capable of dealing with the various derangements of the joint. The site of a lesion in a cartilage depends, to some extent, upon the angle of flexion of the joint at the time of the occurrence of the original injury. Thus, if the joint is slightly flexed the lesion is usually towards the anterior end, while the more flexion present in the joint the further back is the site of the lesion. This rule is not invariable, but at least it is roughly reliable. Splits of the cartilage may occur at any spot. They start from the inner sharp edge of the cartilage and extend longitudinally, and as the cartilage itself is entirely avascular there is no chance for such a broken piece to join with the rest of the cartilage, no matter how long the joint is kept at rest after the original injury. Each twist of the joint leads to a further splitting of the cartilage, so that the pedunculated mass gradually becomes larger and the disability caused by it more definite. It is not usually large enough to cause locking, whether it is situated in the anterior or posterior section of the joint, but when it is nipped between the femur and tibia it does cause pain, discomfort, and a transitory weakness frequently followed by a synovitis. Similarly, a "bucket-handle" split may occur in either cartilage, and the inner portion may not be sufficiently thick to produce a definite locking of the joint, or, indeed, it may be displaced so far to the middle line that it lies between the condyles of the femur and so allows the movements of the joint to occur in an almost normal manner.

ELICITATION OF A SPECIAL SIGN

The problem before us is whether it is possible to diagnose these injuries to the cartilage, both as to their nature and site, and whether this differential diagnosis is possible at any time, and not only on the occasions when the locking or sudden spasms of pain give us some indication as to the nature of the lesion. In answering these questions we have certain facts to go upon. The first is that each time the torn or broken portion of cartilage is nipped between the femur and tibia a considerable amount of pain is caused to the patient, who can always say whether the spasm or pain was similar to that which occurred previously. If, then, it were possible so to manipulate the joint that the injured cartilage, or portion of cartilage, was nipped between the bones, and pain was caused similar to that usually experienced, it is probable that the same mechanical disturbance had occurred in each case. Such a manipulation can be carried out comparatively easily if we remember the mechanics of the joint.

If the knee-joint is first fully flexed so that the heel is placed almost on the buttock, then abduction of the leg and external rotation of the foot will bring to bear on the internal cartilage the exact same strain as occurs in the ordinary accident when an internal cartilage is displaced or torn. With the foot and leg held in this relation to the thigh, the knee is then slowly extended. If there is a lesion of the internal cartilage at any spot from the level of the attachment of the internal lateral ligament backward, a distinct click will be produced when the femur passes over the site of injury in the cartilage.

This manipulation can also be carried out in the diagnosis of lesions in front of the middle of the cartilage, but for obvious mechanical reasons the test is not so reliable in this situation, and is, in fact, not often necessary because the history and clinical signs are so much more definite and clear. Similarly, lesions of the external cartilage may be examined in almost the same way; after full flexion the joint is straightened with the leg adducted and internally rotated.

There are certain provisos to be remembered in carrying out this test: (1) in the knee of a child a click may frequently be produced in a perfectly normal knee-joint; (2) this may also be possible in some adults in whom there is ligamentous laxity without any other lesion of the cartilage; but if a definite, painful click can be produced on several occasions with the knee at the same angle of flexion, then it is more than likely there is a lesion of that particular cartilage at that spot. Once learnt, the test can easily be carried out, but it requires a considerable amount of "knack" before satisfactory results can be obtained, and practice is the only way in which one can become proficient. It is necessary to note the exact angle of the joint at which the clicking occurs, and whether it occurs at one or two angles—the latter usually indicating the "bucket-handle" type of lesion.

TYPICAL AND ATYPICAL CASES

The test is of little or no value in the typical case in which there is a lesion of the anterior end of the cartilage. The story here is so clear: the patient describes so definitely the site of pain, there is the usual area of tenderness, and there has been the usual history of locking and unlocking. But these classical cases do not make up the whole field of cartilage troubles. At least one patient in three comes with the story that as he is walking along something suddenly gives way in his knee; there is pain, and he either falls or saves himself with an effort. On close questioning he states that the pain occurs somewhere inside the joint. When asked to localize the spot he places both hands over the joint and again says, "It is somewhere-inside." No tenderness can be found, and probably very little swelling, while usually there is never any locking of the joint. This is the type of case which seems to me to present the greatest difficulty. Nothing can be found by the ordinary methods of examination—x rays, etc. Are we then to say the man probably has an internal derangement of the joint, possibly a cartilage, and advise an exploratory arthrotomy, or else condemn him to the massage department?

If there is a lesion of the posterior end of either cartilage an exploratory arthrotomy cannot possibly do any good, because it is impossible to see the posterior ends of the cartilage *in situ* from any incision on the anterior aspect of the joint. In my experience an exploratory arthrotomy is never advisable as a method of diagnosis in lesions of either cartilage. As far as the massage department is concerned, it is already far too well patronized. We find hidden in its soothing care many types of case more suitable for active surgical treatment, and there seems little object in adding to their number. If there is a definite cartilage tear or

displacement massage cannot cure it, and its practice can only postpone the form of treatment likely to benefit the patient.

GENERAL INDICATIONS OF TREATMENT

To me the greatest difficulty in the treatment of knee-joint injuries is the diagnosis. Once this has been settled satisfactorily the carrying out of treatment is comparatively easy. Let us take a simple illustration. A patient has a lesion confined to the posterior end of either cartilage, and on opening the joint in one of the usual positions on the anterior aspect it is seen that the cartilage is apparently normal and undamaged. This is the time when certainty of diagnosis is essential, as without it we are groping in the dark and probably doing more harm than good. Diagnosis should be made *before* and not *after* opening the joint. In fact, unless it is made beforehand, opening of the joint will, in all probability, only add to our confusion. A careful examination of the story, good x-ray photographs, and an examination for localized tenderness will help us, but if these are not sufficient a careful manipulation of the joint will nearly always enable us to clinch the diagnosis.

LOOSE BODIES

There are certain errors into which we may fall, and the first of these is in regard to loose bodies. These masses of cartilage, or cartilage and bone, or calcified cartilages, are derived from a variety of sources. They may come from the edge of the articular surface, as a result of a direct blow; or from the substance of the articular surface, as a result of osteochondritis dissecans; or from the development of fibrotic changes and calcium deposition in hypertrophied synovial fringes. In whatever way they are developed they may cause signs and symptoms very much like those of a broken or displaced semilunar cartilage. There is the same unexpected acute pain in one or other side of the joint. There is the same "locking" of the joint, followed by unlocking and usually synovitis; but there is one definite difference. If the body causing these symptoms is really loose then the locking may occur on either side of the joint. If the locking always occurs at one spot then the "loose" body is not really loose but pedunculated, and may be found where the signs and symptoms indicate its presence.

ADHESIONS

A damaged or loose semilunar cartilage may be diagnosed in error when the disability is really due to the presence of adhesions in the capsule or round the attachment of the cartilage. When the capsule of the joint or the attachment of the cartilage to the upper surface of the tibia is stretched beyond its normal capacity there usually follows a considerable amount of inflammatory reaction, either localized to the injured tissues or generalized in the joint as a synovitis. When this inflammatory reaction disappears the distended tissues gradually fall together and may become adherent to each other. In this way, owing to binding together of capsule or synovial membrane, the usual range of movement in the joint is limited. Attempts to carry out the normal range of movements may pull on these adhesions and cause symptoms and signs very much like those of a lesion of the subjacent cartilage. When the adhesions are present over the antero-internal aspect of the joint, rotation of the leg outwards may cause symptoms exactly like those of a displacement of the *anterior* end of the internal cartilage. There is the sudden acute pain, and on account of the tenderness and pain the patient cannot extend the leg, so that the joint is apparently "locked." There may be a little synovitis, although this is never present

to any great extent, and a similar twist may produce the same symptoms on subsequent occasions. There is, however, one definite point of difference in the story. Although there is the sudden apparent locking, this is never followed by a sudden unlocking and freedom of the joint, as we find in cases of lesion of the semilunar cartilage. In cases of adhesions straightening always comes slowly, as the inflammation diminishes.

It is essential for us to appreciate these different conditions, because in the case of a recurrent displacement of a loose or broken cartilage only removal of the cartilage is really satisfactory. In the case of adhesions a gentle manipulation, under anaesthesia, is usually all that is required to produce normal function in the joint, and for the sake of our reputations we must be able to diagnose those cases which are likely to be a success in the hands of a manipulator, qualified or unqualified.

OPERATIVE APPROACH

The prognosis in regard to knee-joint lesions depends upon the general condition of the joint. If there is no trace of osteo-arthritis, if there is no abnormal ligamentous laxity, and if there is no long-standing chronic synovitis, then excision of an abnormal cartilage will leave a joint which is little removed from the normal. In this removal of the offending cartilage many points are raised as regards the technique and the extent of operation to be carried out. There are certain points on which we are all agreed. First, the incision must be so planned that none of the important ligaments round the joint are injured, and for this reason we use an incision on the anterior aspect between the patella and the internal or external lateral ligament. Secondly, we must consider the length of the incision. There are two schools of thought—those who believe in a large incision through which the operative field can be widely inspected, and through which any other abnormality in the joint can be examined, and those who use the smallest incision which is compatible with free access to the field of operation. I myself am a firm adherent of the latter school of thought, because a very long incision does not necessarily give any better view of the operative field, and the most important feature of the incision is not the length but the site. The reason why, in my opinion, a long incision into the capsule of the joint is detrimental is because such an incision is in many instances followed by synovitis, which recurs again and again as a result of the most trivial strains.

An illustration of this is the case of a footballer I saw recently. He had had a broken internal semilunar cartilage removed in its entirety through a long incision, and during the past year he had been trying to get fit to return to football. Each time he began to train the knee swelled up afterwards, in spite of the fact that the muscle development had been restored to its pre-accident condition. There was no suggestion that a piece of the cartilage had been left in, or that there was any other intra-articular lesion, but only that the long wide scar on the capsule and the synovial membrane had led to a laxity and a loss of the normal absorptive process of the synovial membrane, so preventing the full restoration of function in the joint.

The next question is whether, when the cartilage is found at operation to be broken, we should remove only the broken portion or the cartilage in its entirety. I think this is the point on which I have heard the greatest diversity of opinion. One group of surgeons is quite definite that in at least some cases it is unnecessary to remove the whole of the cartilage, and they often justify this opinion by saying that they never see those cases again in which a partial removal of the cartilage has been done. There is the other group equally definitely of the opinion that in any lesion of the cartilage the

whole cartilage, and not only the broken portion, should be removed at the time of operation. I am a very firm believer in the necessity of removing all of the offending cartilage. During the past fifteen years I have been obliged to remove many posterior ends of cartilages which have been left at the primary operation.

In regard to after-treatment, my practice is to keep the patient in bed with the knee fixed at an angle of slight flexion for ten days. After this time the stitches are removed and he is allowed to walk about with the leg still fixed on a splint for another ten days, during which time he is persuaded to exercise the quadriceps muscle. The splint is then removed and replaced by a bandage round the joint, and exercises and gentle massage are given to the quadriceps until this group of muscles is equal to those of the other leg. I have never found any difficulty from stiffness following this splint fixation, and I believe it is necessary to allow the wound of the joint to become soundly healed before strain is put on it by flexing the knee.

A CASE OF TYPE IV PNEUMOCOCCAL SEPTICAEMIA

BY

E. A. HOARE, M.R.C.S., L.R.C.P.

The following case may be worthy of record, both on account of its rarity and of its successful conclusion. The diagnosis was only made after many investigations, and the blood culture on which it depends was repeated, at an interval of two days, with the same results.

CASE HISTORY

The patient, a widow aged 34 years, was admitted to hospital complaining of attacks of shivering and pain in the epigastric and lumbar regions for two weeks. There was nothing outstanding in her past history; she had had no serious illnesses, and she had never been abroad. She had no children. As regards her present condition, the pain was not severe and the shivering attacks did not upset her, although they were sometimes followed by vomiting. Her bowels were regular and the motions normal. She had no urinary symptoms, and no menstrual disturbance or vaginal discharge.

Examination of the abdomen elicited slight tenderness and rigidity in the epigastrium and right hypochondrium. There was nothing abnormal palpable. Rectal and vaginal examination revealed no abnormality. Her heart and lungs were normal. Her throat was clean and the teeth healthy. There was no nasal or oral discharge. She was running a swinging temperature from 99° to 104° F., but showed very little general disturbance. The investigations made, the patient's progress, and her treatment can best be considered together, with reference to her temperature charts.

First Week

Pathological investigations revealed a moderately severe anaemia: red cells, 3,600,000 per c.mm.; haemoglobin, 44 per cent. There was a polymorphonuclear leucocytosis of 13,000 per c.mm. Agglutination reactions for *B. typhosus* and *B. paratyphosus* A, B, and C, the Salmonella group, and for *Brucella abortus* were all negative. Urine was normal, except for a trace of bile.

Second Week

An x-ray photograph of the gall-bladder showed no abnormal shadows. On blood culture there was a heavy growth of a short-chain coccus, which was identified as a Type IV pneumococcus. This was repeated two days later, with the same result. The blood sedimentation rate was 50 per cent. (one hour reading). The patient's general condition was worse, although she still felt fairly well. She was given a single intravenous injection of 5 c.cm. of collosol argenti.

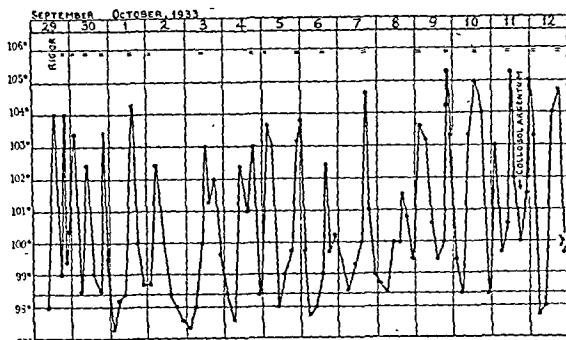


CHART 1.

Third Week

Two injections of 10 c.cm. of Pané's polyvalent anti-pneumococcal serum were given. Although a third blood culture at this time was negative, there was no improvement in the patient's general condition. The blood sedimentation rate had risen to 61 per cent., and the leucocyte count had fallen to 9,000 per c.mm. There was an acute cardiac dilatation, the apex beat being in the mid-axillary line. The patient complained of pain in the right side of her chest, and a small patch of pleurisy and impaired resonance was found. X-ray examination of the chest confirmed the cardiac enlargement, but showed no abnormal shadows in the lungs. A course of injections of S.U.P. 36 and nucleic acid, 1 c.cm. of each daily, was started.

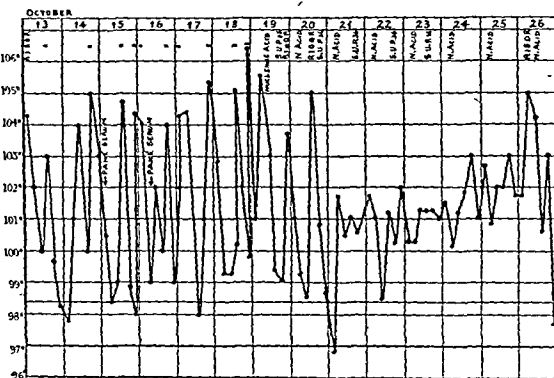


CHART 2.

Fourth Week

For five days the patient had no rigors, but remained very ill. The pulse was persistently over 100, and sometimes up to 140. The anaemia was very severe, the red cells being only 850,000 per c.mm. and haemoglobin 24 per cent.

Fifth Week

A blood transfusion of 750 c.cm. was given, with an immediate improvement in the general condition. In two days the pulse had settled to about 90; although the rigors

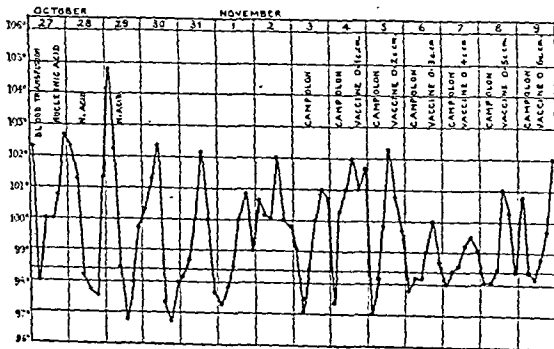


CHART 3.

continued they were less distressing, and the temperature was generally lower. The cardiac enlargement began to decrease and the patch in the right lung cleared up.

Sixth Week

The improvement continued, although occasional rigors still occurred. Injections of campolon, 2 c.cm. daily, were started, and also an autogenous vaccine made from the blood cultures by Dr. A. G. Shera. To begin with, 50,000 organisms in 0.1 c.cm. were given, increasing by increments of 50,000 organisms daily. Ten injections in all were administered.

Seventh to Tenth Weeks

The rigors entirely ceased and the temperature remained normal. Three injections of a stronger vaccine, containing 500,000 organisms in 0.1 c.cm., commencing with 0.1 c.cm. and increasing up to 0.3 c.cm., were given. At the end of

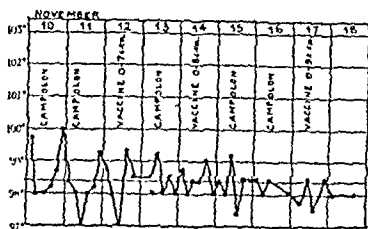


CHART 4.

ten weeks the patient was able to be discharged. She had then no abnormal physical signs; she felt well, and was gaining weight. Her red cell count was 4,025,000 per c.mm. and the haemoglobin was 62 per cent.

I am indebted to Mr. A. H. Crook, M.Ch., F.R.C.S., whose case this was, for permission to publish these notes, and to Dr. A. G. Shera for carrying out all the pathological investigations.

Clinical Memoranda

CHRONIC BILATERAL SPONTANEOUS PNEUMOTHORAX

The note by Dr. Joseph Lewis in the *Journal* of October 28th, 1933, on the subject of chronic bilateral spontaneous pneumothorax, emphasizes the necessity for reporting instances of this uncommon condition. The following are records of two cases which have come to my notice. Perhaps the condition is not so rare as its neglect by medical writers would appear to indicate.

Case 1.—A man, aged 46, was admitted to hospital on April 3rd, 1933, complaining of remittent indigestion of eight years' standing and a tender lump in the epigastrium. X-ray examination of the stomach and duodenum, by Dr. Duff Gray, showed no evidence of organic disease. The lump was an epigastric hernia. The patient was somewhat dyspnoeic, and coughed up three to five ounces of frothy sputum in the twenty-four hours. X-ray examination of the chest showed a localized pneumothorax at each apex and fibrosis of both lungs. Tubercle bacilli were not found in the sputum, and several previous searches had also proved negative. The patient had had pneumonia in 1916. A consequent empyema had been "vomited" up without operation. He had been off work for ten weeks, and then in a sanatorium for three months. Neither here nor at the tuberculosis dispensary, which he attended for some years, was any positive evidence of tuberculosis found. In 1919 and 1923 the patient went off work for five and three months respectively after attacks of influenza, and in 1927 he had influenza again. In 1929 he underwent an operation for strangulated hernia. In 1930 he was in bed for one month owing to "congestion of the lungs," and in November, 1932, he was ill for seven weeks with acute bronchitis. He was warned of the danger of recurrence to which his cough

rendered him liable, but in spite of this he insisted on an operation for his epigastric hernia. This was carried out under novocain anaesthesia on May 24th, 1933, and he was discharged on June 21st. He carried on his occupation as a boot repairer until November 14th, when he again sought admission on account of his cough and shortness of breath. An x-ray photograph at this time, seven months after the first, showed the two apical pneumothoraces to be unaltered. The upper edge of the lung was extremely thin, and strands of lung tissue could be seen running towards the parietal pleura (Fig. 1). Lipiodol injection gave no evidence of bronchiectasis. The patient has improved sufficiently to permit him to be discharged from hospital, but his cough and dyspnoea are still present.

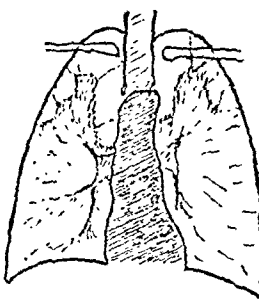


FIG. 1

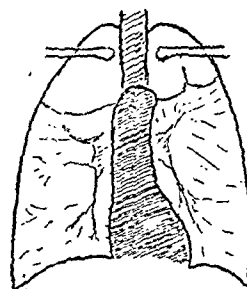


FIG. 2

Case 2.—A man, aged 55, was seen by Dr. Sutherland in January, 1927. He had had pleurisy thirty-five years previously, and repeated attacks in the next few years. In 1925 he had had influenza, and had coughed ever since. There had been slight staining of the sputum once in 1921, and once in 1926. At the time of examination in 1927 the sputum did not contain tubercle bacilli. X-ray examination showed a pneumothorax at each apex, that on the right side being the larger (Fig. 2). There was no evidence of active tuberculous disease, and the case was diagnosed as one of old pleuropneumonia. An x-ray examination by Dr. Twining in 1931, more than four years later, revealed the pneumothorax to be unaltered. A recent attempt to trace the patient has been unsuccessful, so that his present condition cannot be ascertained.

Neither of the cases can be held to come within the category of spontaneous pneumothorax in the apparently healthy; in both there was a long history of antecedent pulmonary disease. Kopstein and Lenz¹ distinguish sharply between benign pneumothorax and that occurring during the course of tuberculosis or chronic emphysema. Neither they nor Kjaergaard, however, regard a past healed tuberculosis as removing the case from the benign class, and Kjaergaard adduces evidence that the mechanism of the "valve vesicle" is operative in the emphysematous patients, as it is in those without previous history of respiratory disease.

That the pneumothoraces were truly chronic in both the cases here reported is indicated by the complete similarity of the x-ray appearances at the beginning and end of the respective intervals. It is necessary to remember, however, that spontaneous pneumothorax may be a recurring condition, and that the symptoms of its onset are sometimes so misleading as to make its discovery a chance one during the course of an x-ray examination. The mere presence of air in the pleural cavity on two successive occasions is not necessarily, therefore, a proof that it has been unabsorbed during the whole of the intervening period.

The second case was brought to my notice by Dr. E. W. Twining, and I am indebted to him and to Dr. D. P. Sutherland, who have placed the radiological and clinical details at my disposal.

Manchester.

A. GRAHAM BRYCE, F.R.C.S.

¹ Kopstein and Lenz: *Deut. Arch. f. klin. Med.*, 1933, cxxiv, 366.

Reviews

A SURVEY OF INFLUENZA

Volume ix of the *Annals of the Pickett-Thomson Research Laboratories*¹ is the first instalment of a monograph, in two volumes, devoted to the subject of influenza. It is the work of Drs. D. and R. THOMSON, and forms a valuable addition to the series of monographs already produced by this laboratory. An eminent French physician is reputed to have said that the difference between English and French doctors was that the former were excellent at diagnosis but poor at treatment, whereas the latter excelled in treatment but were indifferent diagnosticians. We should be the last to decry the uses of purely symptomatic treatment, but it is obvious that successful treatment must depend on correct diagnosis, and it is equally obvious, too, that the more we know about influenza the better we shall be able to cope with its ravages. For this reason we owe a debt of gratitude to the authors of this monograph; it should make available much information which otherwise might lie hidden in the voluminous literature of the subject. Their task has been truly herculean, for it has entailed reading and analysing some 4,000 original papers.

The procedure followed is the same as in the previous publications from this laboratory. The literature of each aspect of the subject is reviewed, the authors next add any personal observations which they may have made, and then sum up, giving the conclusions they draw from the available evidence. The present volume covers a large field. It starts with remarks on the nomenclature of influenza, following which are three short sections dealing with the history of this disease and the epidemics caused by it. An interesting account of the epidemiological features of influenza is followed by a consideration of its clinical picture, diagnosis, and prognosis, and then sections on the incidence, mortality, infectivity, relapse rate, and immunity bring us to what is perhaps the most important part of this monograph—that dealing with aetiology. The cynics maintain that in the case of this disease, as in that of the common cold, it is really of little use attempting to discover the causal agent or agents. They argue that if influenza were shown to be due to a variety of primary causal organisms—that is, not a true entity—then this very multiplicity of causation would defeat any specific prophylactic measures. On the other hand, should influenza have a single prime cause, then it follows that an attack of the disease confers little immunity, and so here again nothing could be hoped from specific prophylaxis. This is surely a counsel of despair. When we have solved the aetiological problem of influenza we must be in a better position to deal with it, and it is satisfactory to recall that recent research in this country has gone a long way towards settling this vexed question.

The view that influenza is due to a filterable virus has claimed an increasing number of adherents in the past ten or fifteen years. Though not without some evidence in support of it, convincing proof has been delayed owing to lack of a suitable experimental animal. The investigations of Smith, Andrewes, and Laidlaw, demonstrating the susceptibility of the ferret, has altered all this, and their work has gone far to show the correctness of the filterable virus hypothesis. The authors of this monograph are of a like opinion. They relegate Pfeiffer's bacillus, the various streptococci, and other bacteria encountered in influenza to the status of secondary, but by no means unimportant, invaders. They also give

prominence to the possibility of the filterable virus and one or other of these cultivable bacteria being passed together in nature, each reinforcing the action of the other, and thus giving rise to a more serious type of disease from the start. The beautiful work of Shope on swine influenza lends strong support to such a view, for, in fact, this is exactly what does occur in this disease. It is interesting to note, too, in this respect, that Smith, Andrewes, and Laidlaw have shown that the virus of swine influenza is, if not identical with the human influenza virus, at least a very close relative of it.

The Pickett-Thomson Laboratory is to be congratulated on having given us such a useful monograph—at least, the first volume of it is most satisfactory, and we shall await with interest the publication of the other half.

PRACTICE OF MEDICINE

Dr. F. W. PRICE's *Textbook of the Practice of Medicine*² has now appeared in its fourth edition, some four years having elapsed since its last revision. During that comparatively short period there have been numerous changes in medical outlook consequent upon advances in knowledge and practice, and these are incorporated in the present volume. The most extensive alterations have taken place in the section on diseases of the blood, which has been entirely rewritten by Dr. L. J. Witts, while Lord Horder has rewritten the neighbouring sections on diseases of the lymphatic system and on diseases of the spleen. The former's contribution is an excellent survey of a subject in which he has had considerable first-hand experience, but it must be confessed that the five pages on the lymphatic system and the four on the spleen from Lord Horder's pen are too brief for a work of this nature, and not of the high standard which characterizes this author's work elsewhere in the volume. Other sections which have been very largely revised include those on anoxaemia, alkalaemia, the endocrine glands, digitalis therapy, coronary occlusion, and the treatment of pyelitis. There are over fifty new articles, and almost as many portions of the book contain new material. There do not seem to be very many more pages than in previous editions, but the volume is certainly larger to handle now, though still not unwieldy. The increased bulk appears to be due to the choice of a slightly more opaque paper for the main contents, which is a great improvement. There can no longer be the same criticism, passed on previous volumes, that the print of one page could be seen through the paper from the opposite side. This is still true of the paper in certain sections, where illustrations are present, and the improvement can be easily seen by contrasting pages 981 and 375, for example. The index continues to be of very high standard, running into over 130 pages, and is indicative of the extreme care for detail which the editor has bestowed upon his work. The present edition will be as deservedly popular as its predecessors: a worthy product of the London school of medicine.

RADIOLOGY OF BONES AND JOINTS

Until a comparatively short while ago, the title of Dr. J. F. BRAILSFORD's book *The Radiology of Bones and Joints*³ would have included practically all the clinical uses of Röntgen's discovery. Now, however, so wide has the field become that the diagnosis of thoracic and abdominal disease largely rests upon radiology, and requires special knowledge, experience, and skill, as well

¹ *Annals of the Pickett-Thomson Research Laboratory*. Vol. ix, *Influenza* (Part 1). By D. and R. Thomson. London: Baillière, Tindall and Cox. 1933. (Pp. xvi + 640; 28 plates. 42s.)

² *A Textbook of the Practice of Medicine*. Edited by F. W. Price, M.D. Fourth edition. London: H. Millard, Oxford University Press, 1933. (Pp. xlv + 1,995; 106 figures. 36s. net.)

³ *The Radiology of Bones and Joints*. By J. F. Brailsford, M.D. London: J. and A. Churchill. 1934. (30s.)

as special publications. A glance at this volume will show that its 500 pages and 310 illustrations are none too many for the presentation of the radiology of bones and joints.

In his preface Dr. Brailsford rightly lays stress on the value of repeated x-ray examination, for even when a first one has revealed no abnormality a later one may make changes manifest, as in cases of Kümmell's disease. Even in a work of this size it is impossible to represent every known form of abnormality, but this unavoidable lack is largely made up by the copious bibliography, which enables reference to be made to special publications. The author begins with the radiology of the normal skeleton at the time of birth, and discusses the departures from normality which may be found and the conditions which influence the process of ossification. The treatises and textbooks on anatomy of forty years back, and even later, told us authoritatively when and where centres of ossification were to appear, but standard works such as Gray gave little hint as to the researches on which the conclusions were formed. We know now that ossification is often an irregular and uncertain process, for even like twins may show different rates of ossification.

Beginning with the upper extremity, the various sections of the limbs are considered and their abnormalities and dystrophies described and illustrated. Fractures and dislocations of the long bones are but lightly touched upon, because, as the author states, radiographs of them are to be found in most books on surgery. As might be expected, the spine is treated of at considerable length, for this region is one which offers great difficulties to the radiographer and is at the same time liable to many irregularities of development and many injuries which can only be revealed by means of x rays. Such problems are fully discussed by the author. The same remarks apply, *mutatis mutandis*, to the chapters on the head. The reproductions of radiographs and the diagrams are clear and informative.

THE PINEAL BODY

Dr. JEAN CALVET's monograph *L'Épiphysse*⁴ will attract those who are interested in the method of applying comparative anatomy and embryology to the elucidation of disease. There have been three stages in our conception of the pineal body. In the first, purely speculative stage, psychical functions were attributed to it; in the second, the researches of Baldwin Spencer and others revealed that it contained a vestigial eye, which atrophied in the higher vertebrates, and attention was concentrated on it as a key to the origin of vertebrates from invertebrates, particularly by Gaskell. In the third phase the association of disorders of this gland with macro-genitosoma led to its being regarded more as an endocrine organ, although no hormone has ever been extracted from it. Indeed, the suggestion has been made that its influence on the endocrine system is through the nervous system rather than by chemical means, a suggestion which recent work on the close association between the diencephalon and the endocrine glands renders all the more plausible.

Dr. Calvet's view is that, like the pituitary and the adrenal, the pineal has a double origin—one parietal, which is the vestigial eye, the other, the true epiphysis, which is neuroglandular, analogous to the post-pituitary, and similar in histological structure. He regards it as an endocrine organ with a special influence on growth and gonadal development, and supports this thesis by an experimental and clinical study.

⁴ *L'Épiphysse*. By Dr. Jean Calvet. Paris: J. B. Baillière et Fils. 1934. (Pp. 148; 63 figs.)

PHYSIOLOGY OF MUSCULAR ACTIVITY

Increasing stress is being laid on the importance of exercise to the citizen in every branch of life. The Board of Education is taking great interest in the physical training of children, and a number of students are now approaching the subject of physiology from the special point of view of exercise and the function of the muscles. For these Dr. E. C. SCHNEIDER's work⁵ will prove a useful handbook. He takes muscle as the key to physiology, and shows how, for adequate understanding of the contraction of any one muscle fibre, it is necessary to understand the working of the whole body. After a review of the structure of muscle and of present theories of muscle contraction, he goes on to survey the fuel used and the way in which it is brought to the muscle, and the role of oxygen in physical exercise. This leads him to a study of respiration and the circulation, and this in turn to blood pressure and the co-ordination of all these activities. He thus produces what is in fact a little textbook of physiology, written from his specialized point of view. Concluding chapters deal with tests of physical fitness and the effects of physical exercise at high altitudes and in different temperatures. Dr. Schneider attempts to frame a definition of the term "physical fitness," but like many other experts is unable to tie this elusive concept down to any rigid words. He reviews tests from all over the world, including our own Royal Air Force efficiency tests, and draws attention to the discrepancies which are often found between athletic prowess and physiological findings. The book is illustrated with tables and some outline sketches, and is supplied with a very full bibliography. The index appears to have a very high proportion of proper names to its other entries, showing that the author has consulted authorities from all countries.

TORTURE IN ENGLAND

The law and practice of torture in England are recorded and expounded by Dr. L. A. PARRY in his book entitled *The History of Torture in England*.⁶ He gives his readers a rapid and interesting review of the subject and, in spite of the title, includes chapters on torture in Scotland and in Ireland. The latter of these chapters is quite short, and one wonders whether it is accidental or significant and characteristic that "Ireland was comparatively unaffected by the torturers. The custom was recognized neither by Common nor Statute Law, and only a few cases are recorded in this country." Dr. Parry's volume is in the nature of a compilation rather than the result of any profound research, but it is obviously the outcome of a good deal of reading, and has been put together with considerable care and judgement. It happily does not purport to be a complete record even of sample cruelties, but it illustrates the circumstances in which and the ways in which the practice of torture and brutality was followed, especially under the Tudors and Stuarts, both in the punishment of malefactors and as a means of extracting confessions and depositions from innocent and unwilling witnesses or victims, in spite of the fact that it was forbidden by Common Law, at least since the time of Magna Charta. The Courts of Star Chamber and High Commission, through the instrumentality of which the attempt was made to substitute for the Common Law the will of the sovereign, are described, and characteristic instances of their action are narrated: brutal punishments

⁵ *Physiology of Muscular Activity*. By E. C. Schneider, Ph.D., D.Sc. London and Philadelphia: W. B. Saunders Company. 1933. (Pp. 401; illustrated. 14s. net.)

⁶ *The History of Torture in England*. By L. A. Parry, M.D., B.S., F.R.C.S. London: Sampson Low, Marston and Co., Ltd. 1934. (Pp. viii + 244. 10s. 6d. net.)

imposed both by them, and later by the ordinary courts, are described, and there are notes on trial by battle, the "peine forte et dure," and allied proceedings. There are also chapters on witchcraft and the Church in relation to cruelty, and, in conclusion, accounts are given of several important trials relevant to the subject. The book can be commended to the curious as a guide to a not unimportant byway of history.

Notes on Books

We welcome a fifth edition of Dr. JOSLIN's *Diabetic Manual*,⁷ so well known throughout the world. The depreciation of the dollar now, fortunately, brings it within the means of many more persons in this country. No essential change in the aims and scope of the book is introduced, and it still remains a straightforward guide for the diabetic on what he ought to know to maintain normal health by diet and insulin. Its interest and liveliness, however, are greatly enhanced by attractive new illustrations. We are glad to see that the chapter of Socratic questions and answers is retained, for it ensures that no patient can escape essential knowledge required for his well-being. Altogether the book remains a living testimony to the clinical greatness, powers, and humanity of its author. From the practitioner's point of view it is hardly dogmatic enough to enable him to treat a case without the master's guiding hand.

In *A German Reader for Biology Students*⁸ the authors have brought together a series of short passages from German scientific publications, graded in order of difficulty, and supplemented by a full vocabulary. The book is a sequel to *The First German Course for Scientific Students*, and can be commended to those who wish to acquaint themselves with modern German scientific phraseology. Grammar explanations are excluded, having been dealt with in the earlier volume, but useful hints are to be found in the vocabulary, which will be adequate for those who already have some knowledge of German.

A little volume by Dr. LARTSCHNEIDER⁹ is the first instalment of a work which is intended to revolutionize our conceptions of embryology and of cellular pathology. The first part sets out to correct our views of the histogenesis of epithelium and of the aetiology of cancer. The author's conclusions are not based on new methods of investigation or original preparations, but are derived from histological preparations of other authors, some of which are reproduced in the volume, and to which the author applies a different interpretation. The ambitious attempt fails to convince, yet one cannot but admire Dr. Lartschneider's courage and seriousness.

A comprehensive and practical *Handbook for Health Visitors in India*¹⁰ has been compiled by Dr. RUTH YOUNG, who is secretary of the Lady Reading Health School at Delhi, and director of the Maternity and Child Welfare Bureau of the Indian Red Cross Society. It contains an orderly and well-set-out compendium of information about the infant and young child in health and disease, and indicates the right lines to be taken in the many bewildering situations in which health visitors in India may find themselves plunged. The various topics are dealt with clearly as well as interestingly, and the author's fifteen years of practical experience of training health visitors have enabled her to produce a book which will

be useful to students and practitioners of preventive nursing in the Tropics generally, as well as in India.

The novel of *Damaged Lives*,¹¹ adapted by C. J. Eustace from the film by Don Davis and Edgar G. Ulmer, like Brieux's well-known play, is a serious piece of propaganda to inculcate the dangers of alcoholic indulgence, pre-matrimonial sexual intercourse, and resort to quacks with consequent neglect of proper treatment. The work is introduced by Mrs. Neville Rolfe, Secretary-General of the British Social Hygiene Council, and the composition, aims, and objects of that Council are appended to the story.

For the eighth year Dr. A. RAVINA has produced his brief annual review of the therapeutic procedures, new medicaments, and apparatus under the title *L'Année Thérapeutique*.¹² Among the sections which may be noted is a good one on the use of evipan for general anaesthesia, an interesting account of irradiation of the carotid sinus as a means of treatment in vascular hypertension, and the somewhat amusing suggestion of using raw onion for the treatment of erythraemia.

In his little book entitled "Organization of the Medicine of the Future,"¹³ which consists of a communication read before the First Congress of Compulsory Insurance at Santiago, Dr. GARCIA TELLO advocates the formation of an office of compulsory national insurance, the creation of a tribunal for medico-social offences, curative and preventive vaccination whenever possible, the destruction of animal carriers and isolation of human carriers. The principal diseases against which an active campaign should be carried out, in the author's opinion, are tuberculosis, syphilis, oral sepsis, and cancer.

Fluorescence Analysis in Ultra-Violet Light,¹⁴ by J. A. RADLEY, describes the uses of ultra-violet light in the detection of substances through the quality of the fluorescence which they individually exhibit when thus illuminated. This method of examination can be usefully employed in a great variety of investigations. Quinine is detectable in human milk in an attenuation of about one part in ten million parts. Bacteria show distinctive kinds of fluorescence. Pigments, dyes, and inks which appear alike to unaided vision are distinguished when illuminated with ultra-violet rays. Counterfeit stamps and documents can thus be often detected. Traces of obliterated writing are also rendered visible, and geological specimens are caused to exhibit details of structure which are not otherwise evident. General use has been made of the rays in the comparison of specimens of drugs, foods, and technical materials. The book describes the apparatus available for production of the illumination and the accessory apparatus by which colours may be compared and photographs obtained. It also gives much useful information, derived from the experience of workers in many fields, about the application of ultra-violet radiation, and furnishes a remarkably large number of bibliographical references useful to workers in this branch of analytical investigation.

The total number of names in the *Dentists Register*¹⁵ for 1934 is 14,425, being 103 less than the figure for the preceding year. Of these, 7,606 (52.73 per cent.) are registered with medical, surgical, or dental qualifications, as compared with 7,500 in 1933. Only five out of the 283 persons newly registered are without qualifications. Death and other causes were concerned in the removal of 652 names, while 253 which had been omitted from previous editions for various reasons now appear.

⁷ *Diabetic Manual for the Mutual Use of Doctor and Patient*. By Elliott P. Joslin, M.D. Fifth edition, thoroughly revised. London: H. Kimpton, 1934. (Pp. 224; 49 figures. 10s. 6d. net.)

⁸ *A German Reader for Biology Students*. By H. G. Fielder, M.A., Ph.D., and G. R. De Beer, M.A., D.Sc. With a vocabulary by Herma E. Fielder, M.A. London: H. Milford, Oxford University Press, 1933. (Pp. 92. 5s.)

⁹ *Krebs im lichte Biologischer und Vergleichend Anatomischer Forschung*. I Band: *Ektodermkrebs*. Von Dr. J. Lartschneider. Leipzig und Wien: Franz Deuticke, 1934. (Pp. 192. M.10.)

¹⁰ *Handbook for Health Visitors in India*. By Ruth Young, M.B.E., B.Sc., M.B., Ch.B., W.M.S. With a foreword by Major-General J. D. Graham, C.B., C.I.E., K.H.S., I.M.S. New Delhi: Maternity and Child Welfare Bureau, Indian Red Cross Society, 1933. (Pp. 185; 7 figures. Rs. 1/8.)

¹¹ *Damaged Lives*. The Novel of the Film. Adapted by C. J. Eustace. With an introduction by S. Neville Rolfe, O.B.E. London and New York: Putnam and Co., Ltd. 1934. (Pp. 221. 3s. 6d. net.)

¹² *Paris: Masson et Cie*. 1934. (Pp. 192. 18 fr.)

¹³ *Estructando la Medicina del Futuro*. By Garcia Tello. Santiago de Chile: Libreria Walton, 1933. (Pp. 141.)

¹⁴ *Fluorescence Analysis in Ultra-Violet Light*. By J. A. Radley, B.Sc., Ph.D., M.Sc., F.I.C. Vol. vii of *Monographs on Applied Chemistry*. London: Chapman and Hall, 1933. (Pp. 219. 15s. net.)

¹⁵ Published for the General Medical Council by Constable and Co., Ltd., 10, Orange Street, W.C.2.

FLESH FOODS AND THEIR LOSSES ON COOKING

AN ANALYTICAL STUDY

The chemistry of food is a field of inquiry which has been remarkably developed during the current century. Our knowledge of the accessory factors, starting from zero about 1912, has already attained to a high degree of refinement, and fruitful attention has been focused also upon the role of the mineral constituents. Older lines of study into the protein, fat, and carbohydrate content of foodstuffs, begun prior to this active period, have been continued, but most of the food tables evolved as a result have been open to criticism on the ground that they relate to raw materials only and take no account of the effects of cooking. This is a practical objection, because doctors in ordering diets for patients have to reckon, as a rule, in terms of the cooked article. In order to fill this gap in our information the Medical Research Council made grants to Dr. R. A. McCance, aided by Mr. H. L. Shipp, to carry out systematic analyses of cooked flesh foods.

The report of these observers,¹ after describing their analytical methods, proceeds in its principal section to deal with British flesh foods, including fish, in the cooked state. The figures are set forth in eight tables for fresh fish, preserved fish, shell-fish, fresh meat, preserved meat, poultry and game, organs, and a few raw foods, showing for each class the total, purine and non-purine nitrogen, protein, fat, carbohydrate, and specified metals, etc., present per 100 grams. The authors confirm the low values found by others for calcium in beef and mutton and its higher range for fish. They regard fish like sardines, sprats, and whitebait, which have fine edible bones, as valuable sources of this mineral, and bring out that the same three kinds contain more iron than cooked halibut, plaice, or trout.

Studying the losses brought about by cooking, the authors observe that from the death of the meat animal till the flesh is eaten loss takes place at every stage. Not only must the skin, head, and bones be rejected as nutritionally valueless, but the heat of cooking comes creeping in to diminish the substance of what remains.

LIEBIG'S DOCTRINE

According to Liebig's doctrine the fine art of cooking lay in producing at once upon the surface of meat a pellicle, seal, or coagulum which would serve to keep in its goodness. In order to form the pellicle, meat for boiling must be plunged at the outset of the cooking into boiling water. If, on the contrary, the meat at the beginning were immersed in cold water, which was then gradually raised to the boiling point, all its virtues of protein and the rest would dissolve out and be lost in the water round it before the saving pellicle could be formed and brought into action. Subject to the different conditions of cooking, the same principle was held to apply to roasting, grilling, and frying. This doctrine, accepted by scientists of standing without apparently much investigation, came to be widely credited by the public, although the work of American observers in 1901 and later lent it little countenance.

Liebig's hypothesis was put to the test by the authors of the report under notice. They cooked two lots of meat in two different ways, starting one lot in boiling water, and the other lot in cold water which they slowly heated. When cooking was complete, comparison showed that the ultimate losses of water, salts, and weight were precisely the same in the two cases. Moreover, during the first hundred minutes all losses were greater in the meat which had been started at boiling temperature. There was no

action which could be ascribed to the existence of a retaining pellicle.

It was noted, too, that when a salt beef round, weighing 3,850 grams, was placed in boiling water it took one and a half hours for a thermometer in the centre of the joint to reach 49° C., while three hours elapsed before 90° C. was registered. This observation confirmed the general view that meat is an inactive conductor of heat, and suggested that there could be no convection currents through its substance.

LOSS OF WEIGHT AND VOLUME

It is the rule that meat, when heated in cooking, loses weight and volume. The application of heat over 60° C. to beef, fish, and flesh foods leads to the shrinkage of their proteins and the expression of juices. This is the only cause of salt loss when meat is roasted or steamed, but in boiling there is further loss of salts by leach into the surrounding water. Raising the temperature accelerates the rate of shrinkage, but does not greatly affect the final result. Egg proteins did not shrink at all when heated up to 100° C. The shrinkage of beef, after steaming for forty-five minutes, was represented by a loss of weight of 42 per cent.

All methods of cooking that are attended with evaporation tend to conserve the salts and extractives of the meat. Roasting, grilling, and, above all, frying have been found to lead to smaller salt losses than steaming or boiling. The reason is that in roasting, grilling, and frying, when shrinkage occurs and the juices are expressed, the water evaporates, leaving the salts on the surface of the meat. If, however, the roasting takes place in a pressure cooker or an electric oven, evaporation is checked and the dripping juices carry the salts away. The juicy appearance of electrically roasted meat is superficial and fallacious, being due merely to lack of active evaporation in the electric oven. Gas ovens are better in this particular than those heated by electricity.

POPULAR ERRORS

As already noted, the authors have exposed the error that a pellicle forms when the cooking of meat commences, at a high temperature. They consider that unless the procedure can be defended on the ground of flavour or easier digestion there is no point in making the water boil before the meat is immersed or in heating up the oven before the joint is put in. Further, they traverse the common belief, which, "apart from dyspepsia, is probably psychological in origin," that underdone meat is more nutritious than meat that has been overcooked. Since the greater part of the weight lost during cooking consists of water, it is obvious in their view that, pound for pound, overcooked meat must contain more protein, and probably more fat, than undercooked meat, and be therefore a more concentrated food. As regards the saline content, if the piece of meat is small and boiling prolonged, its salts will leach out freely into the water, so that its salt percentage is lowered. If the piece is large, salt and water will be expressed in nearly equal proportions, and salt concentration in the meat will be about the same whether it is undercooked or overcooked. If it is a case of roasting, since water is being continuously lost through evaporation, the longer the process of cooking continues the higher the percentage of salts in the meat will tend to rise.

On the scientific side the special value of the report will probably be adjudged to lie in its less spectacular tabular portion, which is a course added to the foundations of nutrition. On the more domestic side it will be of interest to all, and no doubt intriguing to many, for its disclosure of the results of the application of heat in cooking and its disturbing discriminations against some familiar views and methods. The exemplary graphs in which the work abounds will be appreciated by all its readers.

¹ Medical Research Council, Special Report Series, No 167. *The Chemistry of Flesh Foods and their Losses on Cooking*. By R. A. McCance, M.D., Ph.D., M.R.C.P., and H. L. Shipp, B.Sc., A.I.C. London: H.M. Stationery Office. 1933 (2s. 6d. net.)

British Medical Journal

SATURDAY, APRIL 21st, 1934

WHAT CAUSES PEPTIC ULCER?

A bewildering variety of quite unrelated causes have been suggested to explain peptic ulceration. Almost every process has been invoked which is known to be the basis of morbid changes elsewhere, including infection, interference with blood supply, trauma, allergy, vitamin deficiency, and disturbances of endocrine function. In so far as these hypotheses are based on experimental evidence, their weakness lies in the fact that the type of ulcer produced has usually been acute, superficial, and rapidly healing, whereas we are more concerned to ascertain the aetiological basis of a type of ulceration having as essential features deep destruction and a most persistent chronicity. Ulcers described as possessing these characters have, however, been produced experimentally, and the body of similar evidence accumulated since the original experiments of Mann and Williamson¹ is certainly the most serious factor which has to be reckoned with in formulating conclusions on this subject at the present time. These workers argue that peptic ulceration occurs only in areas of mucosa exposed to the action of acid gastric secretion, and their experiments consist in inducing persistent ulceration beyond the pylorus by diverting the alkaline secretions which normally neutralize the gastric contents at this point. These secretions are the bile, the pancreatic juice, and the secretion of the duodenal mucosa, and several ingenious proceedings by which these were diverted to a lower point in the small intestine all had the same effect on that portion of the bowel which was left in the position of the duodenum but was deprived of its natural secretory defences.

That the duodenal mucosa itself takes an important share in neutralizing acid from the stomach is shown by the work of Florey and Harding,² who were able to obtain its secretion in considerable quantities from tied loops of duodenum in the rabbit, and found that it possessed a high bicarbonate content. They propose tentatively that an insufficiency of this secretion may be a factor in producing peptic ulceration: the case for this hypothesis would be stronger if atrophic changes in Brunner's glands, which produce this secretion, were to be demonstrated in cases of peptic ulcer. That the action of the gastric juice is responsible for peptic ulceration is also suggested by a variety of experiments performed by Matthews and Dragstedt.³ They separated portions of stomach to make an independent sac, in which ulcers formed and even perforated, owing, it is assumed, to the unaided and unrelieved effect of

the contained secretion; or attached the separated portion to the small intestine, in which ulcers were produced with a frequency which increased with the distance of the point of attachment from the stomach. This last observation suggests that a degree of resistance to the action of gastric juice exists at various levels in the upper alimentary tract proportionate to their degree of normal exposure to it. Taken as a whole, all these experiments, among which those of Mann and Williamson at least have been repeatedly confirmed, point to the local action of gastric secretion as the chief factor in maintaining peptic ulceration, and the consistent finding of hyperchlorhydria in the subjects of this disease supports the same conclusion.

It is therefore a little surprising to find it seriously suggested that peptic ulcer is due to a specific infection. Saunders, Holsinger, and Cooper,⁴ in a recent publication reiterate the original findings of Saunders⁵ to the effect that a constant and distinct type of streptococcus can be cultivated from peptic ulcers, and adduce evidence that feeding cultures of this streptococcus to dogs subjected to one of the surgical procedures devised by Mann and Williamson increases the subsequent incidence of ulceration and alters its type. The original evidence in favour of this streptococcus as a cause of peptic ulcer included its constant appearance in cultures made from ulcer tissue, the morphological and serological homogeneity of the strains so isolated, and the presence of agglutinins for it in the blood of patients suffering from peptic ulcer. One objection to it is the purely arbitrary method of culture employed. Why, for instance, should a streptococcus which happens to grow in the depths of "semi-solid hormone agar" inoculated with material containing a mixture of bacteria (such, even, as a loopful of pyorrhoea pus) be the one micro-organism that matters in that material? It is arguable that this streptococcus grows constantly only because the conditions afforded for it happen to be more favourable than for other equally indifferent bacteria in the inoculum; it is also more than probable that if a certain streptococcus is constantly present in ulcerated stomachs it is only there because it is a type possessing greater resistance to acid than others among the numerous mouth streptococci normally swallowed in hundreds of millions every hour. It is not inconceivable that such a streptococcus may multiply in the base of a preformed ulcer and even give rise to agglutinin formation, but that is not to say that it produced the ulcer. There are endless gaps and possible fallacies in this work: it is, in fact, a good example of the pitfalls which beset those who imagine that to find the cause of a lesion one has only to look for a germ in it. Anyone with suspicions that Saunders's conclusions are possibly valid should read the paper⁶ in which he claims to have isolated forty-one strains of streptococci "proved identical" by various serological methods from gastric ulcer, ulcerative colitis, carcinoma of the rectum, the cervix uteri, and carcinoma

¹ *Ann. Surg.*, 1923, lxxvii, 409.

² *Journ. Path. and Bact.*, 1933, xxxvii, 431.

³ *Surg., Gynecol. and Obstet.*, 1932, lv, 265.

⁴ *Amer. Journ. Med. Sci.*, February, 1934, p. 246.

⁵ *Arch. Int. Med.*, 1930, xlv, 347.

⁶ *Ann. Surg.*, 1932, xcv, 327.

of the breast: it is seriously suggested that this streptococcus, which is also found in cow's milk, plays a part, the nature of which is postulated in specific terms, in producing cancer. Such streptococci, like diphtheroids, are best avoided by investigators with their ultimate reputations at heart.

A BUDGET OF RELIEF

Mr. Chamberlain's observation that we have now finished the story of *Bleak House* and are starting the first chapter of *Great Expectations* hits off the situation neatly, and the emergence from the danger of financial disaster to comparative safety is summed up in his remark that the realized surplus of last year almost exactly balances the deficit of the year before. The Government can congratulate the whole body of taxpayers, and deserves their congratulations in return, on this result: there is probably no other country in the world which would have made the same sacrifices, and certainly none which would have shown the same cheerfulness and fortitude in the task. The Chancellor rightly emphasized the unique position of the British Empire in national finance as compared with the present tribulations of the Exchequers of other nations. The world-wide falling off in international trade has affected the industries and finances of every country, and the United Kingdom, with its dependence on foreign sources of food and raw materials and the traditional importance of its mercantile marine, has felt the depression as acutely as any other nation. For three years steady and varied efforts have been made to encourage trade in the internal market; the effects are now becoming apparent, and the contraction of foreign is being offset by the expansion of home trade. The result on the national finances has been most encouraging not merely in its direct effects but also as showing that, if the barometer of British trade is still a long way from "set fair," it is at least rising steadily.

A few weeks ago the newspapers generally were indulging in estimates of the disposable surplus for the current year, which have proved too sanguine—estimates of £45,000,000 and upwards were not uncommon, whereas the actual figure is about two-thirds of that amount, which, as Mr. Chamberlain very rightly said, is "if not dazzling at any rate a very substantial surplus." It is probable that in making his calculations the Chancellor has been deliberately cautious. The worst that could happen after the encouragement of the surplus of last year and the fiscal reliefs now granted to taxpayers generally would be for the country to have to face another deficit, however small, in twelve months' time. Nationally it would be deplorable; politically it would be disastrous. Criticism of expert Treasury estimates is a fruitless exercise of the wits for anyone without the special means of information necessary for the task, but on general grounds there seems good reason to hope for a surplus at the end of the present year, though no doubt it will be of more modest dimensions. Mr. Chamberlain laid some

emphasis on the fact that improvements in trade are not immediately fruitful so far as the Treasury is concerned, at least in the important spheres of income tax, surtax, and estate duty. While, therefore, no increased yield—apart from the receipt of the £12,000,000 lost last year by postponement of part of the January instalment—can be expected from these taxes in the coming year, there should be enough gain in the future to provide further relief for the taxpayer.

Few will be found to cavil seriously at the Chancellor's distribution of relief among the many classes of deserving citizens. Two-thirds of the surplus is absorbed by the reduction of the standard rate of income tax from 5s. to 4s. 6d. The effect of that is, of course, to reduce each taxpayer's contribution by 10 per cent., whereas an increase in the scale of allowances would give a larger relative advantage to the smaller taxpayers. Of all existing taxes income tax is probably most acutely felt, and a standard rate of 5s. is almost impossible to justify in time of peace. Indeed, having regard to the reduced scale of personal allowances now in force it is fairly comparable in weight to the 6s. tax which was the maximum rate in force soon after the war. It is to be hoped that next year the allowances can be materially increased. One of the chief necessities of the present time is for a stimulated demand for ordinary commodities and services, and a reduction in the tax paid by the ordinary citizen would operate in that direction as effectively as, if not more effectively than, an equal diminution in the amounts paid by the large companies and financial concerns who are chiefly affected by the reduction in the standard rate from 5s. to 4s. 6d. At the same time, the psychological effect of that reduction will be of the utmost benefit to trade generally, and we agree that the Chancellor's decision is the right one, but only on the assumption that next year he can at least go some way towards restoring the pre-1931 scale of allowances. Turning to smaller, though not less important, allotments of relief, the restoration of the full unemployment benefits as from July 1st, and of one-half of the special "cuts" inflicted on certain groups of public servants—including insurance doctors and pharmacists—will meet with general approval, the more so as the cost of the former will prove less than at one time seemed probable owing to the absorption of out-of-work operatives by the improvement in trade generally. The reduction in the horse-power tax on cars as from January 1st had not been generally anticipated, and is a minor but welcome advantage to medical practitioners.

It is often said that there is no such thing as gratitude in politics. Perusal of the general press in the past few days apparently gives the lie to the statement, though the gratitude may not prove very durable and may consist largely of a hope of favours to come. If the latter consideration enters rather largely into the national feeling Mr. Chamberlain is partly responsible. He has shown himself to be a prudent and courageous Chancellor, and his tone of cautious but confident optimism gives good ground for thinking that in his

case promise will be outrun by performance. A few months ago the country was watching the rising tide of Exchequer receipts with keen interest and increasing hope. The Budget statement has set bounds to extravagant expectations that were voiced in some quarters, but at the same time it has satisfied the more modest hopes and kept others alive for future satisfaction.

THE ANNUAL REPORT OF COUNCIL

Almost the whole of this week's *Supplement* of fifty-two pages is given up to the Annual Report of Council for 1933-4. The detailed financial statement will appear next week, and the Supplementary Report of Council on June 23rd. These three documents, with amendments and riders to come from the Divisions and Branches, make up together the material for discussion and decision at the Annual Representative Meeting which opens at Bournemouth on July 20th. Even a casual glance through the main report published to-day must bring to the mind some idea of the multifarious activities of the world-wide organization which is known everywhere, to doctors and laymen alike, as the B.M.A. It is in part a record of work done. Thus, for example, the Arthritis Committee, the Nutrition Committee, and the Committee on Medical Education have completed the tasks set them, and their findings are before the profession. It is in part also a survey of work, already begun or planned, of which the main burden must be taken up during the next twelve months. The field covered by the report includes, directly or indirectly, every department of professional life—science, clinical medicine, public health, medical economics. We venture to say that it is the duty of every one of the 35,000 members of the British Medical Association—no matter where he lives or what his branch of practice—to look carefully through the *Supplement* this week and make himself acquainted with its contents. Thereafter, if he feels disposed to criticize it in detail, so much the better for him and for the Association.

GERMAN CARDIOVASCULAR RESEARCH

The recent publication of the annual proceedings of the German Society for Cardiovascular Research¹ is of importance in that it contains contributions from some of the pioneers of modern work and also much suggestive matter for future work. In a masterly article Professor H. E. Hering deals with the reflex nervous control of the circulation (die Blutdruckzügler), and among other things shows that the significance of the carotid sinus nerves and the aortic nerves must be extended to include reflex control of vaso-dilator tone, of the tone of the cardio-inhibitory nerves, of tonic inhibition of vaso-constrictor tone, of parasympathetic tone, and of tonic inhibition of the accelerators. Stöhr of Bonn gives some interesting histological evidence of the nerve supply of vessels and puts forward the view that every cell of the entire vascular system is under nervous control. Koch of Bad Nauheim discusses the relative importance of the sympathetic and parasympathetic in the control of the heart and of the vessels: he shows that for the heart the parasympathetic

normally preponderates, while for the vessels the sympathetic exerts the greater influence. Using Rijlant's cathode-ray oscillograph, Karásek presents results on the rabbit's depressor nerve which show that normally the depressor is in a state of continuous excitation, and that in hypertension its activity increases, and in hypotension it diminishes. Bohn of Frankfurt reviews shortly his important experiments which, it is claimed, demonstrate the presence of a circulating pressor substance in secondary hypertension (pallid type). A similar pressor substance can also be shown to exist in the blood of "plethoric" hypertensives, but not to nearly the same extent. In both types pressor substances can be shown to exist in the urine: in the cerebro-spinal fluid the results were confusing, since even when strong pressor activity could be obtained from the blood the cerebro-spinal fluid might be quite inactive. Again, in the urine anti-diuretic substances could be demonstrated in all types of cases, even in normal individuals, which rather militates against the pituitary hypothesis. Many other interesting papers appear in these proceedings which are well worth studying.

SAFE MILK IN CANADA

It is symptomatic of the increasing recognition of the part played by milk in carrying disease that the *Canadian Public Health Journal* has devoted its entire January number to "Safe Milk." There are altogether seventeen papers, mostly by different authors, dealing with this subject from various aspects. Dr. Gwatkin discusses contagious abortion in cattle, and mentions that 52 out of 102 cows showing a serum agglutination titre of 1 in 100 or over were actually excreting *Br. abortus* in the milk. Laboratory tests showed that strains of this organism were destroyed by exposure to a temperature of 140° F. for ten to fifteen minutes. Dr. McNabb states that during the five years 1929-33 no fewer than 480 cases of undulant fever have been diagnosed in Ontario alone. It is interesting to note that of 7,379 Widal sera tested, 836 agglutinated *Bact. typhosum*, 325 *Bact. paratyphosum* B, and 289 *Br. abortus*. The total proportion, therefore, of sera agglutinating organisms of the enteric group was 19.6 per cent., and *Br. abortus* 3.9 per cent. These figures closely resemble those for England and Wales—namely, 21 per cent. and 3.5 per cent. Dr. Marguerite Price has continued her investigation in Toronto of non-pulmonary tuberculosis of bovine origin in children. She has now examined 300 patients under 14 years of age, and found forty-five of them to be infected with the bovine type of bacillus. All the patients infected with the bovine type had consumed raw milk and had come from districts outside Toronto. In Toronto itself, where 99.8 per cent. of the milk is pasteurized, not a single case of bovine tuberculous infection has been detected. Examination of 100 samples of pooled raw milk before pasteurization revealed tubercle bacilli in twenty-six. After the same milk had been pasteurized, not a single sample was shown to be infected with tubercle bacilli by the guinea-pig test. This investigation is unique, and constitutes the strongest and most direct evidence of the importance of milk in causing tuberculosis that has ever been forthcoming. Dr. Murray presents figures of epidemic milk-borne infection in Canada, but is careful

¹ *Verhandlung der deutschen Gesellschaft für Kreislaufforschung.* VI Tagung 1933. Herausgegeben von Professor Bruno Kisch. Dresden: T. Steinkopff. (RM.15.)

to point out that they refer only to those epidemics which were brought to the attention of the provincial authorities or the local authorities of the twenty-four largest cities, and in which the milk supply was proved definitely to be incriminated. During the fourteen years 1920-33 there were thirty-one outbreaks of typhoid fever with 6,336 cases and 662 deaths, three outbreaks of paratyphoid fever with 522 cases and three deaths, five outbreaks of scarlet fever with 106 cases and no deaths, and three outbreaks of septic sore throat with 584 cases and four deaths. The same author reports on the extent of pasteurization in Canada. In nineteen of the twenty-four larger cities an average of 60 per cent., and in the remaining five cities 100 per cent., is pasteurized. There are now twenty-five municipalities in which compulsory pasteurization of all milk is required. In view of the importance of efficient pasteurization, Dr. Berry's article on common defects in pasteurizing plants is most valuable, and should be studied by all who are responsible for the supervision of pasteurization. Dr. McKay reports an outbreak of septic sore throat due to milk that had been imperfectly pasteurized, and indicates how it could have been obviated by adequate instruction of the dairyman. Other articles deal with model milk by-laws, clean bottles, sanitary caps for milk bottles, pasteurizing equipment for small dairies, certification of operators in pasteurizing depots, home pasteurization of milk, dairy farm inspection, and the nutritional value of pasteurized milk.

AIR CONDITIONING FOR ASTHMA AND HAY FEVER

The work of the late Dr. Storm van Leeuwen in treating hay fever and asthma patients in a protected atmosphere is well known. His researches have been carried a stage further by Dr. L. M. Gay at the Johns Hopkins Hospital, in conjunction with the research department of the Frigidaire Corporation, who manufacture apparatus by which the air in a room can be kept at a constant temperature and humidity and thoroughly cleaned of all impurities. A room large enough to accommodate four bed-patients was equipped with an air-conditioning unit. The windows and door were kept closed but not sealed. The humidity was maintained at 40 per cent., as against an outside humidity in August and September of 80 to 90 per cent. The temperature was maintained at 10° below that of the outside air. Tests with oiled slides showed that although much pollen was present in the outside air none reached the room. Patients with hay fever uncomplicated by asthma improved strikingly in ten or fifteen minutes: within an hour the symptoms had gone. Patients with asthma as well as hay fever did not respond quite so rapidly, although within an hour there was a great improvement in their general condition. The symptoms soon returned when the patients left the room, but if they were allowed to remain in it long enough they suffered less irritation afterwards from the outside air. The air conditioning appeared to give patients a rest period during which they could build up resistance to the ordinary atmosphere. Some earlier experiments by Dr. Isobel Beck¹ with a filtered atmo-

sphere showed that patients who spent a considerable amount of time and slept in the pure atmosphere gained a large measure of permanent relief. The experiments at the Johns Hopkins Hospital were not continued long enough to demonstrate the full benefit of the protection of an air-conditioned atmosphere, but they served to indicate that air conditioning is a powerful adjunct to other remedies for all respiratory disorders in which atmospheric conditions are a contributory factor. Drs. T. A. and W. H. Taylor,² in a recent article, describe an ingenious apparatus for conditioning the air in a bed tent and for supplying an atmosphere rich in oxygen. This might prove of use in cases of acute pneumonia. Experiments on the treatment of, for example, bronchitis ought to yield some interesting data.

INVESTIGATION OF PUERPERAL SEPSIS

In a recent circular to medical officers of health the Chief Medical Officer of the Ministry of Health states that the arrangements entered into by the Departmental Committee on Maternal Mortality for bacteriological investigations at a central laboratory of cases of puerperal sepsis have been discontinued. It is hoped, however, Sir George Newman continues, that medical officers of health will take every opportunity of obtaining assistance from bacteriologists attached to adequately equipped local laboratories in investigating pyrexia in lying-in women. He recommends that isolation and separate nursing of the patient should be immediately arranged, and that swabs be taken from the cervix, the throat, and the nose, while search for septic foci should be made in persons in contact with the patient during labour and in the subsequent forty-eight hours. "It should be remembered," he adds, "that as contact with hands and instruments is the most likely mode of infection of the genital tract, particular attention should be directed to infections or abrasions of the skin in anyone who has had such contact with the patient." The assistance of the Ministry will continue to be available to all medical officers of health desiring help in dealing with cases of puerperal infection.

NERVE GRAFTING FOR FACIAL PARALYSIS

After the meeting of the Council of the Royal College of Surgeons of England on April 12th Mr. V. E. Negus gave a demonstration to the Council of a film illustrating ciliary activity and the action of various drugs on ciliary motion. A film illustrating the results of nerve grafting for the relief of facial paralysis as carried out by Dr. A. B. Duel of New York was also shown. The method which was adopted for the treatment of these cases was the result of a long series of experiments carried out by Dr. Duel and Sir Charles Ballance in London and New York. The method consists in preparing a small peripheral nerve by section *in situ* ten to twenty-one days before the operation of repair. The prepared nerve is implanted in the Fallopian canal without sutures and covered with gold foil. The interesting feature of this work is the rapidity with which the recovery takes place, even in cases where the facial paralysis has existed for some time. The

¹ *Med. Journ. and Record*, August 3rd, 1932

² *Anesthesia and Analgesia*, 1934 (January-February), xiii, 22.

justification for operation in long-standing cases of facial palsy depends on whether the muscles of the face respond to the galvanic current. In almost all cases operation should not be delayed; the prepared graft operation on decompression should be performed. The results of using prepared grafts show that return of faradic response in the palsied muscles takes place in less than half the time that is required when a fresh nerve graft is employed. The degenerated nerve graft consists of a series of tufts through which the axis cylinders of the central nerve segment slide along, pushing aside the lipid contents. Sir Charles Ballance left America eighteen months ago, and as there are no baboons at the Royal College of Surgeons he has not been able to continue the research on the lines he and Dr. Duel were engaged in for some years. Dr. Duel, however, has been continuing the research with great enthusiasm, employing for this purpose a large number of monkeys: and, moreover, he has applied the new method with great success to a large number of patients suffering from facial palsy. In cases of Bell's palsy Dr. Duel has operated on many patients, decompressing the inflamed and swollen nerve in the aqueduct by removing the outer bony boundary of the canal and slitting up the fibrous sheath. In some of these patients Sir Charles Ballance was present at the operation, and in many others previously operated on he has observed the great success of the operations. The method of anastomosing the facial nerve to another nerve in the neck is definitely abandoned for the procedure of exposing the nerve in the canal, excising the diseased or damaged portion, and replacing in the gap so formed a prepared graft.

WHEN HOSPITALS ADVERTISE

Time was (writes a correspondent) when the display to the general public of objects illustrating morbid anatomy would have been received with real or pretended horror. The new generation is less squeamish. Just now the world and his sweetheart, wandering up and down the corridors of the "Ideal Home" Exhibition at Olympia, stop with undisguised interest at the hospital stands where jars containing pathological specimens and other unlovely things are on view. When the exhibitor at the St. Bartholomew's Hospital stand holds up a jar which he says contains an entire varicose vein, or an enlarged heart, or a section of a broken neck, no cheek blanches, and the overheard exclamations about the mysteries of the human body betray familiarity if not contempt. A life-size representation of the operating theatre at Bart's as it was in 1834 is also a very popular exhibit. It has wax figures of the surgeon, the nurse, and the patient in the dress of the period, with models of the instruments then used. On the other side of a partition is a replica of the operating theatre of to-day, robotique in its efficiency. An even larger exhibit of the kind figures at the stand of the King Edward's Hospital Fund, where again there are representations of the hospital methods of the pre-Listerian era, which make the spectator marvel that a patient ever survived, while the parallel exhibit of the hospital of to-day makes him wonder why a patient is ever lost. Here again the passer-by, though his eyes have been surfeited by modern furniture and his ears by gramophone records,

and even his palate by free samples of all kinds of food products, turns with an equal zest to the inspection of large-scale skiagrams, the technique of radium and light treatment, modern apparatus for the investigation of ear and nose cases, photomicrographs of blood cells, bacteria cultures, or the dreadful appearances in tropical disease. Guy's also permits a view of its operating tables and blood transfusion apparatus, and so on; but St. George's and the West London are more domestic, with, in the former, a display of garments and toys made by past and present patients and nurses, and, in the latter, a corner of the children's ward. Now that the sick-room has been virtually banished from the home, ideal or otherwise, we must feel no surprise that an exhibition of this kind should include a hospital section, and it is to be hoped that the contents of the collecting boxes which are all around testify adequately to the gratitude which the modern household ought to feel.

MEDICAL AND HEALTH FILMS

The International Institute of Educational Cinemaography, which is a League of Nations organization, situated in Rome, has in preparation an *International Encyclopaedia of Educational Films* which will include a catalogue of British-made medical and public health films. The official representative of the Rome Institute in this country is the British Film Institute, and the preparation of the British catalogue of medical and allied films has been entrusted to the medical panel of this body. Under the terms of the recent International Customs Convention, educational films will be allowed to circulate freely in the countries of those Governments which have ratified the convention, so that the existence of a comprehensive encyclopaedia of medical films will make it possible for lecturers in, and demonstrators of, medical subjects easily to obtain both British and foreign films in their special subjects. In compiling the British portion of the encyclopaedia it is necessary first to find out what medical and public health films of British origin are in existence and are actually being used for instructional purposes at the present time, and the British Film Institute therefore asks that medical practitioners and others having knowledge of such films will send particulars of them to the Institute at 4, Great Russell Street, London, W.C.1. The British Medical Association is represented on the advisory council of the Institute and on its special medical panel by Dr. G. C. Anderson, the Medical Secretary.

We regret to announce the death of Lady Berry, M.D., on April 15th. As Dr. Frances May Dickinson she was anaesthetist to the Royal Free Hospital and the Alexandra Hospital for Children. In 1891 she married Sir James Berry, F.R.C.S., afterwards president of the Royal Society of Medicine and the Medical Society of London, and together they did admirable work with the Anglo-Serbian Hospital during the war.

Dr. G. Ramon has been appointed director of the Institut Pasteur of Paris in succession to the late Dr. Emile Roux, and has also been elected a member of the Académie de Médecine.

Scotland

Edinburgh Arts and Crafts Exhibition

An exhibition in aid of the Edinburgh Royal Infirmary Extension Fund was opened in the Waverley Market, on April 7th, by Lady Rosebery. It was organized by Dr. William Robertson, late medical officer of health for Edinburgh, and a special exhibit, arranged by Dr. A. Logan Turner, illustrated the development of medical science, particularly during the last 200 years, in Edinburgh. This exhibit included portraits of celebrated medical men beginning with Hippocrates and photographs and drawings of medical institutions, to which short notes were appended indicating their respective contributions to the history of medicine. For example, a portrait of Sir J. Y. Simpson illustrated the introduction of anaesthesia, and portraits of Pasteur and Koch that of bacteriology. The King Edward's Fund model hospital, which has already been shown in London, was also exhibited. This model is constructed on a scale of $3/4$ inch to the foot, and includes faithful reproductions of hospital fittings, x-ray rooms, etc. Much interest was taken in the model, on a similar small scale, of one of the wards of the Royal Infirmary, complete with all its furnishings, this model having been constructed by the nurses and craftsmen of the institution. Another series of models, also by the same craftsmen, depicted hospital practice in different ages: among these were a Greek temple of healing about 500 B.C., a Roman valetudinarium of about A.D. 200, a monastic infirmary, a sixteenth century hospital, and a ward in the early eighteenth century infirmary at Edinburgh.

Edinburgh Post-Graduate Courses

The syllabus of the post-graduate courses in medicine to be held at Edinburgh during the summer contains particulars of the instruction obtainable in July, August, and September. From July 16th to August 11th there will be a course in obstetrics, gynaecology, and child life and health, at the Royal Maternity Hospital, the gynaecological wards of the Royal Infirmary, and the Royal Hospital for Sick Children; fee £10 10s. A general practitioners' course will be held from August 13th to September 8th; it will include applied anatomy, clinical medicine, infectious diseases, clinical surgery, clinical gynaecology, child life and health, diseases of the eye, diseases of the ear, nose, and throat, and dermatology; fee £10 10s. for four weeks, or £6 6s. for two weeks. A general surgical course, to be held concurrently with the former, will include applied anatomy, general surgery, diagnosis and treatment of renal disease, abdominal surgery, gynaecological operations, orthopaedics, surgical pathology and physiology, venereal diseases, and radiology; fee £10 10s. for four weeks, or £6 6s. for two weeks. Limited courses will also be held from time to time at fees which range from £2 2s. to £5 5s., on such subjects as modern diagnostic methods, diseases of the blood, endocrinology, diseases of the nervous system, urology, x-ray physics, ultra-violet radiation, ophthalmoscopy, urological surgery, neurological surgery, diseases of the ear, nose, and throat, disorders of speech, venereal diseases, and surgical pathology. A course on clinical medicine, including radiology, has been arranged for the months of May and October, and a similar course in clinical surgery, including radiology, will be held during each academic term for a period of six weeks. Graduates may obtain the syllabus from the secretary of post-graduate courses in medicine, University New Buildings, Edinburgh.

Dental Treatment in Fife Schools

Dr. G. Pratt Yule, medical officer of health for the county of Fife, reported to a meeting of the Public Health Committee of the County Council, on April 3rd, that instances were occurring in which parents refused permission for their children to obtain school dental treatment, or in which they refused treatment recommended by the school dentists as essential. In many such cases early conservative treatment might have obviated the necessity for later extraction. The attitude of these parents was mainly the result of ignorance or of unwise sympathy towards the children. It was proposed that a propaganda campaign should be undertaken by the Dental Association in Fife during the month of June, since anything in the nature of compulsion would be harmful to the work and would reflect adversely on the county council. At the same meeting the terms of a proposed arrangement between Dunfermline Town Council and Fife County Council, concerning a new maternity home and hospital to be erected at Dunfermline, were considered.

Aberdeen University Graduation

At the spring graduation of Aberdeen University, in the Mitchell Hall of Marischal College on April 4th, the Very Rev. Principal Sir George Adam Smith presided, and conferred the degree of M.D. upon four graduates and of M.B., Ch.B. upon twenty-four graduands. The degree of LL.D. was conferred upon five honorary graduates, including Dr. Herbert Ritchie Spencer, emeritus professor of obstetric medicine in the University of London.

England and Wales

Central Midwives Board

At the April meeting of the Central Midwives Board for England and Wales Dr. J. S. Fairbairn was re-elected chairman for the ensuing year. Sir George Buchanan, M.D., and Councillor V. J. Loxley were appointed respectively as representatives on the Board by the Society of Apothecaries of London and the Association of Municipal Corporations. The Ministry of Health had forwarded a copy of a further letter from the Association of Municipal Corporations, expressing the opinion that the Board should be so constituted that representatives of local authorities should be in a majority, and that, of the representatives of local authorities, the association, as representing county boroughs and non-county boroughs, should appoint the greater number. The Board resolved: That consideration be given to the question of the reconstitution of the Board generally, and that such consideration be commenced at the next meeting. It was agreed to reply as follows to a letter from the Medical Secretary of the British Medical Association:

(1) That a midwife is only required to summon medical help if there be any illness of the patient or child, or any abnormality occurring during pregnancy, labour, or lying-in, and the summoning by her of medical help in any other instances would not come within Section 14 of the Midwives Act, 1918; (2) that the Board is of opinion that the footnote to the form of sending for medical help makes it quite clear that the midwife must not send a copy of the form to the doctor in cases in which help is sought by a relative or friend only; and the Board is not aware of any difficulties in the matter having arisen in the past; (3) that the Board has no power to decide questions regarding the payment of fees by local supervising authorities under Section 14 of the Midwives Act, 1918.

The list of examiners, as submitted for the ensuing year, was approved, and the names of Drs. A. C. H. Bell and J. D. S. Hew were added to the list of supernumerary examiners at the London centre. The list of lecturers and institutions where lectures may be delivered was approved, and also the list of institutions, homes, and midwives at which and under whom pupil midwives may be trained, subject to satisfactory arrangements on certain points being made in certain cases. The Board recorded its sincere appreciation of the service rendered by Dr. T. Vincent Dickinson as one of its members from October, 1927, to March, 1934.

New Child Welfare Centre in St. Marylebone

An appeal has now been issued by the Borough of St. Marylebone Health Society for financial assistance in building a model welfare centre and day nursery on a site offered by the Hon. Gerald Portman in the heart of the poorest quarter of the borough. The institution would comprise a school of mothercraft, treatment clinics, and a day nursery. The land presented is occupied at present by five small houses and an ex-public house, where the present child welfare work of this kind is being carried on. Since 1915, when it began, the work has far outstripped the available accommodation, and the day nursery, which has been operating since 1916 elsewhere, has been compelled to evacuate its premises, now required by the St. Marylebone Housing Association for its scheme of building much-needed flats for the working classes. The memorial fund which has been launched to commemorate the pioneer labours of the late Dr. Christine Murrell in this neighbourhood and elsewhere is to be devoted to the permanent equipment of part of the new building, with which it is proposed to associate her name. The appeal contains a short account of the efforts of the St. Marylebone Health Society since its inauguration twenty-seven years ago. Infant consultation centres and clinics have gradually grown in number, and have been combined with a school of mothercraft, a dental clinic for mothers and school children, a massage clinic, and an artificial sunlight department. The organizing secretary of the society is Miss Mostyn Bird, 9, Windsor Court, Bayswater, W.2.

Society for Relief of Widows and Orphans of Medical Men

A quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on April 11th, with Mr. V. Warren Low, president, in the chair. The deaths of four members were reported and one new member was elected. A first application for relief from the widow of a member was considered. Her late husband was elected a life member in 1921 and the widow was left practically destitute with nine children, four under 16 years of age. The court voted her a yearly grant of £60 and one of £50 a year for each child under 16; thus the yearly grant she will receive will be £260, and, in addition, she will probably receive at Christmas a present of £10 for herself and £40 for the four children. A striking example of the benefits to be derived from membership of the society. Membership is open to any registered medical practitioner who, at the time of his election, is resident within a twenty-mile radius of Charing Cross. The annual subscription ranges from two to four guineas, according to the age of the candidate. Eighty-five pounds was voted to five widows to enable them to continue their children's education, as the ordinary grants cease at the age of 16. The annual general meeting was fixed for May 8th at 5 p.m. Full particulars of the society may be obtained from the secretary, at its offices, 11, Chandos Street, Cavendish Square, W.1.

Reports of Societies

TREATMENT OF HYPEREMESIS GRAVIDARUM

At the March Meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland Dr. O'DONEL BROWNE read notes of a case of severe hyperemesis gravidarum treated by jejunostomy.

The patient was 30 years old and seven or eight weeks pregnant. On her first pregnancy she had aborted at the fourth month, and some vomiting was present. The vomiting on this, the second pregnancy, had been severe for two and a half weeks before admission to a nursing home. She presented all the signs of advanced hyperemesis, with acidosis, cracked tongue, sordes, and persistent vomiting. Constipation was present, and relieved by simple enema. Retroversion of the pregnant uterus was treated and a support inserted. Salines were given with glucose by bowel and luminal as sedative treatment. During the first forty-eight hours' treatment the condition worsened so rapidly, with development of incontinence and restlessness, that fluids were imperatively and urgently needed. Further rectal administration was impossible, the veins being collapsed and subcutaneous salines too slow to allow any of these methods.

Jejunostomy was performed under local anaesthesia. Continuous drip saline through a large rubber catheter into the duodenum was begun, and was continued for four days. Glucose 10 per cent. was added, and on the fourth day two ounces of castor oil were given by tube; and, subsequent to bowel action, whey and other light feeding, also by tube. The progress of the case was altogether satisfactory. Vomiting ceased within seventy-two hours; urine excretion and bowel action were established; the jejunostomy was closed; and the patient was sent home within two weeks. Further progress was normal except for premature stillbirth of a normally developed foetus.

Dr. Browne expressed the opinion that luminal in large doses, until restlessness was controlled, was most important. This, together with the immediate introduction of fluids with glucose, was regarded as the chief factor in the successful treatment of the condition. He did not recommend jejunostomy as a routine treatment. It was, however, seen to be of the greatest value in urgent cases such as this. Emptying the uterus appeared to be useless in the majority of cases, unless either the foetus was dead or the operation was performed at a very early stage of the disease. In less urgent cases constant drip salines with glucose intravenously were favoured. This was best done by fixation of the leg on a splint and introduction of the fluid by the saphenous vein at the ankle.

Mr. J. OWENS said that when he first saw Dr. Browne's patient he thought the outlook extremely bad. She was obviously very toxic, and there was acetone in her urine and in her breath. He opened the abdomen under local anaesthesia, through a left rectus incision. The vomit in this case was not examined for glucose. Since operating on this patient he had done two or three jejunostomies and introduced glucose and saline, and had had the vomit examined, and it had always contained glucose. It was possible to get in from five to six pints of a 5 per cent. glucose and saline solution in twenty-four hours. Dr. NINIAN FALKNER referred to a case in which he had introduced glucose intravenously, and in which the response was very satisfactory. The patient was not, however, in such a very serious condition as Dr. Browne's patient was. Most cases of severe vomiting in pregnancy that he came across he treated in this way. If patients were seen before dehydration was advanced the administration of Lugol's solution often did good.

Dr. J. CUNNINGHAM said that these cases of toxic vomiting were very troublesome, especially in hospital practice, and he thought the reason was that they did not go to hospital soon enough. He felt that in teaching sufficient stress was not laid on the importance of hyperemesis gravidarum. It was sometimes taught that induction of abortion was part of the treatment of this condition. Abortion should not be necessary, and there had never been any indication given by anybody as to when abortion should be induced. If the patient had gone as far as having the liver damaged abortion would not do any good. He himself thought that the injection of

corpus luteum and other such drugs was useless in the treatment of hyperemesis gravidarum. Patients required at least five pints of water a day, and, if possible, an effort should be made to give fluid by the bowel. If it could not be given by the bowel it could be given either intramuscularly or intravenously.

Dr. J. S. QUIN thought that most of the extreme cases of hyperemesis gravidarum were seen too late by a doctor. By the time they were seen they were usually suffering from a profound degree of dehydration with acidosis, which had to be dealt with at once. The degree of toxæmia which was present killed the foetus. In really severe cases the cause of the hyperemesis was usually not ascertained. It was presumed to be due to a toxæmia, but where the toxæmia came from was not known. It should be borne in mind that vomiting was not a natural concomitant of pregnancy.

Dr. R. M. CORBET referred to the question of getting a tube out of the rectum into the colon, and said he would not try this difficult and lengthy procedure with a patient who was in such a bad condition as Dr. Browne's. He thought it could not be done properly without inserting two fingers into the rectum. This led to pulling the patient about a good deal, in some cases more than was justifiable. He had recently removed the corpus luteum of pregnancy from a patient who was six months pregnant, and she had not vomited at all.

Dr. E. A. KEELAN referred to a case of his in which there was great distension, associated with vomiting. Jejunostomy was done and the patient made a good recovery, but in a few days she miscarried. He also referred to another case in which there was severe vomiting for four days, and intussusception. Jejunostomy was done and the patient recovered. He mentioned the necessity for teaching that vomiting in the early stages of pregnancy might be very dangerous.

The MASTER OF THE ROTUNDA said that cases of excessive vomiting were often found later in pregnancy as well as during the early stages. The pulse was, in his opinion, the real indication of the patient's condition. In one case of his recently there was albumin, and Fouchet's test was positive. She was given saline treatment. Her pulse kept going up slowly. After ten days, labour was induced at thirty-four weeks, and a live baby, weighing four pounds three ounces, was born. Immediately after the birth vomiting ceased. He felt that but for induction of labour the patient might have died.

Dr. BETHEL SOLOMONS said that this was the first case of hyperemesis treated by jejunostomy and reported from Great Britain and Ireland. Professor Moorhead, in 1919, ascribed persistent vomiting after some abdominal operations to vagus shock with motor paralysis of the stomach and over-secretion from the stomach, and suggested, when other treatments failed, that the establishment of an enterostomy opening high up in the bowel might save some patients. Sir William Wheeler had made the suggestion to him (Dr. Solomons), but a suitable case had not appeared. To Mr. Owens, who had been Sir William's assistant, great credit was due for the excellent result in the case under discussion. Mr. Victor Bonney advocated similar treatment for intestinal obstruction, which he believed to be due to spastic contraction of one segment of gut, with disturbance of gas production and gas absorption. He, Dr. Solomons, had tried various treatments for hyperemesis: he had not had gratifying results either with intravenous glucose or intensive calcium treatment. He thought it quite wrong to condemn entirely the evacuation of the uterus. All obstetricians could remember cases which might have been saved if the uterus had been emptied. Death after induction was due to the fact that the induction was carried out too late. There were many cases where the infant was dead, especially about twenty to twenty-four weeks, where minor Caesarean section, either vaginal or abdominal, was a life-saving procedure. Induction took too long and hysterotomy was attended with better results. The way to avoid deaths from hyperemesis was education, but he believed that the mothers of the patients required most education. They told these girls that vomiting was a natural part of pregnancy. Thus the specialist saw the case when it was very far advanced. Institutions seemed to vary in their

ideas as to what hyperemesis was, for the answer to a questionnaire he had circulated seemed to show that ordinary vomiting was sometimes considered as hyperemesis. He based his nomenclature on excessive vomiting, accompanied by constitutional symptoms and either the presence of albumin in the urine or a positive Fouchet test. Many serious cases would be prevented by early pre-natal attendance with instruction. Any colonic lavage or prolonged treatment would, in his opinion, have killed this patient.

NEPHRITIS

At a meeting of the Devon and Exeter Medico-Chirurgical Society on March 29th, with the president, Mr. R. WAYLAND SMITH, in the chair, Dr. F. A. ROPER gave an account of two cases which illustrated the nephrotic and azotaemic types of nephritis respectively.

The first case (of nephrosis) was that of a woman aged 41, who had had slight generalized oedema for three weeks before admission to hospital on March 16th, since when diuresis had been within normal limits and the blood pressure constant at 138 systolic and 90 diastolic. Albuminuria was considerable (1.2 per cent.); casts were present; but there were no blood cells. The urine was sterile on culture. The blood urea had been found to be 32 mg. per 100 c.cm. of blood.

The second case (of azotaemic nephritis) was that of a woman aged 48, who had been admitted to hospital on February 28th with a history of persistent vomiting for nine weeks. On arrival at hospital she was in a collapsed condition, and obviously very ill, but there was no oedema. The blood pressure was 175/104 on admission; but since the vomiting had ceased the systolic pressure had been constant at 200. Diuresis had set in after the first few days in hospital. On March 1st the blood urea was 192 mg. per 100 c.cm. of blood; on March 5th, 144 mg.; on March 16th, 67 mg.; and on March 29th, 44 mg. The urine on admission contained blood cells, albumin 0.15 per cent., and a large number of granular casts: these were now absent. The eye grounds showed evidence of arteriosclerosis, but no retinal haemorrhages were noted.

Dr. Roper said that the cases were of especial interest from the point of view of dietetic treatment. In the nephrotic type, with a blood urea within normal range, a generous nitrogenous diet had been employed from the first, whilst in the azotaemic case a diet rich in carbohydrates and low in protein had been indicated.

Dr. R. R. TRAILL mentioned the class of case in which acute nephritis with haematuria was associated with tonsillitis, and asked if, in such circumstances, Dr. Roper would recommend an albuminous diet. Dr. MARGARET JACKSON asked if bleeding had been employed in the second case, and remarked that in her experience the good effects so arrived at were not shown in the blood pressure, which tended to remain unaltered by blood-letting.

Dr. ROPER, in reply, stated that the reduction of the protein intake was of prime importance when treating cases of the azotaemic type. The nephritis referred to by Dr. Traill would probably be of a mixed type, and the blood urea figure offered the best guidance on the diet question. He certainly advocated bleeding in cases of the azotaemic type, although the collapsed state in the case just related had seemed to contraindicate this. Morphine had been decried in such conditions, but he himself had not feared to prescribe it in this and like instances.

PSYCHOLOGY OF TROPICAL RESIDENTS

At a meeting of the Medical Society of Individual Psychology on April 12th Dr. H. C. SQUIRES read a paper on "Individual Psychology and the European in the Tropics."

Dr. Squires said that he recognized the importance of exposure to the physical effects of unaccustomed temperature, light, and humidity, and to parasitic and other tropical disabilities, but emphasized that those disabilities which were sufficiently serious to result in invaliding were largely those with a cosmopolitan distribution. The lives of Europeans living under tropical conditions were worthy of consideration from the standpoint of individual psycho-

logy, not simply and solely because they were individuals, but because they were individuals in a particular setting. If certain categories of individuals were taken for comparison (and he had taken males in Government service in England and those in Government service or working as missionaries in the Tropics) certain definite facts emerged. The first was that roughly the percentage of invalidings for psychoneuroses alone, or for psychological reasons in general, to the total number invalided was three times as great for the tropical as for the home figures. Secondly, a comparison of the age groups and length of service groups revealed marked differences. The most striking of these related to invaliding for psychoneuroses during the early years of service. In England, for three years' service and under, for six years' service and under, and for ten years' service and under, the percentages were 6, 8, and 14.5 respectively. Those for the Tropics at the same periods were 41, 56, and 72. He regarded the group invalided with three years' service or less as the most important. It appeared that a transfer

to the Tropics might precipitate a state of affairs comparable to that occurring at such special epochs as the commencement of school life, adolescence, and marriage, when new responsibilities had to be undertaken in novel circumstances. Dr. Squires then discussed the motives that might lead individuals to spend a large portion of their lives in the Tropics, and the bearing of these motives on the figures already given. While realizing the importance of such factors as a family connexion and economic conditions, he said that for some individuals life in the Tropics might appear as something in the nature of an escape. Individual psychologists were especially capable of understanding such motives, which had much to do with feelings of inadequacy and inferiority. Finally, Dr. Squires gave instances to show how, under tropical conditions, such feelings might create great and sometimes insurmountable difficulties in the individual's attempt to cope with one or more of the three Adlerian life tasks—those associated with employment, society, and sex.

CORRESPONDENCE

The Milk Question

SIR,—In your issue of April 7th (p. 643), Dr. A. H. Macdonald, the chief medical officer of Dr. Barnardo's Homes, states that: "Our experience, through a succession of years, shows that tubercle is not the result of drinking raw milk." Is it possible for Dr. Macdonald to supply the evidence for this statement, and to define what is meant by "tubercle"?—I am, etc.,

Leeds, April 15th.

MOYNIHAN.

SIR,—I do not doubt the accuracy of the figures in regard to the source of tubercle bacilli in milk which have been produced by Dr. W. G. Savage (April 7th, p. 642), whose authority in respect of milk is unquestioned; but according to the People's League of Health report, upon which your leader was based (and which I confess never to have seen until this week), about 820,000 cows are infected with tuberculosis in England and Wales, and only 4,100 have udder tuberculosis. Does this latter figure account for all tuberculous infected milk, and therefore for all cases of bovine disease in the country? The true state of affairs in regard to bovine infection is not at all clear. From the same report the estimated proportion of bovine infection in non-respiratory cases in England and Wales for the ten years ending 1929 was 23 per cent., whereas, according to the report of the Central Tuberculosis Laboratory, Wales, the corresponding figure is 10 per cent. How is this difference accounted for? My own opinion is that there are not nearly as many bovine infections as is generally believed.

Two statements from the report are instructive.

"No obvious reduction in the proportion of milk infected with tubercle bacilli has occurred in the past ten years. . . . It is doubtful if pasteurization and sterilization of milk can be chiefly responsible for the rapid decline in non-pulmonary tuberculosis during the past thirty years."

No adequate explanation for this is given, but so far as bovine infections are concerned I suggest that cleaner methods of milk production are the reason, because in my opinion contaminations other than tubercle bacilli facilitate the entry of that organism. An all-round clean milk means fewer cases of tuberculosis, despite the presence of tubercle bacilli. The P.L.H. report suggests that milk from tubercle-free herds should be sold raw or pasteurized, which means that other infective organisms, whose presence is used as an argument for pasteurization, are adequately dealt with by clean methods: I am glad to find that the committee agrees with me in this. The report, however, suggests that the larger urban authorities

should be enabled to make pasteurization compulsory. The rural population does not need any such provision apparently: is it immune to milk-borne diseases? The present grading of milk is based on its degree of contamination and nothing else. Why not have clean raw milk and pasteurized milk both sold at the same price? Make the producer of contaminated milk pay the cost of the process. If you must grade it, do so according to its food value.

I maintain, as before, that pasteurization under present conditions frustrates all efforts at obtaining the clean milk supply which is essential in the first place.—I am, etc.,

Hounslow, April 16th.

W. S. FORBES.

Heredity and Mental Deficiency

SIR,—In his article in the *Journal* of March 31st (p. 584) Professor Charles McNeil rightly draws attention to the fact that the importance of the hereditary factor in the causation of mental deficiency has usually been exaggerated. I remember Dr. Robert Hutchison emphasizing this point at the meeting of the British Medical Association at Bradford in 1924.

In a recent article¹ of mine on the subject I quoted Dr. John Thomson's figures, and emphasized the need for remembering the danger to the brain of the foetus *in utero* and to the baby at birth and during the neo-natal period. We must, however, first of all be sure that the figures from which we draw our conclusions are from a study of cases which are really representative of all classes of the population, and of all types of mental deficiency. Are we quite sure that Dr. John Thomson's cases were so? I have always felt that the cases sent to a physician in consulting and hospital practice tend to be of the special types, and thus different from those seen, for instance, by a school medical officer. There is sure to be some selection as to medical interest by general practitioners and others referring cases to a physician. Dr. Manson has also drawn attention to this possible fallacy in his letter in your issue of April 7th.

In assessing the causation of mental deficiency are we to ignore the numberless instances of family trees, with the taint of feeble-mindedness running through them, and instances such as those quoted by Ireland,² where two "idiots" married and had three "idiot" children? I think that the verdict of medical practitioners who have knowledge of generations of different families, and of those who have studied the family histories of the mentally deficient, will be that there is a large element

¹ Parsons and Barling: *Diseases of Infancy and Childhood*, 1933, ii, p. 1332. Oxford University Press, London.

² *Mental Affections of Children*. Churchill, London, 1900.

of heredity in the causation of mental deficiency. The report of the Departmental Committee,³ which was unanimous, should be held to be authoritative.

I hold that hereditary mental deficiency is an indefinite variation, and is to some extent due to chance, but is much more likely to occur in a psychopathic stock. Such a stock is likely to show variation either way, and thus it may well be that some of the parents of aments are highly intelligent. Furthermore, as has actually been found to be the case,⁴ the offspring of two mentally defective parents are not necessarily all mentally defective. They are, however, likely to be so, just as one or other of the parents of a mentally defective child is likely to be dull or feeble-minded, or to come of a psychopathic stock.—I am, etc.,

Manchester, April 10th.

C. PAGET LAPAGE.

SIR,—Whilst it will be agreed that Professor Charles McNeil is to be congratulated on the excellence of his contribution in your issue of March 31st, and on his desire to bring to wider notice the clinical study of Dr. John Thomson, on which he comments, certain observations are essential if misconceptions are to be avoided.

A reference to the universally accepted statement of the relative incidence of various grades of defect, and their classification into clinical and pathological types, in the report of the Mental Deficiency Committee, 1929, will afford convincing evidence that the cases analysed by Dr. Thomson were representative, not of mental defectives, but of the lower grades of mental defectives—a vastly different matter.

As "all of these cases were under 5 years of age at their first examination," and in face of the extremely low proportion of cases of simple primary amentia, one can hardly avoid the conclusion that the nature of the cases was such that they were diagnosable as defectives before, or at the age of, 5 years. That is to say, they consisted mostly of imbeciles and idiots, for feeble-mindedness cannot be diagnosed with reasonable certainty as a rule at the age of 5 years. That this is so will be apparent from the definition itself, without appeal to authority. The conclusions of Professor McNeil are consistent with those of the majority of investigators only if they do in fact refer to such lower-grade defectives, to the exclusion of what have recently been called sub-cultural aments.

It is also suggested that investigations which have been made in institutions for mental defectives have been criticized on the grounds that "cases regarded as hereditary tend to be concentrated there." This is not so, but rather it is the case that lower-grade defectives tend to be concentrated in institutions, and, by general consent, a relatively small proportion are hereditary.

During 1931 and 1932 I carried out an investigation into the incidence and circumstances of retarded school-children and mental defectives in a rural area of a total population of 45,000-odd inhabitants. This was presented to the University of Leeds as a thesis for a doctorate. With the permission of the senate of the University I propose, in the course of a few weeks, to submit for publication in this *Journal* a summary of that part of the thesis which relates to mental defectives and their family histories. Having said this much I do not wish to anticipate to a greater extent than to say that my findings substantiate the above observations, and lead to the conclusion that hereditary influences are evident in 75 per cent. of defectives of all grades, but much less in lower-grade defectives.—I am, etc.,

F. GRUNDY,

Assistant County Medical Officer,
East Suffolk County Council.

Southwold, April 10th.

³ Cmd. 4485 London: H.M. Stationery Office, 1934.

⁴ Baur, Fischer, and Lenz: *Human Heredity*, p. 429. London, Allen and Unwin.

Gonorrhoea in the Female

SIR,—Professor R. S. Statham, in his article on the treatment of gonorrhoea in the female (published on April 7th), referring to acute salpingitis as a complication of gonorrhoea, states: "This complication is known to be very rare in women who have never become pregnant, for the reason that while the internal os remains intact it is almost impervious to any organism." My experience does not bear out this statement. I am constantly coming across cases of quite young nulliparous girls, many of whom find their way to my clinic via the gynaecological department, whose first symptoms of gonorrhoea have been those of the acute salpingitis from which they were found to be suffering. I find it difficult to believe that in all these cases mechanical interference with the internal os has taken place, and that the mucous channel, along which the menses can pass in one direction and the spermatozoon in another, is impervious to the gonococcus. I have always understood this condition to be relatively common among recently married women, and have heard it referred to by at least one gynaecologist as "honeymoon appendicitis."—I am, etc.,

G. L. M. McELLIGOTT,

Director, Venereal Diseases Department,
St. Mary's Hospital, Paddington.

Definition of Menstruation

SIR,—In the *Journal* of March 24th (p. 566), "M.B.Oxon." seems to think that the conflicting views of various writers expressed in previous numbers of your estimable paper on the definition of such an apparently simple conception as that of menstruation constitute a scandal in the history of gynaecology. "As things are," he says, "many medical men must feel that the ground is slipping from under their feet." The letter seems to imply that a complete definition of menstruation which is fixed and immutable should be one of the fundamental props of gynaecology. If that prop is removed the science of gynaecology is in danger of falling to pieces like a house of cards. The writer is under the false impression that definitions in the empirical sciences such as medicine are similar to those in the abstract sciences such as mathematics. There is a world of difference. In mathematics definitions are "made," not "discovered." We construct, *at the outset*, our own definitions by a mental synthesis of certain elements, and nothing more. We do not, therefore, need the methods of induction to eliminate irrelevant conditions. These mental syntheses or *conceptual* definitions, which are *fixed and immutable*, constitute the foundation stones on which is built the superstructure of mathematical science. Conceptual definitions do not represent real things. They represent ideals or, in the jargon of philosophy, abstract universals. In the empirical sciences, on the other hand, definitions are something more than mental constructions. They claim to represent the essence or nature of real things. As these essences are given in complex reality, we have to "find" them, and not merely to construct them. They are not discovered by intuition. They are *changing* concepts which "grow out" of the principle of the uniformity of nature—the root principle of every branch of empirical science—by a conservation of the "essentials" and the elimination of the accidentals. Mathematical definitions, then, constitute the solid foundation stones of a magnificent piece of architecture which laughs at nature. Real or empirical definitions, on the other hand, have a growth and development like that of a living organism in which the accidental variations are rubbed off by the process of trial and error. As we shall soon see, the differences of opinion on the definition of menstruation which have so

upset the faith of "M.B.Oxon." should not be regarded as flat contradictions. They represent, rather, different stages in the development of that definition.

Until comparatively recently menstruation was defined as a periodic shedding of blood from the uterus occurring at the time of ovulation. In the light of further experience it was discovered that menstruation, instead of synchronizing with ovulation, did not take place until approximately fourteen days after that event. I need hardly say that it took some considerable time before the new definition was accepted. Further investigation appeared to show that decidual necrosis was an essential feature of the menstrual process. Within the last few years anovular menstruation, accompanied by endometrial change, has been observed in monkeys by Corner and others during a certain season of the year. According to Novak and other accredited observers, the persistence of the interval type of endometrium throughout the entire menstrual cycle of the human female at all seasons of the year is not an uncommon occurrence. This can be interpreted only to mean that anovular menstruation occurs in women as well as in monkeys. Wilfred Shaw does not deny the possibility, but he regards anovular menstruation in women as pathological, not physiological. The distinction between what is pathological and what is physiological is based so frequently upon pragmatic or human, rather than upon logical, considerations that the pathological category is a convenient *pot pourri* which receives everything that fails to agree with preconceived notions. "What," says Hartman, "could we not learn of normal physiology by salvage from this heap!" The "premenstrual endometrium" and "intermenstrual bleeding" have already been rescued from the category of the pathologic. There are equally good grounds for elevating anovular menstruation from the rubric "pathologic" to the "physiologic." In order to keep within the facts it would appear that ovulation is not an essential part of the mechanism of menstruation.

The periodicity of menstruation, which is, after all, its most fundamental and impressive feature, has been traditionally regarded as *sui generis*, entirely unrelated to the oestrous and reproductive cycles of the lower animals. Studies in comparative physiology have disturbed the traditional view. In a paper which I contributed to the *British Journal of Obstetrics and Gynaecology of the British Empire* (1931, xxxviii, No. 4), I indicated many arguments, both biological and biochemical, in support of the view that in ovulatory menstruation the oestrous and reproductive cycles during the second half of the menstrual cycle are telescoped into each other, so to speak. In anovular menstruation there is only one cycle—the oestrous cycle. If this view is accepted, then we shall have to reconstruct our definition of menstruation in order to harmonize it with the findings of comparative physiology and biochemistry. In the paper of mine to which I have already referred I have defined menstruation to be a *periodic shedding of blood from the uterus during the child-bearing period which, accompanied by ovulation, represents pro-oestral and pseudo-pregnant degeneration telescoped into each other: unaccompanied by ovulation it represents pro-oestral degeneration alone.*

We must carefully distinguish between the nature or meaning of menstruation as defined and its causality. A solution of the former is logically prior to that of the latter. It is obvious that we must know what a thing is before we can account for its causality. The unfolding of the nature of menstruation is not an instantaneous affair. It is a long-drawn-out affair, like the growth of a living organism, as I have already said. We should expect, therefore, a corresponding development of the causal concept, and that is really what we find. How-

ever, we are concerned at present with the definition of menstruation, not its genesis or causality.

I agree with "M.B.Oxon." that the various writers expressed their conflicting views upon the definition of menstruation in language that was indecorous and intemperate. Dr. Wilfred Shaw was hardly fair to the reputation of such a world-renowned gynaecologist as Novak. A dignified protest by the latter called forth, I am glad to say, a handsome apology from Wilfred Shaw. Professor Blair-Bell's letter to the *Journal* did not help to mend matters. In his defence of Novak and the American school from the unwarranted attack of Wilfred Shaw he tried to belittle the reputation of the latter. Shaw's reputation in histological research, which has thrown considerable light on menstruation and menstrual disorders, is assured. I do not suppose that the deliberate omission by Blair-Bell of Shaw's name from the new edition of the *Principles of Gynaecology* will dim the lustre of that reputation.—I am, etc.,

D. J. CANNON, M.B., B.Ch., M.A.O.

Infirmary House, Kildare.

Leucocyte Counts

SIR,—In a leading article in the *Journal* of March 31st, on the normal leucocyte count, you state that "the numbers of leucocytes in the peripheral blood are subject to wide and rapid fluctuations," and, further, that a series of counts performed regularly on a single individual at the same time of day betrayed "only a capricious irregularity."

I have for some years been carrying out detailed blood counts on the same lines in both "normal" and tuberculous individuals, but I have always obtained the sample of blood from a vein in the antecubital fossa. Working with venous blood, I have carried out counts at intervals of from half an hour to twenty-four hours in the same individual, and again at the same hour each day for two or three weeks. I have found the daily fluctuation in the total leucocyte count to be seldom more than 1,000 cells per c.mm. in the absence of clinical change in the subject, or of the injection of vaccines, etc. I have satisfied myself that, apart from minor variations, the percentages of cells in the differential count remain reasonably constant from day to day. I feel sure that the unsatisfactory results which have been obtained by using specimens of blood extruded from the capillaries and tissues are dependent, as your leading article suggests, on local conditions.—I am, etc.,

Colindale Hospital, London, N.W.9,
April 10th.

L. E. HOUGHTON.

Liver Therapy in the Tropics

SIR,—With reference to the article in the *Journal* of March 31st (p. 578) on "Pernicious Anaemia in an Asiatic," I was very much interested in Dr. Spaar's account of his treatment of this case.

It is satisfactory to note that, although the progress of the case was slower than one usually experiences in the treatment of cases of pernicious anaemia with liver therapy, the result was eventually satisfactory. I think that the explanation of the slow response is more or less apparent. On studying the blood counts on various days in relation to treatment it is at once evident that treatment with hepatex P.A.F. was instituted prior to the removal of six septic stumps. From my own personal experience of rather similar cases in this country I am satisfied that the presence of septic stumps, or in fact any septic focus, is quite sufficient to diminish seriously the effect of liver therapy, and in all probability, had the septic stumps been removed in this case prior to the institution of liver therapy, the response would have

been very much more satisfactory and progress more rapid. I think that Dr. Spaar is probably mistaken in assuming that preparations of liver extract are prone to deteriorate in the Tropics, since it is not in accordance with many reports I have received from other tropical sources, in which it has been found that liver therapy has proved quite satisfactory, not only in the treatment of pernicious anaemia, but also in sprue.—I am, etc.,

Runcorn, Cheshire, April 4th.

H. A. MITCHELL, M.D.

The Human Factor in Road Accidents

SIR,—The Road Traffic Bill, which has just passed its second reading in the House of Commons, should arouse particular interest in the medical profession for two important reasons. The first, and the more weighty, lies in the circumstance that it is the medical profession which can contribute more successfully than any other agency to the prevention of accidents. The second and more trivial reason is the grievance which the profession undoubtedly feels in that it carries the burden of first-aid in injuries, often without any corresponding remuneration.

An admirable little pamphlet, a copy of which I enclose, has been published within the last three months by the National Institute of Industrial Psychology, a body whose work and very existence is too much ignored both by the public and by the profession.* I have chafed Lord Macmillan, who is President of the Institute and also Chairman of the University of London Court, on the relative failure of the Institute in making its work more widely known. I hope that this letter may attract the attention of some of my colleagues to the importance of the new methods, devised largely by the Institute, for testing motor drivers.

I made an effort, but without success, during the debate on the second reading to induce the Minister of Transport to give some consideration to the human factor in the production of accidents, a factor which the Bill almost completely ignores. The experience of the medical profession, acquired after long observation of factory accidents, has surely convinced everyone familiar with the subject of the predominant importance of the human factor in the production of accidents. In his report for 1932 the Chief Inspector of Factories makes the significant observation that however perfectly machinery may be guarded not much more than a further 10 per cent. reduction in the appalling present factory accident rate could thus be effected, but by consideration of the human as against the mechanical factor a much more hopeful outlook could be entertained. Too little study has been given to this factor, and the new psychological and physical tests are opening up a very wide prospect of success in the prevention of accidents, both in factories and on the road.

In a very interesting paper by Dr. Charles S. Myers, F.R.S., Principal of the National Institute of Industrial Psychology (*The Review*, March 9th, 1934), he says:

Factory and traffic accidents are believed by the psychologist to be due to precisely the same causes as are found to determine the breakages of cups and saucers in a restaurant. These accidents are not equally spread among all who might be subject to them. They are more frequent among novices who have not acquired sufficient skill; they are more frequent among the youngest and oldest; they are also more frequent among certain individuals ("accident-prone" persons, as we shall later call them), however experienced or of whatever age they may be. Further, they are more fre-

quent during conditions of over-pressure, irritation, and worry or other causes of excitement. The frequency curve of the breakages of china obtained for different hours of the day, at the start of the investigation just mentioned, showed an enormous rise between the hours of 4 and 6 p.m., when fatigue from the day's work might be supposed to reduce the dexterity and caution of the waitresses. But fatigue alone is probably not a prime cause of increased breakages, nor, indeed, of any other accidents, whether in the factory or outside it. It is more especially when, in the presence of fatigue, undue effort is made to maintain speed that accident frequency is increased; and in restaurant work this condition must be most acute at the last of the "rush" periods of the day. Other causes of accidents have also been ascertained. Factory accidents, for example, tend to occur with more frequency on Mondays and towards the week-ends; also under conditions of uncomfortable temperatures, both hot and cold, of defective lighting, and of bad ventilation.

The breakage of human bodies is surely of more importance than the breakage of cups and saucers, and is even more deserving of close scientific attention. Unfortunately, the opportunity for accurate observation and study of traffic accidents has hitherto been scanty, but there is some material for gauging the practical utility of selective tests in cases where they have been applied.

Thus Myers mentions a batch of American drivers divided into two groups, one having a high, the other a low, accident rate. Forty-nine per cent. of the high accident group (but only 9 per cent. of the low accident group) were suffering from bodily infirmities, easily determined by medical examination. Forty per cent. of the high accident group (but only 12 per cent. of the low accident group) failed to pass a certain single laboratory test to provide help in selecting reliable drivers. The tests employed by the Institute are intended to ascertain the accuracy, speed, and uniformity of speed, of responses to various signals; the ability to distribute attention effectively and to resist distraction; visual acuity and binocular balance; the ability to estimate rapidly and accurately the size and distance of other vehicles, etc. Myers gives a very remarkable example of the practical utility of selection tests when properly devised and applied. Thus in Paris, whereas the frequency of accidents caused by taxis, private cars, and lorries (in which no tests were applied) increased between the years 1923 and 1932 by 145 per cent., the accident frequency caused by the omnibuses and trams of the General Transport Company of Paris, since their use of selection tests during the same period, decreased by 30 per cent., and incidentally the company using these methods found that it effected an annual saving of over 1,500,000 francs. The saving in the reduction of the wear and tear of the vehicles driven by the better selected man would be difficult to estimate, but must be a very considerable additional asset. It is further to be noted that in many of the cases the fault ascertained by these methods can be corrected in the individual. It was found, for example, that a reduction of 42.7 per cent. in accident frequency among the accident-prone group was obtained after six months' instruction and treatment.

It is, of course, essential that these tests should be carried out by experts, and it may be objected that the cost would be prohibitive. In this connexion a pertinent observation is made by the secretary of the Pedestrians' Association. He points out that the Royal National Lifeboat Institution maintains a lifeboat service at an annual cost of nearly £300,000, mostly obtained from voluntary sources. The average number of lives thus saved from drowning in a year is from 300 to 400. The accidents due to motor cars on our roads for the year 1933 were responsible for 7,125 killed and 216,401 injured. I believe that public opinion is sufficiently aroused by these figures for its consent to be readily obtained to an enlarged expenditure designed to reduce the toll of the roads, and the medical profession is clearly marked out as the agent, both to convince the public on this matter and to supply the most effective remedy against road

* Issued by the Institute, Aldwych House, W.C., price 3d.

accidents. If pressure were exercised by the medical profession I believe that a clause insisting upon the use of these new scientific methods might still be inserted in the Bill before it becomes an Act, and it is with the object of arousing the profession to apply such pressure that I write this letter.—I am, etc.;

E. GRAHAM-LITTLE,
Joint Chairman with Viscount Cecil of the
Road Accidents Parliamentary Group.
House of Commons, April 11th.

Hypochondriasis

SIR,—Dr. T. A. Ross (April 7th, p. 643) need not be alarmed. Having survived encounters with several naval commanders, I do not intend to reach your obituary column through an infuriated army colonel (retired). So if I have such a patient I shall certainly not tell him that he has failed in his career; but I shall hope that he will be drawn to tell me that his ambitions have been frustrated, and if he does so, I think it will help him. He may even recollect that, as a small boy, his not too sympathetic parents paid him special attention when he had a bilious attack, and possibly see the persistence of his life-style in the similar situation as regards his wife and his abdominal discomfort. I agree that it is probably very difficult to help retired colonels by "radical cure"; but does this mean, as both Dr. Hutchison and Dr. Ross insist, that we must not try? Dr. Ross believes in "giving the patient the feeling that he is being taken care of" (what would the colonel's reactions be if he overheard that remark?); but, surely, what the patient needs is sympathetic understanding.

I agree with Dr. Ross that "if there were no compensation for accidents there would be no traumatic neuroses," but there are many forms of compensation: the little lady I was called to see last night, howling tremendously over a very slight graze, had found hers in the fuss she was getting from her grandfather. Is it unreasonable to suggest that she, too, finds parental understanding somewhat lacking?

As for the vicarious hypochondriacs, does not a feeling of guilt *ipso facto* connote a feeling of inferiority to those who are not guilty? Whatever the unconscious factor, however, this class certainly presents a very difficult problem, which every one of us comes up against—notably in Dr. Hutchison's apt example of the over-anxious parent. I venture to suggest that the person who is in the best position to tackle this problem—if he cares to try—is the family doctor, not only because it is easier to get these patients to his consulting room than to Harley Street or to hospital, but also because he is likely to see them in an earlier stage than Dr. Hutchison or Dr. Ross. Most mothers who are anxious about their children will respond to a tactful inquiry about their own health; and it is obvious that the mother who has only one child both lacks the confidence that comes from rearing six and is extremely likely to be suffering from some unsatisfactory and uncertain method of birth control. Let us do what we can by re-education on the conscious level; but is that sufficient?—I am, etc.,

Wandsworth, April 9th.

F. GRAY.

The Medical Witness

SIR,—I observe with interest not unmixed with sadness that your medico-legal authority, in warning the doctor to avoid technical phraseology when giving evidence in court, is unable to refrain from repeating that time-honoured monstrosity of pathological hyperbole which the learned judge translates as "a black eye."

Whenever a book on forensic medicine or an article on the subject of medical evidence is published, one looks with confidence for this venerable example of our traditional inability to avoid unnecessarily long technical terms. I confess I have always regarded the doctor who was originally responsible as a lineal descendant of Mrs. Harris: the choice perfection of the composition smells too much of the lamp. It is, however, possible that it really issued from the lips of a colleague whose desire for accuracy and whose fluency were indeed to be envied, even if his lamentable lack of a sense of proportion was to be deplored; and in all sincerity I asked in your hospitable columns nine years ago if one of your readers as inquisitive and as sceptical as I, but more enterprising, could supply chapter and verse. Now, nine years later, I would again humbly suggest to learned writers on medico-legal topics that it really is time that we were entitled to receive, during the course of instruction when we are to be flagellated for our inability to express ourselves in plain non-technical (yet unpatronizing) language, another example of what ought not to be said: one which is quite as convincing and, if I may say so, much more probable.—I am, etc.,

London, W.1, April 14th.

ADOLPHE ABRAHAMS.

The Election to the Council of the Royal College of Surgeons

SIR,—The excellent effect which followed the letter from Mr. Ivor Back which you published in April, 1928, seems to have lasted for about five years; for, with the exception of the curious incident to which he refers in his letter appearing in your issue of April 14th (p. 689), peace has reigned since. But now the canvassers show signs of stirring again. If his present campaign, as I hope it will, proves equally effective for another five years, may I suggest that you will allow Mr. Back the courtesy of your columns to issue, at the proper intervals, a quinquennial appeal to Fellows of the College to abstain from the tiresome and undignified practices which he describes so well. He would earn the gratitude of many besides myself.—I am, etc.,

London, W.1, April 13th.

LIONEL COLLEDGE.

SIR,—Mr. Ivor Back's letter has much impressed me. That a Fellow of the College should be obliged, in the interest of medical ethics, to state his case on the unholy method of wire-pulling in the election of the Council is indeed distressing to learn and sad to contemplate. It was as if one of the immortals had made his way into the very presence of the gods with a genuine grievance to be laid at the feet of Zeus, who, as was his wont, sits on his throne saying nothing, but enigmatically "nodding assent." We members of the College are, of course, mere mortals, but our existence, we are told, is sometimes felt. Our grievance has been issued annually for over forty years. Is it not appalling that so important a reform as representation of members on the Council of the College should not be acceded? But the gods on Olympus, who are omnipotent and superior in every respect to the "man-in-the-street" member, can exercise their autocracy. This is an age of dictators.

If examination is considered the only test of special knowledge in any given subject, the exacting requirements in anatomy, physiology, and surgery for the Fellowship speak for themselves. But, Sir, I should be interested to learn whether members of the Council are required to pass any examination in the history of medicine, ethics, or the

art of statesmanship; if not, a knowledge of surgery alone can hardly help them in the enlightened ruling of those whom they are supposed to direct. The member is surely the man who, by his special experience, knows the requirements of the general practitioner better than your surgical specialist or consultant. An amalgamation of the two would undoubtedly strengthen the cause of each, and could not but add to progress in surgical practice throughout the British Empire. The British Medical Association has given proof that among general practitioners there are many who possess the combined qualities of organization, judgement, and foresight.—I am, etc.,

London, N.8, April 17th.

T. WILSON PARRY.

Medicine and Economics

SIR,—No medical man will dispute the proposition that there is an intimate connexion between economics and the physical and mental well-being of the people, and therefore between economics and the practice of medicine. For those of us whose lot is cast in the industrial districts especially, the results of the depression of the last few years have been only too apparent. The economic circumstances of our patients merely make a mockery of any scientific enthusiasm we manage to retain, and fill us with a sense of futility and frustration. When the whole scheme of living is wrong, and we know it, economic conditions leave us no resource but the hypocritical offering of a bottle of medicine, or a box of powders, with the addition, perhaps, of some advice which we know cannot possibly be carried out. I submit, Sir, that if the medical profession is to justify the position of trust which it holds in the estimation of the people, it should welcome any movement which promises a solution of the present economic chaos and a raising of the standard of living of the mass of the people.

It may be argued that economic problems are outside the scope of a medical journal, and that in any case they should be left to the experts in that subject. In reply, I would suggest, first, that the concentration of the medical man on his own professional responsibilities scarcely absolves him from the wider responsibilities of citizenship, and, secondly, that the "experts" are not making much of a job of it. So little progress are they making, in fact, that thinking people all over the country have been driven to examine the facts for themselves, and there is a steadily increasing volume of opinion that the root cause of our difficulties is to be found in the operation of our banking and financial system.

Up till recently there has seemed to be a conspiracy of silence with regard to this question on the part of the Press, but on April 4th the London Times earned the gratitude of the country by opening its columns to a discussion on this subject. The discussion was initiated, as perhaps you are aware, by the publication of a letter signed by several well-known and influential gentlemen, expressing their opinion that the financial system stands in need of reform, and pleading for a scientific inquiry into the whole question.

My object in writing is to suggest that the British Medical Association should throw its weight into the scale, and should bring to the support of this demand the assistance of its prestige and authority. A scientific body cannot possibly object to a scientific inquiry, the demand for which would acquit you of any *a priori* opinions. I submit, finally, that the course suggested would raise the Association immensely in the estimation of all who sincerely desire to find a way out of the present deadlock.—I am, etc.,

Dunfermline, April 8th.

A. C. DOUGLAS.

Lymphadenoma

SIR,—May I call attention to a slight inaccuracy in your otherwise admirable report of my contribution to the discussion on lymphadenoma, at the Royal Society of Medicine on March 27th? Referring to methods of regional irradiation I said that Finzi had applied the term "radiation baths" to this type of treatment, but in your report the term "radiation bars" was used in error. Dr. Finzi was unable to be present at the discussion, but he writes to say:

"I think you take much too gloomy a view about these cases. I have now quite a number of cases over five, ten, and even fifteen years where extensive local treatment, combined with treatment of the adjacent gland areas, has resulted in a complete disappearance of the growth without recurrence. Most of them are cervical, but one was a case of a man with enormous masses in his groins."

I am glad to take the opportunity of correcting any excessively pessimistic impression I may have given in my paper.—I am, etc.,

London, W.1, April 14th.

WALTER M. LEVITT.

Obituary

JAMES ANDERSON, M.D.

Seaton Delaval

By the death on April 6th of Dr. James Anderson of Seaton Delaval a popular and highly esteemed personality has been removed from East Northumberland. Born in 1866 he was educated in the Universities of Edinburgh and Durham. He graduated M.A. Ed. in 1887 and M.B., C.M. in 1891, following these seven years later with the B.Hy. Durh. He proceeded M.D. with commendation in 1922. He had been in practice in the extensive colliery districts of Seaton Delaval and Cramlington for about forty years, and had been medical officer of health to the Cramlington urban district council for some thirty years. He took a very active interest in the work of the St. John Ambulance Brigade, being assistant commissioner for the northern section, and a Commander of the Order. He was a Fellow of the Society of Medical Officers of Health. Dr. Anderson rendered conspicuous service to public education, and had been chairman of the Seaton Delaval Education Committee of the county council. A month ago he was re-elected to the Northumberland County Council, on which he had previously served for six years. He was also a justice of the peace, and regularly attended the courts of Blyth and Whitley Bay. He was a member of the Grand Lodge of Freemasons, and a founder member of the Astley Lodge, Seaton Delaval. James Anderson joined the British Medical Association in 1892, and was chairman of the Blyth Division from 1923 to 1927. He was a member of the Representative Body at the Swansea Annual Meeting of the Association in 1903, at Exeter in 1907, at Newcastle-upon-Tyne in 1921, at Portsmouth in 1923, and at Edinburgh in 1927. He was a member of the Local Medical and Panel Committee of Northumberland from its inauguration, and chairman during the last three years.

Dr. WILBUR C. LOWRY (honorary secretary of the Blyth Division) writes: Many of us younger members of the Blyth Division and of the Panel Committee will long remember how with a thoughtful mien or a cheery smile and a characteristic "No" Dr. James Anderson's forceful personality waved aside objections and opposition alike. No resentment was ever felt, because we knew he had a "flair" for getting things done. Dr. Anderson possessed in large measure the art of the practice of medicine. He also kept in close touch with the advance of scientific

medicine. He attended the scientific meetings regularly, and took part in the general discussion. A survey of the organizations and individuals who paid tribute to his memory impresses on one the multitude of his interests and the influence he exercised even beyond the district in which he lived and practised. It also marks the standard of his ability to deal with men and affairs. He will be greatly missed by his fellow practitioners in medico-political and scientific matters. He will be missed by the St. John Ambulance Association, and not least by the classes who regularly asked if he was available to examine them.

ANDREW MCFARLANE, M.D., M.R.C.P., D.P.H.

Medical Officer, Scottish Board of Health, and late Deputy Medical Officer, Darlington

We record with much regret the death, in Edinburgh on April 2nd, of Dr. Andrew McFarlane, after a prolonged illness. Born at Leadhills in 1898, Andrew McFarlane was educated at Biggar Grammar School and the University of Edinburgh. He graduated M.B., Ch.B. with honours in 1922, and proceeded M.D. in the following year. He early revealed a remarkable facility for absorbing knowledge and passing examinations, and he followed his earlier successes with the obtaining of the diploma M.R.C.P.Ed. in 1926 and the D.P.H. in 1927. His first appointments were in Edinburgh, where he was house-physician at the Royal Infirmary, resident medical officer to the Ministry of Pensions Hospital, clinical tutor at the Royal Infirmary, and medical officer at the tuberculosis hospital, and he held clinical assistantships at the tuberculosis dispensary and the venereal department of the Royal Infirmary.

With such a wide grounding McFarlane started on what seemed certain to be a most distinguished career in public health. For two years he was assistant county medical officer of health in Surrey, and in 1929 was appointed to Darlington from a long list of applicants. In that town he was deputy medical officer of health, medical officer for venereal diseases, and assistant school medical officer. In November, 1933, he was appointed medical officer to the Scottish Board of Health, but increasingly grave illness prevented him from taking up the duties. Two operations proved unavailing, and an exceptionally promising career was untimely ended. To his brilliance of attainments and outstanding abilities he added a charm of manner which rendered him generally popular, as well as greatly respected. A keen golfer, he carried off several honours at the Dimsdale Spa Golf Club. He leaves a widow, a son, and a daughter, with whom deep sympathy is felt. He became a member of the British Medical Association soon after graduation.

NORMAN LAVERS, M.D.

We regret to record the death, on March 26th, of Dr. Norman Lavers of Bath, after a professional life devoted to the study and treatment of mental diseases. Born in Tasmania in 1872, he received his medical education at Guy's Hospital, where he had gained an entrance scholarship in arts. He obtained the diplomas M.R.C.S., L.R.C.P. in 1896, and three years later the M.D. Brux. degree. After holding the post of assistant medical officer at Camberwell House, London, he brought into being the city and borough mental hospital at Canterbury, and became its first medical superintendent. He later went to Bath as medical superintendent of Ballbrook House, remaining there for twenty-one years, until his retirement from practice. A keen member of the Royal Medico-Psychological Association, he served for some time on its council. He joined the British Medical Association in 1908, and was a member of the Representative Body

from 1915 to 1920. He held office as chairman of the Bath Division in 1922-3, and when the Association held its Annual Meeting at Bath in 1925 he was a vice-president of the Section of Neurology and Psychological Medicine. He was also president of the Bath Clinical Society. Dr. Lavers was a Freemason, and a member of the Bath Lodge of Honour. During the war he held a commission in the R.A.M.C., worked at the Bath War Hospital, and also at Aintree and St. Annes in connexion with the treatment of shell-shock. He had moved not long ago from his house at Clifton Down to the countryside at Box.

A colleague, F. H. E., writes:

Norman Lavers was an all-round sportsman. He played regularly for Guy's at soccer, and, whilst a student, occasionally for the county of Surrey at cricket. I remember his sometimes uncanny skill with a billiard cue, and later in life he showed the same aptitude with a rod. It is often difficult to recall the particular attribute that differentiates a man from his fellows, but in Norman Lavers it may be that it was his thoroughness: how he did what he set himself out to do, in work or in play, will stand out in the memory of his many friends, and to this may be added a natural placidity of temperament, the gift of silence when it was best, the wise word in due season, the ear of a patient listener—rare attributes, and he had them all. He leaves a widow and three sons.

THE LATE DR. STANLEY MELVILLE

Dr. H. B. PADWICK (Bedford) writes:

To the appreciative obituary notice of the late president of the British Institute of Radiology, Dr. Stanley Melville, and of his attainments in the radiological world there must be many who knew him as a man who felt, on reading it, that they would like to add something on the personal side. Perhaps it may be permitted, to one whom he sought unasked to help on more than one occasion, to stress a particular side of his character. If Melville had a hobby it was helping other people. In fact he spent his life in assisting his fellow men, both individually and as members of a corporate body. But for him the Institute of Radiology might not still be in existence, and even now, when it is firmly established, "the Institute" without Melville is melancholy to contemplate. There are quite a number of radiologists now practising whom he has "made" professionally, and who would be the first to admit it. I can think of two particularly prominent exponents of that branch of medicine who continually do so. Yet he was the most unobtrusive of benefactors, and anything like patronage was entirely foreign to him. In his room, for instance, at the Brompton Hospital, which was apt to be thronged with visitors anxious to hear his words of wisdom on chest films, he, who saw many thousands of such films a year, would turn, when a difficult one was put up, to an obscure provincial radiologist and humbly ask his opinion on it, waiting with an air of unaffected deference for his halting reply. There was something about his courtly manner and his frank straightforward approach which—as a manufacturer said to me last week—made all with whom he came in contact feel that here was a man one could trust. A very white man and a big man in every sense of the word—one with whom one could be frivolous yet whom it was instinctive to address as "Sir." However busy he might be one was always assured of a welcome. He had always time to give an opinion on a film, and such was his enthusiasm for his work that he always demanded more. The world is indeed the poorer for the passing of a very great gentleman.

Dr. ROBERT WILLIAM MAYSTON of Erith, who died on April 3rd at the age of 58, was the elder son of the late Engineer Rear-Admiral R. Mayston, C.B., and was educated at Portsmouth Grammar School and Guy's Hospital. In 1897 he obtained the diplomas M.R.C.S.,

L.R.C.P., and graduated M.B.Lond., with honours in forensic medicine. He proceeded M.D. in 1899. After holding the appointments of house-physician to Guy's and house-surgeon at the Seamen's Hospital, Greenwich, he was appointed medical officer to the Erith Armament Works in 1900. Three years later he entered into partnership with the late Dr. Murison of Erith. He held the rank of captain R.A.M.C.(T.), and was lecturer to the Erith Branch of the St. John Ambulance Brigade and surgeon to the Erith Cottage Hospital. He joined the British Medical Association in 1911, and held office as chairman of the Dartford Division in 1927-8. His health had been impaired since an attack of pneumonia seven years ago, and for the last two years he had been almost entirely confined to bed.

We regret to record the death, on April 7th, of Dr. PETER WILLIAM MACDONALD of Weymouth, who had been a member of the British Medical Association for fifty-three years. Dr. Macdonald received his medical education at Aberdeen, where he graduated M.B., C.M. in 1879, and proceeded M.D. in 1886. His professional life was almost entirely devoted to the study and treatment of mental diseases, and he was early appointed to the post of assistant medical officer to the Cheshire County Asylum at Parkside. For many years subsequently he was well known and highly esteemed as the medical superintendent of the Dorset County Asylum at Herrison, and after his retirement was honorary visiting physician to that institution. A keen supporter of the Royal Medico-Psychological Association, he was honorary secretary of the south-west division from 1894 to 1905, and occupied the presidential chair from 1907 to 1908. He was an early pioneer in the work of localizing mental function, and contributed articles on this subject to the *Journal of Mental Science*. He served on the Neurological Pensions Board for the Dorset and Bournemouth area. Dr. Macdonald was elected a member of the British Medical Association in 1881, and did all in his power to assist its work. He was chairman of the West Dorset Division in 1922-3, and a past president of the Dorset and West Hants Branch, and had also filled the presidential chair of the Bournemouth Medical Society. After his retirement he removed to a house on the outskirts of Weymouth.

Dr. CHARLES MICHAEL COOKE died on April 13th, at the age of 70 years, at his home in Northam, Devon. He was trained at St. Mary's Hospital, London. After qualifying as M.R.C.S., L.R.C.P. he practised for many years at Barnstaple, where he was in partnership with Dr. J. W. Cooke, his brother. For twenty years he was parish medical officer for Barnstaple. Whilst at the height of his career, and in the prime of life, he became totally blind. Undeceived by this handicap, he trained as a blind masseur, and was duly certified by the National Hospital and University College of the School of Massage. For twenty years he resided at Northam, where he established an extensive practice as a masseur in Bideford and district. He was appointed masseur to the Bideford and District Hospital. During the last two years he relinquished active work on account of a breakdown in his general health. On leaving Barnstaple, owing to blindness, the local medical men issued an appeal on his behalf to the medical profession at large. As a result of the generous response, a fund was raised which enabled Dr. Cooke to live in comfort for the rest of his days. Reference should also be made to the generous help afforded the late Dr. Cooke by the National Institute for the Blind.

We regret to announce that Dr. MARTHA KEITH, assistant medical officer of health and assistant school medical officer for the city of Norwich, died on April 8th. Dr. Keith studied medicine at the University of Edinburgh, and immediately after graduating M.B., Ch.B.Ed., in 1926, she became a member of the British Medical Association. In 1930 she obtained the Edinburgh D.P.H.

Universities and Colleges

UNIVERSITY OF LONDON

The ceremony of presentation for degrees will take place at the Royal Albert Hall on Thursday, May 10th, at 2.30 p.m. The annual service for members of the University will be held at Westminster Abbey at 5.30 p.m., when the Dean of Exeter (the Very Rev. W. R. Matthews, D.D.) will preach. The graduation dinner will take place in the evening at the Leathersellers' Hall, when the Chancellor will preside.

The University College Committee has re-elected Sir John Rose Bradford, Bt., M.D., F.R.S., as chairman, and Lord Meston as vice-chairman, for the year 1934-5.

Dr. G. H. Eagles has been recognized as a teacher of bacteriology at the Lister Institute of Preventive Medicine.

The regulations of the University Studentship in Physiology (Scholarships Pamphlet, p. 25) have been amended by the substitution for paragraphs 5 and 6 of the following:

5. The names of all candidates will be submitted not later than May 1st to the Board of Studies in Physiology, who will nominate appropriate assessors.

6. Applications must be received by the Principal on or before April 20th, 1935.

Dr. A. M. H. Gray has been appointed representative at the celebration to be held in honour of the hundredth anniversary of the foundation of the Medical School of the University of Liverpool on May 11th and 12th, and Professor W. W. Jameson representative at the forty-fifth congress and exhibition of the Royal Sanitary Institute at Bristol from July 9th to 14th.

Lectures

A course of three lectures on "Experimental Vertebrate Embryology" will be given by Professor W. Vogt, professor of anatomy in the University of Zürich, at University College on May 22nd, 24th, and 25th, at 5.15 p.m. At the first lecture Professor J. P. Hill, F.R.S., will be in the chair.

A course of three lectures on "Some Problems of Perception in Modern Psychology" will be given by Professor David Katz, formerly professor of psychology in the University of Rostock, at Bedford College on May 22nd, 23rd, and 24th, at 5.15 p.m. At the first lecture Mr. C. A. Mace, Reader in Psychology in the University, will be in the chair.

UNIVERSITY COLLEGE

A course of eight public lectures on "The History of Physiology" will be given by Professor Charles Singer, M.D., and Dr. K. J. Franklin in the Department of Physiology and Biochemistry on April 30th, May 1st, 2nd, 7th, 8th, 14th, 15th, and 22nd, at 5 p.m. The lectures are open to the public without fee or ticket.

BEIT MEMORIAL FELLOWSHIPS

An election of junior Fellows will take place in July. The annual value of a junior Fellowship is £400, and the usual tenure for three years. Forms of application and all information may be obtained by letter only, addressed to the honorary secretary, Beit Memorial Fellowships for Medical Research, University College Hospital Medical School, University Street, W.C.1. Applications should be received by May 18th, though later entries will be accepted up to June 1st.

LONDON HOSPITAL MEDICAL COLLEGE

An open entrance scholarship (value £100), offered by the London Hospital Medical College, has been awarded to A. F. Smith of Lincoln College, Oxford.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A quarterly Council meeting was held on April 12th, when the President, Sir Holburt Waring, was in the chair.

Diplomas of Membership were granted to Thomas Stewart Heslop and Maxime Shun-Shin. Diplomas in Tropical Medicine and Hygiene were granted jointly with the Royal College of Physicians to the following twenty candidates:

A. C. Banerjee, P. P. Bhavnagri, S. A. B. Black, I. E. Dirckx, V. L. Ferguson, Emily C. Greenfield, R. D. Harding, L. C. Mayne, K. S. Menon, T. H. L. Montgomery, M. G. Pradhan, H. A. F. Sallam, M. F. Seif, F. J. Sladen, F. G. Smith, R. B. U. Somers, A. L. Stuart, T. H. Williams, J. Yatawara, K. E. Yuill.

The Jacksonian Prize for 1933 was awarded to Edgar Samuel John King, F.R.C.S., for his essay on "The Pathology, Diagnosis, and Treatment of Localized Rarefying Changes in Bones, as Illustrated by Perthes's (or Legg's) Disease, Schlatter's Disease, Kummell's Disease, and Allied Diseases." A certificate of honourable mention was awarded

to Mr. H. Jackson Burrows, F.R.C.S., for his essay on this subject. The subject for the Jacksonian Prize for 1935 is "The Pathology, Diagnosis, and Treatment of Intrathoracic New Growths, excluding Neoplasms of the Oesophagus."

The John Hunter Medal, with the triennial prize, was awarded to Dorothy Stuart Russell, M.D., M.R.C.S., for her work on the morbid histology of the kidney and the brain.

The following Members of twenty years' standing were elected to the Fellowship: Professor George Alfred Buckmaster, M.D., George French Stebbing, M.B., B.S.

Examiners in anatomy under the Conjoint Examining Board and for the Fellowship will in future be elected from persons holding a medical qualification registrable in this country. The previous regulation that examiners in anatomy for the Fellowship should be Fellows of the College has been altered as above.

Mr F. M. Stent was appointed assistant secretary to the Examining Board.

After the Council meeting the following cinematograph films were shown in the lecture theatre: (1) a film of ciliary action, made in the College research laboratories, shown by Mr. V. E. Negus; (2) a film made by Sir Charles Ballance and Dr. A. B. Duell illustrating the application of Sir Charles Ballance's experimental work to the treatment of facial paralysis, shown by the conservator of the museum and director of research. [See p. 722.]

The Services

DEATHS IN THE SERVICES

Deputy Inspector-General William Connolly, R.N. (ret.), the oldest living naval officer, died at Kingstown, Dublin, on March 16th, at the great age of 102. He was born on April 11th, 1831, was educated in Dublin, and took the L.R.C.S.I. in 1856 and the M.D. St. Andrews in 1862. He entered the Navy on September 25th, 1856, just at the end of the Crimean War, was promoted to staff surgeon on July 27th, 1867, to fleet surgeon on December 25th, 1878, and retired on April 11th, 1886, with an honorary step of rank as deputy inspector-general. He served on H.M.S. *Calcutta*, flagship, in the China War of 1857-8, attending wounded from the actions at Fatshan and Canton (medal); in the New Zealand War, from July 7th to October 2nd, 1860, as senior medical officer of the Naval Brigade under Commodore Loring and Captain Beauchamp Seymour (medal); and as fleet surgeon of H.M.S. *Euphrates* in the Zulu War of 1879 (medal). He leaves eight children.

Lieut.-Colonel Brisbane Warren Somerville-Large, R.A.M.C. (ret.) died on February 4th, aged 81. He was born at Cork on October 7th, 1852, took the Edinburgh double qualification in 1874, and entered the Army as surgeon on February 4th, 1877, became lieutenant-colonel after twenty years' service and retired on December 20th, 1905. His name was originally only Large; he changed it to Somerville-Large by deed poll in 1887. He served throughout the South African War as P.M.O., first of No. 6 and later of No. 12 General Hospital, took part in operations in the Transvaal, Orange River Colony, and Cape Colony, and received the Queen's medal with three clasps and the King's medal with two clasps. He also rejoined for service in the war of 1914-18, from July 1st, 1915.

Lieut.-Colonel Alfred Edmond Weld, R.A.M.C. (ret.), died in Queen Mary's Hospital, Roehampton, on March 4th, aged 61. He was born on November 30th, 1872, was educated at Charing Cross and took the M.R.C.S. and L.R.C.P. Lond. in 1897. Entering the R.A.M.C. as lieutenant on July 27th, 1898, he became lieutenant-colonel in the long war promotion list of March 1st, 1915 and retired on February 23rd, 1919. He served in the South African War in 1900-2, when he took part in the defence of Ladysmith, and received the Queen's medal with a clasp and the King's medal with two clasps, and also in the war of 1914-18.

Lieut.-Colonel Charles Seaver Smith, R.A.M.C. (ret.), of Fallowfield, Manchester, died suddenly at Rhyl on March 7th, aged 59. He was born on November 3rd, 1874, was educated at Birmingham and at Newcastle-on-Tyne, and graduated M.B., B.S. Durh., with first-class honours, in 1897. After serving as house surgeon of the General Hospital, Birmingham, and as clinical assistant at the Royal Orthopaedic Hospital, Birmingham, he entered the R.A.M.C. as lieutenant on December 4th, 1899, became lieutenant-colonel on December 26th, 1917, and retired on half-pay, on account of ill-health, on February 23rd, 1920. He served in the South African War in 1900-1, taking part in operations in the Orange Free State and the Transvaal, including the actions

at Kamee Siding, Vet River, and Zand River, and at Johannesburg; and also in operations on the Zululand frontier of Natal in September-October, 1901; and received the Queen's medal with four clasps. He also served in the war of 1914-18.

Lieut.-Colonel Arthur Henry McNeill Mitchell, R.A.M.C. (ret.), died suddenly of heart failure in London on March 7th, aged 61. He was born on December 16th, 1872, was educated at St. Mary's, and took the M.R.C.S., L.R.C.P. Lond. in 1900. Entering the R.A.M.C. as lieutenant on January 28th, 1901, he became major on October 29th, 1912. He served in the war of 1914-18, and was mentioned in dispatches in the *London Gazette* of January 1st, 1916, and May 29th, 1917. A member of the B.M.A. since 1920, Lieut.-Colonel Mitchell was chairman of the Lambeth Division, 1925-6.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The Financial Statement issued to the House of Commons by Mr. Neville Chamberlain when opening the Budget for 1934-5 on April 17th includes a proposal, which is accepted by the House, to restore, as from July 1st, 1934, on the emoluments of insurance doctors and chemists, one-half of the emergency reductions made in 1931. Restorations in similar proportion are proposed in the emoluments of Ministers, M.P.'s, judges, civil servants, members of the Defence Forces, teachers, and police. In the Budget Mr. Chamberlain also announced a decision to reduce income tax by 6d. in the £, leaving abatements and allowances unchanged. The reduction in the rates of unemployment benefit made in 1931 is to be restored in full as from July 1st if the Unemployment Bill be law by then, and a sum of £3,600,000 is reserved for an increase in transitional payments. As from January 1st, 1935, the present horse-power tax on motor cars will be reduced to 15s. per unit of horse power with a minimum of £4 10s. on a six-horse-power vehicle. Similar reductions will be granted on motor cycles, and the fee of 10s. or 5s. now charged on the surrender of a motor licence will be abolished from August 1st, 1934.

Discussion on the Budget continued during the week in the Commons. The Incitement to Disaffection Bill was read a second time on April 16th, and the second reading of the Shops Bill was set down for that day, but was deferred.

The House of Lords read the Tithe Bill a second time on April 17th.

The Firearms Act (1920) Amendment Bill was put through report stage and read a third time by the House of Commons on April 13th. Its chief purpose is to restrict the sale of firearms to young persons.

The Workmen's Compensation Act (1925) Amendment Bill passed through the House of Commons in committee on April 13th. It dealt with the insurance of persons employed in coal mines. An amendment was inserted to make clear that the scope of the Bill included compensation schemes set up under the principal Act by the Home Secretary in relation to industrial diseases such as silicosis or silicosis accompanied by tuberculosis.

The Supply of Water in Bulk Bill, a Government measure, which has passed through the House of Lords, was read a second time in the Commons on April 11th and put through committee and report stages on April 13th.

The Army and Air Force Bill passed through committee of the House of Commons on April 11th. A proposed new clause to authorize, at the request of parents or guardians, the release from the Army of boys enlisted under the age of 18 was defeated by 264 to 96.

The Gas Undertakings Bill received a second reading in the House of Commons on April 12th.

Road Traffic Bill

In the House of Commons, on April 10th, Mr. OLIVER STANLEY moved the second reading of the Road Traffic Bill. He said he wondered whether the ordinary man realized that between that time (3.30 p.m.) and 11 p.m., when the Speaker would put the question, 180 people would have met with injury on the roads of this country. In the last eighteen months there had been unmistakable signs of a growth in the number of accidents, and because of that they had to survey the field once again. They must all agree that speed reduced the driver's power to deal with the unexpected. It was in the built-up areas that 75 per cent. of the deaths occurred. Pedestrians made up more than half of the people killed on the roads, and about half of the pedestrians were children or old people. This Bill was not a return to the old speed limit, which failed because it did not accord with the view of reasonable people. In regard to tests for drivers, it was true that a certain number of people would be unable to pass the test, some whose physical condition would prevent it, and so on, but the general run of people would eventually pass the test.

A Medical Test

During the debate Sir E. GRAHAM-LITTLE said that he was chiefly concerned with the medical and biological aspect of this problem. It was essentially a medical and pathological problem. The medical profession had had a long experience of accidents. While attention was confined to the mechanical factor progress was slow, but when it was directed to the human factor the improvement was immediate and profound. He urged on the Minister the importance of including a medical test as well as a test of capacity to drive. It was possible at this moment to discriminate between drivers who were likely to be mischievous and those who were likely to be safe. We owed the tests which had been made to advances in medicine, which, as was so often the case, were largely ignored in this country while adopted in others. Some figures published a few weeks ago showed that the practical application of selective tests on drivers of public service vehicles in Paris and in America was not to be ignored. Those figures proved that not only had the rate of accidents been enormously decreased, but that there had been large savings to the companies concerned. He was convinced that advance could best be made by following the progress of scientific medicine. It was not perhaps sufficiently realized by motorists that if, in driving, a decision were taken half a second earlier it might make all the difference between a fatal accident and escape from accident. That was tested carefully among a group of drivers, and it was found that the best driver gained half a second in his reaction compared with the less experienced and less able one. That meant a saving of 30 feet at a speed of thirty-five miles an hour, and the better driver could thus pull up more quickly than the other. A driver's decision could be retarded by a number of innocent causes, such as a heavy dinner, a glass of beer, or fatigue.

No Compensation to Hospitals

Dr. HOWITT urged that the Bill should embody the principles of Lord Moynehan's Road Traffic (Emergency Treatment) Bill. There was, he said, a growing dissatisfaction all over the country that emergency treatment was usually not paid for. It was not fair that emergency cases should be treated, without payment, at hospitals kept up by local voluntary contributions for local needs. Doctors were continually being called to treat emergency cases, for which they were usually not paid, and which disorganized their regular work. Patients in such cases, he thought, were afraid to get into communication with the doctor in order to pay for the treatment because they thought they would put themselves wrong with the law. A very slight increase in the compulsory insurance payment for third-party risk would cover emergency treatment both by doctors and by hospitals.

Mr. SROREY said that the greatest blot on the Bill was that it did nothing to secure justice for the voluntary hospitals, and left on their shoulders a very heavy burden due to the cost of treatment of road accidents. The Minister of Transport had reminded the House that between the time he was speaking that afternoon and 11 o'clock that night 180 persons would be injured on the roads, but he had not reminded them that those cases would be treated by the hospitals,

which would not be able to recover more than one-half of the cost. In 1931 it was estimated that road accidents still cost the voluntary hospitals of the country £230,000 a year, and that they were only able to recover £34,000. It was true that there were outstanding claims of some £58,000, but anyone who knew how difficult it was to recover those sums would realize that such claims were very doubtful assets indeed. It was very difficult to maintain voluntary hospitals at the present time, particularly in distressed areas, where contributions were made in small sums of 1d. or 2d. a week from working-class people; and it was quite wrong that those who had subscribed this money should have to wait for treatment owing to the pressure on the hospitals due to road accidents. He suggested that a charge should be made on the Road Fund to meet cases of this kind, and that the money should be paid to some central body, which would recoup the voluntary hospitals for their charges, the hospitals making over to that body any right they might have against any driver who had been proved to be negligent.

Lieut.-Colonel HEADLAM, replying to the debate, said there was no intention of re-establishing a general speed limit for private cars such as existed before 1921. It was, however, perfectly clear that the larger number of accidents taking place at present occurred on built-up areas. So long as that was the case it was desirable to make it less likely that accidents of that kind should occur. The Government thought that by imposing a speed limit in built-up areas no serious hardship would be imposed on motorists. The real point of the Bill was not that the Government hoped by it to do away with all the accidents and troubles on the roads at present, but that its effect would be to reduce accidents and inculcate into the people of the country the necessity for care and caution on the roads. The Minister was ready to consider in committee any suggestions by members for the improvement of the Bill, and matters such as those concerning the hospitals and the doctors could well be considered then.

The Bill was read the second time without a division and sent to a standing committee.

Water Supplies Bill

Sir HILTON YOUNG moved the second reading of the Water Supplies (Exceptional Shortage Orders) Bill in the House of Commons on April 12th. He said that to find a comparable period of drought it was necessary to go back to 1887-8, when, in the twelve months ended March 1st, deficiency of rainfall was 23 per cent. of the normal average; for the twelve months up to the end of March, 1934, it was 27 per cent. The seasonal distribution of rainfall in 1933-4 was bad, with an exceptionally poor fall in the middle and late months of winter. The winter deficiency was six inches of rain, and the March fall no more than average. Reserves of the great towns were so low that measures of conservation were essential. The increasing provision and use of baths cast a new heavy burden on water undertakers, and there was a heavy expansion of industrial requirements. The Rural Water Supplies Act recently passed dealt with rural areas, and was permanent. The present Bill was concerned chiefly with the great urban areas, and was temporary. The Bill proposed procedure by Orders to last for six months, and renewable thereafter, if necessary, during the lifetime of the Bill. It took exceptional powers to tap new sources or by sinking new wells, or by impounding water from streams which there was no present power to impound; to abolish all legal restrictions on the amount of water which could be taken from various sources; and to reduce the amount of compensation water. Water undertakers would receive power to reduce the use of water by a particular customer, or generally. Power would be given for the better apportionment of supplies between undertakers. He hoped much would be done by voluntary effort from water undertakers and the public. The Bill would run till December 31st, 1935. That period would be required for the restoration of deep underground sources.

Mr. ARTHUR GREENWOOD moved a reasoned amendment for the rejection of the Bill, on the ground that the Government had been dilatory. Mr. MACGUSTEN advocated the use in rural areas of steel sheets and tanks to catch and preserve rain-water, as was done in Rhodesia. Sir GODFREY COLLINS said that there was a water shortage in Scottish burghs and

rural areas. The East and South suffered more. Last summer at least fifty-seven of 195 burghs in Scotland had an insufficient water supply. Coastal towns of Moray and Banff had suffered much for two years from insufficient supplies. Water was taken from streams and chlorinated, but even then the needs of local hospitals could not be properly met. The winter rain of 1933-4 in Scotland had been much below the average. The Departmental Committee appointed last year to inquire into health services in Scotland had recommended an immediate survey of Scottish water resources, and steps were being taken that day to survey the sources and needs. Within the next few days the problem in Fife would be tackled. Mr. McKIE said Scotland had always had a higher consumption of water per head of the population than had other parts of the United Kingdom.

Mr. CHORLTON said the Haweswater scheme would have a capacity of 75,000,000 gallons a day. Were any steps to be taken to complete this reservoir? Manchester and Liverpool had lately connected their water mains. Were other schemes of pooling nearing action? In the Metropolitan Water Board area there would be 12,000,000 people before many years had gone. The present consumption in that area was 280,000,000 gallons. With the population he had named the consumption would be 720,000,000 gallons at 60 gallons a head per day. They should remember that in Scotland the consumption was 100 gallons a head. He hoped the Minister would have a hydrological survey of the country. Lord HARTINGTON said Parliament should hesitate before it upset the provisions which had been made for compensation water, or rivers might become open sewers and menaces of the neighbourhood. Sir FRANCIS FREMANTLE said the daily bath was becoming usual with the growing generation in all classes, but the idea that it was necessary was false. Such frequent baths were comforts and luxuries. Thirty gallons of water per head per day were all that was necessary in an industrial town, and with provision for washing the streets. He was sure that with enlightened application of the provisions of this Bill there would be no serious shortage or real hardship in the towns, but many villages had suffered, and would suffer again, if the drought continued. Mr. SHAKESPEARE said that even up to the day of the debate there was no general shortage of water. The Bill was in ample time to enable undertakers to cope with emergency as it arose. Under the Bill statutory water areas could not be extended, but water could be supplied from one statutory area to another.

The Bill was read a second time by 184 to 23 and sent to a standing committee.

Diseases of Fish Bill

Mr. SKELTON moved the second reading of the Diseases of Fish Bill in the Commons on April 12th. The Bill had passed the House of Lords. He said furunculosis, a virulent and rapidly spreading disease, which particularly affected trout and salmon, had been brought from Europe through the importation of live trout, and made its first serious appearance in this country during the year before the war. In the last few years it had spread rapidly through many salmon rivers in England and Scotland, and in one Scottish river in one year as many salmon were picked up dead with furunculosis as were caught by the net. The first provision of the Bill was for the complete prohibition of the importation into this country of live fish of the salmon species. Secondly, other live freshwater fish and the eggs of any kind of freshwater fish could only be imported by a licensed consignee. The disease also appeared in coarse freshwater fish. Orders could be issued under the Bill by the Ministry of Agriculture in England or by the Secretary of State in Scotland to control or prohibit the transport of live fish out of an infected area, and to provide that any fish farm or private fish hatchery found to be infected by the disease could be ordered to be cleansed and the fish disposed of. Where an area was suspected to be infected a standstill Order could be made for twenty-one days, during which no live fish could be moved out of the area. In a district which was not a suspected area the local fishery board, or any occupier of a fish farm or hatchery or any water, could apply to the Minister for an inspection of the fish to ascertain whether the disease was among them, and the experts from the Ministry would report free of charge. The decision whether an area was infected

lay with the Minister. Sir MERVYN MANNINGHAM-BULLER said it had been proved that in a small hatchery or pool the disease could be cured by the application of salt. Mr. CONANT said there was no known means of eradicating the disease once it got into a stream. Furunculosis could not be determined save by bacteriological examination. Dr. SALTER held that the Bill was not drastic enough. To clean a stream it would have to be cleared of fish and not restocked for two years. A fishpond or hatchery might be cleansed, but would be reinfected if it continued to use water from an infected stream.

The Bill was read a second time without a division, and sent to a standing committee.

Dinitrophenols in the Poison Schedule

Replying to Captain Erskine-Bolst, on April 12th, Sir JOHN GILMOUR said that the steps necessary to add dinitrophenols and dinitrocresols, drugs used for "slimming," to Part I of the existing Poisons Schedule had already been taken, and notice to that effect would appear in the *London Gazette* on April 13th. The statute required that one month should elapse from the date of the notice before the provision came into effect. Sir REGINALD MITCHELL-BANKS, in a supplementary question, asserted that up to April 12th in only one case had death been shown to be attributable to one of these drugs.

Medical Defence Services

Mr. HORE-BELISHA announced in the House of Commons, on April 12th, that agreement had been reached in the consultations with the Government of India regarding the recommendations of the Warren Fisher Committee on the Royal Army Medical Corps and other medical services of the Defence Forces. The Government's decisions on the recommendations of the committee would be announced by the end of April.

Indian Service Pensions.—VISCOUNT FITZALAN OF DERWENT opened a debate in the House of Lords, on April 11th, on the proposals about payment of pensions out of Indian revenue to retired officers of the Indian Army and the various Indian Civil Services. These proposals are contained in the White Paper on the Government of India. VISCOUNT HALIFAX said this subject was engaging the attention of the Joint Select Committee on India. All parties were at one in making these pensions secure. Further discussion would be unprofitable till the Joint Select Committee reported.

Meals to School Children.—In a reply, on April 11th, to Mr. Tom Smith, Mr. RAMSBOTHAM said the effect of school meals on the physical and mental condition of the children was observed by school medical officers, but the arrangements for recording the effect varied considerably from area to area. Answering Mr. McEntee, Mr. Ramsbotham said that, apart from cases discovered at routine medical inspections, children were selected for school meals by special medical examination, by nutrition surveys undertaken by school medical officers, by recommendations of teachers and care committees, and on application by parents. Information about the methods adopted by local education authorities was not complete.

Housing in Scotland.—On April 10th Mr. SKELTON informed Mr. GUY that questions affecting housing in Scotland, including those dealt with in the report of the Scottish Departmental Committee on Housing, were being actively considered in consultation with representatives of local authorities. The Secretary of State for Scotland was not yet in a position to make any statement on the matter. Replying to Mr. Tinker, Mr. SKELTON stated that the number of local authority houses in tenders approved for March, 1934, was for 1,429, the highest since March, 1933. Of these, 1,183, the highest number on record, were for slum clearance houses. Tenders for the erection of houses under Section 3 of the Housing Act of 1933 did not require the approval of the Department of Health for Scotland. One scheme for the giving of guarantees to enable the erection of houses under that section had been submitted, and was now under consideration. Intimation had been received that seventeen local authorities in Scotland were

not prepared to build houses under Section 1 of the Act of 1933 because of the reduction in the amount of the subsidy. Up to date tenders had been approved for the erection by twenty local authorities of 812 houses under the section, and of these, 350 were under construction on March 31st last. Local authorities had power to build houses to relieve overcrowding and to provide for the normal growth of the population, but measures for dealing with the problem of overcrowding in Scotland were at present being considered by the Government in consultation with representatives of local authorities.

Detention in Mental Ward without Certification.—In reply to Mr. Pike, on April 12th, Sir HILTON YOUNG said there was some misapprehension about the facts concerning the death of Mary Medley, a married woman aged 60, of Sheffield. It appeared from the Press report that, on the strength of a medical certificate from the district medical officer describing Mrs. Medley's condition as "bronchitis and unsound mind," she was removed by the general relieving officer to the hospital under the provisions of Section 20 of the Lunacy Act with a view to being kept under observation in the mental ward. The patient died there before any question of further formal proceedings for certification under the Lunacy Act arose, and she was never certified. In these circumstances there was no case for inquiry into the operation of the Lunacy Act. He could not accept the suggestion that, in view of the present circumstances, which permitted an officer of a public assistance committee to issue an order for detention in a mental ward, no person should be admitted as a mental case until there had been a thorough medical inquiry and the mental condition of the person had been established. In this particular case there was no question of certification.

Appointment of Matron to Army Headquarters, India.—On April 16th Sir SAMUEL HOARE told Dr. O'Donovan that members of both the British and the Indian nursing services were eligible for appointment to the post of chief principal matron at Army Headquarters, India. The appointment was made on the merits of the candidates from either source on each occasion.

The Small-pox Outbreak at Blackburn.—Replying to Mr. Groves, on April 17th, Sir HILTON YOUNG said that he was advised that the recent outbreak of small-pox in Blackburn was an outbreak of variola major. Answering another question by Mr. Groves, the Minister said that four of the early cases were originally diagnosed as chicken-pox. It was not proposed to take proceedings against the medical attendant or attendants concerned for failing to notify these cases as small-pox. An error in diagnosis did not constitute an offence under the Infectious Disease (Notification) Acts. He was aware that the first case which led to the outbreak at Blackburn was that of a man employed at a cotton mill, where he handled cotton daily. He had no satisfactory evidence whether the man contracted the disease in the performance of his duties.

Unemployed not Entitled to Medical Benefit.—Sir HILTON YOUNG informed Mr. Thorne, on April 17th, that the returns which had now been received from approved societies indicated that approximately 125,000 members, who after a period of prolonged unemployment were continued in insurance in 1933 under Section 1 (5) of the National Health and Contributory Pensions Act, 1932, had ceased to be entitled to medical benefit on December 31st last, though continuing to be insured for pensions purposes. That number, however, would be substantially reduced by reinstatements to medical benefit, notifications of which were now being received from the societies at the rate of several hundreds a week.

Notes in Brief

Sir John Gilmour is making inquiries with a view to deciding whether the safety of film-containers should be dealt with by regulation.

Mr. Ramsbotham told Mr. Anstruther-Gray, on April 12th, that memoranda had been issued by the Board of Education to local education authorities from time to time on the subject of traffic dangers, and useful work in training children how to avoid these dangers was being carried on in the schools by local authorities and teachers in co operation with the National Safety First Association.

Medical News

A special general meeting of the Fellows of the Royal Society of Medicine will be held at 1, Wimpole Street, W., on Tuesday, May 1st, at 8 p.m., when Dr. Russell Reynolds will give a demonstration on x-ray cinematography, and Dr. Robert Janker (Bonn) will also show films. Admission will be by ticket only, applications for which should be addressed to the secretary.

At the next monthly clinical meeting for medical practitioners, at the Hospital for Epilepsy and Paralysis, Maida Vale, W.9, on Thursday, April 26th, at 3 o'clock, Dr. Blake Pritchard will give a demonstration. Tea will be provided, and those intending to be present are asked to send a card to the secretary.

At the next scientific meeting of the Zoological Society of London, on Tuesday, April 24th, at 5.30 p.m., the secretary, Sir P. Chalmers Mitchell, F.R.S., will report on the additions to the society's menagerie during March, 1934, and Colonel A. E. Hamerton, R.A.M.C. (ret.), will present a report on the deaths occurring in the society's gardens during the year 1933.

The spring meeting of the Dutch Society of the History of Medicine, Natural Sciences, and Mathematics will be held at Leyden on April 28th and 29th, when papers will be read on old microtomes, Cosmas and Damian, Jan Steen and the doctors, and the views of the South American Indians on diseases and their treatment.

A meeting of the Fever Group of the Society of Medical Officers of Health will be held at 1, Upper Montague Street, W.C., on Friday, April 27th, at 5 p.m., when a discussion will be opened by Drs. C. D. Agassiz, G. Jessel, and J. E. McCartney, on the relation of measles and whooping-cough to chronic inflammatory conditions of the chest. The clinical, radiological, and pathological aspects of the subject will be dealt with, and all medical practitioners interested are invited to be present.

An exhibition entitled "India," by Lieut.-Colonel F. D. S. Fayrer, I.M.S. (ret.), will be on view at the galleries of the Royal Photographic Society, 33, Russell Square, W.C.1, from May 3rd to 31st.

A course of lectures on pathological research in its relation to medicine, to be given on Thursdays, at 5 p.m., during the summer session, commenced at the Institute of Pathology and Research, St. Mary's Hospital, Paddington, on April 19th, when Professor A. Bethe, director of the Institute of Physiology, University of Frankfurt/M., lectured on permeability and osmoregulation in lower animals. The lectures are open to all members of the medical profession and students in medical schools, without fee.

A post-graduate course commenced at the Dundee Royal Infirmary on April 12th, and will be continued on Thursdays, at 3.15 p.m., until May 24th. No fees will be charged for the lectures and demonstrations, but there will be a registration fee of £1 1s. to cover expenses of printing, etc. Tea will be provided at 4 p.m.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that Dr. Clark-Kennedy will lecture on cardiac irregularity, at 11, Chandos Street, on April 24th, at 2.30 p.m. The fifteenth lecture-demonstration, on May 1st, will deal with auricular fibrillation. Dr. Ellman will conclude his series of lectures on chronic diseases of the chest on April 25th and 27th. The second lecture, in the series arranged for Thursdays, will be given by Mr. E. A. Peters on "Septic Tonsils—Nasopharyngitis and its Results," on April 26th, at 4 p.m. These lectures are open to all members of the medical profession, and are free to members and associates of the Fellowship. The Samaritan Hospital for Women is holding a week-end course on April 28th and 29th. Other forthcoming courses include: psychological medicine at the Maudsley Hospital, April 30th to June 1st; dermatology at St. John's Hospital, April 30th to June 2nd; a week-end course in cardiology at the Victoria Park Hospital, May 5th and 6th; advanced urology at St. Peter's Hospital, May 7th to 19th.

A complimentary dinner to Mr. R. H. Burne, F.R.S., late physiological curator at the Royal College of Surgeons of England, will be held on Thursday, May 10th, at 7.30 p.m. for 8 o'clock, in the Langham Hotel, Portland Place, W. The honorary secretary to the committee is Dr. John Beattie, Conservator of the College Museum.

The Vienna Medical Faculty has arranged a post-graduate course on recent advances in therapeutics, from May 28th to June 10th. The fee is 50 schillings. Further information can be obtained from Dr. A. Kronfeld, Porzellangasse, 22, Wien 9

We are informed by the Swiss Legation (18, Montagu Place, Bryanston Square, W.1) that a post-graduate course, under the auspices of the International Hospital Association at Lucerne and the Swiss Hospital Association at Bern, will be held in Switzerland this year from August 15th to 23rd, and will be followed by a tour of the hospitals in the Canton of Grisons. Certain facilities already granted will much reduce the cost of the visit. Application for particulars of the course should be made to Veska-Bureau, Obergrundstrasse 13, Lucerne.

At the annual dinner of the Margate Chamber of Commerce on April 26th, in St. George's Hotel, Cliftonville, the principal guest will be Sir Henry Gauvain.

The London Fever Hospital, Liverpool Road, Islington, N.1, announces in our advertisement pages that a limited supply of convalescent measles serum is available for general practitioners for the protection of babies and young children. Application should be made to the resident medical officer. We are asked to add that the hospital committee urgently needs volunteers from among convalescent measles patients who would be prepared to attend and have blood taken for the purpose of preparing serum.

The annual dinner of the Metropolitan Police Surgeons' Association will be held at 7.30 p.m. on Thursday, May 3rd, at the Holborn Restaurant. Among the numerous guests to be received by the president, Dr. Mayberry, will be Lord Trenchard, the Commissioner of the Metropolitan Police.

The present president of the North of England Branch of the British Medical Association is Dr. Archibald Fairlie of Blyth, and at the annual meeting and dinner of the Blyth Division, held on April 12th, Dr. C. F. Fairlie—his son—was elected chairman of the Blyth Division. It would be interesting to know if it has ever before happened in the history of the Association that a son held office as chairman of a Division in the Branch of which his father was at the same time president.

The Council of the Royal Institute of Public Health, having received invitations from the universities and municipalities of the cities of Danzig, Warsaw, Cracow, and Gdynia, has decided to organize a medical educational tour to Poland. The arrangements for this journey up to the present are that the party shall leave London on Thursday, August 2nd, by s.s. *Baltonia*, and go via the Kiel Canal to Danzig; thence by train to Inowroclaw, Warsaw, Cracow, Gdynia, and Zoppot, arriving back in London on August 13th or 14th. The universities and municipalities concerned are arranging certain functions, hospitality, etc., the inclusive cost of the tour being 18 guineas. As the cabin accommodation on the boat is somewhat limited, early application for reservation of berths is necessary. Full details of this tour can be obtained from the secretary, Royal Institute of Public Health, 23, Queen Square, W.C.1.

The Registrar of the General Medical Council informs us that voting papers in connexion with the election of a Direct Representative were issued on Wednesday, April 17th, to all practitioners having registered addresses in England and Wales. Any such practitioner who has not received a voting paper, whether he wishes to vote in the election or not, should immediately communicate with the office of the Council, 44, Hallam Street, Portland Place, London, W.1, in order to ascertain that his address is correctly entered in the *Medical Register*.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The Editor, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, *Aitology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Medisera Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

"A Terrifying Yell"

Dr. W. PATERSON BROWN (London, W.) writes: The interesting case described by "J. F." (p. 697) is probably one of Gilles de la Tourette's syndrome, a form of psychical and motor tic. I have seen two similar cases within the last year. Typically there is an involuntary explosive utterance, usually of some obscene word, to the accompaniment of some tic movement, often generalized in nature. In my cases the explosive utterance bore a marked resemblance to the barking of a dog, but in one of them the bark might be replaced by the word *bur*, in which form the tic commenced. While remissions are not uncommon, there is a tendency for the illness to proceed to dementia. Psychological treatment probably offers the best chance of a cure. Peripheral irritation is rare in its aetiology, and general medical measures are usually less effective than in simple tics. However, a measure of relief usually results from the removal of environmental stress and the provision for constant active occupation. One of my cases was greatly helped by the removal from home to a sympathetic but understanding environment. Unfortunately I was prevented from treating either of my cases psychologically, as I should have liked to do.

"G. B." writes to suggest that "J. F." would do well to get his patient into touch with the Manchester Child Guidance Clinic, at 292, Oxford Road.

Intravenous HCl

Dr. A. C. GREENE (Sutton, Surrey) writes: I wish to inquire if any medical men in this country have tried the intravenous injection of hydrochloric acid in dilution of 1 in 1,500 and 1 in 1,000. I understand it has been used and is being used extensively in the U.S.A. for all manner of complaints, and with beneficial results. It was first practised by a Dr. Barr Ferguson of Birmingham, Alabama. He claims that hydrochloric acid solution injected intravenously increases cellular activity and repairs tissue as a result of artificial stimulation of the white cells. He found that in all manner of infections, from syphilis to coryza, he obtained clinical results which he could attribute only to the increased cellular activity following the injections. Following these injections a decided increase in the number of white cells occurred, and the expected clinical results were obtained. His claim that the results seen in the use of the "specifics" were attributable to no selective action of the drug, but to the power of arsenic, quinine, or mercury in stimulating the numbers and activity of the white blood cells, seems worthy of consideration, and perhaps of clinical application. Therapeutic measures—for example, mustard plasters, liniments, and other counter-irritants—exhibit their undoubted remedial effects because of stimulation of the white blood cells and the following phagocytic activity. Since it is a generally accepted fact that phagocytosis is

a most consistent and essential factor in resistance I feel that any agent that stimulates these cells would be useful, and it would therefore be most interesting to have the views of those who may have tried the intravenous injection of hydrochloric acid in 1 in 1,000 solution.

Silvester of Silvester's Method

Dr. M. BINGEN (Mathias Wynandsstraas, 6, Maastricht, Holland) inquired in our issue of February 3rd where he could obtain a portrait of Dr. Henry Robert Silvester (1828-1908), whose name has long been associated with a method of resuscitating stillborn children and of restoring persons apparently drowned or dead. We now learn from Dr. Bingen that he has obtained a portrait of Silvester through the good offices of Dr. John S. Clarke of Weobley, Herefordshire.

Income Tax

Repayment on Allowances

"WINNER" has an unearned income of £310 (gross) taxed by deduction, presumably at the standard rate, and his wife £5. They pay £103 in life assurance premiums, and he shares with his brother the support of his mother. What repayment can he claim?

* Repayment is apparently due as follows:

Personal allowance (£150 at 5s.)	...	£37 10 0
Reduced rate relief (£165 at 2s. 6d.)	...	20 12 6
Life assurance relief (£52 10s. at 2s. 6d.)	...	6 11 3
Dependent relative relief (£12 10s. at 2s. 6d.)	...	1 11 3
		£66 5 0

The relief in respect of life assurance is restricted to tax on one-sixth the total income of £315; that in respect of a dependent relative to one-half the statutory allowance of £25.

Appointment—Car Expenses

"H. C." holds an appointment under a county council; he is required to maintain a car and receives a mileage allowance. He bought a car for £265 in 1928 and sold it in 1933 for £20, when he bought a new car for £213. What can he claim?

* The replacement cost is, of course, £213 - £20 = £193, but he will have to overcome the difficulty that he receives an allowance for his car expenses, which will, *prima facie*, be regarded as sufficient. The income tax deduction is restricted to the expenditure incurred "wholly, necessarily, and exclusively" in carrying out his duties, and the income tax authorities are likely to place on him the onus of showing that the county allowance does not reach the "necessary" standard.

Car Allowance

"C. H. D." runs two cars, and for many years has spent regularly £100 a year on changes. He is allowed wear-and-tear at the rate of 15 per cent. of the written-down value, usually between £30 and £50, so that he appears to lose on the arrangement.

* There seem to be two alternatives: (1) to drop the depreciation claim and claim the annual cost of renewal instead; and (2) to claim the obsolescence allowance in addition to the wear-and-tear allowance. The latter would amount to the excess of the cost of the "change" over the aggregate amount of the wear-and-tear allowance made for the car exchanged, and can be claimed for the six previous years. Obviously that form of claim is preferable, but there may be some difficulty in persuading the authorities that cars regularly exchanged after only two years' running are in any real sense "obsolete." "C. H. D.," however, has equity on his side, and it might be well worth while trying the claim.

Assistant—House Rent Paid

"W. W." is assistant to a firm which pays him £500 a year, and also pays the rent (£50) of a house in which he lives, and on which he pays the rates. Is the £50 assessable?

* "W. W." is evidently occupier of the house, and enjoys the use of the house to the value of £50. If he is responsible for the rent then the payment by the firm is equivalent to payment by him; on the other hand, if the firm is only responsible for the rent, and requires him as part of the conditions of his employment to reside in the house in question, then we are of opinion that he is not liable.

LETTERS, NOTES, ETC.

William Harvey's Gout

Dr. KENNETH J. FRANKLIN (Oriel College, Oxford) writes: In your very generous review of my *Short History of Physiology* in the *Journal* of April 14th, you say that for some reason I assume that Harvey suffered as a young man from gout. I write to give my authority for the suggestion, which is Sir Thomas Barlow's *Harveian Oration*, 1916 (*Lancet*, October 28th, 1916, p. 740).

"Periodical Sterility"

"X" writes: My experience of this form of contraception is totally at variance with that of the correspondent in your issue of April 14th. I have been married for fourteen years, and in medical practice for fifteen years. During this time I have known every one of the methods of contraception now advocated fail both in my own personal experience and in that of patients and friends who have confided in me. On the other hand, I have never known the method of "periodical sterility" as advocated by Ogino fail. Its success depends on two essential requirements—namely: (a) that the menstrual cycle must be a regular twenty-eight-day cycle; (b) that due care is taken to count backwards for ten days from the date on which the next menstruation is due. Thus, although obviously incapable of general application, the method can, in my view, be recommended without hesitation and with absolute confidence to those with regular twenty-eight-day cycles. In my own married life the method has been unfailingly successful since its adoption after several pregnancies. Since then conception has occurred only following coitus deliberately planned to take place during the period of ovulation, and then only. For easy reference I append the dates of ovulation and sterility according to Ogino:

Menstruation	1	
	2	
	3	
	4	
	5	
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Medical Golf

The Milsom Rees Challenge Cup will be played for by members of the Medical Golfing Society on Wednesday, April 25th, on the links of the Kingswood Golf Club. Members are requested to send in their entries by April 23rd. The semi-finals of the knock-out tournament are between Dr. D. S. Gordon and Dr. Bletsoe, and Dr. Glyn Hughes and Dr. May.

Boots Pure Drug Co. (Nottingham) have prepared for the information of members of the medical profession two new booklets. One is on medicinal glucose (anhydrous), a white crystalline powder conforming to the requirements of the *British Pharmacopoeia*, 1932, for dextrose. The other is on gonococcus vaccines prepared in the department for venereal diseases at St. Thomas's Hospital and issued under licence from the Ministry of Health. Each booklet is furnished with references to recent medical literature.

From April 23rd the address of the West End depot of Crookes' Laboratories (British Colloids Ltd.) will be 88, Newman Street, W.1. Telephone number as before; Museum 3663.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 46, 47, 48, 49, 52, 53, and 54 of our advertisement columns, and advertisements as to partner-ships, assistantships, and locum tenencies at pages 50 and 51. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 212.

A British Medical Association Lecture

ON

AURAL DISCHARGES: THEIR SIGNIFICANCE AND TREATMENT*

BY

JOHN F. O'MALLEY, F.R.C.S.

CONSULTING SURGEON EAR, NOSE, AND THROAT DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL; LATE PRESIDENT, SECTION OF OTOTOLOGY, ROYAL SOCIETY OF MEDICINE

The subject of this lecture embraces a very large section of the common diseases of the ear, so that of necessity, in the time at my disposal, I can only deal with the salient points. This is probably not a matter for regret, as an attempt to crowd into it a great amount of detail would detract from its clarity and usefulness.

All discharges escaping from the external auditory meatus are pathological in origin, with the exception of cerumen, although this may possibly become so when it is excessive or impacted. They may have as their primary source the pinna, external meatus, middle ear, mastoid antrum or cells, or even the intracranial cavity. They generally have certain characteristics, which enable us to make a useful classification of them as set forth below. These characteristics, if carefully elicited in taking the history of the case, possess considerable value, in that they often indicate the nature of the disease and so form the first pointer towards a correct diagnosis.

Classification of Aural Discharge

I Watery	Colourless or not	1. Middle-ear catarrh with perforated drum
	Scanty	2. Cerebro-spinal fluid
II Purulent	Copious	3. Meatal eczema
	Sticky, mucoid, or viscid	
III Haemorrhagic	Odorous or not	
	Whitish	1. Furunculosis
IV Crumbly	Yellow	2. Acute middle-ear suppuration
	Scanty	3. Chronic middle-ear suppuration
	Copious	4. Foreign body
	Sticky, mucoid, or viscid	
	Watery sanious fluid—	1. Injury
	Scanty	2. Acute influenzal inflammation of the middle ear
	Copious	3. Granulation tissue, polyp, etc.
	Blood	4. Epithelioma of the external meatus
	Solid	
	Semi-solid	

Aural discharges are always objective evidence of disease, and in some instances are associated with the most serious affections of the ear, which may lead to complications endangering life and to the temporary or permanent loss of hearing.

WATERY DISCHARGES

There are three possible causes of watery discharges from the ear:

1. The early stage of a middle-ear catarrh accompanying a nasal coryza, in an ear with a large perforation in, or the absence of, a tympanic membrane. This occurs in such cases frequently, but it is usually overlooked unless it passes into the purulent stage.
2. Escape of cerebro-spinal fluid. This is exceedingly rare, and can only occur following a trauma.
3. Associated with acute meatal eczema. This is fairly common.

In the first the fluid is colourless, very scanty, odourless, and sticky. It is similar to the efflux in the early stage of a common cold, but it may later become purulent and yellow.

The second is very rare. In relation to fractures of the base of the skull the discharge is usually blood-stained at first, then becoming quite clear, but this will be mentioned under another heading. I have seen one case of clear, watery discharge (cerebro-spinal fluid) in a soldier in 1918. Its escape was a sequence to an old radical mastoid operation, performed ten years before and followed on three later occasions by the removal of a polypus. It continued to escape for over twelve months, gave the characteristic tests, and the quantity lost was estimated to be $1\frac{1}{2}$ gallons in three months or about 6 gallons for a year. I showed the case at the Section of Otology in August, 1918, and none of the members present had ever seen one of such long duration and severity.

In the third—acute eczema—the quantity varies from scanty to moderately copious. It may stand out in beads on the affected surface. It is clear, sticky, and usually odourless, though it may be offensive if much decomposed: epithelium remains *in situ*. It is invariably preceded by itchy sensations, followed by some degree of pain and local tenderness, but with practically no interference with hearing, unless there is much swelling. The stickiness of the discharge is characteristic of acute eczema, and wool or lint will adhere to the surface of the ear if applied to it. It is not, however, stringy like discharges containing mucus.

PURULENT DISCHARGES

There are three common causes of purulent discharges from the ear:

1. Furunculosis of the external meatus.
2. Acute middle-ear suppuration.
3. Chronic middle-ear suppuration.
4. Foreign body (in a child's ear—not common).

In furunculosis the discharge is scanty, yellowish, not sticky, and usually odourless. It is always preceded by local pain and tenderness in the external meatus, which may in some cases be very intense, and in such cases, owing to an associated perichondritic swelling, the hearing is impaired. This is the commonest inflammatory disease of the external meatus.

In acute middle-ear suppuration the discharge is often copious, of a bluish whiteness, very sticky, and mucoid and odourless. Its stickiness is pathognomonic of its origin, as having come from an inflamed mucous membrane surface, and therefore from the middle-ear cavity. This physical characteristic can be easily demonstrated by mopping out a portion of the contents of the external meatus with a rolled pledget of wool and then applying the pus-moistened wool to some other object and withdrawing them slowly apart, when strings of mucus will be seen. This proves the source of the pus, even where a perforation of the drum membrane may not be visible, and differentiates it from pus of furuncular origin, which never contains mucus, unless in the much rarer instances where both meatus and middle ear are involved simultaneously. This discharge has invariably been preceded by an acute febrile affection of the upper airway and pain deep in the ear; no local meatal tenderness, but deafness is marked. The degree of pain preceding it, in infants,

* Delivered to the South Suffolk Division of the British Medical Association on December 1st, 1933.

is often negligible, probably owing to the anatomical characteristics of their Eustachian tubes, the latter being straight and short, with a relatively large lumen, which permits the release of tension in the middle ear during the acute stage. The ear affection in these cases is usually a sequence of pharyngeal sepsis associated with teething troubles. Infants with irritation of the gums show an extraordinary predilection for biting on any available object, a proceeding most likely to cause an oral sepsis, with its possible extension to the nasopharynx.

Variation in the quantity of discharge of a recent middle-ear suppuration may have special significance. As the inflammatory manifestations, such as pyrexia, pain, and intensity of deafness, subside and pass off, the quantity of the discharge gradually lessens and becomes less viscid; but should the flow increase again and become relatively copious an abscess of the mastoid must be suspected, although there may be no localizing swelling or tenderness in the latter region. This is a fairly common sequence of events, and at once its observance raises the question of an operation for mastoiditis.

In chronic middle-ear suppuration the discharge is invariably scanty and yellow, and shows practically no stickiness, unless associated at the moment with a recent inflammatory recrudescence of the middle-ear cavity and Eustachian tube. It is often malodorous, if the case is of long standing, due to the presence of fatty acid degenerative products of dead epithelium and pus. The malodour is especially suspicious of the condition known as cholesteatoma, where masses of suppurating epithelial debris are present in the attic, aditus, or mastoid antrum, and, when large, cause varying degrees of erosion of bone. These erosions may open the path to the invasion of the labyrinth or cranial cavity and lead to the most serious complications which are possible to occur in diseases of the ear.

A discharge from one ear in a child, if of recent onset and not related to any illness, should raise the suspicion of a foreign body.

HAEMORRHAGIC DISCHARGES

There are at least four possible causes of haemorrhagic discharge from the ears:

1. Injury (blood, cerebro-spinal fluid).
2. Acute influenzal inflammation of the middle ear.
3. Granulation tissue, polyp, or ulceration of the middle ear, and caries of bone.
4. Epithelioma of the external meatus.

If the discharge is the result of a blow on the ear or the result of gunfire or shell explosion or high diving, pure blood usually escapes first, becoming serous later. It is rarely profuse. If the injury is considerable, as in a motor accident, causing fracture of the base of the skull, the escape of pure blood is sometimes accompanied by a considerable amount of thin, sanious fluid, which raises the suspicion of its being cerebro-spinal in origin. After bleeding has ceased it may continue to escape as a clear fluid dripping from the lobe of the ear, when it can be collected in a test tube and examined for its chemical properties, etc., to establish its nature. It is significant of a severe lesion, and increases the gravity of the prognosis, but is not necessarily a fatal complication, nor does it appear to increase the risks of meningitis arising in such cases. Areas bathed in cerebro-spinal fluid do, however, appear to become septic with greater facility than in its absence.

In acute influenzal middle-ear inflammation the discharge may appear to be pure blood, but is more often blood-stained serum and small in amount. This fluid invariably escapes from a burst haemorrhagic bulla, which had formed on the outer aspect of the tympanic membrane or adjacent meatal wall, and is almost pathognomonic of

an acute influenzal middle-ear infection of the *Streptococcus haemolyticus* type. It appears early in the acute inflammatory involvement of the middle ear, is indicative of an intense infection, and usually precedes the formation of pus by a couple of days, and is accompanied by pyrexia, pain, and deafness in the affected ear.

In the polypoid type of case, the discharge is either pure blood or pus and blood, usually small in amount, but a drachm or more may escape. There is a history of chronic ear trouble, with a probable recent increase in deafness owing to enlargement of the polypus or granulation tissue, but there is rarely any pain or pyrexia. Its occurrence may follow a slight injury, and its appearance signifies the presence of a polypus or granulations, growing on an ulcerated area of mucous membrane or bone. The tympanic bony ring is intensely hard, and hence badly supplied with blood vessels. It is therefore very prone to caries and shows poor tendency to repair in consequence of its defective nutrition, and this is the chief cause of chronicity. The granulations formed in the attempt at healing are flabby and unhealthy, and therefore apt to bleed easily on touch. The pedunculated polypus usually grows from the middle-ear mucous membrane, is covered with epithelium, is firmer in structure, and unless large enough to extend well outwards in the meatus, is less liable to bleed on slight trauma than the softer granulations.

The fourth type of source, epithelioma, is rare, but sufficiently common to warrant its suspicion when blood escapes from an ear, with no immediate history of an injury or disease, in a person well over 50 years of age. Granulations on an epitheliomatous ulcer are exceedingly friable, and liable to bleed on slight trauma.

CERUMINOUS DISCHARGE

Anxious mothers frequently consult a doctor on finding a little cerumen in an infant's ear. It may have some significance at teething time. Irritation of the gums may cause reflex discomfort, which induces the child to rub the ears. The frequent repetition of this will excite the glands to greater activity in the production of more cerumen.

More commonly the middle-ear discomfort is an infection from the nasopharynx, the result of spread from oral sepsis. The rate of ceruminous secretion in adults seems to vary with the individual, though it is not governed by any physiological law of which I am aware, but its accumulation, however, is largely conditioned by the anatomical formation of the external meatus. If the posterior portion of the outer end of the meatus is overhung by the free border of the concha, the secreted wax tends to be pushed deeper in the meatus, rather than extruded, by the movement of the lower jaw, as should take place normally. It may completely occlude the meatus, causing deafness, and if long retained may set up a dermatitis, accompanied by some pain and discharge.

TREATMENT

It is my intention, owing to considerations of time and space, to limit treatment to one proven method, to the merits of which I can testify, rather than discuss alternative ones which are equally well recommended in the textbooks.

The watery aural discharge from an open middle-ear cavity, resulting from a coryzal extension, usually subsides with the exciting cause in the nose and Eustachian tube, and rarely requires any special treatment. A clean piece of wool, changed when even slightly moist, but at least night and morning, prevents discomfort from the discharge, and lessens the risk of an added infection through the external meatus. If the discharge becomes

purulent and persists when the cold in the head has disappeared, special treatment is indicated, to obviate its passing into a chronic condition.

I favour dry treatment in such a case, and have found the daily insertion of boric powder iodized to the extent of 1 per cent. or even less to give excellent results. If it should still persist after a fortnight's treatment, slight ulceration of the mucous membrane and the formation of some granulation tissue is possibly present. To ascertain this, syringe clean with warm boric lotion, dry, and look for a granulating spot. If found, roll a thin piece of wool on an applicator, dip it in 5 per cent. silver nitrate solution, and apply under direct vision firmly to the area, one day a week, using the powder the other six. I have found the result of this line of treatment in any form of chronic middle-ear discharge most gratifying, and will refer to it again later in more detail.

Apart from fractures of the base of the skull the escape of cerebro-spinal fluid from the ear is, as I have already pointed out, an exceedingly rare occurrence.

I reopened the mastoid in my case and packed it in the usual way with gauze and bipp. In twenty-four hours the dressing was soaked with pus. This occurred on three consecutive days, and still the mastoid cavity and wound continued to pour out pus. I then ceased to pack, but cleaned up with 40 per cent. spirit, using a little gauze soaked in this as a drain, with gratifying results. It cleared up, and later, when granulations had formed, I packed them firmly against the fissured area (junction of attic and aditus), which eventually converted them into a sound scar.

Acute eczema of the ear responds well to treatment. At this stage the affection has usually extended from the meatus to the pinna, and is accompanied by considerable weeping. The application of calamine lotion by dabbing it on with a piece of cotton-wool soothes and helps to dry the affected area in a few days. The following is then used until all weeping has ceased and the condition has passed into a scaly stage: Lassar's paste (zinc oxide, pulv. amyl, lanoline, and vaseline, each 2 drachms) spread on lint (smooth side) and applied night and morning. To treat the scaly stage add 10 grains of salicylic acid to the ounce of Lassar's paste and smear on daily, leaving the part uncovered. If the ointment is warmed to soften it, by standing the pot in hot water, it can be applied with a camel-hair brush. Eczema of the ear in either the wet or dry stage is accompanied by seborrhoea of the scalp, as indicated by the presence of more or less dandruff. Many dermatologists regard the ear condition as a seborrhoea also, and secondary to the scalp. The point of importance, however, is that the scalp and ear must be treated simultaneously to be really effective. The scalp should be shampooed twice a week for two or three weeks, taking care to protect the ear from the shampoo liquid and water. Soap spirit (sapo mollis and spirit. vini rect. each 2 ounces), 1 drachm of which, if rubbed into the scalp, acts well, but it should be thoroughly removed by repeated rinsing with water. In less acute cases with very little discharge, and if confined to the meatus, the following is a useful application:

R Ung hydrarg. nit. dil. ...	1 drachm
Liq. carbonis deterg. ...	10 minims
Paraffin. liquid. ...	1 ounce

Apply with a camel-hair brush night and morning.

In the discharging stage of furunculosis of the ear, filling the meatus lightly with a strip of half-inch ribbon gauze, smeared with 10 per cent. ichthyol in glycerin, once a day, is an excellent method of treatment. The mental epithelium is thus kept clean, dry, and protected from maceration, the latter being the greatest factor favouring recurrence in these cases.

ACUTE MIDDLE-EAR SUPPURATION

The treatment should be general and local, the former being often the more important. The ear condition is always secondary and invariably due to some upper respiratory infection of an exanthematous or influenzal type, so that the first consideration in the treatment is that of the primary affection.

With the onset of an aural discharge, the middle-ear symptoms become less intense, pain should have passed off by the release of inflammatory tension, and any pyrexia specially excited by this complication should have subsided or nearly so. During the acute pyrexial stage the patient should remain in bed, and after this has subsided with the onset of the discharge, confinement to the house or sickroom is indicated so long as the discharge shows much viscidness. This physical character indicates the presence of much mucus, and the latter is evidence of the existence still of marked inflammatory engorgement in the middle ear and Eustachian tube, upon which a relapse with complications may easily supervene.

If the case is "hanging fire" and does not make steady progress to recovery, as when the discharge, though free, is still very viscid and some pyrexia exists, a 10 c.cm. injection of "anti-scarlet-fever serum"—concentrated streptococcus antitoxin (scarlatina) globulins (B.W. and Co.)—will often give a decided turn for the better. It seems to aid or rouse the flagging efforts of the body's immunizing reaction to the infection, and as it is to this reaction we must look as the first line of defence and attack, our usefulness lies chiefly in doing everything which favours its maximum effectiveness, whilst at the same time watching for any threatened complications. Keeping the patient indoors and free from exposure to chills and fresh infection is conducive to this purpose.

Local treatment consists in keeping the ear clean, and if possible free from infection from without by an invasion of the more resistant organisms such as staphylococci and its common sequence, the conversion of an acute into a chronic middle-ear suppuration. For this reason I do not advocate the use of hydrogen peroxide, as it causes too much commotion when mixed with pus, and is liable to carry the contents of the meatus—organisms or otherwise—through the perforation into the middle ear. Syringing may do the same if used with force. Wiping away the pus with wool, dry or soaked in bicarbonate of soda or boric acid solution, will cleanse it, and then filling the meatus with glycerin. acid. carbolic. 2 per cent. will render it practically antiseptic. Covering the area with a sterile dressing to be changed at least night and morning is also helpful. Drainage of the middle ear does not depend on the removal of secretion from the external meatus provided it is not dammed back by plugs of wool. The entrance of air into the middle ear through the Eustachian tube, when we swallow or blow the nose, expels pus through the perforation, and is the most effective factor in drainage. When the discharge has become thinner, filling the meatus daily with boric powder iodized to 1 per cent. is most effective. The boric powder is absorbent, hygroscopic, and antiseptic, and the presence of heat and moisture causes the liberation of some nascent iodine, increasing the degree and efficiency of the antiseptic.

CHRONIC MIDDLE-EAR DISCHARGES

Cases which belong to this category present the most difficult and serious problems of all aural affections—difficult because of their disappointing resistance to any line of treatment which the patient or a nurse can carry out, and serious because of the dangerous possibilities to life which accompany them. For these reasons I propose to deal with the treatment at some length. I must, however, digress at this point to examine certain factors concerned

in the health and infection of air-containing cavities associated with the respiratory tract, because a clearer conception of these should enhance our chance of success in treatment.

I have personally formed certain views on the physiological and pathological problems of air spaces which are either in constant or intermittent continuity with respiratory air currents through the nose and nasopharynx. These are based upon certain researches carried out during the past few years, chiefly upon the nasal accessory sinuses, but also upon the ear. I think it will prove correct to assume that certain principles can be seen to underlie the cause for the maintenance in health of an air space under normal conditions, its spontaneous cure from an inflammatory affection or why it persists in a diseased state. It is briefly summed up in the word "ventilation." This implies the free entrance and exit of air, due to synchronizing air-pressure variations between the air spaces and the respiratory passages, during inspiration and expiration, and so long as this is possible the drainage and removal of certain secretions will be possible also. This state obtains throughout the healthy period of the cavity; it is suspended in diseased conditions, which may prove only temporary, because it is again re-established spontaneously, but the disease remains permanent if it is not, and this is the stage at which the attention of the surgeon is called for. The principles which apply to nasal accessory sinuses are also with slight modification applicable to the middle-ear space. In the former the air movements in the cavity and respiratory passages are practically continuous, whilst in the latter they are intermittent. In the former the walls are rigid and fixed, but in the latter one boundary is membranous and mobile, facilitating the temporary increase or diminution of its contents, whether of air or fluid.

A large number of middle-ear inflammations never suppurate, a second large class suppurate but do not perforate, a third large proportion do all three, and yet all of them heal spontaneously, whilst a fourth residuum goes through the same pathological phases and remains chronically diseased. In the first two the air exchange between the middle-ear cavity and respiratory movements remained possible during the attack, in the third they are not so temporarily, but the membranous walls yielded to infection and pressure of secretion, to be followed by restoration of the air space. In the fourth, not only has this desired aeration result failed to eventuate, but, in addition, the inflammatory process has permanently damaged certain of the structures forming the walls or approaches of the cavity by an infective tissue erosion. If the erosions are purely membranous, opposite the wider portion of the air space, they are usually followed by spontaneous cure and aeration of the cavity, but if in the region of the ossicles or tympanic ring, the attic, aditus, mastoid, or bony Eustachian tube they are prone to chronicity.

The size of the middle-ear cavity varies considerably in different individuals, even in adult life, and one that is abnormally small presents an anatomical factor of great moment in relation to the points just mentioned. Practically all the cases of chronic suppuration one meets with date from, or begin in, childhood, when this anatomical factor of size was most likely to operate. In contrast to this it is exceedingly rare to find such a condition in an adult in whom the first middle-ear inflammatory attack began indubitably when his growth was completed. I cannot recall one such case. From these remarks you will infer that factors unfavourable to the restoration of the middle-ear cavity as a functioning air space make for chronicity of disease.

Occasional discharge, occurring at intervals of months or more, implies an infection spreading along the middle-

ear tract from the nasopharynx and nose, associated with a cold in the head. It is a fresh invasion of an ear which supplicated previously, and is not due to any permanent local lesion. I have discussed this type already under watery discharges. If such a condition occurs in a child, the removal of adenoids gives a gratifying result, and if in an adult, the treatment of a pronounced nasal obstruction may be necessary, and equally successful.

Continuous discharge indicates a local lesion, and this may be situated in any portion of the middle ear, in the mastoid antrum, or Eustachian tube, and our hope of success in treatment will depend largely upon our ability to localize the exact site of the lesion. This is either an erosion of the soft tissue lining or of bone or even a necrosis of bone (invariably an ossicle), and the lesion is often covered more or less by granulation tissue, which is Nature's attempt at repair, and as a result of this process a discharge is produced. After cleaning out the ear, by syringing if necessary, and drying, a systematic examination on a definite plan will materially help.

Imagine the inner end of the meatus to represent the face of a watch. The tympanic membrane, if present, occupies this position, and when absent the inner wall of the middle-ear cavity does so. Divide this into anterior and posterior halves by a vertical imaginary line, from 12 to 6 o'clock, and into an upper and lower half by a horizontal line, from 9 to 3 o'clock. This will give four quadrants in any one of which or in more than one a lesion may be found. Note if the membrane is absent, or only a portion remains at the upper pole, or if it is nearly complete, but perforated, and what is the site of the latter. If adherent to, or well removed from, the inner wall by an air space.

Perforations and granulations in the posterior and upper quadrant are the most grave, as a cholesteatoma is fairly often present, causing some destruction of bone in the region of the external semicircular canal, with possibly severe attacks of vertigo. These cases must be treated by a radical mastoid operation without delay, as otherwise they may cause fatal complications. If the perforation is somewhere nearly central, well away from the periphery, and even if small, with a scanty, glairy, purulent discharge, filling the auditory meatus with 5 per cent. silver nitrate and then inserting an olive-shaped nozzle, to which is attached a piece of tubing and an air ball, to compress gently, but without much force, the fluid through the perforation, will often prove effective. I have seen cases of a year's duration dry up after one treatment. If some of the fluid passes through the Eustachian tube the prognosis is more favourable than if not, for the reasons I have mentioned above about air movements. If the perforation is at the periphery, either anteriorly or posteriorly, it is usually associated with caries of the tympanic ring. These are less promising in their response to treatment, and especially so if the air space is small and the membrane is adherent to the inner wall of the middle ear. If the membrane is absent a lesion of the bony tympanic ring can be easily seen, and treated with a good prospect of success.

Polypi and granulations, if large, may require general anaesthesia for their removal, but much can be done under the local application of Bonain's solution if the patient is fairly tolerant.

To enable silver nitrate to penetrate and be effective the epithelial covering of a polypus or granulation must be broken by pressure of a small curette or friction by a piece of wool. Making them bleed freely answers the purpose. Then apply 20 per cent. silver nitrate on wool repeatedly, by using a number of wood applicators on which the wool is rolled firmly, and after application are thrown away. If persisted in the bleeding will cease, and the area touched will turn white. If bleeding is very troublesome insert a few inches of ribbon gauze, soaked in the silver solution, and leave in for two days. Once a week is sufficiently often to do this, and on all other

days of the interim the patient has some iodized boric powder inserted. Formerly I have used ordinary boric powder, but now find the iodized preparation more effective.

In some cases with complete absence of drum, the middle-ear inner wall is seen to be granulating. These can be treated in the same manner. They may be more sensitive than around the tympanic ring, so 5 per cent. silver solution may be used instead of 20 per cent., and is usually quite strong enough, possibly because there is usually no caries here. If there is a mass of granulations in what appears to be the remains of the membrane in the upper part it usually includes a portion of the ossicles, which are possibly necrosed, and the removal of the entire mass by ossiculectomy or the radical mastoid operation will probably be necessary, but no harm comes from giving the silver treatment a good trial first. By this method we can get the more accessible areas to heal and follow extensions towards the attic or Eustachian tube. If there is still much evidence of disease in the attic, not easily reached by bent metal applicators, the radical operation will be necessary. With large loss of membrane this treatment is easily applied and effective, and when healed the middle-ear cavity is externalized, as it is with the radical operation.

A certain proportion of cases is seen where the middle ear is so small and ill developed, and filled so completely with granulating areas, as to compel the need for a radical mastoid operation to provide a cavity sufficiently large to give access for treatment. Considerable patience and perseverance on the part of the patient and surgeon are required, but the result often justifies it, as it is undoubtedly the only effective treatment I have found, short of the mastoid operation, and may in many cases dispense with the need of the latter. The following are my reasons for having adopted it.

For many years, in cases of extensive middle-ear disease, with granulations and suppuration, which had undergone long periods of treatment by syringing and the various antiseptic and astringent drops, I followed the usual practice of doing a radical mastoid operation. In a very large proportion of these I found only a sclerosed mastoid, with possibly a little septic debris in the antrum, but practically all the active disease present was encompassed by the boundaries of the middle ear, which could be reached through the external meatus. The opening of the mastoid and the removal of all the diseased middle-ear area at the operation did not ensure quick or certain healing of the newly made cavity with any form of dressing or even skin grafting, but, on the contrary, suppuration continued in a large percentage, which vitiated the desired and hoped-for surgical success. I then resorted to the silver treatment of the new cavity with great advantage, and subsequently came to the conclusion that, as so little was found in the mastoid itself in most of these cases, treatment of the middle ear in all that were suitable should be given a good trial first before undertaking any larger surgical procedure, and in consequence I have done fewer radical mastoid operations in recent years.

At least no harm and much good may come of trying this method, and certainly in all the cases which have responded well the hearing was vastly better than one usually finds after the radical operation.

FOREIGN BODY IN THE EAR

This occurs most often in children. Adults sometimes have pieces of wool in the ears, inserted to ease a slight ache, perhaps in cold weather, and forget about them. Examine first to see if a foreign body is present to ascertain its nature. If metallic or mineral it is usually hard, and if vegetable, soft. Syringing with watery solutions may remove the former if the stream is carefully directed between the meatus and the object; but if against the latter damage to the drum will result.

Watery solutions will cause vegetable matter to swell and probably necessitate the turning forward of the pinna, to expose the meatal tube deep to the foreign body, for its removal. Oil will not cause it to swell, therefore a good general rule is to drop in nightly for a week some warmed olive oil, and then syringe with bicarbonate of soda solution. A thin malleable wire loop can be inserted over the object to extract it, where forceps and probes cannot.

HAEMORRHAGIC DISCHARGES

Number three in the above classification has been considered already. Whenever blood or blood-stained discharge is found in an ear following an injury there is one golden rule to observe in treatment, and it is "never syringe." In the late war it was frequently done in cases of ruptured membranes following gunfire and shell explosion injuries, with the inevitable result of middle-ear suppuration.

The escape of blood and serum flushes the damaged breach, and if the external meatus is then made as aseptic as possible the lesion may heal promptly. Wipe out the meatus with sterile wool and 40 per cent. spirit. The pinna and outer part of the meatus may be painted with iodine or a picric acid solution similar to that applied to the skin prior to operations and covered with a sterile dressing. Haemorrhagic discharge of an influenzal middle-ear inflammation may, in the first instance, be treated in the same manner and then have 2 or 3 per cent. glycerin acid. carbolic. dropped in twice daily. If there is much pain 5 or even 10 per cent. may be used.

The question of when or not to incise the inflamed drum membrane is a vexed one, on which otologists differ somewhat in practice. I have stated my opinion at some length in a paper read at the B.M.A. Meeting held at Eastbourne in 1931 and in some subsequent correspondence, and still hold to the same views. They are briefly these. I object to incising an inflamed membrane when there is no evidence of tension on it by secretion in the middle ear, as I hold that the infliction of a trauma on any inflamed tissue will most certainly lower its resistance to infection and diminish the maximum effort of its physiological reaction. Many such cases resolve without suppuration or certainly without external suppuration; with perforation, and if incised, both of the latter must obtain.

When, however, the cavity is filling with secretion and there is possibly no escape by the Eustachian tube, the membrane will then bulge outwards, and this is seen to take place invariably opposite the deepest part of the space, posteriorly to the handle of the malleus: release of the tension now is a sound surgical practice for three reasons:

1. Considerable tissue immunity to infection is present already at this stage, when inflammatory exudates are being poured out, and the drum will bear a trauma with greater immunity.

2. Release of tension now favours the subsidence of the inflammatory engorgement, which is a beneficent indication as disclosed by Nature's method of pouring out exudates at this stage.

3. Favours the exit of pus and entrance of air, with the consequent restoration of the air-space character of the middle-ear cavity.

The incision is usually made posteriorly, because the bulging of the membrane is seen here and as it is also the deepest part of the air space, though some factor other than bulging must be concerned with spontaneous rupture, or else all perforation should occur at this situation, which is not the case. The subsequent treatment may follow the lines already mentioned under acute middle-ear suppuration.

EPITHELIOMA OF EXTERNAL MEATUS

A very busy otologist may not see more than five cases of this condition in his own hospital and private practice in twenty years, so this will indicate its rarity when compared with other ear affections. Biopsy is the only sure method of establishing its nature. If seen early, before the lesion has spread widely, I have found radium followed subsequently by intensive x-ray treatment very satisfactory. Eight to ten radium needles, of 0.6 mg. strength, are inserted from without inwards around the circumference of the meatus, deep to the lesion, and left *in situ* for ten days. This is followed up by x rays for some months. Scarring and occlusion of the meatus is a frequent sequel, and, to prevent this, its patency should be maintained from the outset of treatment by a gauze packing or the insertion of a rubber tube.

CERUMINOUS DISCHARGE

If the mass is hard its removal presents difficulties, and attempts to dislodge it by forceful syringing may damage the drum. As the matter is rarely urgent I advise the use of warm olive oil nightly for a week, and the removal of the mass then is merely a question of syringing with a little technical skill. The nozzle of the syringe should never more than half fill the opened-out meatus, when the ear is pulled upwards and backwards to bring the cartilaginous portion of the passage into straighter line with the deeper bony portion. This enables the operator to direct the stream of fluid from the junction of the posterior and upper meatal walls towards the drum, and provides for its exit along the floor of the passage. A large nozzle will not prevent this; it will fill the outer opening and the stream is directed against the mass, and damage to the drum will result, with considerable pain to the patient. To facilitate the easier entrance of the fluid posteriorly to the mass, a small gutter can be made in the latter with a probe or small forceps, under illumination, through a speculum before syringing. A little refinement to the technique makes all the difference to the comfort of the patient, and, small as this minor operation may seem, it is not uncommon to find those who can recall with much regret some previous unpleasant experience.

If there is a history of middle-ear suppuration many years before, the existence of a perforation may now be assumed, and in such a case I prefer to try and remove the mass instrumentally rather than by syringing, as a fairly common sequence of the latter is reinfection of the middle ear followed by fresh suppuration, a development which will not bring credit to the attendant. Bicarbonate of soda, 2 drachms to the pint of water, at blood heat, is an excellent solution to syringe with. I frequently use soapy water, and think its physical properties aid in the expulsion of the mass.

The fourth International Congress of Radiology will be held at Zürich under the presidency of Professor Hans R. Schinz, from July 24th to 31st, when the following subjects among others will be discussed: radiodiagnosis of bone tumours, radiological appearance of the development of pulmonary tuberculosis, radiotherapy of cancers of the mouth and pharynx, short wave-lengths in treatment, and hard gamma rays and cosmic rays. Particulars may be had from the general secretary, Dr. H. E. Walther, 14, Gloriastrasse, Zürich. In connexion with the congress a special exhibition will be held comprising books, journals, etc., connected with radiology and associated sciences. The official opening of the congress will be on July 25th, by the President of the Swiss Confederation, at which meeting Professor Forssell will report on the organization of cancer campaigns.

X-RAY TREATMENT OF EXOPHTHALMIC GOITRE

BY

CHARLES S. D. DON, M.D. ABERD., M.R.C.P. LOND.
HONORARY PHYSICIAN TO SALFORD ROYAL HOSPITAL AND TO THE
ROYAL EYE HOSPITAL, MANCHESTER

The comparative scarcity of papers in our own medical journals on the x-ray treatment of exophthalmic goitre might be interpreted as indicating that there is little interest in this subject. In other countries numerous papers continue to appear. In January, 1933, Romanis stated in a paper in the *Journal* that "the results of x-ray treatment are not very impressive," and if one can judge by the correspondence which followed there is still interest shown in this line of treatment, and contrary views are held as to its merits. Douglas Webster,¹ Murray,² Cooper,³ Connell,⁴ Rowden,⁵ Riddell,⁶ all wrote upholding x-ray therapy, while Joll⁷ gave the case against it. Douglas Webster wrote as follows: "In 1926" I reported marked improvement in 82 per cent. of 107 cases; further experience, with nearly 200 cases in all, has confirmed this conclusion." Rowden⁵ stated that since 1905 he had treated several hundred cases with results at least as good as those claimed by surgery. Murray² gave strong support to x-ray therapy when he said that he had found surgical treatment to be advisable in about one-twelfth of the cases. In 1929⁹ I gave details of the cases I had observed, but, rightly or wrongly, I considered as failures all cases which had to have surgical treatment after having had any x-ray treatment. Barclay and Fellowes¹⁰ obtained good results in 90 per cent. of 300 private cases, while F. Hernaman-Johnson¹¹ obtained good improvement in 50 per cent. of all cases of Graves's disease.

As a physician one does not approach the treatment of patients with any bias towards either surgery or x-ray therapy, but with the aim of obtaining satisfactory results in a high percentage of cases. In assessing the results I have placed most reliance on the variations in the weight and the basal metabolic rate, on the pulse rate, the patients' symptoms and signs, and on their own opinions as to the value of the treatment. An increase in weight and a fall in the basal metabolic and pulse rates usually go hand in hand, but one finds cases where the improvement in general health and in the pulse and metabolic rates has been accompanied by very little increase in weight; on the other hand, an increase in weight does not always mean a big drop in the metabolic rate or pulse rate. By taking all these points into consideration, and by observing alterations in the tremor, the goitre, and the exophthalmos, when present, it is possible to give a very accurate opinion on the value of the treatment. It is quite possible for a patient to improve without iodine, or x-ray treatment, or operation, but as most of my cases had some definite form of treatment, I am unable to give a competent opinion on the frequency of such a spontaneous improvement. My experience with sodium fluoride is too small to permit comparison.

SCOPE OF PRESENT INVESTIGATION

The cases discussed are nearly all those which have had x-ray therapy at Salford Royal Hospital, and have been under observation for a minimum period of one year. In many cases the period of treatment and observation has been longer, but several are also included which were sent from x-ray therapy for an operation.

I am indebted to our radiologists, Dr. Higgins and Dr. Morris, for the following note on the x-ray technique.

Two areas were treated, using a tube current of 3 milliamperes, 6½ inch spark-gap (point to plate), through 3 mm. aluminium for five minutes, this being equal to a half Sabouraud pastille dose with the outfit used. This dosage was given at first twice a week, then once a week, and thereafter with increasing intervals between treatments as the patient improved.

The basal metabolic rate, the weight, and the pulse were taken in hospital as each patient was admitted from time to time into the ward for these examinations. Accurate estimation of the metabolic rate is difficult, and so I abandoned my attempt to carry it out on the patients without admitting them to the ward, as the results were too variable. Rest and a nourishing diet were insisted upon, but I did not prescribe iodine to any, and, so far as I know, very few of these patients had iodine from their private practitioner. It is probable that iodine has a limited sphere in Graves's disease, and I have found very little advantage from its continued administration. It is for this reason that, apart from times of emergency, iodine is only given to patients in order to prepare them for a thyroidectomy, as its value as a pre-operative treatment is most striking in those patients who have not received it previously.

In order to arrive at some estimate of the results of x-ray treatment I have divided the cases into "cure," "improvement," and "failure." I intend to consider 103 cases, and I find that during the first three months which elapsed from the onset of treatment ten patients had their treatment stopped and were sent to a surgeon for an operation to be performed. I do not propose to consider these ten cases further, as the treatment was stopped by the physician and not by the radiologist, and I do not think it is fair to include under "failure" cases which have had so little treatment.

Of the remaining ninety-three cases, at the end of six months' treatment seven had been operated on, and at the end of a year six more had been sent for operation. At the end of two years seven further patients had had operations, while at the end of three years one more case had found its way to the surgeon. In assessing the results I have included all these cases, but instead of classing them as x-ray failures, as I did in my previous paper,¹ I have classified them according to whether there had or had not been any improvement at the time they ceased to attend the x-ray department. Some of these, therefore, are included under "improvement," and some under "failure"; none can be called "cured," as such cases would not have been sent to a surgeon. My reason for this classification of these operative cases is again because the radiologist did not in most cases recommend that x-ray treatment be stopped, and it is not beyond the bounds of possibility that further treatment might have resulted in improvement. The radiologist in some cases did advise that x-ray therapy should be stopped and another form of treatment tried. Such co-operation is of great help to the physician in charge of the case.

RESULTS OBTAINED

My records show that at the end of six months eleven cases could be considered cured, but as six months is too soon to consider all the cases these are merely mentioned as indicating that in some instances one can even hope for cure within that time. At the end of a year the results were as follows: cure, 29; improvement, 34; failure, 30.

I propose now to pass on to the final results, and it must be borne in mind that while some patients have been under treatment or observation from one to five years, some are included, as mentioned previously, who were operated on after having had x-ray treatment for a shorter period. The final results are: cure, 38;

improvement, 30; failure, 25. Of the seven cases which were operated on at six months four are included under "failure" and three under "improvement." Of the six operated on at the end of a year five are classed as "failure" and one as "improvement." If these thirteen cases are removed from the list the final results are changed, and become: cure, 38; improvement, 26; failure, 16.

In terms of percentages we then have the "cure" and "improvement" constituting 80 per cent. of the total. It is obvious, therefore, that the results could be made to appear excellent by simply excluding, on the grounds that they had not completed their treatment, all cases which were referred for surgical measures. On the other hand, by including all cases sent for an operation, the results seem quite mediocre, and in compiling the final results I have tried to steer a middle course. It would be of interest if writers were always in a position to state the number of patients who, within a reasonable time of their x-ray treatment, sought surgical treatment. It is possible that many whom a writer regarded as improved might not continue to feel the same enthusiasm about their improvement, and have tried other methods of treatment. Such a follow-up might show that a number had had operations, and the total would depend largely on the opinion which the physician in charge of the case had formed of thyroidectomy, and on the local mortality rate for that operation. My own figures, obtained on cases which were all sufficiently severe to require hospital treatment, suggest that unless approximately three out of ten such patients have an operation performed there will be many who, in spite of x-ray therapy, will suffer from chronic ill-health.

It will be observed that the final assessment shows a higher number of combined cured and improved cases than the figures given for one year's treatment, and it seems likely that the extension of the treatment beyond one year when necessary is justified, as some cases do not reach their maximum improvement at the end of one year. In following up cases year after year one finds, unfortunately, that recurrences or relapses may occur: my own records show that among the cases under consideration there were eleven patients who had recurrences or relapses, but that most of them improved with further x-ray treatment. One patient developed myxoedema and has to take thyroid regularly. The symptoms and signs came on just after treatment had been stopped, and when she consulted me six months later she was a well-marked case. Four patients died during treatment—one of pneumonia, one of mitral stenosis and heart failure, and two of Graves's disease.

I have discussed surgical measures in previous publications,^{1,2} but I must refer to this again, as the thyroidectomy mortality rate is one requiring consideration when deciding on the line of treatment to be adopted. The mortality rate of all experienced surgeons is very low, and at Salford Royal Hospital it has been extremely low during the periods that the x-ray cases discussed in this paper were being observed.

Out of 155 cases operated on for toxic goitre there were only two deaths, both, I am told, from pulmonary embolism. These cases were operated on chiefly by Mr. Garnett Wright and by Mr. Jefferson, and they illustrate the low mortality rate which may be obtained by skilled surgeons. No fewer than forty-six of these cases had had x-ray treatment previously, and, whereas I have no details of the treatment given in fifteen of these, in thirty-one it was given at this hospital. In ten of these the treatment was given for less than three months, and was therefore incomplete. I mention this because surgeons sometimes make the unqualified statement that many of their cases have received x-ray therapy without improvement, and do not give details

of the treatment. The low mortality rate and the high percentage of cure attending surgical operations on the thyroid has made surgical treatment popular. Yet, although good surgical technique is the chief reason for the low mortality rate among our cases, it may also be due partly to the previous improvement in some severe cases under x-ray therapy, and partly to the fact that most of the patients on whom thyroidectomy was performed gave an excellent response to iodine when administered pre-operatively. Many of our cases were operated on from the medical side of the hospital and returned to it from the theatre. It is possible that some who were sent for operation might eventually have improved considerably had x-ray therapy been continued, but many of them might in the end have presented a serious surgical risk to life. Our x-ray cases were drawn from the working classes, and therefore it is the aim to try and produce satisfactory results in one year; this wish, coupled with our low surgical mortality rate, no doubt accounts for the fact that a greater number were operated on than Dr. Murray found necessary in his cases.

None the less, I believe that by sending cases which are not showing progress at an early date for operation a hospital as a whole is able to show a better percentage of improvement in all cases attending, and a lower surgical mortality rate. X-ray therapy should be given a trial in the large majority of cases, the results considered at three-monthly intervals, and those cases which do not show adequate improvement should be sent for surgical treatment. In the case of patients who, for financial or other reasons, cannot face more than a short absence from active life, an operation seems to be the treatment of choice.

REFERENCES

- ¹ Webster, J. H. Douglas: *British Medical Journal*, 1933, i, 432.
- ² Murray, G. R.: *Ibid.*, 1933, i, 432.
- ³ Cooper, G.: *Ibid.*, 1933, i, 539.
- ⁴ Connell, R.: *Ibid.*, 1933, i, 247.
- ⁵ Rowden, L. A.: *Ibid.*, 1933, i, 204.
- ⁶ Riddell, J. R.: *Ibid.*, 1933, i, 488.
- ⁷ Joll, C. A.: *Ibid.*, 1933, i, 238.
- ⁸ Webster, J. H. Douglas: *Ibid.*, 1926, i, 985.
- ⁹ Don, C. S. D.: *Ibid.*, 1929, i, 1108.
- ¹⁰ Barclay, A. E., and Fellowes, F. M.: *Lancet*, 1926, i, 593.
- ¹¹ Herniman-Johnson, F.: *Practitioner*, 1931, cxxvii, 569.
- ¹² Don, C. S. D.: *British Medical Journal*, 1931, ii, 287.

TREATMENT OF ACUTE GONORRHOEA BY MEANS OF A NEW GONOCOCCAL VACCINE OF LOW TOXICITY

BY

I. N. ORPWOOD PRICE

PATHOLOGIST, THE LONDON COUNTY COUNCIL (WHITECHAPEL) CLINIC

AND

AMBROSE J. KING

CHIEF ASSISTANT MEDICAL OFFICER, THE LONDON COUNTY COUNCIL
(WHITECHAPEL) CLINIC

The treatment of gonorrhoea is generally acknowledged to be unsatisfactory, and the multiplicity of therapeutic methods which have been used may be regarded as an indication of their inefficiency. Unfortunately, we still lack a specific antidote. The local application of anti-septics has only a limited effect because certain areas of infection are frequently inaccessible. Drugs, whether given by mouth or by injection, are of uncertain value. Specific antisera, which raised such high hopes, have failed to fulfil their promise.

The various types of vaccine which have been used and recommended for years do not appear to have maintained a high standard of effectiveness. Despite many attempts to use vaccines in the acute stages of the disease, the effects have often been disconcerting, and accompanied by a high proportion of complications. Hence their use is generally restricted to chronic cases; but here again, owing to lack of antigenic power, results have often been indifferent.

Nevertheless, it was felt that if a vaccine of low toxicity could be prepared which, when administered to patients with acute gonorrhoea, would evoke a rapid and substantial antibody response, it should at least prove useful in the treatment of the disease. Such a vaccine has been prepared by one of us (I. N. O. P.), and this paper has been written to show:

1. The low toxicity of this vaccine.
2. The rapid and substantial response of the antibody-forming mechanism of the body (as measured by the complement-fixation test for gonorrhoea) following the administration of this vaccine.

The presence in the blood of specific antibody as a result of this vaccine administration: (a) curtailing the duration of the infection; (b) the prevention of complications; (c) curing the disease.

SUMMARY OF PREVIOUS WORK

It is stated by Thomson¹ that the first investigations of vaccine therapy in the treatment of gonorrhoea were made in 1907, when Wollstein, following the researches of Flexner on the meningococcus, showed that injections into animals of dead gonococci produced specific agglutinins and complement-deviating substances. In the same year Cole and Meakins² reported encouraging results in cases of gonococcal arthritis from the subcutaneous injections of large doses of gonococcal vaccine. Since these initial observations the subject has accumulated an enormous literature. Numerous observers have assessed results on widely different standards of cure, and a great variety of conclusions have been reached concerning the best method of preparation of the vaccine, the dosage, the type of case most suitable, and the stage of the infection at which the best results may be obtained. Autogenous vaccines and stock vaccines, recent strains and old subcultured strains, polyvalent strains and single strains—all have been recommended with varying results. These earlier workers relied mainly upon emulsions of killed gonococci injected subcutaneously or intramuscularly. Most of the vaccines so prepared were found to have the great disadvantage of marked toxicity. The general and local reactions which followed a dosage that was considered adequate were found to be distressing, and in weakly patients sometimes dangerous.

In 1913 Cruveilhier,³ following the researches of Bestedka (1911), prepared a gonococcal vaccine which was "sensitized" by the addition of serum from goats that had been immunized previously by the intravenous injection of dead gonococci. He reported good results in complicated cases and the absence of any severe general reaction following the use of this vaccine; but a slight rise of temperature with some transitory pain and redness of skin round the injection site sometimes occurred. He also recorded some good results with sensitized vaccines made from living gonococci. In the same year Broughton-Alcock,⁴ working with a vaccine similarly prepared, confirmed Cruveilhier's observations as to the therapeutic benefit derived from its administration in cases where complications had occurred. In a further series of cases (twenty-six) of acute gonococcal urethritis without complications he was not convinced of any curative effect.

Subsequently, numerous workers have concentrated upon the attempt to produce a non-toxic vaccine, and brief mention of the more important of these may be made. In 1913 Nicolle and Blaizot⁵ produced "Omegon," a vaccine which was claimed to have been rendered non-toxic by culturing gonococci on a special medium and by their subsequent treatment with a solution of sodium fluoride. They then added to the vaccine a proportion of "syncocci"—Gram-negative cocci, which these authors believed to be frequently associated with the gonococcus. In 1913 Hirschfelder⁶ used an extract of gonococci. This was obtained by dissolving them in pan-

creatin and sodium bicarbonate solutions, and then acidulating with weak hydrochloric acid. Large doses of this solution were injected intravenously, but pyrexial reactions with malaise were apt to occur. Thomson (1919,⁷ 1920,⁸ 1922⁹) stated that he was convinced that the disappointing results from vaccine treatment were due to inadequate dosage—the dosage being, of course, restricted by the marked toxicity of vaccines in general use. By patient research he elaborated a complicated chemical method of removing the "endotoxins" from gonococci. After detoxication by his method initial subcutaneous injections of 5,000 millions to 10,000 millions of organisms could be given without ill effects, and the dosage by this route could be increased at short intervals up to a very large amount. Also, after a small preliminary sensitizing dose, large doses of this vaccine were given intravenously, again without unpleasant reactions. This preparation is still used and rightly esteemed, but the results obtained from it are admitted to have fallen short of early expectations. More favourable results are obtained from its employment in the treatment of chronic and complicated cases than in acute urethritis.

Lambkin and Dimond (1927¹⁰ and 1928) supplemented the routine treatment of gonorrhoea by intradermal and intramuscular injections, together with the intraurethral instillation of an "exotoxin" derived from cultures of gonococci grown on a medium containing animal nucleo-protein. Briefly, they observed that gonococci grown in cultures of this kind produced "polar bodies" histologically similar to those associated with the diphtheria bacillus. They washed off gonococci plus their polar bodies from the culture with 2 per cent. saline solution, and allowed the wash to stand for three or four days. This was found to separate into three distinct layers. The bottom layer contained heavy gonococci; the intermediate layer was a lighter white, powdery material termed "alpha nucleo-protein"; and the supernatant clear fluid contained a substance termed "beta nucleo-histone." The two upper layers were believed to result from the splitting by the saline solution of the polar bodies into their main constituents. The beta nucleo-histone, which was separated in this way from the poisonous endotoxins resulting from autolysis of the gonococci, was employed as the vaccine. This was found to have marked antigenic properties, and could be tolerated in doses which were large when compared with the equivalent in ordinary vaccine. The method of preparation is, however, a complicated one, and accurate standardization is difficult. Some excellent results have, nevertheless, been reported, and investigation is still proceeding along these lines. Clements and Oliver,¹¹ using a modification of this preparation, have recently reported some good results in chronic cases.

THE VACCINE DESCRIBED

Many attempts have been made to utilize the various vaccines described above during the acute stage of gonorrhoea, but the results have generally been unsatisfactory and accompanied by a high proportion of complications, which seem to "flare up" suddenly after the administration of the vaccine. Consequently, gonococcal vaccine therapy is not generally favoured for acute gonorrhoeal cases. The ideal vaccine is one which combines ease of preparation and powerful antigenic qualities with the absence of marked toxic effects following its administration.

The vaccine described below is not claimed to be ideal, but it would appear to combine these cardinal merits to a greater extent than any vaccine with which we are acquainted.

Technique of Preparation

Gonococci, grown on hydrocele agar (pH 7.5) in a triangular Roux bottle at 37.5° C. for forty-eight hours, were washed off into a cylinder with 100 c.cm. of physiological saline; this yielded a suspension of about 180 millions of organisms per c.cm.; 1 c.cm. of N/1 NaOH was added, and the cylinder placed in the 37.5° C. water-bath for two hours, when most of the organisms were found to be in solution. The fluid was filtered through sterile lint, 1.5 c.cm. of N/1 HCl added, and the cylinder returned to the bath. After fifteen to twenty minutes white flocculi appeared, and these were centri-

fuged out of solution (3,000 revolutions per minute) and then suspended in 9 c.cm. of sterile saline. N/1 NaOH was added to the suspension drop by drop until a pH of 7.5 was reached, when the precipitate appeared to go into solution. To this 1 c.cm. of formo-saline (1 per cent.) was added. This colloidal suspension of gonococcal protein constituted the vaccine, 1 c.cm. of which contained the protein content of approximately 1,800 million gonococci.

CLINICAL APPLICATION

This preparation was employed in the treatment of forty-six men who were suffering from acute gonococcal urethritis. The occupations of the men are of interest, and may be analysed as follows: twenty-four manual workers, eighteen sedentary workers, and four unemployed. Their ages varied from 19 to 42 years, the average being 26½ years. The incubation period varied from one day to twenty-four days, but in the majority of cases evidence of infection was present within a week. When first examined at the L.C.C. (Whitechapel) Clinic the infection was apparently limited to the anterior urethra in thirty (65 per cent.) of these patients, but the remaining sixteen (35 per cent.) were suffering from both an anterior and a posterior urethritis. In most cases the patient presented himself for treatment, and the first dose of vaccine was administered within six days of the onset of the symptoms.

Dosage and Method of Administration

As already stated, the vaccine was made up so that 1 c.cm. was equivalent to the protein content of 1,800 million gonococci. All injections were given subcutaneously over the gluteal muscles, the right and left sides being injected alternately. The initial dose in each case was 1/4 c.cm. (450 million organisms), and this was increased to a maximum dose of 1.5 c.cm. if no untoward manifestations occurred. The actual amounts of vaccine received by the patient are shown in the table below.

Number of Patients	Consecutive Days									Total Amount of Vaccine Received per Patient
	1	2	3	4	5	6	7	8	9	
5	½	½								1 c.cm.
3	½	½	½							2 "
10	½	½	½	½						1 "
9	½	½	½	½	½					2½ "
3	½	½	½	½	½	½				1½ "
5	½	½	½	½	½	½	½	½		12 "
1	½	½	½	½	½	½	½	½	½	2 "
2	½	½								2 c.cm.
2	½	½	½	½						1½ "
1	½	½	½	½						1½ "
2	½	½	½	½	½					2½ "
1	½	½	½	½	½	½				2½ "
1	½	½	½	½	½	½	½	½	½	2½ "
1	½	½	½	½	½	½	½	½	½	5½ "

This shows that the period during which vaccine was administered varied from two to nine days, whilst the total amount injected in any one case ranged from 0.5 c.cm. (the protein equivalent from 900 million gonococci) to 5.25 c.cm. (the protein equivalent from 9,450 million gonococci). Two groups of patients are represented in the table. Group 1 represents the earlier patients, none of whom received more than 0.25 c.cm. per diem. With the experience gained from the reactions of the patients in this group we were able, in most of our later cases,

to advance the dosage more rapidly. This is shown in Group 2. The injections were given each day where possible, but the daily and the total dosage were modified according to the individual reaction.

Immediate Results

A local reaction occurred in every case. The mildest reaction consisted of a tender, slightly indurated, circumscribed area of approximately $1\frac{1}{2}$ inches in diameter at the site of injection, with a slight enlargement of the nearest inguinal glands. This was accompanied by mild subjective discomfort. A good reaction was indicated by a painful indurated area 5 inches in diameter, with enlarged painful inguinal glands. In such cases as these the site of injection was covered by an area of vivid scarlet erythema, from which a well-marked red band of lymphangitis extended across the buttock and round the flank to the inguinal glands on the same side. The skin overlying the glands became red and tender. The acute local signs and symptoms following injection produced their maximum effect within twenty-four hours of the administration of the vaccine and took two to three days to subside, while the subcutaneous induration remained for a day or two longer. The local reaction in twenty of the forty-six patients injected was moderate, and confined to the immediate site of the injection. In twenty-six patients, in addition to the tenderness and enlargement of the corresponding inguinal glands, a well-marked induration developed at the point where the vaccine was injected. In seven of these a well-marked band of lymphangitis was present. This tracked from the area of induration at the site of injection to the enlarged tender inguinal glands on the same side.

The general reaction consisted of symptoms which ranged from a slight headache and malaise to a severe rigor with vertigo, nausea, retching, and vomiting in some cases. Occasionally insomnia and restlessness were well marked, but in most cases the only result was a headache of moderate severity and some feverishness. These symptoms, which did not invariably follow the first injection, were alleviated by mild analgesics such as aspirin or pyramidon. A general reaction was absent in ten (21.7 per cent.) of the forty-six patients injected. In thirty-four (73.9 per cent.) some general reaction developed in from one to five hours after injection. In only two patients (4.4 per cent.) was the general reaction so severe that the vaccine treatment was stopped after the second dose had been administered.

CLINICAL RESULTS

The clinical results following injection of the vaccine may be classified into two groups:

Group 1.—Those in which the signs and symptoms of the infection remained absent after a definite period of time. These may be subdivided as follows:

(a) Absence of signs and symptoms within ten days from beginning of treatment. In five (10.8 per cent.) cases the absence of urethral discharge or other symptoms, and the absence of haziness and threads from both specimens of urine, were noted after ten days' treatment or less. One of these cases, which will be mentioned later as the most rapid cure in the series, remained entirely without symptoms or signs after only three days' treatment.

(b) Absence of signs and symptoms within two to four weeks from beginning of treatment. These consisted of nineteen cases (41.3 per cent.).

(c) Absence of signs and symptoms within one to three months from beginning of treatment. This group contained sixteen cases (34.8 per cent.); in a proportion of these patients this clinical improvement occurred in

spite of irregular attendance and neglect of routine treatment.

In this whole group of forty (86.9 per cent.) cases the results may be said to be satisfactory.

Group 2.—Those cases which developed acute complications of gonorrhoea. There were only six cases (13.1 per cent.) in this group. Two of them developed a unilateral acute epididymo-orchitis; two had periurethral abscess of the penile type; one suffered from an acute prostatitis and vesiculitis, which was accompanied by gonorrhoeal rheumatism. The sixth case was transferred to another department as a suspected case of chronic pyelitis. No complications occurred during the period of vaccine administration. The shortest time between the cessation of the injections and the onset of a complication was two days.

The above results may be compared with those obtained by ordinary routine treatment. In order to do this the records of 100 unselected patients, who originally attended this clinic suffering from acute gonorrhoea, were examined, and the proportion of these cases which developed acute complications of the disease during their early treatment was noted. Of the 100 unselected patients, twenty-four developed acute complications, an analysis of which is shown below.

Acute epididymo-orchitis	...	...	...	12 per cent.
Acute prostatitis	...	...	...	5 " "
Periurethral abscesses	...	...	...	4 " "
Acute arthritis	...	...	...	1 " "
Gonorrhoeal rheumatism	...	...	...	1 " "
Gonorrhoeal teno-synovitis	...	...	...	1 " "
				24 " "

SEROLOGICAL RESULTS

These may be divided into three groups:

Group A.—Those in which the complement-fixation test for gonorrhoea (Price's former technique⁽²⁾) was negative in the blood serum at the onset of treatment, but became positive within ten days. This group contained thirty-four (73.9 per cent.) cases, and the results are tabulated below.

G.F.T. at Onset of Treatment	G.F.T. within Ten Days or Less	Number of Cases
Negative	++ (40) strongest positive	1
"	++ (20) very strongly positive	2
"	++ (5 to 10) strongly positive	14
"	+ positive	12
"	± weakly positive	5
	Total ...	34

The bracketed figures show dilutions of the serum—for example, (40) indicates that the serum was diluted 1 in 40. It should be remembered that without treatment a positive gonorrhoeal complement-fixation test, as recorded by the above technique, is not usually obtained in acute cases until fourteen to twenty-one days after the onset of symptoms. These cases, however, had been treated by routine methods (irrigations, etc.), and therefore positive serum reactions were not to be expected until later in the course of the disease.

Group B.—Those in which the complement-fixation test was positive at the beginning of treatment, but showed a definite increase in the strength of the reaction at the end of the period of vaccine administration. This group included four (8.7 per cent.) patients whose sera behaved as shown:

Patient	Complement-fixation Test	
	First Day	Tenth Day
First	±	++ (20)
Second	+±	++ (40)
Third	+±	++ (40)
Fourth	±	++

Group C.—Those in which the complement-fixation test was negative at the outset, and in spite of vaccine treatment remained negative at the end of ten days. This group consisted of seven (15.2 per cent.) cases. Later in the course of the disease a weakly positive (±) reaction developed in three of these cases, but evidently this was not due to the effect of the vaccine. The remaining four failed to record a positive reaction at any time. Five of these seven cases were the least satisfactory of all the cases in the series from the point of view of clinical results. The two remaining patients showed a remarkable and unexpectedly rapid recovery; the reason is not apparent. One case, not included in this classification, was a patient who refused to allow more than one venepuncture, and subsequently defaulted.

END-RESULTS

In view of the widely divergent views held as to the standard of cure on which results of treatment should be assessed, the test of cure employed in all these cases is set out below.

1. **Urethral Discharge.**—Absent.
2. **Urine:** "Two-glass" Test.—Both specimens were free from haziness and threads on repeated examination.
3. **Rectal Examination.**—Clinical evidence of infection of the prostate or seminal vesicles was absent on digital examination.
4. **Microscopical Tests.**—Three successive smears of the contents of the prostate and the seminal vesicles taken at intervals of one week or more showed less than five leucocytes per 1/12 microscopic field.
5. **Instrumental Examination.**—(a) A metal sound of average size (16/20 Clutton) was passed into the bladder without difficulty. (b) *Urethroscope:* No lesion could be detected in the anterior urethra.
6. **Complement-fixation Test for Gonorrhoea.**—This had to be completely negative. The complement-fixation test employed as a test for cure in all but one case in the series was Price's improved method.¹² This more sensitive technique considerably enhances the value of the test as a criterion of cure.
7. **Provocative Diet.**—A negative complement-fixation test for gonorrhoea and no excess of leucocytes in the prostatic and vesicular smears after a provocative diet, including alcohol and spices, for a period of from two to four weeks.

At this stage it would be well to emphasize the importance of the complement-fixation reaction for gonorrhoea in the test for cure of patients, even in those who have undergone vaccine treatment. Many authorities believe that the results of the complement-fixation test for gonorrhoea are valueless when applied to the sera of patients who have received gonococcal vaccines. It was definitely established in the course of this investigation that the injection of vaccine stimulates the production of antibodies (as demonstrated by the complement-deviation test for gonorrhoea) only so long as the administration is continued. In cases in which we were able to establish a rapid cure the reaction became negative in approximately six weeks from the cessation of vaccine treatment. But it was also established that if the

complement-deviation test for gonorrhoea remained positive more than six weeks after the vaccine had ceased to be injected it was invariably possible to demonstrate a persistent focus of infection.

On reviewing the end-results of any treatment for gonorrhoea one is always confronted with the difficulty of patients who default when they become symptomless, although they may not necessarily be cured. In this category were fifteen (32.6 per cent.) in the series of forty-six patients who failed to pursue their treatment upon the cessation of symptoms. Of these, ten did not return, and so no assessment of the curative value of the vaccine treatment could be made in these cases; three defaulted whilst undergoing their final tests, so that a cure could not be established; two defaulted but returned later with symptoms.

The final tests of cure were passed by twenty of the remaining thirty-one patients. The varying periods of treatment before cure of these twenty patients are set out in the table below.

Number of Patients		Period of Treatment before Cure	
1	...	7	days
3	...	6	weeks
1	...	8	"
2	...	12	"
1	...	16	"
2	...	18	"
2	...	20	"
3	...	28	"
1	...	32	"
2	...	36	"
2	...	40	"
20			

From this it will be seen that of the twenty patients who remained under observation throughout the clinical course of the disease and were cured seven were discharged within three months, eight within six months, and five within ten months.

The following table shows the results obtained in twenty unselected cases treated by routine methods, without vaccine, during the same period. The same standard of cure was, of course, adopted.

Number of Patients		Period of Treatment before Cure	
1	...	8	weeks
3	...	12	"
6	...	20	"
4	...	24	"
3	...	28	"
2	...	32	"
1	...	40	"
20			

Comparison of the two tables shows that a somewhat larger proportion of rapid cures was obtained in the patients treated with the vaccine.

Apparently, cure of the disease was not hastened by vaccine in the remaining eleven patients. Two reached the test of cure stage after twelve and fifteen months respectively. Nine still remain under treatment after periods varying from ten to eighteen months. It must be remembered that these cases were all treated as out-patients, and most of them continued their daily work, so that adequate control of their actions and habits during this period was impossible.

CONCLUSIONS

1. This vaccine is a powerful and prompt stimulant to the production of gonococcal antibodies as demonstrated by the complement-fixation test for gonorrhoea. When employed in the acute stage of the disease in the manner already described—that is, daily injections—thirty-eight (82.6 per cent.) patients out of forty-six showed a marked increase in the strength of their serum

tests within ten days—namely, during that period of the disease when such a result is not to be anticipated.

2. In view of the protein equivalent of the number of gonococci (1,800 million per c.cm.) contained in this vaccine, it may well be described as a detoxicated vaccine. Furthermore, it can easily be prepared and standardized.

3. No fixed method of dosage of the vaccine is possible. The maximum dose which a patient will tolerate can only be found by the individual response of the patient to gradually increasing doses.

4. In those patients who responded serologically to the vaccine a definite clinical improvement almost invariably followed within a short time, but the percentage of cases which subsequently presented symptoms of chronic infection was not lessened.

5. Where serological response to the vaccine was not forthcoming the results were disappointing in all but two cases.

6. Two cases which showed no serological response made a rapid recovery. The explanation of this is not apparent.

7. No acute complications occurred as a result of the vaccine, although it was administered during the acute stage of the disease. The number of acute complications—six (13.1 per cent.)—occurring later in the course of the disease in patients treated by this method is definitely lower when compared with patients treated by ordinary routine methods alone (24 per cent.).

8. The time taken to effect a cure is somewhat shortened in some cases when the routine methods of treatment are supplemented by the administration of this vaccine, but on the whole the results are disappointing.

9. It would appear that the type of gonococcal infection most likely to be benefited by treatment with this vaccine is that in which the patient is suffering from a chronic gonococcal complication such as arthritis, and the blood, when tested by the complement-fixation reaction, reveals a low (\pm) specific gonococcal antibody content. This point is at present under investigation (A. J. K.). Of the forty-six cases treated with vaccine, thirty-eight showed an increase in the antibody content of the blood (as evidenced by the complement-fixation test), and a definite decrease in the severity of the clinical symptoms within ten days of the first vaccine injection. It would be natural to anticipate that the time taken to cure these patients would be definitely shorter than when the ordinary routine methods of treatment are employed. This, however, was not the case, and, whilst admitting the danger of drawing conclusions from such a small number of cases, it would appear that specific gonococcal antibodies tend to prevent the occurrence of severe acute complications and to shorten the acute stage of the disease, but seem to have little effect in eradicating the infection from its localized sites in the genital system. This would account for the disappointing results from the use of gonococcal vaccines, prepared in all manner of ways, in the routine treatment of gonorrhoea.

REFERENCES

- ¹ Thomson, D.: *Gonorrhoea*, Oxford Medical Press, 1923, p. 303.
- ² Cole, R. L., and Meakins, J. C.: *Johns Hopkins Hosp. Bull.*, 1907, xviii, No. 185, 223.
- ³ Cruveilhier, L.: *Lancet*, 1913, ii, 1311.
- ⁴ Broughton-Meeck, W.: *C. R. Soc. de Biol.*, 1913, lxxiv, 623.
- ⁵ Nicolle, C., and Blaizot, L.: *Journ. d'Urol.*, 1913, iv, 723.
- ⁶ Hirschfelder, J. O.: *Journ. Amer. Med. Assoc.*, 1913, lx, 1061.
- ⁷ Thomson, D.: *Lancet*, 1919, i, 1102.
- ⁸ Idem: *Journ. State Med.*, 1920, xxix, No. 3.
- ⁹ Idem: *British Medical Journal*, 1922, i, 796.
- ¹⁰ Lambkin, E. C., and Diamond, L.: *Proc. Roy. Soc. Med.*, 1927, xxi, 157.
- ¹¹ Clements, P. A., and Oliver, J. O.: *Brit. Journ. Ven. Dis.*, July, 1933, ix, 147.
- ¹² Price, I. N. O.: *Journ. Path. and Bact.*, 1930, xxxiii, 493.
- ¹³ Idem: *The Complement Fixation Test for Gonorrhoea*, London County Council Publication, 1933, p. 9.

NOTES ON A SMALL OUTBREAK OF GLANDULAR FEVER

BY

E. J. BRADLEY, M.D.CAMB., F.R.C.S.ED.

SURGEON, MARGATE AND DISTRICT HOSPITAL

Glandular fever in epidemic form is not an uncommon disease. The literature¹ on the subject has grown during the last few years; but some of the cases occurring in the outbreak now to be described showed certain unusual symptoms, which are the main reason for these notes.

The cases arose in a preparatory school in October, 1933. Out of eighty-four boys eleven developed the disease; two cases were of alarming severity, three others were severe in type, the remainder were moderate or mild in character. All boys in the school occupy separate bedrooms or cubicles, but it is of interest that a direct relationship could be traced among the infected boys in friendship, or proximity in work and play. Further, a case of chicken-pox arose early in October, and although there were over sixty vulnerable boys, no other contracted this disease, so that the methods of isolation and prophylaxis, valid in the latter disease, were of no avail in glandular fever. The cases occurred within the space of twelve days. The school was disbanded on the fifteenth day after the onset of the epidemic and reassembled on the thirty-second day. Of the boys sent home two only developed the disease, and those in mild and attenuated form. Six of the adults in attendance on the boys fell ill, five with frank follicular tonsillitis and one with a doubtful attack of glandular fever. Nine out of eleven boys had had their tonsils removed; the illness of the two who retained them was mild in type.

As the cause of the disease is unknown, search was made among the domestic staff for a possible carrier of throat infection, but without any definite result. Analysis of the milk and water supply proved negative, and the drainage system of the school, tested regularly, was beyond reproach. Sporadic cases of glandular fever had arisen in the district during the previous two months, which had been prolific in producing other throat infections, and notably scarlet fever.

SYMPTOMS AND SIGNS

Before describing any case in detail the following general statement of symptoms and physical signs is given.

Onset.—The first complaint, in the majority of cases, was of the collar being too tight. This was followed by pain or stiffness of the neck. Slight fever occurred in the beginning, and the groups of glands under the sternomastoid muscles or in the submaxillary triangles were found to be tender and enlarged. There was vomiting at onset in five cases; headache was not noted.

Development.—Fever increased quickly and the glands became more swollen. Usually both sides of the neck were affected, but not equally. Glands in the posterior triangles of the neck were quickly and commonly affected; the axillary and inguinal groups of glands enlarged definitely in only four cases. Periadenitis developed in the severe cases, the cervical swellings becoming diffuse and very tender. Dysphagia occurred as a sequel of this, produced in two cases by oedema of the palate and fauces. An enlarged spleen was noted twice, enlargement of the liver once. Epistaxis gave some relief to the congestive symptoms early in the disease. A rash was observed in two cases only, once urticarial and once macular in type. All severe cases showed a typical feature, which came to be regarded as almost diagnostic. When asked to sit up in bed a hand was placed behind

the back of the head and the head and trunk raised in one piece till supported on the other elbow. In mild cases the temperature settled on the third or fourth day. In others it proved very erratic, settling, then rising again. Spasms of pain in the throat occurred even in cases where the fauces were but little affected. Even in mild cases the boys became more ill than seemed warranted by their physical signs; and the severe cases were rapidly debilitated by the fever, pain, and anorexia. There was a definite tendency to relapse, and it was found wise to keep the boys in bed until ten days after the cessation of fever.

Pathology.—Examination of the blood in selected cases showed a mononuclear lymphocytosis, which developed after the third day, and was well marked at the end of the third week of illness. Throat swabs taken in certain of the cases were negative for haemolytic streptococci and Klebs-Loeffler bacilli. Where abscess formation occurred the organism cultured from the pus was a non-haemolytic streptococcus.

Complications.—The following arose in three separate instances: acute retropharyngeal abscess, suppuration of a cervical gland, and acute otitis media. No haematuria or nephritis occurred. The following sequelae were noted: tachycardia, anaemia, persistent glandular enlargement (six weeks or more), and slight, irregular temperature.

Differential Diagnosis.—During the first forty-eight hours there may be a resemblance to mumps of the submaxillary type. Follicular tonsillitis is distinguished by the throat appearance and the fact that the fauces are affected primarily and the glands next. The absence of a definite rash in glandular fever should be sufficient to distinguish it from scarlet fever. Tuberculous adenitis and lymphadenoma both have certain features in common with glandular fever, but time and a biopsy in persistent cases will prove deciding factors. A differential blood count in the acute stages, though not to be taken as diagnostic, may be regarded as confirmatory of glandular fever if a mononuclear lymphocytosis be present.

INDIVIDUAL CASE RECORDS

Case 1 (aged 11)

On October 6th this boy went to bed with an ordinary feverish cold, stayed in bed two days, then appeared well until October 13th, when he complained of stiff neck and pain just to the left of the larynx. His temperature was 99° F., and he was put to bed at once. Examination showed nothing in the throat and no enlarged glands. On October 15th the glands in the left substernomastoid region and in the posterior triangle on that side were enlarged and tender; there was some dysphagia, and the temperature was 100°. Next day the pain grew more severe, shooting up into the left ear, the glandular swelling was more diffuse, and the left side of the soft palate showed oedema. The glands on the right side of the neck began to swell, and the temperature rose to 102°.

On October 17th the fauces were more oedematous and very painful; there was constant clearing of the throat and hawking up of mucus. Nothing but fluid could be taken by the mouth, and the temperature in the evening rose to 104°. On October 18th there was expectoration of blood-stained mucus from the throat, the pain in the throat and neck was severe, the evening temperature was again 104°, and sleep was poor, with some delirium. Next day the oedema and swelling of the throat began to abate, epistaxis occurred, the temperature was falling, and there was some general improvement, though the day was disturbed by bouts of abdominal pain. By the evening of October 20th all the oedema had gone from the throat, the gland swellings were subsiding, and fluid nourishment was taken freely. On October 21st there was further subsidence of physical signs and symptoms, except for sudden and unaccountable spasms of pain in the throat.

On October 23rd the temperature began to rise again, and the left tonsillar region became swollen and angry. On October 24th the temperature rose to 104°, the left side of the pharynx was swollen, but not oedematous; the glands in the neck, however, remained less swollen and less painful. By October 26th the swelling of the fauces was receding and displayed another swelling on the posterior wall of the pharynx. Next day there was a definite localized retropharyngeal abscess, and this was incised "per os" and the pus evacuated. On October 28th the temperature, which

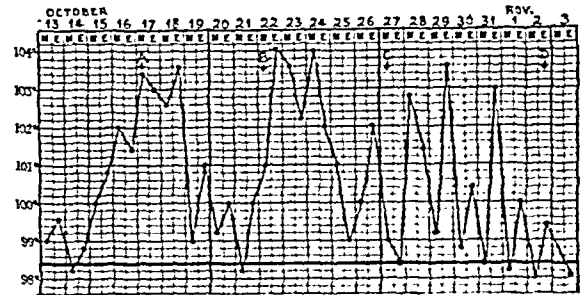


CHART I.—Case 1: (A) Oedema of palate and fauces; (B) Tonsillar swelling; (C) Retropharyngeal abscess incised; (D) Went home.

had dropped, rose again, reaching 104°, but the throat was comfortable, the glands less swollen, and the boy was beginning to eat and take interest again. From October 29th to November 1st the temperature was of the swinging, septic type, but subsequently subsided, except for occasional small irregularities. No further untoward symptoms arose, and convalescence, though slow, was uneventful.

Case 2 (aged 13)

On going to bed on October 15th he noticed that his collar felt too tight. Next morning the right side of his neck was stiff and painful; at 10 a.m. his temperature was 102°, and there was marked glandular swelling under the right sternomastoid muscle; the fauces then showed nothing abnormal. By noon the swelling had increased rapidly, spreading up under the jaw and to the ear. By 6 p.m. dysphagia was present and the right palate and fauces were oedematous; at 8 p.m. fluid swallowed was regurgitated through the nose, and there was slight laryngeal stridor. The temperature rose to 103°, and the glandular swelling was very tender and painful. At 3 a.m. on October 17th, after an attack of

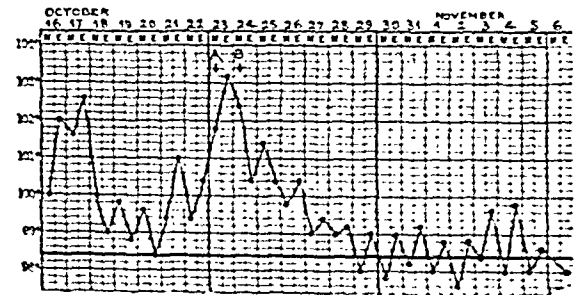


CHART II.—Case 2: (A) Irradiation; (B) Paracetamol.

coughing, stridor became more acute, but spraying of the throat with adrenaline seemed to relieve this; swallowing became more comfortable, and by 6 a.m. the temperature fell to 99°. Swelling of the glands on the left side of the neck appeared, but that on the right was definitely subsiding. The glands in both axillae were found enlarged. On October 18th there were brisk repeated bouts of epistaxis, with considerable relief to the oedema and swelling, whilst the pain became easier. A differential white blood count showed no abnormality.

On October 19th the temperature was settling, the faucial oedema had gone (petechiae showed on the mucosa), and there remained a diffuse, hard swelling under the upper third of the right sternomastoid muscle. On October 20th the spleen was felt. On October 21st the temperature rose to 101° , the glands on the left side of the neck became more swollen and tender, and a general macular erythema appeared. On the 23rd earache started, the temperature rose to 103° , and the membrana tympani was found to be thickened, red, and pulsating. Next day the temperature was still high; paracentesis of the membrane was performed, with liberation of pus and relief of pain. This was followed by a gradual settlement of the temperature, and convalescence proceeded uneventfully, but for a persistently high pulse rate and occasional rises of temperature to $99-100^{\circ}$.

Case 3 (aged 13)

On October 8th this patient went to bed with a feverish cold. On October 11th his temperature rose to 102° and the right submaxillary gland was found to be swollen and tender. On October 13th he vomited and complained of dysphagia, and the glands in the posterior triangle of the neck were enlarged and tender. On October 16th the fauces were swollen, but not septic, the glands large and tender on both sides of the neck. Two days later he complained of headache and pain low down in the throat. On October 20th

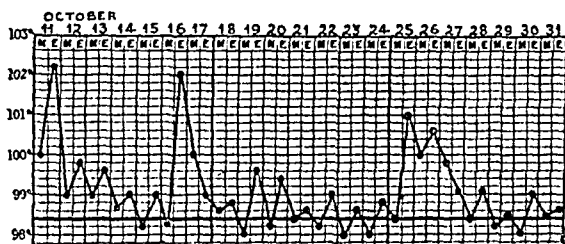


CHART III: CASE 3.

he was more comfortable, but the glands were still tender and the temperature irregular. On October 23rd there was pain in the upper part of the chest and a sense of constriction, which was thought to be due to enlargement of the glands in the mediastinum; this subsided in forty-eight hours. The temperature settled, but for minor irregularities, and no further symptoms of note developed, apart from anaemia. A differential white blood count on October 30th gave the following: polymorphs, 48 per cent.; small mononuclears, 47 per cent.; large mononuclears, 5 per cent.

A fourth boy, who ran a very mild course for a fortnight, relapsed on the fourteenth day, and had a much more severe bout, with high fever, dysphagia, and glandular swelling lasting a further ten days.

Treatment.—This was necessarily empirical. Phenazone and quinine were tried without any obvious effect. Antiphlogistine externally and throat sprays of hydrarg. perchlor. 1 in 1,000 and of adrenaline 1 in 1,000 seemed to give relief.

SUMMARY

Certain of the cases described showed a very acute onset, a marked degree of periaidenitis, and oedema of the palate and fauces, leading in one instance to laryngeal stridor. Unusual complications arose in the shape of an acute retropharyngeal abscess, and a cervical abscess (in a case not described in detail).

I am deeply grateful to Dr. F. J. Poynton for his advice on the outbreak in general, and to Dr. G. F. Still for his help and interest in one particular case.

REFERENCE

- ¹ *Proc. Roy. Soc. Med.*, 1931-2, 155; *New England Journ. Med.*, 1931, ccv, 1238; *Edin. Med. Journ.*, 1932, xxxix.

ON THE DIAGNOSTIC SIGNIFICANCE OF A POSITIVE SPUTUM REPORT

(DIRECT EXAMINATION FOR TUBERCLE BACILLI)

BY

G. GREGORY KAYNE, M.D., M.R.C.P.

DOROTHY TEMPLE CROSS RESEARCH FELLOW IN TUBERCULOSIS

A great deal of attention has lately been focused on the neglect of the early diagnosis of pulmonary tuberculosis. It may not, therefore, be untimely to stress a certain aspect of the *wrong* diagnosis of pulmonary tuberculosis, which has not received the notice it deserves in view of the important social and economic consequences to the individual concerned.

The student is rightly taught that one or even several negative sputum examinations do not justify the rejection of a diagnosis of pulmonary tuberculosis; but neither he, the general practitioner, nor the tuberculosis officer has his attention sufficiently well drawn, either in textbooks or post-graduate lectures, to the fact that a single positive sputum report by no means always establishes the diagnosis. As clinical assistant to the tuberculosis dispensary at the Hospital for Consumption, Brompton, I saw several patients sent by their medical attendant with the diagnosis of pulmonary tuberculosis based on a single report of "T.B. found in the sputum," in whom subsequent physical examination, x-ray of the chest, repeated sputum examinations, and prolonged observation (including a stay in hospital) showed no evidence of active disease. The reports of the sputum examinations emanated from a pathological laboratory of high repute, and the patients had been promptly notified by their private practitioners.

It is unnecessary here to emphasize the significance of such a label to the patient. But the position of the tuberculosis officer also is not an enviable one. He must continue to keep the patient under observation for several months at least. If at the end of this period he is still convinced that the patient has no active pulmonary tuberculosis, he can hardly remove him from the dispensary register as "cured"! Two alternatives lie before him.

(a) He can himself denotify the patient as "notified in error," or as "diagnosis not confirmed." Such action requires some courage, for occasionally a patient will develop pulmonary tuberculosis shortly afterwards, purely as a coincidence, and the tuberculosis officer will undoubtedly be blamed as having mishandled the case.

Thus Rist¹ found that of 192 patients, representing a consecutive series of hospital nurses (see below), referred to him at the Dispensaire Léon Bourgeois of the Laennec Hospital as diagnosed or suspected cases of pulmonary tuberculosis, and discharged by him as *non-tuberculous*, after sufficiently detailed investigation to ensure that no error had occurred, two developed active pulmonary tuberculosis within six months and one year respectively.

(b) The tuberculosis officer can communicate with the patient's private practitioner, giving his findings and suggesting that the latter denotify the patient. This procedure will, however, prove awkward for the doctor, who will probably be accused by the patient of bungling, and will certainly be blamed for the great inconvenience caused by the notification.

Rist discussed this subject at some length in a recent post-graduate lecture in Paris. Since 1923 he has been chief medical referee for tuberculosis to all the nursing staff of the hospitals of the Assistance Publique. While the latter correspond to the municipal hospitals now under the L.C.C. they actually include nearly all the hospital beds available in Paris, as voluntary hospitals consist of only a few religious institutions. All staff diagnosed as, or suspected of, pulmonary

tuberculosis are referred to him at the Laennec Hospital by the general medical referees. In 1925 he published¹ the results of the first year's work of this department. Of ninety nurses referred to him as cases of pulmonary tuberculosis with a report of tubercle bacilli in the sputum the diagnosis was not confirmed in twelve (13.4 per cent.).

SOURCES OF ERROR

The reasons for the findings quoted in the preceding paragraphs may be grouped as follows:

1. *Errors of Technique.*—These have been fully dealt with by Wilson² in a recent report from the aspect of research work. In carrying out routine sputum examinations the following causes of error must be considered.

(a) Mistakes in labelling of specimen jars, slides, and reports.

(b) Using slides which have been previously employed for making smears containing bacilli.

(c) Drying smears with blotting paper previously used.

(d) Employing tap-water for diluting stains or washing the slides. (Tap-water frequently contains non-pathogenic acid-fast bacilli.³)

(e) Using contaminated cedar-wood oil and bottles of stains.

(f) Occasionally mistaking artefacts due to scratches on slides, or crystals of stain, for bacilli.

The possibility of some of these errors should particularly be kept in mind when only an occasional bacillus appears to be present.

2. *Dishonesty.*—The sale of bacilli-laden sputum unfortunately proved not un lucrative during the war, and one can postulate circumstances even in civil life when such means might be adopted. In the Assistance Publique of Paris a nurse automatically receives leave on full pay, for at least two years, immediately the diagnosis of pulmonary tuberculosis is made, and temptation may therefore sometimes prove too great. Further, the increasing number of pathological "services," some with inadequately trained staff, may be made use of by charlatans requiring some justification for the prolonged and costly treatment advised to the patient.

3. *Tuberculous Staff.*—A laboratory attendant suffering from open pulmonary tuberculosis may contaminate material in a laboratory for some time before his condition is detected.

4. *Other Acid-fast Organisms.*—Finally, attention must be drawn to recent papers which have described the occurrence in man of other acid-fast organisms. Branch⁴ reviews the question and describes the occurrence of non-mammalian tubercle bacilli (some of them belonging to the avirulent avian group) in the skin, pleural fluid, and blood cultures. Cummins and Williams⁵ describe an acid-fast bacillus ("M" bacillus) found in the sputum of a female patient suffering from severe pulmonary disease and achalasia of the cardia; they were unable to decide whether it was an adventitious saprophyte or the causative organism of the disease. Baldwin⁶ later reported a similar case—that of a young female patient suffering from a phthisis-like illness and achalasia of the cardia, in whom a bacillus was isolated, resembling the strain of "M" bacillus; his patient, like that of Cummins and Williams, was completely restored to health. Of special interest is the description by Neisser⁷ of acid-fast bacilli found on practically all metal musical instruments, but less frequently on wooden ones.

CONCLUSIONS

The above considerations prompt the following practical conclusions:

1. A diagnosis of pulmonary tuberculosis based on a single positive direct sputum examination without any other evidence is not justified.

2. In any case, whenever possible, more than one sputum examination should be carried out.

3. In view of Cummins and Williams's and Baldwin's cases it would appear that "even when the clinical picture is convincing, the finding of acid-fast bacilli in the sputum is not necessarily proof-positive of tuberculosis. The importance of cultural verification in all doubtful cases cannot be too much stressed" (Cummins and Williams).

4. When there is any question of compensation, pension, etc., unless the clinical picture is quite clear, not only should more than one sputum examination be carried out, but the patient should be made to expectorate in the presence of the physician or pathologist, and, if necessary, after isolation in a hospital ward under observation.

5. It would be well if the practice were universally adopted of indicating in every sputum report an approximate estimate of the number of tubercle bacilli present—for example, twelve per field, one per four fields, etc.

REFERENCES

- ¹ Rist, E.: *Rev. de Phthisiol.*, 1925, vi, 80.
- ² Wilson, G. S.: Medical Research Council Special Report No. 182, p. 97.
- ³ Schwabacher, H.: *Ibid.*, pp. 104 and 124.
- ⁴ Branch, A.: *Tubercle*, 1933, xiv, 337.
- ⁵ Cummins, S. L., and Williams, E. M.: *Ibid.*, 1933, xv, 49.
- ⁶ Baldwin, E. R.: *Ibid.*, 1934, xv, 236.
- ⁷ Neisser, M.: *Journ. State Med.*, 1933, xli, 63.

Clinical Memoranda

SEVERE HAEMORRHAGE WITH SPONTANEOUS EVACUATION OF PERITONSILLAR ABSCESS: LIGATION OF COMMON CAROTID—RECOVERY

I have read Dr. P. Shackleton's two cases of pharyngeal haemorrhage, published in the *Journal* of December 23rd, 1933, with much interest. Severe haemorrhage from a tonsil abscess is, as Mr. E. D. D. Davis remarks,¹ rare, and I think the following case should be added to those already on record.

CASE REPORT

The patient, a sturdy, full-blooded brewery labourer, now aged 46, gave a history of having been troubled by tonsillitis all his life. On April 3rd, 1929, he retired to bed with "influenza" and a sore throat. The sore throat settled on the right side, and four days later an "abscess on the right tonsil" burst, giving him considerable relief. At 1 p.m. on the following day he felt a "hot, tingling sensation" in the back of his throat, and suddenly found his mouth full of blood, which, he said, he had to spit out quickly, otherwise he would have choked. This bleeding stopped in a quarter of an hour, but recurred alarmingly a few hours later, when Dr. A. T. McKay had him admitted to Mercer's Hospital under the care of Sir John Lumsden and myself.

On admission the haemorrhage ceased for a day, but the next morning the patient suddenly spat up a kidney-trayful of blood. Examination of the throat at this stage revealed a resolving quinsy, and I tied off what I thought to be a bleeding point low down on the posterior pillar. This had no effect, however, and haemorrhage continued at intervals throughout the following day, in spite of all our efforts to control it with tonsil clamps, haemostatic injections, and other agents. On the evening of the third day after admission the patient had become very bloodless indeed, and as his condition was obviously serious it was decided to tie the right common carotid artery. This was accordingly done under very light ether anaesthesia. Just before the anaesthetic was started the patient vomited up two pints of fresh clotted blood. This very nearly proved the last straw, for although blood transfusion was performed as soon as possible after operation, and again after an interval of two days, the patient's condition continued to be very critical indeed for several days. He told me afterwards that during this period if either arm fell out sideways from the bed he had not the strength to move it back again. He noticed this particularly

on the second day after operation, when the weakness could not possibly have been due to the very light anaesthetic. A very slight bleeding from the throat occurred on the fourth day after ligation of the artery, but apart from this recovery was progressive and uneventful. The patient was discharged from hospital after four weeks, and to-day his only complaint is that he is getting too heavy. He has not had a sore throat since.

Haemorrhage, such as occurred in this case, is unique in my experience as a laryngologist. The patient was as profoundly drained of blood as a bad case of placenta praevia or post-partum haemorrhage. The exact pathology is unknown, owing to the happy termination of the case and the method of operative treatment, but such bleeding could only have been due to the erosion of a large vessel.

The important fact to be noted is that incision of the abscess was not carried out, since the patient did not call for medical attention until after the abscess had burst spontaneously; consequently it cannot be held responsible for the haemorrhage. Dr. Shackleton's first case, the present one, and one or two others,² show that incision is by no means always to blame for the occasional severe bleeding which occurs with peritonsillar abscess. In fact, as StClair Thomson says,³ these cases demonstrate rather that the abscess should be opened in good time. As is to be expected, in the greater number of recorded cases the abscess has been incised. In a series of cases of severe haemorrhage associated with the opening of a quinsy recorded by J. E. Newcomb⁴ twenty-eight out of fifty-one patients died, a mortality of 54.8 per cent. The common carotid was tied in sixteen of these fifty-one cases with eleven recoveries, a figure which suggests that the line of treatment adopted in the present case, although drastic, is efficient. Nevertheless, should I be unlucky enough to meet another similar case, I think I shall dissect out the tonsil and look for the bleeding vessel in its bed. Ligation of the common carotid is rightly regarded as rather an extreme measure, but one need have no hesitation in carrying out the former procedure at the first sign of bleeding. If it fails, the carotid can still be tied.

REFERENCES

- ¹ Davis, E. D. D.: *British Medical Journal*, January 6th, 1934, p. 34.
- ² Bobone, T.: *Bollettino delle malattie dell' Orrochio*, 1905, No. 10.
- ³ StClair Thomson: *Diseases of the Nose and Throat*, p. 433.
- ⁴ Newcomb, J. E.: *Journ. Laryngol. and Otol.*, 1908, p. 289.

T. G. WILSON, M.B., F.R.C.S.I.
Ear, Nose, and Throat Surgeon, Mercer's
Hospital, Steevens's Hospital, and
National Children's Hospital,
Dublin.

ACUTE MERCURIAL POISONING

The following clinical notes on a case of acute mercurial poisoning may be worthy of publication. They have a forensic as well as a clinical interest.

CLINICAL HISTORY

The patient was a married woman, aged 27. On October 19th, 1933, menstruation being then a day late, the patient, fearing she was pregnant, contrived a vaginal douche with some "tablets" left from the previous confinement by her attendant. These were stated to be tablets of mercuric chloride, containing a little over 7 grains in each. One of these tablets was dissolved in "a little over a pint of warm water and applied with a rag." No proper form of douching was given, and nothing was inserted up the vagina. The liquid immediately produced a great sensation of burning, and its application was stopped. Three hours later the patient collapsed while at work about the house. Palliative treatment was applied locally, and she was treated for shock. She commenced vomiting soon after her collapse, and this continued for the next three days. The day after the onset the patient had passed no urine, had not slept that night, and was complaining of intense burning pain in the vagina and

lower abdomen. At this time menstruation began, and simultaneously she had frequent passage of small fluid motions. These motions were blood-stained. The day after this (the third day after the onset) she became worse; suppression of urine had continued, and her motions were now almost pure blood. She was admitted to hospital.

Her condition on admission was one of lethargy, and her mental condition was abnormal. She denied being in acute pain, and complained chiefly of sleeplessness. There was marked fetor oris. The eyes showed a small subconjunctival haemorrhage in the left outer canthus. There were some teeth missing, and a few were septic. The gums were healthy. The lungs and heart were normal. The abdomen was markedly tender in the renal angle posteriorly, and at the outer border of the rectus sheath anteriorly at the level of the umbilicus. The vagina was much inflamed, especially about the vestibule; a copious blood-stained discharge was present. The parts were acutely tender on examination. The bladder was empty. A few ounces of sterile milk were passed into the bladder by means of a catheter, but were retained, and there was no sign of a vesico-vaginal fistula. The milk was then drawn off, and was slightly blood-stained.

The vaginal discharge and the frequent motions continued throughout. There was no further vomiting after the first day in hospital. The day after admission burning in the mouth was complained of, and also a sore throat. A patch of buccal mucous membrane opposite the third molars on the left side was seen to be covered with a foul greenish slough; this gradually spread, and after three days the mouth was extensively ulcerated with similar areas, involving the soft palate and the nasopharynx. A blue line, beginning round the septic teeth, appeared on the second day, and gradually spread. The vagina at this time showed a large shallow ulcer on the posterior wall. A self-retaining catheter was inserted, and drained three ounces of dark, bloody fluid. The same night she began to suffer from intractable hiccup. The next day (the third after admission, the sixth after the onset) her blood urea was 301 mg. per 100 c.cm. blood. She began to cough up a quantity of foul sputum, and the chest on examination revealed numerous moist rales all over both lungs. The fourth day after admission the eyelids and face were swollen, and the mental condition of lethargy became somewhat worse. At 11 a.m. she complained that her feet were heavy and numb and that she was unable to move her legs. At 4 p.m. she was unable to move her legs or arms. Respiration became laboured. Examination showed a complete flaccid paralysis from the waist down; sensation was impaired but not lost. At 7 p.m. she became cyanosed, the tongue began to protrude, and the patient presented an appearance as if she were being strangled. She was still conscious at this stage, but respirations became gradually weaker, and she died fifteen minutes later.

PATHOLOGICAL FINDINGS

Post-mortem examination revealed extensive ulceration of the nasopharynx, which was covered with a greenish slough; this was removed with difficulty, leaving a raw area. The oesophagus and stomach were normal. The small intestine showed reddening of the mucosa. The whole length of the colon showed an intense haemorrhagic inflammation. The liver was natural on gross examination. There was some catarrh in the lungs, and the heart was healthy. The bladder was empty and appeared natural. The kidneys were large and the perirenal fat was greatly distended, presenting a jelly-like appearance, something like washing-starch. The capsule stripped easily and the cut surface bulged. Otherwise there was no gross abnormality in the kidneys. The genital organs, removed entire, showed no evidence of injury. The vagina was ulcerated in a patchy manner and extended high up into the posterior fornix within 1 inch of the cervix. The uterus contained a little menstrual blood, but was otherwise normal. Microscopically the liver showed cloudy swelling and the kidneys an acute glomerulo-tubular nephritis, the striking feature of which was that the straight collecting tubules had escaped, and could be plainly seen running through the diseased parenchyma.

The inquest was held without a jury, and the coroner returned a verdict of "Accidental death."

BARON RUSSELL, M.R.C.S., L.R.C.P.

Gravesend Hospital, Kent.

Reviews

ST. THOMAS'S HOSPITAL

The second volume of the valuable history of St. Thomas's Hospital carries on the story from 1600 to 1800, and enables us to hope that Mr. PARSONS¹ will issue a third volume dealing with the rise of modern surgery and the genesis of the nursing profession. The Royal Hospitals, by their charters of incorporation and letters patent, were placed by Henry VIII under the control of the Lord Mayor and Corporation of the City of London. London is full of *vestigia*, and "the Spital Sermon" is not the least interesting. It is preached annually at Christ Church, Newgate Street, and is attended by the governors of the Royal Hospitals—no longer in their gowns, but each carrying the staff of office peculiar to each hospital. The sermon seems to be the last survival of the order made by the Court of Aldermen on September 25th, 1604, that all governors were to be chosen at Christ's Hospital—then the Bluecoat School—"on St. Thomas's Day and not elsewhere or otherwise." Mr. Parsons points out that this order enabled the City authorities to observe and control the kind of men who were being made governors. The vigilance was relaxed in course of time, and the last years of the seventeenth century were marked by a determined effort to re-establish control, an effort notable for the publication of a small volume containing the original orders made by the Lord Mayor and aldermen which had not previously been printed. The volume is interesting as being the first English facsimile—or perhaps "fake" would be the better word. It is printed in black letter, is dated on the title-page 1557, and was perhaps paid for by Mr. Samuel Pepys.

Mr. Parsons draws attention to the interest taken by great persons in the appointments at St. Thomas's Hospital, and prints letters from James I, Charles I, Oliver and Richard Cromwell, and the leaders of the parliamentary armies, for at St. Thomas's Hospital what afterwards became Whiggish principles were in the ascendant, whilst St. Bartholomew's remained Royalist and subsequently Tory. At St. Thomas's, too, there are traces of opposition to Laud, and a preference for Low Church, or Puritan, doctrine. Much is told of the hospital itself, its buildings, its use for wounded and maimed sailors and soldiers; of its relation to Guy's, whose founder was an honoured governor of St. Thomas's. There is much about Sir Robert Clayton, the great president, about the princely Richard Mead; of Cheselden, who perfected the operation of lateral lithotomy and was twice rejected when he applied for the post of assistant surgeon; of Henry Cline, and of many others whose names are part of the history of medicine. The reputations of some are enhanced, those of others, like John Browne, are reduced. There are many interesting details of the practice and treatment at the hospital, and not least so is the entry, in 1684, that "No consumptive patients be admitted except in extraordinary cases, and then they shall be placed in the most airy wards."

The whole book is a treasure, not only for the alumni of the hospital, but also for those who wish to trace the progress of medical education in London. There is a slight error on page 94, where the *Annals of the Barber Surgeons* is attributed to Austin Young instead of to his father, the late Sydney Young.

¹ *The History of St. Thomas's Hospital*, Vol. II, From 1600 to 1800. By F. G. Parsons, D.Sc., F.R.C.S., F.S.A. London: Methuen and Co., Ltd. 1931. (Pp. xi + 281; 8 illustrations, 10s. 6d. net.)

CLINICAL TOXICOLOGY

Clinical Toxicology,² by ERICH LESCHKE, professor of internal medicine at the University of Berlin, is a very agreeable treatise. Any physician reading this book will draw new interests and inspirations for his work and gain much knowledge which will help him in his clinical practice. The author shows, for instance, how chronic ill-health may result from amalgam tooth stoppings, how war wounds may result in lead poisoning after many years' quiescence, and discusses the many forms of industrial poisonings with which physicians are nowadays brought into contact. The wealth of modern scientific detail is not confined to diagnosis and treatment; amongst other things we learn the cause of the recent mysterious outbreak of sudden deaths in the valley of the Meuse in Belgium, why Rasputin survived the large doses of cyanide given to him, and how a physician murdered a patient not long ago by injection of novasurol. At the end of the book is a useful list showing the chemical composition of various drugs mentioned in the text under trade names, as well as appendices on the detection of poisons in the body post mortem, and on the prevention of industrial poisoning.

The book has been written by a practising physician for physicians, and it gives an impression of reality which will make the clinician think back over some of the more obscure cases in his practice. The translators are to be congratulated not only on the ease with which the text runs, but for having made such a valuable contribution to the literature of general medicine available to English-speaking practitioners. No one dealing with cases of industrial poisoning or practising medical jurisprudence should be without a copy, whilst any physician will profit from a perusal of its pages. *Clinical Toxicology* supplies a definite want.

MAN'S NEAREST RELATIVES

In 1863 appeared Huxley's *Man's Place in Nature*. In this work it was maintained, on anatomical evidence, that man, the highest of the primates, was nearer to the anthropoid apes than these were to the lowest of the primates. In 1929 Professor Wood Jones published a work dealing with the same important topic, under the title *Man's Place among the Mammals*. His chief conclusion was that when the anatomical evidence was rightly interpreted it was not the anthropoid apes which stood nearest to man among living animals, but the aberrant and lowly primate of the Malayan jungles known as *Tarsius spectrum*. In a recent book, *Man's Place among the Anthropoids*,³ the arguments of Professor Wood Jones are refuted and Huxley's verdict is not only upheld but reasons are given for looking upon the relationship between man and anthropoid apes as being much closer and more intimate than even Huxley supposed.

The author of this work, Dr. W. K. GREGORY, enjoys a high reputation both in the United States and in Europe. He is head of the department of comparative and human anatomy of the American Museum of Natural History, and holds the chair of vertebrate palaeontology in Columbia University, New York. He was invited to

² *Clinical Toxicology: Modern Methods in the Diagnosis and Treatment of Poisons*. By Erich Leschke. Translated by C. P. Stewart, M.Sc., Ph.D., and O. Dwyer, Ph.D. London: J. and A. Churchill, 1931. (Pp. 346; 25 tables, 15s.)

³ *Man's Place among the Anthropoids*. By Wood Jones, the Evolution of Man from the Lower Vertebrates. By William King Gregory, Ph.D., F.R.S., F.Z.S., London: H. K. Lewis, Oxford University Press, 1930. (Pp. xi + 175, 11 figures, 6s. 6d. net.)

give a course of lectures to the students of University College, London, in 1933; these lectures form the basis of the book under review. Dr. Gregory has spent his busy life in tracing the evolution of the higher vertebrates, particularly the highest of all—the primates—from evidence gathered from an examination of their fossil remains. In determining the relationship of fossil forms of man and of ape to each other and to their living representatives Dr. Gregory has had to depend on the evidence of the teeth—for teeth and jaws are the parts of the body which best resist the disintegrating action of the soil. The points in which the teeth of extinct forms of humanity and of extinct genera of anthropoids are in agreement are so numerous and so intimate that Dr. Gregory finds it hard to discover a criterion which will serve to distinguish an anthropoid from a human tooth. A structural resemblance of so close a nature can be explained, so Dr. Gregory believes, only by supposing it to be an inheritance from a common ancestor. Professor Wood Jones, on the other hand, believes that anatomical similarities may represent not a common but an independent or separate inheritance. The similarities between man and the anthropoids are, however, too numerous and too intimate to be explained as independent inheritances. Dr. Gregory cites the conclusions reached by Professor J. P. Hill of University College, London, after an elaborate investigation of the placenta of all higher vertebrates. The human placenta, Professor Hill found, repeats with wonderful accuracy the structural details found in great anthropoids. In their susceptibility to disease, and in the reactions of their blood, the great anthropoids are almost human.

The four plates which illustrate this work are particularly worthy of note, not only for their artistic finish, but also for the sharpness of the impression conveyed. They give in diagrammatic form the best that is known concerning the evolution of man and beast.

PRACTICAL THERAPEUTICS

When reviewing Professor DAVID CAMPBELL'S *Handbook of Therapeutics* in 1930 we expressed appreciation both of the author's very practical purpose and of the thoroughness with which this purpose was pursued. We ventured the anticipation that the volume had a distinct opportunity for service, and the appearance of a second edition* appears to justify this conclusion. The book remains a most helpful guide in the art of medical practice in so far as this is concerned with the use of drugs, sera, and vaccines, with the choice of diets, and with the application of electricity and other physical agents, although in this last-mentioned section there is no pretence of technical completeness. The therapeutic demands created by disease of the various organs and systems of the body are described in considerable detail, and here the author, speaking largely from personal experience and first-hand knowledge, may well command the confidence of the student, for his judgements are expressed with decision but without undue dogmatism. Not that every physician would endorse all these judgements. For example, is it to be accepted that for free haematemesis "operation is the only treatment, and is best performed at the earliest possible moment"? Or, again, that in apoplexy in a plethoric patient venesection is of doubtful value, while a preferable proceeding is to remove some of the cerebro-spinal fluid by lumbar puncture? Professor Campbell seems to have little faith in blood-letting,

except, possibly, in hyperpiesis, and neither "leeches" nor "venesection" appears in his index; he gives no directions for opening the vein, although blood transfusion and intravenous injection receive full notice. For the latter method he figures the arm strangled by a piece of rubber tubing, whereas the armlet of the sphygmometer is much less uncomfortable for the patient, much more readily controlled by the operator, and is, we imagine, generally adopted.

The new sections of the second edition refer to the treatment of coeliac disease and of sprue; to the use of nirvanol in chorea, of suprarenal extracts in Addison's disease, and of carbon dioxide as a respiratory stimulant; also to a few other recent therapeutic proposals. To all these suggestions the author applies a critical, but not an unappreciative, judgement, and here, as in the rest of his book, he renders substantial service both to the art of medicine and to those who practise it.

VENEREAL DISEASES

The fifth edition of Mr. WANSEY BAYLY'S little book *Venereal Disease: Its Prevention, Symptoms and Treatment* contains some additional matter on pathological diagnosis and treatment, and a short section on "The Law and Venereal Disease." If the author merely had indicated the means of prevention and avoided dialectics he would have had more space for subjects such as the complement-fixation test in gonorrhoea, kinds and dosage of vaccines, the importance of cultures, and some mention of such entities as lymphogranuloma inguinale and granuloma venereum. On the whole the teaching is sound, but the treatment of syphilis is somewhat less than that advocated by most modern syphilologists. Many of the statements are highly controversial—for example, the Vernes test, which is lauded, did not show up very well in a comparison with others at Copenhagen. Again, "chancroid" is *not* the name applied "to all non-syphilitic ulcers found on the penis and vulva whatever the causal organism may be"; many observers think that gonorrhoeal proctitis in women is relatively common, not "rare"; most people find intramuscular mercurial injections rather painful; and the curved Kollmann dilator (illustrated) is rather a weapon of torture than an instrument for treatment. Further important omissions are the prevention of post-lumbar puncture headache—which may be accomplished by the use of Colonel L. W. Harrison's fine needle—and the use of the Dmelcos vaccine in the treatment of chancroid; whilst non-gonococcal urethritis, very common nowadays, receives scant attention.

The book is said to be written for students and general practitioners; these would appreciate detailed information about the urethroscope more than a long description of Bellfield's operation—which they are never likely to perform. Like the peers in *Iolanthe*, the author makes "no pretence . . . to scholarship sublime," for he splits infinitives with gay abandon, and errors in grammar are all too frequent, while some sentences are almost unintelligible; perhaps the proof-reader should be blamed for "curvature" instead of "curative," and "systematic" for "systemic." Three coloured plates are works of art, and most of the illustrations are good; the book is bound and printed well, but its contents are capable of improvement, and it is not a suitable work in which to boost the policy of the Society for the Prevention of Venereal Disease.

* *Handbook of Therapeutics*. By David Campbell, M.C., M.A., B.Sc., M.D., F.R.F.P.S. Second edition. Edinburgh: E. and S. Livingstone. 1934. (Pp. xx + 444; 72 figures. 12s. 6d. net.)

* *Venereal Disease: Its Prevention, Symptoms and Treatment*. By H. Wansley Bayly, M.C. Fifth edition. London: Chapman and Hall Ltd. 1934. (Pp. 260; 77 figures. 10s. 6d. net.)

Notes on Books

A Synopsis of Forensic Medicine and Toxicology,⁶ by Dr. E. W. CARYL THOMAS, attempts the difficult feat of condensing the whole of this subject into 152 pages. Considerable trouble has been taken, and a good summary of the general principles is given. Errors in other parts of the text, however, suggest that its compilation has been guided by theoretical study rather than by practical experience. For the practitioner who is doubtful about some point, or for one who is reading the subject for the first time, the book has limited value; but as a means of rapid survey of the whole subject just before his examination the student will find it a useful supplement to his class textbook.

The sixteenth edition of Schmorl's work on Pathological Histological Technique⁷ has been issued under the editorship of Professor P. GEIPEL by the firm of Vogel in Berlin. Professor Geipel, one of Schmorl's oldest students, refers in his preface to the melancholy and tragic event which led to his assuming the editorship: "It was not permitted to George Schmorl to see the issue of the sixteenth edition. On August 14th, 1932, in the seventy-second year of his life, he succumbed within ten days to a wound infection which he had received in his laboratory. An unceasing worker, death snatched him away in the midst of his work." With regard to the book itself little need be said. It is recognized as one of the finest works on the subject, from its completeness, the clearness of its exposition, and the numerous practical and helpful details and recommendations which it contains for the assistance of the student and the pathologist. The revision was almost complete at the time of the author's death, and apparently little more was required of the editor than to see the work through the press.

The Norwegian Medical Association has just published the fifth edition of its Yearbook.⁸ This contains all the young general practitioner in that country needs to learn about the conduct of medical practice—from what fees he should charge for different services to the rules of the association. There is a list of the most prominent of the proprietary remedies, and concise information is given about vaccines, diets (including liver diets), diathermy, technique of the Pirquet test, etc. About a third of the whole book is ruled as a diary, with only two days to the page.

The Minutes of the General Medical Council for 1933 and of its English, Scottish, and Irish Branch Councils have now been published. The volume also contains the minutes of the Executive and Dental Executive Committees of the Council. The appendices to this year's issue number seventeen, and include, besides the usual tables of receipts and expenditure, the reports of the committees on dental education, finance, public health, examinations, and the pharmacopoeia. The General Index to the Council's minutes for the years 1903-33, inclusive, is also now available, and we congratulate those who are responsible for its compilation on the success with which they maintain this volume within a small compass without at the same time sacrificing essential entries. Both volumes are published and sold for the General Medical Council by Messrs. Constable & Co. Ltd., 10, Orange Street, London, W.C.2.

Cow and Gate, Ltd., have recently issued a fourth edition of their small book, *Motherhood* (1s.). The edition has been enlarged and completely revised, and contains a good deal of useful information for the inexperienced mother, although in a book of such small compass thirty-four pages of testimonials seem a little excessive.

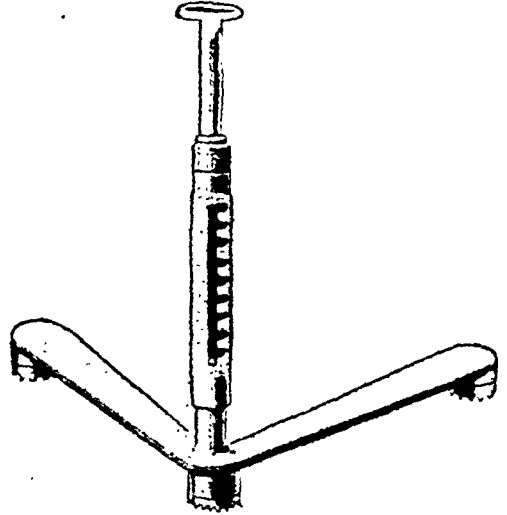
Preparations and Appliances

A GAG-HOLDER FOR TONSIL DISSECTION

Dr. GEOFFREY MOREY (Shrewsbury) writes:

The instrument shown in the accompanying figure has been designed to hold the Davis-Boyle gag firmly in position during tonsil dissection. It has already been used in over two hundred cases, and it is claimed that it functions with complete efficiency.

The angle of the upright has been calculated so that the pressure is evenly distributed between the three "feet," to which are fixed pads of serrated rubber, and thus there



is no tendency for the jack to tip up or to slip, as is so common with the other instruments designed for a similar purpose. There is no strap to be tied around the patient's neck, and it can be adjusted in a second by means of the slotted sleeve shown in the illustration.

The gag is held in the desired position with absolute security, and is not permitted any lateral movement whatever. It was made for me by H. Halcomb Hughes, A.M.I.E., The Square, Shrewsbury.

POLYVALENT VACCINE FOR CUTANEOUS INFECTIONS

Antipeol (Medicobiological Laboratories, Ltd., 9, Cargreen Road, S.E.25) is a filtrate of polyvalent vaccines intended for local application in the treatment of cutaneous infections. Besredka showed that filtrates of old cultures applied locally could produce local immunity to micro-organisms. Antipeol is a filtrate of cultures of staphylococci, streptococci, and *B. pyocyaneus*. It is supplied in watery solution and in ointment form. The manufacturers publish experimental and clinical reports showing the value of the preparation in producing local immunity in such conditions as septic wounds, ulcers, impetigo, etc.

CHAULMOOGRA PREPARATIONS

Valeolina contains ethyl esters of the fatty acids of chaulmoogra oil, together with guaiacol, thymol, and camphor, and active principles derived from cod-liver oil. The mixture is prepared for intramuscular injection, and is recommended for the treatment of tuberculous lesions. The fact that chaulmoogra oil derivatives produced benefit in leprosy led to the trial of both chaulmoogrates and mannates in the last decade for the treatment of tuberculosis, but the results were generally regarded as disappointing. The result is (A.M.I.E., V. 14 and Co., 7, Via Meravigli, Milan) quote a number of highly clinical reports regarding the action of valeolina.

Antitubercina S.C. 116 by the same firm is an emulsion of the ethyl esters of the fatty acids of chaulmoogra oil with cod-liver oil, thymol, and camphor, and active principles from cod-liver oil. It is recommended for intramuscular injection in the treatment of leprosy.

NoVA et VETERA

THE HEALTH OF THE NAVY 150 YEARS AGO

The two greatest ships of the Navy are the *Nelson* and the *Rodney*. Nelson we all know; his predecessor Rodney is less famous, though he did useful work when young, and in his last command, in the West Indies, beat de Guichen in 1780 and de Grasse (whom he captured) in 1782, this latter when England had particular need of a victory as an encouragement. Yet, even so, it may be held that Rodney's best and most enduring influence on the Navy was the outcome of his delicate health which made him take with him a private physician to the West Indies, one Gilbert Blane, M.D., of Glasgow, to become the effectual founder of the science of naval hygiene. Pleased with Blane's professional skill and personal bravery Rodney made him Physician to the Fleet, comprising at that time twenty-six ships of the line and 12,000 men, of whom died in a year 1,577, only fifty-nine in battle or from wounds, a terrible mortality of about 125 per 1,000 from disease.

At the end of 1781 Rodney had to go home for an operation, taking with him Blane, who presented a memorandum of needed improvements to the Admiralty, asking for fruit and vegetables to stop scurvy, wine instead of rum, Government supply of medicines, dry ships, special food for the sick on board so that they need not all be sent to the hospitals, in which no one should have less than 500 cubic feet of space. These proposals, backed by Rodney, were approved, and Blane returned with his admiral in the *Formidable* in 1782 for Rodney's famed victory of "The Saints." When in August Rodney after his victory went home, Blane remained with Admiral Pigot until the end of the war in 1783, so he had three summers of experience in the largest fleet that had ever yet been sent abroad. The effect of his approved proposals was immediate. Rodney said that in his flagship "of 900 men not one was buried in six months" (those immediately following); in the fleet Blane tells us (*Diseases of Seamen*, p. 200) the mortality was halved before the end of the war in 1783.

We are led to speak of Blane at this moment through seeing, in the *Journal of the R.N. Medical Service* for October, 1933, an abstract by R. R. Jones of the very interesting log of a surgeon who sailed in the *Formidable* with Blane and Rodney in January, 1782. The log is unsigned, but the author was probably Nath. Bedford of St. George's Hospital, and a credit to the teaching of John Hunter. He mentions Blane and Rodney each only once, but though a novice his practice is along lines Blane advised, so he knew wisdom when put before him. Scurvy was the chief anxiety, and he notes on the way out, "Our small beer lasted all the month, so that we had not a single scorbutic symptom," but the venereal list "was crowded, from the women we had on board by the admiral's desire, to attend the sick." After the battle he was sent to *Ardent*, a French prize, where he found "a most noisome stench" and always a third of her crew ill with fever. In May he was promoted to the *Conqueror*, where his chief troubles were with fevers, fluxes, and scurvy. Fevers, very violent, attacked men sent ashore to get wood and water, fluxes were fewer if cases were segregated and care taken to clean the buckets after each stool, scurvy was easier to prevent by fruits, malt, and beer than it was to cure. One man died of ulcer after "an accidental Haemorrhage induced by hitting his foot against a bucket"—by kicking a bucket, in fact. The treatment of the injuries he reports was more successful than one would have supposed likely in days so far pre-antiseptic: a "cut throat, trachea divided and both carotids exposed," healed and went to duty in five weeks. Tetanus was a great trouble after wounds in action. The opinion of Admiral Pigot in note 5, p. 240, is quite at variance with Blane's, who notes that his "great zeal for the service, as well as his natural humanity, induced him

to listen to whatever was proposed for the benefit of the men" (p. 145, loc. cit.). Here Blane mentions thirty casks of limes given to cases of scurvy that "proved of infinite use," and on page 54 that in two ships at Montserrat "a few bushels of limes," their only refreshment, cured 174 cases of scurvy in twelve days. The juice of limes as a cure for scurvy is now suspect, but it then had much clinical evidence in its support.

At home Blane was elected physician to St. Thomas's Hospital, persuaded the Admiralty in 1795 to make lime juice an issue, which entirely banished scurvy, was appointed physician to the Prince of Wales and later to King William IV, in 1821 was presented by medical officers of the Navy with a piece of plate, and in 1829 established the Blane medal. In every family of his descendants one son was always called Rodney, but alas! the last baronet was lost at Jutland.

W. E. H.

BEETHOVEN'S DEAFNESS

It is a fairly well known fact that Beethoven was afflicted with deafness, and the appreciation of his genius is enhanced by the knowledge that many of his greatest works are those of an almost completely deaf man. We will not consider here the influence of his deafness upon his compositions and personality, except, in passing, to observe and wonder at the greatness of his spirit which triumphed over this crushing infirmity, bringing him "joy through suffering" and allowing his genius full scope.

From the medical point of view Beethoven's deafness presents an interesting problem in diagnosis, and we have been provided with enough evidence by Beethoven himself and his contemporaries to enable us to make a very fair guess at its nature. In his will (dated 1802) Beethoven states that his deafness first appeared six years previously—that is, in 1796, at the age of 26. At first it was slight, and he was able to conceal his infirmity, but it became progressively worse until it was finally almost complete. After 1816 it was so marked that he could only communicate with his friends by getting them to write in conversation books, and in 1824, after conducting a performance of his Choral Symphony, he was quite unaware of the applause that was being given him until one of the performers took him by the hand and turned him round so that he could see the audience clapping and waving.

From the first he suffered from tinnitus, which caused him great annoyance and sadness, and he appears to have heard low tones better than high ones. Writing to his great friend Dr. Wegeler in 1801, Beethoven says: "I cannot hear the high notes of the instruments or the voices if I am but a little distance off. When anyone speaks quietly I only hear with difficulty; on the other hand, I find it unbearable when people shout to me." These two observations are extremely pertinent from the medical point of view. The first—diminished perception of high tones—is, by itself, a feature of nerve deafness; the second it would seem only reasonable to interpret as a manifestation of paracusis, which is characteristic of conduction deafness.

In his last years, as an aid when composing, Beethoven used a wooden rod, one end of which was placed in the sound box of the piano and the other held between his teeth. This clearly suggests that, in his case, bone conduction was better than air conduction, which again is a feature of middle-ear deafness.

Most of the available evidence suggests that Beethoven's deafness was middle-ear in origin, and the history of progressive deafness coming on in early adult life and accompanied by tinnitus would fit in well with the clinical type now known as otosclerosis. The one definite indication of nerve deafness—diminished appreciation of high notes—suggests that a certain degree of this type of deafness may have been superadded, which is a not uncommon occurrence in otosclerosis.

J. I. S.

British Medical Journal

SATURDAY, APRIL 28th, 1934

THE ARTIFICIAL MENOPAUSE

Woman is called upon to pay a big price for her privilege of being charged with the major responsibilities for perpetuating the race. Her reproductive period ended, she has to face the troubles of the "change of life," which vary both in kind and in intensity, which may persist for many years, and which have but one consolation—that menstruation and child-bearing are over. The family physician is not as a rule burdened with large numbers of these sufferers, because, fortunately for him, woman has long believed that these and other ills resulting from childbirth are inevitable, and form part of her destiny. During the last three decades the problem of the artificial menopause has obtruded itself, and there is no doubt that the symptoms following surgical castration may be more severe than those which follow in the course of nature, and are sometimes alarming. The operations of ovariectomy and hysterectomy have been rendered so simple that the general surgeon has not hesitated to invade the pelvis without regard for the conservative, often more difficult, and always more tedious, technique elaborated by gynaecologists. Then, too, x rays and radium are being used more and more in the treatment of uterine haemorrhage, and whereas ovariectomy is often incidental to the main object of the surgeon, the destruction of ovarian tissue is the primary object of the radiologist. There is one further aspect of the whole question which must of necessity assume an increasing importance. A greater number of women are finding places in the professions and in industry, and they naturally tend to achieve success and control of others at about the time of the menopause. Now the associated physical changes may obviously make such women incapable of exercising their duties in a manner which their previous service would seem to have assured.

It is a slur on medicine—possibly because women have been fatalistic rather than importunate—that little or nothing has been done to relieve such sufferers. It is therefore of significance that the eighth Congress of the Association of French-speaking Gynaecologists and Obstetricians chose the artificial menopause and its treatment¹ as the special subject for its discussions, and invited L. Brouha, A. van Cauwenberghe, P. Lamarque, G. Massabuau, and A. Guibal to contribute the main papers. L. Brouha epitomized the results of castrating animals, discussed the latest work on the sex hormones, and indicated the influences such discoveries might have on therapeutics. A comprehensive review of the effects produced by the surgical and radiological castration of women was presented by

van Cauwenberghe. Castration before puberty is but rarely necessary, and the small number of cases reported show that it leads to imperfect development of the breasts, the uterus, external genitalia, and pubic hair, while the woman tends to become tall and presents a masculine or eunuchoid appearance. After puberty castration affects the metabolism and leads to physical and psychical disturbance. The basal metabolic rate is lowered, as is the tolerance to carbohydrates, while an increase in the weight of the body and in the systolic blood pressure is frequently noted. Of the physical troubles the most important are: flushings of heat and cold, and other symptoms dependent on disturbances of the vasomotor system, which may result in congestion affecting the eyes, ears, kidneys, intestines, bronchi, and liver. Headache is common, as are nausea, pain in the bones, arthralgia, and arthropathies affecting the larger joints. Finally, several affections of the skin, such as pruritus, eczema, erythema, fugitive oedema, and hypertrichosis may occur. The psychical disturbances vary from a slight change in character through melancholia states to insanity, the more severe forms arising in between 1 and 2 per cent. of cases. The sexual appetite is no criterion of gonadic activity, and is not seriously diminished in the majority of cases, and may even become increased. The time of onset of the symptoms varies, and they may not become evident until two or three months after the operation, and are apt to cause the maximum disturbance at those times when the menstrual periods would normally have occurred. The duration of the symptoms varies from a few months to several years. It will be observed that the artificial differs from the natural menopause only in the abruptness of the onset and (particularly in young women) in the severity of the symptoms. The symptoms following irradiation of the ovaries naturally vary with the dosage employed and the degree of damage inflicted, but are usually less severe than those following surgical castration.

The variety of the treatments advocated testifies to their inadequacy; they include hypnotic drugs, calcium, snake venom, irradiation of the thyroid and pituitary glands, and hemithyroidectomy. The extravagant claims made on behalf of folliculin are somewhat shaken by the extraordinary variation in the dosage used, and by the fact that the majority of authors claim good results when the hormone is given by mouth. The wide differences in the technique employed make it difficult to assess the merits of ovarian grafts, but they have not proved as successful as might have been anticipated. Van Cauwenberghe concludes that hormonal treatment following surgical castration will give the best results if it is reserved for patients who are not too young and if it is commenced shortly after the operation. Small doses should be injected intramuscularly for eight to ten days each month at the times the periods should have occurred, in conjunction with medical, physical, and psychological treatment. Paul Lamarque, after a review of the literature dealing with temporary sterilization by x rays, concludes that

¹ *Gynecol. et Obstet.*, 1933, xxviii, Nos. 3 and 4.

the procedure is unsatisfactory because it is impossible to gauge the required dosage with sufficient accuracy, and because even when the end is achieved the period of amenorrhoea is too uncertain. So much has been written lately on the function of the pituitary gland in controlling the ovaries that the contention of Massabuau and Guibal that there is a synergistic association between the uterus and the ovaries appears heterodox enough to be interesting. They point out that removal of both ovaries does not always cause amenorrhoea, and that cystic changes frequently take place in the ovaries after the uterus has been removed. Further, it has been observed that ovarian grafts "take" much more successfully if the uterus has been left behind. The two latter contentions may, however, be explained by the fact that, according to some anatomists, the uterine arteries supply the major portion of the blood to the ovaries, and this supply is of necessity cut off if any of the usual operations of hysterectomy are performed. These authors therefore advocate that as much uterine tissue as possible be conserved, and thus come into conflict with the view so ardently championed by Herbert Spencer, and fast gaining ground in this country, that when hysterectomy is performed the whole uterus should be removed. English gynaecologists will probably be more impressed with the danger of cancer developing in the cervical stump than with the hypothetical value of a few square centimetres of uterine mucosa to the ovaries.

One very important aspect of the question not referred to by any of the speakers at the French Congress is whether menopausal symptoms vary significantly with birth and race. It is a common belief that highly cultured, sensitive women are more liable to suffer severely as the result of surgical castration than average hospital patients, and if this is true significant differences might be observed as between the Latin and Northern races. These papers, with their very full references to the literature and the subsequent discussions, have furnished perhaps the most valuable account of the artificial menopause so far recorded. Even if the present treatment of the condition is shown to be unsatisfactory, a stimulus is given to further study. Disappointment at the results of hormonal therapy will be mitigated once the idea is grasped that if the ovaries suffer all the endocrine glands suffer with them.

NEGLECTED CHILDREN IN AMERICA

The children of the United States of America must now be used to seeing themselves described as those "whose faces are turned toward the light of a new day and who must be prepared to meet a great adventure." It would be interesting to learn whether they know what this means, or what impression, if any, the reiterated description has made upon them. For there has been time: they have not been the same children. The White House Conference of 1909, with its portentous production of platitudinous resolutions in the form of "The Children's Charter," appears to

have initiated the attitude and suggested the description. Ten years later a second conference confirmed the opinions of the first. And now, as the result of a third conference held eleven years later still, and as the outcome of the labours of hundreds of persons combined in associated committees over a period of a quarter of a century, we have the official publication of a large volume on *Dependent and Neglected Children*,¹ which re-echoes the description of American children and reconfirms the opinions previously expressed. Following a general report adopted by the executive committee in plenary session, the book contains an abundance of subsidiary reports, resolutions, addresses, and memoranda; the whole material, with copious bibliography and index, occupying 448 pages. It may be doubted whether this repeated enunciation of truisms, after immense labour and at great expense would be tolerated by the White House under conditions more recently established there.

Such, however, appear to be the now recognized American methods and procedure, and it must not be supposed that they are entirely without some useful or suggestive results, though, in the main, the conclusions set forth are essentially the same as those reached long ago in this country by less laborious and more common-sense effort. One may ask why the word "dependent" appears in the title. Is it not of the very essence of childhood to be dependent? One may ask, again, whether it is really necessary or helpful to keep repeating the statements that children of decent parents and deserving mothers should be kept at home, that every child should receive the best medical attention, and that local child-caring agencies should co-operate? Yet there are scores of conclusions and recommendations of this kind set out at the end of the various sections into which the report is divided. One can only suppose that they are the result of "the opportunity to develop and harmonize different points of view on policies and methods" which the committee claims is "one of its major contributions to the field of child welfare."

Nevertheless, if there is no very practical or concrete outcome easily apparent from the whole business, the wide and complete survey over a great field may serve to bring home to an intelligent but not very thoughtful community the shortcomings of its provision for child care, the general need for effort and the main directions in which effort is needed, and the nature and extent of the progress that has been made since the year of the original White House Conference. Those, too, who in our own country are urging the enactment of a new method of preventing procreation in the case of persons who, they believe, are unfitted for parenthood, may well have their attention called to the comprehensive tabulation and review in this volume of the numerous causes of child neglect in the home other than backwardness of mind in a parent.

¹ *Dependent and Neglected Children*. White House Conference on Child Health and Protection. Section IV. London: D. Appleton-Century Co. 1934. (12s. 6d. net.)

THE MELBOURNE MEETING, 1935

September, 1935, is a long way ahead, but Australia is a long way from Britain, and we need make no excuse for reminding members in April, 1934, that the 103rd Annual Meeting of the British Medical Association will be held in Melbourne next year, and that those who think of attending it should lay their plans well in advance. The Council is most anxious that the number taking part in the first meeting of the Association in Australia should be as large as possible. With this end in view steps have been taken to combine with the voyage to Melbourne an attractive "round-the-world" tour. Particulars of routes, prices, etc., were given in the *Supplement* to our issue of March 10th. All arrangements in connexion with the journey are in the hands of the Financial Secretary and Business Manager, to whom early application should be made for further details, and for reservation of places on steamers and trains and at hotels. Arrangements have been made for members who cannot afford to be away for the whole time of the tour, but who may wish to attend the meeting, to leave London on August 8th, travelling overland to Toulon and embarking there on a P. & O. liner which arrives at Fremantle on September 3rd. The journey on to Melbourne takes three days by rail, so that members travelling by this route will reach their destination on September 6th, three days before the commencement of the meeting. Sir Richard Stawell, consulting physician to the Melbourne Hospital, has been nominated for the presidency. The scientific work will be divided among fourteen Sections. On the social side those responsible for organizing the programme are making every effort to ensure that the event shall be worthy of the occasion, and a very warm welcome may be counted on from our Australian colleagues. The honorary local general secretary of the meeting is Dr. J. P. Major, Medical Society Hall, East Melbourne, Victoria.

"THE HYPERERGIC STOMACH"

In a recent paper¹ K. Westphal alludes to the changed conceptions of the pathology of the gastro-duodenal mucosa which have been introduced recently as a result of histological examination of resected operation specimens, new radiological methods, and gastroscopy. Protesting against the tendency to label all non-ulcerative lesions as "gastritis," he points out that in many there is increased, not lessened, function, and that clinical evidence of gastric or extra-gastric inflammation is absent. In a series of 400 in-patients examined clinically and radiologically, all of whom had a symptom-complex pointing to ulcer, 244 had duodenal ulcer, 75 gastric ulcer, and 129 no ulcer. To the third-named group of cases the name "hyperergic irritable stomach, Grade I," is applied: the patients are comparatively young and have a short gastropathic history. Their gastric juice is moderately hyperacid, and radiologically the folds of mucosa are steep, tortuous, and usually somewhat broadened. From Grade I there may develop Grade II of the "hyperergic, irritable stomach," with broadening of the mucosal folds up to a fingerbreadth, and good preservation of secretion. Grade II findings are present

also after intoxications (nicotine, lead), and in 60 per cent. of gastric and 50 per cent. of duodenal ulcers. As a result of intensive alkali therapy the hyperergic stomach not infrequently becomes the site of chronic gastritis, with morbid cellular changes in the secretion. Its broad high folds, however, are due not to gastritis, but to purely functional alterations (probably in part neurogenic) of the muscularis mucosae, blood supply, and interstitial cell content. Examination of the cell content of the gastric juice shows that increased cell exudation and increase of leucocytes are absent in nearly all duodenal and in one-half of gastric ulcers, and in the hyperergic stomach. Concerning treatment of chronic ulcers, Westphal concludes that this must aim at diminishing the motility of the mural and mucosal muscle (atropine medication), the gastric acidity, and the cell diapedesis from the capillaries of the mucosa. The last two aims are best achieved by giving 5 to 10 c.cm. of olive oil twenty to thirty minutes before meals. Westphal's recent experience has proved the efficacy of this in a large series of peptic ulcers.

THYROIDECTOMY IN HEART DISEASE

The excision of a healthy organ as a remedial measure for disease in another organ is an unfamiliar expedient in modern medicine. In fact, such a procedure could only evolve from increasing knowledge of the intimate physiological and pathological relationships between one system and another. A therapeutic measure along these lines has lately been advocated by Levine, Cutler, and Eppinger,¹ who have claimed that total thyroidectomy may bring considerable benefit to patients suffering from advanced heart disease in whom other remedies have been unavailing. The clinical records contained in this work constitute the extension of a previous publication on the same theme,² and the principles underlying the procedure are based upon the study of thyrotoxic heart disease. Attention has often been called to the astonishing benefit produced by subtotal thyroidectomy in thyrotoxic heart disease. Further, it has commonly been observed that this operation is of great value when thyrotoxicosis complicates unrelated heart disease, such as mitral stenosis. More recently it has been determined by Morris³ that disease of the heart may owe its origin to obvious disturbance of thyroid function, while the basal metabolic rate remains normal; to go a step further, certain cardiac abnormalities such as auricular fibrillation may be due to occult thyroid influence, the true basis of the cardiovascular fault only being disclosed later. In such cases subtotal thyroidectomy has often brought about great improvement. These results suggest that disease of the thyroid must have deleterious effects upon the circulation other than those due to increased metabolism; an additional corollary (which is the source of the new procedure advocated by Levine) is that excision of the healthy thyroid may, by lowering the rate of metabolism, unburden to some extent a severely damaged heart. Levine and his associates have observed the results of partial or complete thyroidectomy in twelve patients suffering from the most severe forms of heart disease. The group consisted of

¹ *New England Journ. Med.*, 1933, ccix, 667.

² Blumgart, H. L., Levine, S. A., and Berlin, D. D.: *Arch. Int. Med.*, 1933, li, 865.

³ *Amer. Journ. Med. Sci.*, 1931, clxxxi, 297.

¹ *Zentralbl. f. Chir.*, February 17th, 1934, p. 370.

valvular heart disease with auricular fibrillation; angina pectoris, and non-valvular congestive failure in equal proportions. In view of the more or less experimental nature of the method, the selection of cases was limited to those gravely crippled and unrelieved by other measures. In six of the patients considerable improvement followed the operation, in three only moderate or slight benefit resulted. It was at first thought advisable to perform a subtotal thyroidectomy, but it was found that the reduction in metabolic rate following this operation was often only transitory. Complete thyroidectomy was adopted in subsequent cases as a means of overcoming this difficulty. Such procedure was usually followed by a reduction in metabolic rate to the neighbourhood of -20 per cent. In most patients thus treated the maximum slowing of metabolism was only reached after some weeks, and in some of them the symptoms of myxoedema supervened, but were satisfactorily controlled by thyroid medication. The beneficial influence of thyroidectomy in chronic heart failure is not difficult to understand when we remember that slowing of the circulation is an integral part of congestive failure. While the sluggish circulation may be inadequate for the needs of normal bodily metabolism, it may suffice to meet the requirements of the body when the metabolic rate is lowered. How thyroidectomy favourably influences angina pectoris is more difficult to understand, for in this condition the circulation is not usually impaired. It has been suggested that the effect of thyroidectomy upon angina is in some way related to reflex or humoral alterations possibly connected with the activity of the suprarenal glands. These observations have opened up new possibilities in the treatment of patients who have hitherto been regarded as hopeless cardiac cripples. It may be that a further lease of life and comparative comfort can be secured for such sufferers, but it goes without saying that an irreparably damaged heart can only gain temporary respite by these measures. How far the operation of thyroidectomy for heart disease and failure will become a useful and practicable proposition remains to be seen.

SHOULD DIABETES BE NOTIFIABLE?

Discussing the high mortality and morbidity rate in diabetes F. Meythaler¹ comes to the conclusion that it is less the constitutional factors in the patient himself than external circumstances which are responsible for such high figures. According to this author, the non-constitutional factors adversely influencing the course of this disease may be classed under four headings: (1) non-observance of medical advice owing to economic reasons; (2) insufficient expert knowledge of the medical adviser and his failure to establish a correct diagnosis; (3) the fact that the patient is not conscious of being really ill, and therefore neglects to observe the irksome restrictions put upon him; and (4) dangers accruing from the transition of the patient from hospital to home care. Basing his argument on his experiences as head of a special diabetes out-patient clinic in Bonn, Meythaler contends that the influence of these factors might be considerably lessened, and the mortality and morbidity rate reduced, by making diabetes a notifiable

disease and organizing special diabetes out-patient clinics all over the country. Beyond keeping the patients constantly supplied with a sufficient quantity of insulin, these stations would exercise constant supervision over their condition, develop prophylactic measures against diabetes, and ensure that sufferers from the disease should be kept out of professions where, owing to their disability, they might endanger others.

THE USE OF LEISURE

In his presidential address to the British Association Sir F. Gowland Hopkins said: "I confess that if civilization escapes its other perils I should fear little the final reign of the machine. We should not altogether forget the difference in use which can be made of real and ample leisure compared with that possible for very brief leisure associated with fatigue; nor the difference between compulsory toil and spontaneous work." The machine has introduced many complications into the modern world, and not the least is the problem of how human beings are to employ the leisure that is being, and will increasingly be, thrust upon them. To the busy practitioner of medicine, however, leisure has the same elusive quality as the philosopher's stone. He may seek for truth, and even for beauty, but to dally along primrose paths, he knows, is not for him. Yet, concerned as he is with the mental and bodily health of the community, the way in which other people use their free time has some bearing upon his professional activities. The problem must have presented itself very forcibly to the minds of doctors in the depressed industrial areas. The atrophy of mind and body brought about by prolonged unemployment is not one that can be remedied by a bottle of medicine, and the suggestion of good times to come has all the limitations of a not very effective placebo. An attempt to solve the problem, not so much of unemployment as of leisure, was made in 1932, when the Grith Fyrd Camp was set up at Godshill.¹ Another camp has recently been established at Alderwasley, near Ambergate, in Derbyshire. These camps are run by young men of all classes who are out of work. (It is hoped to extend the camps for women and married couples.) They aim at making the camp a self-supporting co-operative unit, and pay into it—if technically unemployed—the whole of their unemployment or transitional benefit. They fell trees, build houses, bridges, and roads, grow their own foodstuffs and rear live stock, and occupy themselves with such handicrafts as weaving and thatching. In this scheme the idea of charity is abolished, and the money-making motive is eliminated. The camper, working with his own hands to supply not only his own needs but the needs of his community, learns to live in order to work, instead of working just in order to keep body and soul together. The value of such a scheme must be immense, for it restores self-confidence and pride of person in men who have suffered from the degradation of enforced idleness. Primarily it is an education in the productive use of leisure, and an instructive example of "the difference between compulsory toil and spontaneous work."

¹ The Grith Fyrd Idea. By Professor John MacMurray and others. The Order of Woodcraft Chivalry. 1933. (1s.)

¹ *Klin. Woch.*, March 10th, 1934, p. 378.

As a practical means for dealing with the present unemployment it has attracted the attention of the Government, for the Ministry of Labour sent its parliamentary secretary to attend a recent meeting held in the House of Commons to discuss the Grith Fyrd Camps in relation to the Government's proposed training centres for the unemployed. Medical men who might like to see the camps for themselves should communicate with Mr. Guy Keeling, Grith Fyrd Camps, Toynbee Hall, London, E.1.

HUMANE DESTRUCTION OF ANIMALS

We have received a pamphlet from the Animal Defence Society entitled "Humane and Inhumane Methods of Destroying Animals." It is a verbatim report of a conference held last June to discuss methods of destroying dogs and cats, together with an introduction by Lieut.-Colonel Wakefield Rainey, M.R.C.V.S., and a number of letters and documents pertaining to the subject under consideration. Colonel Rainey, in his introduction, reviews impartially and scientifically, as far as the available evidence goes, the information already available. He finds that chloroform, as at present used in unskilled hands for the destruction of dogs, should be abandoned, although in skilled hands, when an adequate degree of pre-narcosis has been secured by morphine or some other drug, it is quite satisfactory. This appears to apply equally well to carbon monoxide poisoning in the form of coal gas; he is definitely opposed to the use of motor-car exhaust fumes. Shooting is an excellent method of killing, but has obvious practical difficulties in ordinary circumstances. He pins his faith to high-voltage electrocution—a method already in use in some of the large American cities, such as Detroit, with good results. (This, by the way, appears to be unknown to the conference.) He believes that low-voltage stunning with alternating current may be developed as a satisfactory method of pre-narcosis in dogs, to be followed by the intrathoracic administration of some quickly lethal agent such as prussic acid. A good narcotic for cats is nembutal, but its results are inconstant in dogs in economically practicable dosage. We would take this opportunity of welcoming this inquiry by the Animal Defence Society. Many of the methods used by humanitarian societies for the killing of unwanted animals are far from being above suspicion, and an impartial and scientific investigation into euthanasia is most opportune. While many of the speeches indicated that the approach to this in a sane, well-balanced manner would be welcomed by most of these societies, the remarks made by several of those contributing to the discussion showed that great care would have to be exercised to prevent prejudice from wrecking the good efforts of the society. Undoubtedly there is a large amount of unnecessary suffering in the destruction of animals, and we can say categorically that the medical and veterinary professions are as anxious as any other section of the community to relieve and prevent suffering in animals. Deliberate cruelty is, however, the least important of all the problems which confront the humanitarian societies. Suffering from disease, from ignorance, from

the employment of quacks, from thoughtlessness, and from mistaken efforts at kindness, are all infinitely more important, in the British countries at least, and we have no doubt that the solution to many of the problems could be found by methods of education and by co-operation with the healing professions, rather than by the erection of imaginary windmills at which to tilt. A number of bodies are already following the better course, notably the University of London Animal Welfare Society, the R.S.P.C.A., and the S.S.P.C.A., but some are not. To those whose vision has been obscured by anti-vivisection fanaticism, we suggest that an unprejudiced inquiry, on behalf of their members, would show that most of the abuses they attack have never existed, and that far more urgent and important factors, causing an infinite amount of suffering, remain unnoticed and in great need of remedy. Since the report of the discussion came into our hands we learn from Colonel Rainey that a satisfactory means of destruction by electricity, invented by a veterinary surgeon, and known as the "euthanator," is on sale for 7½ guineas at 20, High Street, Bath.

DAWSON WILLIAMS MEMORIAL PRIZE

The Dawson Williams Memorial Fund was established by voluntary subscription in 1928 to commemorate the late Editor of the *British Medical Journal*. Its object is the award of a prize every two years, or at longer intervals, in recognition of work done in connexion with paediatrics. The Fund is administered by the following trustees: The presidents (for the time being) of the Royal College of Physicians of London, the Royal College of Surgeons of England, the British Medical Association, the Royal Society of Medicine and the Section for Disease in Children of the Royal Society of Medicine, and the Editor of the *British Medical Journal*. There have been two previous awards of the prize—namely, in 1930 to Dr. F. J. Poynton, for his work on behalf of rheumatic children, particularly with regard to the establishment of special "rheumatic centres"; and in 1932 to the late Sir Robert Jones, for his work in connexion with the paediatric side of orthopaedics. The trustees have decided to make the third award this year to Dr. G. F. Still, in recognition of his work for sick children, and with the consent of the Council of the British Medical Association the prize (a certificate and cheque for fifty guineas) will be presented by the President of the Association on the occasion of his Presidential Address at Bournemouth on Tuesday, July 24th, 1934.

The fifteenth Maudsley Lecture before the Royal Medico-Psychological Association will be delivered by Lord Macmillan, on "The Professional Mind," at 26, Portland Place, W., on Thursday, May 17th, at 3 p.m. Admission without ticket.

We regret to announce the death, on April 21st, at the age of 66, of Mr. F. N. G. Starr, emeritus professor of clinical surgery in the University of Toronto. Professor Starr was vice-president of the Section of Surgery when the British Medical Association met in London in 1910, and in 1925 he was elected a Vice-President of the Association.

LEAD IN THE HUMAN BODY

A REVIEW OF THE SITUATION

The substance of the human body, though founded chemically on an organic basis, includes in its make-up certain metals which are essential to life. Such are calcium, sodium, and magnesium, and in lesser amounts iron and copper, together with manganese and arsenic and possibly zinc and tin. A place in the list, without in the meantime any claim to physiological significance, must be accorded also to lead. That this base metal, which is held accountable as a cumulative poison to man, should be commonly present in his tissues is not indeed a new conception, since it was announced by Devergie as long ago as 1838, but the introduction of new analytical methods has lent the question a fresh interest which may result in some revision of current views and standards. Mention was made in a recent issue¹ of a report by the Water Pollution Research Board which points out the existence at the present time of much diversity of opinion in matters pertaining to lead.

LEAD IN FOOD

Excepting in industry, where the outstanding lead hazard is from fume and dust, lead when it enters the body of man does so almost without exception in his food and drink. In this country it is frequently carried by water which has passed through leaden pipes, or it may be derived on occasion from the glass of bottles or the metal parts of soda-water siphons. Its concentration in food has been studied in the United States by R. A. Kehoe² and his colleagues, who, working at Cincinnati by modern methods, found in beans which they examined 0.31 milligram of lead per kilo, in meat 0.63, in apples 0.3, in cherries 0.77, and in sausages 1.6. The occurrence of the metal in meat is ascribed to the fondness of stock for licking new-painted surfaces, or to the flooding of pastures by streams conveying waste water from lead mines. Game, too, may be charged with lead, and a curious instance is quoted of the wholesale poisoning of wild duck through swallowing spent lead shot embedded in the mud about marshes. The presence of lead in grape juice is the result of the spraying of grapes with lead arsenate as an insecticide. Fruit in general, owing to the use of these sprays, was the most heavily lead-impregnated of the foods examined. Nourished on such fare the individual American, according to Kehoe and his colleagues, ingests from 1/5 to 1/3 milligram of lead per day, and excretes approximately the same quantity at the rate of 0.02 to 0.08 mg. per litre of urine and 0.03 to 0.1 mg. per gram ash of faeces.

AN INVESTIGATION IN MEXICO

It may be of interest to compare these figures, which relate to a highly organized community, with the results of another investigation, by the same observers, into the lead experience of a primitive folk living to a great extent beyond the reach of civilization. These simple people were the inhabitants of two pueblos on the Mexican plateau. They dwelt in adobe huts without furniture or metal fittings. They drank water or pulque. Their food included beef, fish, wheat, corn, beans, peas, and other vegetables, all native products. Possessing no firearms, they never handled lead shot. Their only metal implements were machetes and sickles, presumably steel or iron. Their food utensils were of wood or earthenware. Of the latter some were lead-glazed. As there were no deposits of lead ore in the neighbourhood these glazes

appeared to be the sole contact of the people with lead. It is therefore rather surprising that in all the foods above mentioned traces of lead were found. High figures were 0.4 mg. per kilo for dried wheat and beans, and 4.15 mg. for atole—a barley and corn gruel—due in all probability to the lead-glazed containers. The mean quantity of lead ingested per person was approximately 1/10 mg. per day, and the mean rates of excretion 0.01 mg. daily per litre of urine and 0.03 mg. daily per gram ash of faeces. Thus the pueblo dwellers, although their figures work out in general at lower rates than those of Cincinnati residents as quoted above, were nevertheless ingesting, absorbing, and excreting lead in measurable quantities.

Kehoe and his colleagues therefore conclude that lead is a natural constituent of the soil and vegetation of the two pueblos and of other primitive places on the Mexican plateau, and, further, they do not doubt that the presence of lead in human tissues is an inevitable consequence of life on a lead-bearing planet. This last seems a wider generalization than the Mexican figures entirely warrant. These are reasons why the soil of Mexico may be richer in lead than that of some other countries, so that Mexican experience may not represent normal or basal rates for mankind as regards the ingestion, absorption, or excretion of the metal. Studies of the position in other lands would throw useful light on an interesting question.

ARE LONG-CONTINUED SMALL DOSES HARMFUL?

The difference between the amounts of lead ingested by the Mexicans and the Americans is primarily due to the difference in the lead content of their respective diets. Kehoe and his colleagues do not claim that their results have the value of a new phenomenon or raise a new hygienic problem. Comparable quantities of lead to those which they record have, they think, occurred in food for a long time. While their researches do not disclose whether the continual absorption of minute amounts of lead has any influence on the general health, their work has made it abundantly plain that under the conditions of observation—that is to say, with an ingestion of lead up to 1/3 mg. per day—accumulation does not occur, a state of equilibrium having been reached where excretion keeps pace with absorption. This finding should serve to dissipate the belief, nebulously held by many, that minimal doses of lead, if long enough continued, are pretty sure in the end to produce lead poisoning.

DIAGNOSTIC SIGNIFICANCE OF LEAD IN EXCRETIONS

Applying their results in the domain of food to the industrial field, the observers expose another error—namely, the view that the detection of lead in the urine and faeces of workers exposed to lead hazard is valuable diagnostic evidence of lead intoxication. In any area where quantities of lead are apt, as in Cincinnati, to be ingested with food, the mere presence of the metal in the excreta of a worker can possess no diagnostic significance. Kehoe and his colleagues give as a general indication that if the average lead hazard of a trade results in a mean daily faecal output of lead in excess of 1.1 mg., and in a mean urinary excretion of lead in excess of 0.21 mg. per litre, cases of lead poisoning may be expected to occur among the workers concerned, but as regards the individual case they say that diagnosis must continue to rest largely on the discovery and interpretation of the clinical evidence. An abnormally high rate of lead excretion may serve as a guide to the severity of the lead hazard: it does not constitute proof of lead poisoning. Indeed, no definite rate of lead excretion can be held to presuppose the existence of symptoms or to explain the symptoms actually presented by the patient. Even abnormal lead absorption should not be rated unduly

¹ British Medical Journal, March 31st, 1934.
² Journ. Indust. Hyg., September, 1933.

high, since lead absorption is not synonymous with lead intoxication.

These views are sustained by the findings of Professor L. S. P. Davidson² and his co-workers in their report on water-borne lead poisoning in the North-East of Scotland. Lead excretion corresponded with hazard—that is to say, was higher among consumers of the heavily impregnated waters—but no significant relationship appeared to exist between a highly impregnated water and either a high urinary excretion of lead or the occurrence of plumbism.

The work done by Kehoe and his colleagues seems to merit the attentive consideration of medical officers of health, certifying factory surgeons, medical practitioners, and all who have to do with the prevention, diagnosis, or treatment of lead poisoning. That there is need in some quarters for greater clearness on the subject is suggested by data contained in a report by F. L. Hoffman,⁴ which exhibit for Germany a remarkable difference between the numbers of reported and compensated cases of plumbism, and also by a pronouncement recently issued by the white-lead manufacturers of Europe, who, in stating the case against prohibition of the use of their commodity, present evidence strongly pointing to the insufficiency of the average diagnosis of lead poisoning.

THE MILK SUPPLY

PURITY AND SAFETY

The Minister of Health, Sir HILTON YOUNG, received a deputation on April 18th from the People's League of Health. The deputation was introduced by Dr. C. O. HAWTHORNE, Chairman of the Council of the League, who said that the League had made a special study of the question of milk, and was in sympathy with the campaign to encourage its increased consumption. At the same time it was very fully aware of the risks involved and believed that these risks were avoidable, and should be avoided.

MEDICAL ARGUMENTS FOR PASTEURIZATION

LORD MOYNIHAN said that milk was almost a perfect food. The amount of milk consumed in this country was much less than in many other countries, and there would undoubtedly be great advantages in increasing its consumption here. Unfortunately, the existing milk supply was not safe. From 8 to 15 per cent. of samples of milk examined were contaminated with tubercle bacilli. Even "Certified" milk had been found to contain tubercle. Contaminated milk was also responsible for the spread of other diseases, such as undulant fever and scarlet fever. The chief desire of the People's League of Health was to secure the eradication of tubercle from cattle and to obtain a supply of clean and safe milk. But the cleaning up of herds was a long process, and for the present all milk other than "Certified" milk and "Grade A (tuberculin-tested)" milk should be pasteurized.

Professor S. LYLE CUMMINGS said that he did not believe there was any conflict between the interests of farmers and the views of doctors. All desired to get rid of tubercle in man and in cattle. Much tuberculosis and, indeed, a large proportion of tuberculous meningitis was due to milk-borne infection. It would be advantageous if the tuberculin-testing of cattle could be carried out free of charge, and if the several existing grades of milk could be replaced by one single grade of tuberculin-tested milk. Dr. R. C. JEWESBURY said that the medical profession was no longer justified in advising the use of raw milk for children. It was important that pasteurization should be carefully controlled.

Sir JOHN ROBERTSON agreed that a supply of milk pasteurized under control was much to be desired. In Birmingham, where he was formerly medical officer of health, there had been a much longer experience of the benefit of sterilized

milk than in any other town in the country. His knowledge of this experience had convinced him that the use of this milk had had no harmful results, and had played a large part in preventing milk-borne diseases. Sir PENDRILL VARRIER-JONES said that all milk at the Papworth Village Settlement was heat-treated, with the result that no Papworth-born child had shown any clinical signs of tuberculosis, nor had a Papworth child died of any disease. Dame LOUISE McILROY spoke of the needs of infants who could not be breast-fed. It was most desirable to have a supply of pure milk available for working-class mothers. She also drew attention to certain unhygienic methods which she had noticed in milk distribution in the streets of London.

Dr. WILLIAM HUNTER, who represented the Royal College of Physicians, said that the College was in full sympathy with the object of the deputation, and its President, Lord Dawson, would have been present had he been in England. Mr. C. H. FAGGE, representing the Royal College of Surgeons, said that this College was also in full sympathy with the deputation.

Miss OLGA NETHERSOLE, the founder and honorary organizer of the League, put in letters from Sir Farquhar Buzzard, who wrote that "If the surplus milk of the country is to be distributed amongst children under the authority of the Government . . . it can only be done under such conditions as will safeguard the children from preventable and serious diseases"; from Professor Langdon Brown, who wrote that "No medical man of an experience can fail to recognize the dangers of milk-borne disease"; and from Lord Horder, Sir John Rose Bradford, Sir Robert Philip, and Sir Francis Fremantle, sympathizing with the objects of the deputation.

MINISTER'S REPLY TO DEPUTATION

Sir HILTON YOUNG said that he was deeply grateful to the People's League of Health for the statements made to him by its influential deputation. He much regretted that Dr. Walter Elliot had been prevented by illness from joining him in the reception of the deputation, though he was glad to be able to say that a representative of the Ministry of Agriculture (Mr. H. E. Dale) was present. He could assure the deputation that it was preaching to the converted. The safety of the milk supply was of pre-eminent importance, because of its direct effect upon child life. It was of great advantage to the campaign which was being undertaken for the improvement of the milk supply that milk producers were now organized, and the deputation could be assured that the Milk Marketing Board was fully conscious of its responsibilities. He agreed with Lord Moynihan that it was necessary to proceed simultaneously along two lines of advance. In the first place, all that was possible must be done to remove infection from herds, and in the second place steps must be taken for the protection of milk. As the deputation would be aware, the Government was proposing to provide from public funds a sum not exceeding £750,000, spread over the next four years, in aid of a campaign for securing a purer milk supply. No final decision had yet been taken how best that money could be spent, and before reaching a decision the Government was awaiting the report of the Cattle Diseases Committee of the Economic Advisory Council, under the chairmanship of Sir F. Gowland Hopkins, which, it was understood, was just concluding its labours. The importance of educating the public in regard to the milk supply was very great, and in this task especially the People's League of Health, which was so influentially supported, could be of the greatest assistance.

Two Chinese workers, Drs. Wong and Chang, have recently published a series of papers concerning the action of acetylcholine on the uterus (*Chinese Journ. Physiol.*, 1933, xlvii, 162 and 987). The authors first showed that in cases where uterine contractions were strong and active the placentas contained relatively large amounts of acetylcholine. In a later paper they have studied the action of acetylcholine on animal uteri and also on the human uterus. They observed that the drug produced an oxytocic action much weaker than that of pituitrin, but that it had the advantage of increasing uterine activity without producing spasm. They have found the drug to be of value in the management of labour.

² *Lancet*, 1933, ii, 377.

⁴ *Lead Poisoning Legislation and Statistics*, 1933.

EPIDEMIC NERVOUS DISEASES IN 1932-3

The January-February issue of the *Epidemiological Report of the Health Section of the League of Nations* contains a survey of the incidence and mortality of cerebro-spinal meningitis, encephalitis lethargica, and poliomyelitis throughout the world in 1932-3.

As regards cerebro-spinal meningitis, the most important outbreak in Africa was that which occurred in Lower Egypt in 1932. It had begun in November, 1931, and reached its climax with almost 1,000 cases, and 500 deaths per fortnight, at the beginning of the following March, after which it rapidly declined. A recrudescence, however, took place in November, 1932, and lasted till March, 1933, after which there was a slow regression. The total number of cases in Egypt in 1933 showed a two-thirds reduction in the prevalence of the disease as compared with 1932. An epidemic of meningitis also occurred in the Anglo-Egyptian Sudan in 1932-3, but the outbreak of 1933 was of much shorter duration than that of 1932. In the United States the incidence of cerebro-spinal meningitis fell from 5,534 in 1931 to approximately 3,000 in 1932 and 1933. In Asia the pandemic which occurred in the Far Eastern ports, especially those of China, in the spring of 1932 showed a further increase in 1933. In British India cerebro-spinal meningitis is a comparatively rare disease with the exception of Calcutta, where well over a hundred deaths took place in 1932 and 1933. In Turkey, owing to a campaign of antimeningococcus vaccination in November, 1932, a considerable decline took place in the incidence in 1933, only four cases having been noted among approximately 74,000 vaccinated. In Japan, where diseases of the central nervous system are particularly frequent, encephalitis lethargica and cerebro-spinal fever are often confused, and no figures are given of the incidence of meningitis in the last two years. In Europe the highest death rate was found in Great Britain, although the disease became stationary in 1932 and even showed a slight decline in 1933. Except in Germany, where the death rate rose from 0.3 to 0.9 per 100,000, the disease was everywhere on the decrease in 1932 and 1933.

As regards encephalitis lethargica, apart from the United States, where an epidemic occurred in Missouri and Illinois from July to October, 1933, similar to the sudden outbreak in Japan in 1924, there was a decrease in almost all the countries for which statistics were available. Lastly, as regards poliomyelitis, the most important focus in 1932 was Germany, where the disease was prevalent in Upper Bavaria, Oldenburg, Hanover, Pomerania, and Silesia. In 1933 the incidence declined everywhere, except in Pomerania. In England the morbidity rate, 1 per 100,000 in 1931, rose to 1.8 in 1932 and 1.9 in 1933. In Denmark epidemics broke out in July, 1933, and in Sweden and in Hungary in 1932. In North America endemic poliomyelitis in Canada persisted in 1932, but showed a great improvement in 1933. In the United States the number of cases fell from more than 16,000 in 1931 to less than 4,000 in 1932, but there was a certain increase in some States in 1933. In Australia epidemics occurred in Queensland and New South Wales during the first six months of 1932, but the disease became less prevalent in 1933.

The report of the St. John Ophthalmic Hospital, Jerusalem, for 1933 shows that 1,179 in-patients were treated, that new out-patients totalled 20,535, total attendances 89,895, and operations 3,630. The Government having increased the local clinics by three during 1933, the Order of St. John is now responsible for the oversight and inspection of ten Government ophthalmic clinics in Palestine. This has necessitated an additional member of the hospital staff, which now numbers four. The hospital suffered severely in its work by the terrible shortage of water experienced during practically the whole of the year. The Order was called on to feed the suffering and destitute in its annexe last summer, and gave a total of 1,615 meals in addition to the necessary medical treatment. It is intended to open a school in Jerusalem under the supervision of the warden of the hospital, Dr. J. C. Strathearn, for the training in hygiene, home nursing, sanitation, and first aid of young Arab girls.

England and Wales

University of Birmingham: A Department of Industrial Hygiene and Medicine

For several years past there has been growing up a demand for the establishment in this country of a university department which would undertake research in the application of medicine to industry, and which could offer a special training to doctors who are whole- or part-time medical officers to industrial organizations or who wish to qualify for such posts. For various reasons, but largely because of the great variety of manufactures carried on in the Midlands, it has been considered that Birmingham would be an ideal centre from which this work could be directed. The research work contemplated would inquire into such questions as the deleterious action on workpeople of the materials they work with, and particularly of various chemical substances and their emanations, and the methods whereby diseases are contracted by workers as a result of some industrial process; and, as a corollary, what methods of prevention can be devised. It is further anticipated that doctors would be trained to advise employers as to methods by which the number of certain types of accidents might be reduced; as to the most effective way of dealing with them when they arise; as to the selection of employees for various kinds of work so as to ensure that they are physically adapted for it; and as to improving the hygiene of factories and the general health of the workers. It is probable that the university will arrange to grant a diploma to those who complete the course successfully. Inquiries have been made as to how far such a department would be utilized by employers, and, although only a small number of firms have been tentatively approached, it is clear from their replies not only that the demand exists, but that the services of such a department are likely to be of increasing value to industry. This is also the opinion of such representatives of the Home Office as have been consulted. The University of Birmingham has therefore decided to institute a Department of Industrial Hygiene and Medicine, and arrangements are being made with a view to its opening on October 1st, 1934.

Cost of London Municipal Hospitals

The estimates of expenditure on hospital and public health provision for the financial year 1934-5 were placed before the London County Council at its meeting on April 24th. Some figures given for the general hospitals maintenance expenditure in our issue of March 31st were based only upon a two months' provision. The figures for the year are as follows:

	£
General hospitals	2,814,515
Infectious diseases hospitals	934,865
Sanatoria... ..	191,040
Children's hospitals	325,660
Pathological laboratories	49,500
District medical service	38,800
Ambulance service	169,590
Diagnosis and treatment, venereal diseases	115,600
Maternity and child welfare	31,675
Midwives Acts	5,475
Other items, including maintenance in hospitals other than those provided by the Council, staff expenses, sanitary officers, and public vaccinators	498,770
	£25,175,490

The estimates show an increase of £35,030 on the original estimates for the year 1933-4. In addition, on capital account, an expenditure of £230,900 on general

hospitals, and of £60,000 on other hospitals is forecast. This is due to the need for extensions and reconditioning works.

New Coventry Isolation Hospital

On April 19th the Mayor of Coventry opened the new City Isolation Hospital, which has been erected on a site of sixteen acres at Whitley in Warwickshire, at a cost of £115,000. The previously occupied buildings are being handed over to the governors of the Coventry and Warwickshire Hospital on May 1st. Further extension has been provided for by the securing of an additional ten acres of adjoining land. The new buildings comprise an administrative block, three ward blocks for acute cases, two ward blocks for convalescent cases, one cubicle ward block, a power block, a house for the resident medical officer, two staff cottages, and an entrance lodge. The various blocks are in terrace formation. Each of the three for acute cases contains twenty-eight beds placed in two main wards and two single-bedded wards. Simultaneous observation of the four wards is rendered possible from the central duty room by an ingenious arrangement. Each of the two convalescent blocks contains twenty-six beds, which are included in two main wards. These blocks possess deep verandas in front, and day rooms placed centrally at the first-floor level. All the blocks are of the one-story type. The cubicle block contains twelve beds, each of which is placed in a separate cubicle. From the central duty room observation of the twelve cubicles—six on each side—is rendered possible by means of glass panels in the dividing walls. This block has also a spacious veranda. The operating theatre unit is conveniently placed at one end of the cubicle block. The administrative block is situated centrally on the site, and is designed to be adaptable to any future extension of the whole institution. Part of it is arranged as a nurses' home, with thirty-six bedrooms and a spacious common room. The kitchen part is essentially modern, with electric ovens and electrically driven machines for various culinary processes. The meals will be delivered from this central kitchen to the various wards in trolleys fitted with electrically heated containers. The power block contains the boiler-house, water-softening plant, an engineer's workshop, the hospital laundry, a disinfecting plant, a weighbridge, and garages for ambulances. The mortuary is attached to this block. All the buildings are centrally heated from the boiler-house; a system of panel heating is installed in the five large ward blocks, and in the wards there is a shaded wall light at the head of each bed. Complete intercommunication between the various hospital buildings is secured by a system of internal telephones. The new hospital is just under two miles from the city centre, and the separate small-pox institution is rather less than half a mile away; this enables the staff of the main hospital to exercise any required supervision. In its general planning and up-to-date equipping the isolation hospital is held to be one of the finest in the country.

Healthy Offices for Clerical Workers

A meeting of London members of the Association of Women Clerks and Secretaries was held on April 17th to discuss the problem of office accommodation in view of the failure of the Offices Regulation Bill to obtain a second reading in the House of Commons. Dr. W. J. O'Donovan, M.P., suggested that it was not only necessary to educate Members of Parliament on this question, it was also necessary to educate those older clerical workers who had become hardened to bad conditions through long experience. Younger workers, with more modern ideas of hygiene, would not accept the conditions which prevailed. Thousands of houses which had been built as dwelling

places were converted for use as offices, and were quite unsuitable for that purpose. The problem was not only one of old buildings, but the use of underground rooms in new modern buildings. Mr. Arthur Greenwood, speaking as an ex-Minister of Health, said that a great deal of "tripe" had been talked during the debate on the Bill about the protection offered by the Public Health Act. All administrators knew that these Acts were quite inadequate to deal with this problem of bad offices. Factory workers had secured adequate protection, but office workers in the past had been too respectable to agitate. They must strengthen their organizations to enable the fight for better conditions to go on. A resolution, deploring the existence of unhealthy offices and urging adequate legislation to secure a minimum health standard for office workers, was carried unanimously.

Scotland

Milk Consumption in Scotland

A report has recently been issued by the Department of Health for Scotland embodying the results of an inquiry by Drs. Gerald Leighton and Peter L. McKinlay into the average amount of liquid milk consumed in Scottish households. There would appear to be general agreement that the amount of milk used in Great Britain is smaller than in any other country. The report points out that no national data are available for Great Britain, but that information has been derived from four main sources: co-operative societies, private retailers, health visitors and nurses, and education authorities. The figures cover every kind of district and community—urban, rural, industrial, and agricultural. It was found that consumption varied greatly in different localities, and that the figures for the large burghs were generally lower than those for county districts. In individual burghs the amount varied from 0.27 pint daily per person in Hamilton to 0.7 pint in Perth, while in counties it varied from 0.3 pint in Lanarkshire to 1.03 pints in Aberdeenshire. The general average for large burghs was 0.4 pint, and in counties exclusive of large burghs 0.55 pint. In Scotland as a whole the amount of milk consumed was found to be 0.479 pint per person per day. It is emphasized that in making an inquiry of this nature several fallacies have to be avoided. The amount of milk entering some particular city is not necessarily consumed by the inhabitants; the city may have a margarine factory, while large quantities of milk may also be used by biscuit factories, chocolate factories, ships, animals, etc. It was found that in nearly all towns the largest distributors were the co-operative societies. For the purposes of this report, eighty-four of these societies scattered over Scotland supplied details of milk distribution. Health visitors and nurses also ascertained from each house visited in the ordinary course of their work the amount of milk taken daily for the number of inhabitants; in this way 15,187 households, containing 80,242 persons, were recorded over a period of some ten months. Returns were also obtained through the Scottish Education Department by ascertaining from senior scholars in schools all over the country the amount of milk taken daily in their families and the number of persons in the house. These returns covered 66,149 families containing 393,726 persons. An appendix to the report states that the total milk produced in Scotland in 1925 was 171,000,000 gallons yielded by 398,000 cows, but that this does not represent the milk used in liquid form. Statistics from the United States indicate an average daily consumption per person of about 1.47 pints of milk and cream, although this is an over-statement

of the amount used as fluid milk, which was slightly more than one pint per day in 1926. The pamphlet can be obtained from H.M. Stationery Office, 120, George Street, Edinburgh (price 9d.).

Two Edinburgh Maternity Hospitals

The joint annual report for the year ending November 30th, 1933, of the Edinburgh Hospital and Dispensary for Women and Children (Bruntsfield Hospital) and the Elsie Inglis Memorial Maternity Hospital (The Hospice) covers a period of steady activity in spite of considerable financial difficulty. The total number of new in-patients at the Bruntsfield Hospital was 809, and there were 1,115 new admissions at the Elsie Inglis Hospital. At the first-named the electrical and massage department was in increased demand, and the diagnostic work of the x-ray room was intensified, while the out-patient department attendances rose by over 2,000. All patients at this institution, except those in the private wards, where a fixed charge is made, are asked to contribute according to their means towards the cost of their treatment; for those unable to do even this there are free beds, which are in continual occupation. In connexion with the Elsie Inglis Hospital it is mentioned that in the 1,101 cases delivered there between December 1st, 1932, and November 30th, 1933, there has been no instance of puerperal fever due to the specific organism. Plans are nearing completion for building a permanent ante-natal and out-patient department, where further accommodation has long been needed; there are always between five and six hundred patients on the lists. The two institutions, with their total of 116 beds, apart from the six cots at the Bruntsfield Hospital, now provide a complete unit for the treatment of women in every branch of medical science. In the last two years, with the addition of an ear, nose, and throat specialist, there has been brought together a complete specialist staff of fully qualified women, which admits of valuable team work. In the medical part of the combined report reference is made to the gratifying results of the special efforts made, as regards bacteriological research and control, to eliminate infection by the *Streptococcus haemolyticus*. It is concluded that by the methods adopted the risk of contagion by this organism can be eliminated. A separate bulletin has been issued showing the results of the three years' investigation. The number of cases of malignant disease treated by radium in 1933 was less than those in the two preceding years, and it is pointed out that further education of the public is still necessary, since too many advanced cases are being encountered. A new departure in the year under review was the organization of a fortnight's intensive post-graduate course by the two hospitals in gynaecology, obstetrics, and allied subjects. It is now proposed to hold this course for women doctors twice each year in future, and to include lectures, clinics, and pathological demonstrations.

Glasgow Ear, Nose, and Throat Hospital

At the annual meeting of the Glasgow Ear, Nose, and Throat Hospital, held on April 19th, Lord Provost A. B. Swan, who presided, said the hospital was doing a great deal to raise the standard of health and efficiency in Glasgow and the West of Scotland, and that he hoped the opportunity would soon be taken to extend the building. The report showed that 15,066 patients had received treatment, including 2,415 in-patients, a marked increase on the figures for the previous year, which were 13,518 and 1,956 respectively. Subscriptions had amounted to £6,834 as compared with £6,699 in 1932, and the total income had been £8,198, while the expenditure had been £8,355.

Simpson Memorial Maternity Hospital

The report presented to the annual meeting of the Edinburgh Royal Maternity and Simpson Memorial Hospital showed that the number of cases treated by the hospital in the past year had been 3,450, while patients attending the out-patient clinics had numbered 15,832. An arrangement had been effected with the Edinburgh Corporation whereby emergency accommodation was provided in the Western General Municipal Hospital; this arrangement had relieved congestion in the ante-natal department. Patients admitted to the hospital or attended in their own homes by the hospital's nurses had been equivalent to 45.4 per cent. of the total births in Edinburgh during 1933. During the year 11,070 visits had been paid by doctors and nurses in connexion with the outdoor department; this was equivalent to 11.6 visits per case. It was announced at the meeting that the plans of the new hospital, to be taken over by the management of the Royal Infirmary, had now been approved, and that the construction of the Simpson Memorial Maternity Pavilion, which would replace the present Maternity Hospital, would be begun immediately. It was expected that the new hospital would be ready for the reception of patients in the spring of 1937, and May 15th in that year had been fixed as the date on which the management of the Maternity Hospital would be handed over to the Royal Infirmary. The deficit of £3,146 on the working of the hospital during the year had been withdrawn from the reserve fund, and a very urgent appeal was made for a steady subscription income of at least £4,500 per annum during the next three years.

India

Blindness in India

An appalling prevalence of blindness in India is revealed by figures published by the National Institute for the Blind (Great Portland Street, London). These give an estimate of 1,500,000 Indians totally blind and 4,500,000 with "gravely affected" sight. Sir Michael O'Dwyer, a member of the council of the Institute, declares that a large proportion of the latter four and a half millions are so bad that they would be certifiable as blind if they lived in this country. Much of the trouble is preventable, and it is with a view to checking the trouble in its earlier stages that the Institute has made an emergency grant to finance a propaganda scheme. The money will be used by the Indian Junior Red Cross Society in distributing pamphlets in the vernacular and in organizing lectures to teachers. A memorial prepared by leading authorities was recently presented to the Government of India urging official action, but, though the Government was sympathetic, nothing could be done "owing to the present financial stringency."

Kashmir Mission Hospital

Dr. Ernest F. Neve has published a review and summary of the work of the Kashmir Mission Hospital during the last half-century in which this institution has been presided over by the late Dr. Arthur Neve and the author. It has been serving a population of about one and a half million people in Kashmir itself, and has become a centre of pilgrimage for the sick in such far distant parts as Tibet, Bombay, Calcutta, and Madras. Situated in Srinagar with a population of more than 140,000, and having won by steady persistence the support and approval of Moslems and Hindus, it also sends expeditions into the villages about two or three times a year, has been

the pioneer in leprosy work in that part of India, is now fighting hard against the growing menace of tuberculosis, and in the last fifty years has treated 825,000 new out-patients, admitted over 72,000 cases to its wards, and performed 197,522 surgical operations, the average weekly number of which at present is about seventy. In 1933 there were 23,046 new out-patients, 2,243 in-patients, 3,932 operations, and 3,000 laboratory investigations. During the last twenty years much progress has been made in co-ordinating the work of the Mission Hospital with the State medical organization, the Diamond Jubilee Hospital, the city dispensaries, and the increasing number of capable general practitioners. Of the 160 beds, 100 are maintained by individual supporters or corporate associations. About one-third of the patients are women and children, many of the latter suffering from the consequences of neglect and starvation. Osteomalacia is a common characteristic of the maternity work; it is attributed to some special form of toxic infection originating from vitamin deficiency and insufficient exposure to sunshine. In the district work of the hospital infestation by ascariades figures largely, as also do diseases of the alimentary system. Cataract extraction is frequent, but the commonest cause of blindness in Kashmir is entropion and trichiasis. Bone diseases are unusually common.

Rural Sanitation in Agra and Oudh

The continued financial depression led to still further curtailment of the public health activities of the United Provinces of Agra and Oudh in 1932, and it was fortunate that climatic and other conditions were not such as favour epidemics on a grave scale. The labour gangs, which proved so effective in promoting sanitary conditions in villages, had to be abolished. This greatly hampered the work of the small local health staffs, and medical officers had to rely on their powers of persuasion to induce the villagers to take an active interest in their sanitary arrangements. In this respect the "village aid scheme" played an important part. It comprised three distinct activities. At least two of the inhabitants in each village receive special training in elementary sanitation and first aid. This enables them to guide the villagers in ordinary needs and difficulties, and many instances are on record of snake bite, scorpion bite, and drowning having been effectively treated by these "first-aiders," while disinfection in suspected cholera has been adequately dealt with. Secondly, there have been established, generally in charge of village school teachers, dispensaries stocked with a few simple remedies. These create a demand for more skilled medical treatment, but their financing has proved difficult owing to the lack of support by most of the district boards. Thirdly, efforts have continued to ensure the storage of manure and refuse outside the inhabited sites, preferably in pits, and to promote the construction of soakage pits. The total number of village aid dispensaries rose from 2,082 at the end of 1931 to 2,316 at the end of 1932, and the number of trained villagers from 58,496 to 74,933. In the Gorakhpur district there are resident public health officials who can supervise the disinfection of wells in the villages in their areas, distribute anti-cholera medicaments and quinine, deal with vaccination and the collection of health statistics, enforce the local by-laws, train village dais, and give instruction on health matters. In the year covered by this report Lieut.-Colonel W. A. Mearns, I.M.S., Director of Public Health for Agra and Oudh, was able to trace the great advantages gained by this system. The number of those vaccinated increased very considerably, there was a great reduction in deaths from cholera, the vital statistics became much more accurate, and the villages were better cleaned. Inducements are also offered by

the district board of Gorakhpur to the dais to improve the standard of their efficiency. Colonel Mearns remarks that this scheme is an experiment in public health, based on experience gained in Travancore, Ceylon, and other parts of the world. The underlying idea is to apply a more detailed public health organization to a limited area in order to demonstrate what intensive health measures can achieve, and to create a demand for better sanitation.

Ireland

Conditions of Service for Poor Law Medical Officers in the Free State

A meeting of representatives of the Poor Law medical officers in the Irish Free State was held on April 17th in the Royal College of Surgeons, Dublin, with Dr. Conor Maguire in the chair. The meeting decided that the General Council of Medical Associations in the Free State, which is the executive of the Irish Medical Committee, should be requested:

(1) To appoint six Poor-Law medical officers to investigate the very unsatisfactory conditions of service of Poor Law medical officers in the Irish Free State as compared with general medical practitioners and Poor Law medical officers in Great Britain and Northern Ireland, the proposed committee to make a report embodying recommendations for consideration as early as possible by a meeting of Poor Law medical officers to be held in Dublin; (2) to consider the question of the tenure and purchase of dispensary houses by the occupying medical officials and their dependants, the reduced remuneration for administration of anaesthetics in county and district hospitals under the health boards, and a recent order issued to district medical officers of health in County Wexford directing them to notify immediately maternity cases in which the temperature is raised for twenty-four hours.

A resolution was passed unanimously approving of the affiliation of the British and Irish Medical Associations.

The Benn Hospital, Belfast

The report presented to the recent annual meeting of the Benn Ulster Eye, Ear, and Throat Hospital showed that the number of patients treated during the year was 4,448 and the total attendances of both old and new cases were 15,994. Patients admitted to the wards for intern treatment from the city of Belfast and the following counties numbered 871: Belfast 536, Antrim 104, Down 97, Tyrone 38, Londonderry 27, Armagh 26, Fermanagh 22, Monaghan 18, Kildare 2, and Donegal 1. There was an increase of 787 in the total attendances. During the year, through the interest of Sir Robert Kennedy, the hospital received a grant of £150 from the Ulster V.A.D. Committee of the British Red Cross Society and the Order of St. John of Jerusalem to purchase a fumigator for mattresses and dressings. The report expressed thanks also to the committee of the County Antrim Branch of the British Red Cross Society and the Order of St. John of Jerusalem for the generous grant of £50 for the purchase of a gas-and-oxygen apparatus, and to Mrs. Malcolm Gordon and the members of the Linen League. The medical and surgical report stated that the total number of eye patients attending was 2,203, and of ear, nose, and throat patients 2,245. Operations to remove cataract from the eyes numbered thirty, mastoid (ear) operations fifty-two, dissection of tonsils 136, and removal of tonsils and adenoids (chiefly in children) 310; the total number of operations of all kinds was 1,222. The hospital has now an excellent equipment for removal of metal and other foreign bodies from the eyes by electro-magnets, etc.

Reports of Societies

FAILURES OF GASTRIC SURGERY

At a meeting of the Medical Society of London on April 23rd, with Sir JOHN THOMSON-WALKER presiding, the subject of the discussion was "The Failures of Gastric Surgery."

CAUSES OF FAILURE AND THEIR AVOIDANCE

Dr. JOHN A. RYLE, in opening, said that he hoped it might become the custom to devote one evening in each session to a review of therapeutic limitations, errors, and failures. All true advances in therapeutics must pass through an experimental phase in which indications were sifted and technique developed. During this phase the results would be found to vary considerably in relation to individual judgement and ability, and gastric surgery was no exception to this rule. Their self-criticism should take the form, not of condemnation, but of analysis. He hoped the discussion would not degenerate into an argument for medical methods as opposed to surgical, or for one surgical method as opposed to another. There had been from time to time a tendency for the surgeon to decry the physician, and vice versa, in respect of the treatment of peptic ulceration, but this antagonistic habit of mind was unbecoming and unphilosophical.

What constituted a failure? Briefly, an operation which left the patient immediately no better, or worse, than before, or resulted in death, when the condition might have been cured or greatly palliated by medical means, must be regarded as a surgical failure. The causes of failure might be subdivided into those due to technical error or surgical inexperience, and those due to faulty selection and judgement. Faulty judgement was held to include decisions to operate in cases in which there was no sufficient justification for surgery at all, in which the medical treatment had been given no trial or no sufficient trial, or in which the patient's state of health made surgery an unwise procedure. He enumerated five complications of gastro-jejunostomy deserving the name of partial or complete failure: (1) the dumping stoma; (2) vicious cycle vomiting; (3) recurrent haemorrhage; (4) persistence of the original ulcer; and (5) anastomotic ulceration. In considering the measures necessary for the avoidance of failure, he urged first a close attention to the age, physical and mental type, general fitness, family history, occupation, habits, and economic status of the patient, and secondly the duration of the ulcer. The final decision should never be based on any rule-of-thumb method, but on a careful review of all the available evidence, general or local. Commonly the decision should require the co-operation of physician and surgeon. Every operation should be followed by an adequate period of dietetic treatment. Dr. Ryle added that he had no wish to exaggerate the frequency of failure. For every ten cases of duodenal ulcer seen in private practice he saw one case of anastomotic ulcer. But caution should not be dictated solely on account of the numerical frequency of the failures; their gravity also had to be considered. When gastric surgery failed to relieve it commonly left the patient in a worse state than before, but the same could not be said of medical treatment. The triumphs of surgery were more complete and lasting than those of medicine, but by the very nature of the risks undertaken the failures of surgery were more complete and lasting also.

OPERATIVE PROCEDURES: RISKS AND COMPLICATIONS

Mr. A. JAMES WALTON said that surgeons had to thank Dr. Ryle for the moderate and friendly way in which he had considered some of their failures. He associated himself with him in saying that the days in which a surgeon was simply required to know how to operate were long since passed; one of the surgeon's most important functions to-day was to know when to operate. The first group of errors in gastric surgery was that of diagnosis. It was a difficult matter indeed to estimate the

proportion of these cases. It was true that to-day surgeons were not called upon to operate simply because the patient had symptoms which were somewhat anomalous and had not reacted to medical treatment. In the old days it was said that medical treatment had failed, and therefore surgical treatment should be given a chance: that principle was not put forward to-day. Mr. Walton produced statistics relating to 2,343 cases which had passed through his hands. Of these, in 171 the expected surgical lesion was not found; thus the failures in diagnosis amounted to 7.2 per cent., which he thought was still much too high. The next big group comprised those which he might call operations for medical lesions. There were groups of cases in which an operation should not be carried out because the patient could be cured by medical means. One had to take into account the widespread dread of operation, which was not confined to the ignorant, but prevailed among people of the educated classes, including medical men, who understood what was going to happen to them. Very few cases now came to him in which he could say that the patient had had no opportunity of medical treatment. It was also agreed that the more unsuitable the case or the patient for operation the longer should medical treatment be tried. Again, owing to increasing knowledge of the effects, surgeons were not now so often asked to operate for visceroproposis, chronic colitis, and other similar lesions. It was necessary also to bear in mind the group of patients who died from operation. In most of the statistics given the operative mortality was not considered, but he wanted to point out that there was no operation whatever to-day which was free from danger to life. Every operation was associated with a certain risk, and one had always to balance up most carefully the risk of the operation against the risk of the condition present in the patient; and that, of course, entailed a very careful consideration of the patient's condition. They were often told that there was a certain lesion which required a certain operation. That might be useful for undergraduates, but in practice it was absolutely futile. The three conditions which were most important to consider were the age of the patient, the presence of complications, including obesity, and the experience of the surgeon. It was noteworthy that as one's experience of a certain disease increased, so did one's mortality rate rise. The explanation was that the experienced surgeon increasingly had sent to him for operation extremely bad risks, the simple cases all being done locally. But that circumstance showed how valueless were mere lists of statistics. His own operative mortality had been as follows:

	Cases	Deaths	Per cent.
Posterior gastro-enterostomy for duodenal ulcer	703	14	2.0
Posterior gastro-enterostomy for all uncomplicated lesions	816	25	2.9
Surgical resection for lesser curvature ulcers	272	12	4.4

He also gave figures of five-year cures after operation. These showed 74.2 per cent. after partial gastrectomy, 92.1 per cent. after surgical resection for lesser curvature ulcers, and 88.4 per cent. after posterior gastro-enterostomy for pyloric and duodenal ulcer.

A great deal was heard to-day about the failures of surgical operation, and there were, of course, definite failures; but he desired to stress the fact that these formed a very small percentage of the total. Among the actual failures some were due to errors of technique, of which he enumerated some gross illustrations; fortunately these were becoming rarer. He believed that post-operative haemorrhage was due to errors in technique, but it was very difficult to lay one's finger on the error, and therefore difficult to avoid it. Some cases were due to accident which could not be predicted or prevented. There were four complications upon which a good deal of stress had been laid—namely, gastro-jejunal ulceration, and recurrent ulceration, subsequent onset of carcinoma, and presence of post-operative anaemia. Gastro-jejunal ulceration was common only after posterior gastro-enterostomy for duodenal ulcer. The condition was much more common

in males, and was definitely due to hyperacidity. This complication must not be put down entirely to the fault of the surgeon. Errors of technique, such as the use of Murphy's button, might increase the incidence of gastro-jejunal ulcer, but a faultless technique would not abolish it. To his mind there could be no doubt that there was one treatment—namely, a partial gastrectomy performed sufficiently widely to reduce permanently the acidity—which would prevent the occurrence. With regard to recurrent ulceration, gastro-enterostomy was an insufficient operation for lesser curvature ulcer. In 117 of his cases in which gastro-enterostomy for gastric ulcers was done there were five cases of recurrent ulceration; in 865 cases in which this operation was done for duodenal ulcers four developed ulcers on the lesser curvature; after a partial gastrectomy in 469 cases there was no case of recurrent ulceration. There could be no question that the routine operation for duodenal ulcer should be posterior gastro-enterostomy, reserving the partial gastrectomy for the small percentage of cases in which there was a gastro-duodenal ulceration. As to carcinoma, the number of cases in which he had done a posterior gastro-enterostomy with resection was 1,307, and among these cases twelve—or 0.91 per cent.—developed carcinoma of the stomach. In four of the twelve the carcinoma was present at the first operation; in three the carcinoma was remote from the ulcer; and in five, or 0.37 per cent. of the total, the carcinoma was at the ulcer site. As for the fourth complication—namely, severe anaemia—in his own series after gastro-enterostomy for duodenal or gastric ulcer he had no severe anaemias at all. One such case occurred after gastro-enterostomy and resection for gastric ulcer, and five after partial gastrectomy.

THE SELECTION OF CASES

Dr. EUSTACE CALLENDER said that his own personal experience of gastric surgery had been confined to gastro-enterostomy for the relief or cure of duodenal ulcer. In the cases in which he had ventured to advise operation the procedure had been very generally completely successful, but he gave an account of one case in which there had been complete failure of gastric surgery. His experience led him to believe that the operation was eminently successful in selected cases. There were cases of duodenal ulcer in which, in his opinion, a permanent cure was extremely unlikely without operation; there were others in which the condition could be treated by medicines and diet; and some in which operation should be avoided if possible. A good deal of responsibility rested upon the general practitioner, who knew the patient and his psychology, in selecting the cases that he brought to the surgeon, and also a good deal of responsibility rested upon him in selecting the surgeon.

Sir WILLIAM WILCOX thought that Dr. Ryle's figure of 10 per cent. of anastomotic ulcers was much too high. It occurred in Dr. Ryle's experience because he happened to have selected cases submitted to him. He was inclined to agree with Mr. Walton in his view that posterior gastro-enterostomy was the safest operation for duodenal ulcer, and he also entirely agreed with him in some remarks he had made about the scares concerning carcinoma appearing in an ulcer. Such development was, in his judgement, exceedingly rare, and he thought that, if there was an ulcer, to advance the possibility of carcinoma as an argument for operation was utterly fallacious.

RADIOLOGICAL FINDINGS

Dr. G. VILVANDRE said that the first complication of surgical operation for gastric or duodenal ulcer was to be seen in some cases when the appendix had been removed and, a year or two after operation, the patient still complained of indefinite symptoms of indigestion. In such patients, by taking a careful history, it would be found that at the time of operation for so-called appendicitis he or she was really suffering from symptoms of duodenal ulcer. In his own series of cases such a condition had arisen a good many times—in short, the appendix had been removed on flimsy evidence, while all the time mild symptoms of a duodenal ulcer were

present, but had not been sufficiently investigated to give a definite diagnosis. It followed, therefore, that these patients were submitted in due course to a second operation for duodenal ulcer. In a series of cases which he had examined after gastro-jejunoscopy for a duodenal lesion he had on four occasions come across the presence of a well-marked gastric ulcer on the small curvature, some distance above the stoma. It was true that cases of double ulcer—that is, duodenal and gastric—had sometimes been found; and Carman, a famous radiologist in America, had put the number of such cases at 4 per cent. It was difficult to see how a gastric ulcer should follow a gastro-jejunoscopy, but whatever the reason the fact remained that such a thing did arise. A more common complication following this operation had been the occurrence of jejunal ulcer.

Mr. DONALD BARLOW thought partial gastrectomy far too radical a measure for ulcer in the stomach. One would have thought that the chief aim would be to rest the stomach, both from physiological movement and from the passage of acid and food. Physiological rest might be obtained by splinting the stomach in some way, possibly by temporary paralysis of the nerve supply by crushing the vagus and allowing regeneration after a certain time, or by strapping the stomach with some sterile preparation. Dr. ERNEST YOUNG pointed out a contraindication to operation in cases common in quite young people with duodenal ulcer, in whom there was rapid emptying of the stomach. These cases almost invariably turned out to be surgical failures.

Mr. W. H. OGILVIE thought it a pity if the meeting terminated in an attitude of too great complacency. The failures were nothing like the simple problem suggested by the majority of the speakers. Few surgeons saw their own failures. In twelve years he had seen only two recurrent ulcers in cases on which he had operated, but in the last five years he had operated for about thirty anastomotic ulcers where the primary operation had been done elsewhere. If the experience of other surgeons was like his own, surgical failure was of no small dimensions. Several surgeons who themselves suffered from the condition were most enthusiastic devotees of medical treatment in their own cases. He attacked that "idol of surgery," posterior gastro-jejunoscopy, which in his view did nothing to counteract the cause which brought about the ulceration—in fact, by increasing the rapidity of emptying it made the recurrence of ulcer more probable. The experience of Continental surgeons was that the only method by which acid could be permanently reduced to a level which was really safe was gastrectomy, and this must be radical, at least four-fifths of the stomach being removed. Before such a radical procedure was adopted, of course, medical treatment should be given the fullest trial.

Dr. MAURICE SHAW said that he had seen a relatively large number of failures of gastric surgery, but these did not lead him to underestimate the benefits of operation. Ultimately, success or failure must depend upon the skill with which the cases were selected for treatment, and to a large extent upon collaboration between physician and surgeon. Mr. Walton had not stated whether he removed the appendix as a routine in ulcers, but, whether routine or not, it was a measure which should always be considered. He did not regard the radiological appearances of pyloric obstruction as a certain indication for operation, and he had several times seen cases of apparent pyloric obstruction yield to medical treatment. He had had among his patients a number of doctors who had submitted to operations, with varying results, but he had never heard of a surgeon who had done so—though he was sure there must be such—and he knew of several who had refused.

Dr. J. R. WYLIE presented some statistics from the Miller Hospital relating to 492 operations for gastric lesions, and in a table gave some idea of the frequency of the various post-operative sequelae. In this series there were only two cases of carcinoma in which the surgeon thought the condition had started in an ulcer.

Dr. RYLE, in reply, said that the most frequent and serious of the sequelae was the anastomotic ulcer. In expert hands the figures were low, but it had to be

remembered that gastro-enterostomies were being done all over the country by competent and incompetent alike. It had taken a quarter of a century to realize how serious and frequent were the failures of gastro-enterostomy. Only a few years had passed since partial gastrectomy had become common, and he thought there should be an effort to look ahead and endeavour to estimate how far this experiment—for it was really such—was justified. Great caution should be used in employing partial gastrectomy for small ulcers. Mr. WALTON said that as regards the appendix he did not remove it as a routine; of course, he always examined it, but he did not take it away unless there was definite evidence of disease.

CORRESPONDENCE

The Milk Question

SIR,—In reply to Lord Moynehan's inquiry in your issue of April 21st (p. 727): The evidence on which my statement was based is that in one of our homes, containing about 750 boys, during five years, while they were on a daily pint of raw milk, only one case of non-pulmonary tuberculosis occurred after admission, whereas during the previous five years there were fourteen such cases. These boys must not be taken as being normal for this country, as they consist of what may well be termed a C3 population. They enter these homes for various reasons—poverty, neglect, bad usage, parental alcoholism, etc.—and in quite a number of cases one or both parents have died of pulmonary tuberculosis, so that some might regard them as being a fruitful field for potential tuberculous infection. They are at this particular home because they are, or have been, in need of medical or surgical treatment, and on that account are not fit to be boarded out. We believe that the extra nutrition attained by this means has fundamentally assisted to raise their resistance to tuberculous and other infections. By "tubercle" I mean any lesion which may occur as a consequence of infection with the *Bacillus tuberculosis*.

As the cases recorded were not typed they prove nothing with regard to bovine tubercle, but they do give some indication with regard to tubercle in general; besides, Griffith's and Munro's researches have shown that in the age group (5 to 15 years), as at this home, over 75 per cent. of cases of non-pulmonary tubercle are of human type in those places in the United Kingdom where their work was done.—I am, etc.,

A. H. MACDONALD,

Stepney Causeway, E.1,
April 23rd.

Chief Medical Officer, Dr. Barnardo's
Homes.

The Nutrition Report

SIR,—In your issue of February 24th Dr. Helen M. Jardine comments adversely upon my letter of the week before, but fails to controvert my main contention.

The mere fact that many people suffer from malnutrition and some from subnutrition does not alter the fact that an idle man's nutritional requirements are less than those of the same man engaged in active manual labour, nor the fact that the English as a whole do themselves well. Statistics show that most, except the lowest-paid classes, consume more than their requirements. As regards this question of "malnutrition," most of it is not due to underfeeding, but to a faulty balance in the rations consumed. Besides which the mere fact that a person fails to reach an A1 standard in general condition does not necessarily mean the want of a correct diet, but may be due to ill-health, heredity, congenital defect, or to physiological or psychological reactions to environment other than food.

Dr. Jardine is mistaken when she asserts that I criticized the minimum diets recommended in the B.M.A. Committee's Report. I merely commented on the excellent diet (No. 2) which the committee found in use in well-to-do working-class families in England. And nowhere does the report give "minimum" diets. It gives diets for an average man (with percentages for women and children) doing a moderate day's manual work. This postulates that there are healthy people below and above that average as regards both physique and labour conditions. Therefore some people require less than the 3,000 + 400 calories and others require more. The diets given are not minimum, but average. I presume the committee, when deciding the nutritional requirements of the average man, envisaged him as living in a temperate zone, otherwise its recommendations are very divergent from dietary habits in climatic extremes. The nutritive constituents of the 3,000 calories show the following percentages: 14 protein, 31 fat, 55 carbohydrates (approximately), whereas in Greenland it is 44, 48, 8, and in Java 9, 8, 83, so the inhabitants of these two countries suffer more heavily than the English from malnutrition due to imbalance. To show what man (in a temperate clime) can flourish on, Hindehede put subjects on as low as 1½ oz. (as against 3½ oz.) of protein per day over a prolonged period, and found that they maintained good health and activity (vide Hutchison and Mottram). All of which indicates the possibility of a healthy and active existence on widely divergent proportions of nutritive constituents, under both different and similar conditions, the impossibility of laying down a rigid diet for everyone even in the same environment, and the unwisdom of assuming that all those below standard in physique or general condition are suffering from errors of diet in quantity or balance.

We all agree that the Government should do its part in fostering the well-being of the people, but false deductions and misrepresentations are to be deprecated.—I am, etc.,

Southern Rhodesia, March 23th. D. CAMPBELL WATT, M.D.

Leucocyte Counts

SIR,—Variability in the blood in response to change of environment or of food is essential to constancy of function for any animal that is to survive. The leucocyte count must vary accordingly, yet the count, like the pH, has, on the average, amazing constancy. For both reasons the count is valuable, as is shown by the following case, in which counts were taken for nearly three years. (It is with the differential counts, particularly with the eosinophils, that I have been mainly concerned.)

The case is that of a man with long-standing asthma. In asthma the percentage of eosinophils is usually raised above the normal 3 or 4, with corresponding reduction of the polymorphonuclears. In this patient they reached 70 per cent., the highest I have ever met. As detoxication proceeded and he improved they fell more or less steadily; he has had no asthma for two years. The counts (expressed in percentages) were taken on certain days in the months indicated.

	1931	1932			1933				1934
	Nov.	May	Aug.	Nov.	Mar.	June	Aug.	Nov.	Jan. Mar.
Eosinophils ...	68	70	59	40	54	23	12	7	7 6
Polymorphs ...	7	13	18	23	30	38	58	36	69 72
Small lymphs.	23	12	17	20	11	33	20	40	15 15
Large lymphs.	2	5	6	7	5	6	10	17	9 7

In contrast with this steady fall over these years is the rapid variation produced in less than one hour in the same patient by a cold douche following a warm bath.

	Eosinophils	Basophils
Before hot bath ...	63	0.0
Immediately after ...	66	0.0
After cold douche ...	49	0.5
One hour later ...	45	1.0

This change was probably due to the stimulation of the sympathetic and so of adrenaline flow, for fifteen minutes after injection of 10 minims of adrenaline in the same patient the eosinophils fell from 56 to 43 per cent. and from 69 to 59 per cent. The greater reduction after the cold douche seems to indicate the more prolonged effect of the douche than of the injection of adrenaline. Pointing in the same direction is the observation that a cold douche tends to draw out the basophils, as mentioned by Dr. J. A. M. Cameron. In another case the figures were:

	Eosinophils	Basophils
Before hot bath ...	4	2
After hot bath ...	8	3
After cold douche ...	10	4
One hour later ...	4	6

On the other hand, where there is a tendency to toxæmia, and so to eosinophilia, the effect of increasing the toxic load by the injection of 15 grams urea is to raise the eosinophil count. This happened in eighteen out of twenty-three cases so treated—increased eosinophils both in percentage and in total number. In three cases the percentage was doubled, and in one of these it rose from 11 to 22, and status asthmaticus followed for forty-eight hours. On the average there was only slight increase in the total white cell count.

Much else could be added. The lesson surely is not that leucocyte counts are clinically worthless, but (1) that they are of great value if only we attend to the factors making for variation; and (2) that variation in the blood picture is essential if the blood is to keep functional constancy.—I am, etc.,

Glasgow, April 21st.

JAMES ADAM.

Raised Intraocular Tension

SIR,—I am grateful for Flight Lieutenant R. L. Raymond's letter in your issue of April 14th (p. 689) in reply to my criticism of his original article on intraocular tension. He now explains that, although he wrote that the tension in each case was "thought to be higher," he and his colleagues actually had no doubt but that the tension was raised. This does not affect the main part of my criticism, which was to point out that the tension had been estimated merely by digital tonometry. Dr. Raymond will agree that the notes of half his cases described the tension as being only "raised" or "slightly raised." It is surely unwise to be dogmatic about a tension which could not be noted as being definitely raised, when it had only been estimated by a method which is acknowledged by all recognized authorities to be inaccurate and unreliable. An ophthalmologist cannot be sure of his fingers when the tension is only moderately raised, and the estimation of tension must remain a matter of doubt to other people, if not to himself, unless confirmation has been obtained by a less inaccurate method of tonometry. It is therefore not possible to share Dr. Raymond's confidence in his findings.

For the sake of argument, however, let it be imagined that the four cases upon which Dr. Raymond based his conclusions actually did have increased intraocular tension. There is, then, no explanation of the author's further

reply that the point of his article was to demonstrate increased tension with no other symptoms of glaucoma. There can be no justification for this statement in the absence of full clinical details. There was, for example, no information given about the fields of vision. In any case, it is surely a commonplace that increased intraocular tension can, and not infrequently does, occur without any other signs or symptoms of glaucoma at the time of examination. Furthermore, as I have previously pointed out, glaucoma may occur in young people and may cause pain which is referred to the frontal region. There is therefore nothing new in the syndrome reported by Dr. Raymond.

It is possible that the difficulty in following Dr. Raymond's description of his syndrome is due to the fact that he appears to have different views on the subject of glaucoma from those held by modern ophthalmologists. For example, he now explains that his cases demonstrate "pathological hypertension which could not reasonably be called glaucoma" in the absence of other symptoms. Now most, if not all, authorities regard the terms "increased intraocular tension" and "glaucoma" as synonymous. In other words, increased pressure is glaucoma, and there is no such condition as increased intraocular pressure which is not glaucomatous. It is therefore not possible to discuss Dr. Raymond's query as to cause except by consideration of the aetiology of glaucoma, a vast and, as yet, unsolved problem. However, it appears necessary to explain that glaucoma is not a disease *per se*, but a symptomatic condition of which tension is the cardinal sign; it is upon the causes and consequences of the increased intraocular pressure that all the other signs and symptoms of glaucoma depend.—I am, etc.,

London, April 20th.

VICTOR PURVIS.

Theoretical Aspects of Collapse Therapy

SIR,—Dr. F. H. Young's excellent article on the theoretical aspects of collapse therapy in pulmonary tuberculosis, in the *Journal* of April 4th (p. 661), prompts me to ask you for space to refer to some of the recent French views on the subject.

Confining myself for the purpose of discussion to artificial pneumothorax and phrenicectomy only, the indications for, and the results obtained after, these two procedures may, from a mechanical point of view, depend on some or all of the following factors.

1. The intrinsic difference in the action of artificial pneumothorax and phrenicectomy.—A pulmonary lesion is subjected to the physiological tension of the expanded lung tissue and the additional tension during inspiration. An artificial pneumothorax causes relaxation of the physiological tension (static relaxation), inspiratory movements generally still going on, even if somewhat diminished. Phrenicectomy, by abolishing the active diaphragmatic movements, produces dynamic relaxation. The volume of the lung is, however, generally also slightly reduced, causing some relaxation in all directions. The latter factor probably accounts for the improvement sometimes caused by phrenicectomy in upper lobe lesions.

2. The situation of the lesion.—An artificial pneumothorax will often produce poor collapse of the base owing to the common presence of basal adhesions. Phrenicectomy, on the other hand, should clearly benefit basal lesions most. A lesion situated in the centre of the lung will be acted on more favourably (owing to the relaxed tension all around it) than one laterally placed or in the apex. As apical lesions are so much commoner than basal ones, however, the total benefit to be derived from phrenicectomy in the former group may equal or exceed that obtained in the latter.

3. The character of the lesion and the state of the tissues surrounding it.—A cavity or caseous area will benefit more by the relaxation of tension when it is completely surrounded by healthy than by fibrotic or atelectatic lung. On the other

hand, considerable improvement may be obtained in an active fibrotic lesion owing to relaxation of the additional tension caused by the fibrosis involving the diaphragm.

4. The results of phrenicectomy will depend on the extent the patient is in the habit of using the diaphragm. Thus one would expect more benefit in narrow-chested than in broad-chested individuals, in men than in women. Hence also the importance of careful screening before deciding on the type of operation.

5. The presence of adhesions will considerably affect the result obtained. As Dr. Young points out, this factor is also of great importance in phrenicectomy, especially as the presence and extent of diaphragmatic adhesions are more difficult to appreciate.

Even if all these factors are considered beforehand, however, artificial pneumothorax and phrenicectomy still sometimes prove a "toss-up," owing to the unexpected results obtained. For example, E. Dumarest and P. Lefèvre (*Presse Méd.*, 1934, xlii, 498) point out that an apical lesion which at first may benefit from a phrenicectomy owing to relaxation of a downward pull may later retrogress as the result of lateral pulls which before were ineffective owing to the stronger vertical force.

In view of the uncertainty as to the results to be obtained by these operations, the new method of radiokymography now being studied in France seems of considerable importance. A gridiron plate consisting of x-ray-opaque bars is inserted between the film and the patient's chest. An exposure covering about two respirations is given. The film thus obtained shows in each vertical space small peaks representing the inspiratory and expiratory movements of various organs—for example, rib, edge of cavity, lateral part of diaphragm, etc. It is thus possible to compare and have a record of the movements of lesions in relation to the chest wall and the diaphragm of the same and opposite side (for the effect of any method of collapse on the opposite side of the chest should always be considered). The method is still in its infancy, but offers great possibilities (cf. Léon Bernard, Pellissier, and Silbermann, *Presse Méd.*, 1934, xli, 205; and other references given there).

Finally, in view of the new conceptions in regard to collapse therapy, it might be urged that the expression "compression of the lung" is no longer applicable except when dealing with oleothorax or a pleural effusion associated with a pneumothorax.—I am, etc.,

Paris, April 18th.

G. GREGORY KAYNE.

A Reversible Reducing System of the Lens

SIR,—Until now two "reducing systems" have been found in the lens of the eye. These are the SH groups (glutathione and cystein) and vitamin C (ascorbic acid). The latter forms an irreversible reducing system, while the former are found, in a reduced form only, in all the tissues of the body. It appears, however, to be probable that they are also found in the oxidated form in the lens.

On precipitating the proteins of the lens one finds that the sodium nitroprusside reaction acts more intensely after adding M NaCN. NaCN and KCN have the property of reducing the total amount of glutathione or cystin. So it follows that in the lens the SH groups behave like true reversible reducing systems. If one precipitates the proteins of lenses with the aid of 2/3N sulphuric acid and 10 per cent. sodium tungstic acid or 10 per cent. trichloroacetic acid, and one adds to the filtrate a solution of silver lactate as has been described by Folin, one finds not only the glutathione and the vitamin C, but also a yellowish substance. This substance may be dissolved in 0.25 per cent. hydrochloric acid, and shows in light of short wave-length (3,660 A.U.)

a strong fluorescence of yellowish-green colour. This fluorescence is lost after strongly reducing the substance. On making this solution basic and adding acid again to it, it is possible to extract the substance with the aid of chloroform. After evaporating the chloroform extract one may obtain a solution in water.

It is clear, therefore, that this substance shows all the properties which are peculiar to those substances which are isolated from tissues of rats and tumours by Bierich and Rosenbohm. These authors consider the substances to be identical with the yellow oxidation ferment of Warburg and Christian and with vitamin B₂ of Kuhn, Wagner-Jauregg, and György.

A considerable amount of this yellow oxidation ferment may be found in the lens, which is revealed by the fact that a very weak solution—1 in 7,000—still shows the fluorescence. It appears that there is a decrease of it in the lenses of elderly patients. In lenses affected with cataract the amount of vitamin B₂ is diminished or disappears. Bierich and Rosenbohm take it for granted that a very low E₀ potential is particular for this yellow oxidation pigment. This E₀ potential should be the lowest of all physiological reducing systems hitherto known. It covers the range of potentials measured in mammals by an anaerobic method. It is quite clear that a real reversible system of oxido-reduction is of fundamental importance for the mechanism and continuation of the internal respiration of the lens.—I am, etc.,

F. P. FISCHER,

Nederlandsch Gasthuis voor Ooglijders,
Rijksuniversiteit.

Utrecht, April 7th.

BIBLIOGRAPHY

- Bierich ssenschaften, 1933, xxi, 490
idem: ysiol. Chem., 1934, ccxiii, 136
Warburg Zeit., 1932, ccliv, 438, and 1934,
cclviii, 496.
Folin: *Journ. Biol. Chem.*, 1922, liv, 2.

Hypochondriasis

SIR,—Touching the vexed question of hypochondriasis which has recently been discussed in the *Journal*, may I submit that clinical classification is the only scientific means of understanding the various morbid conditions of which it is a prominent symptom? It so happens that I have lately been interested in the clinical analysis of the acute and subacute mental crises common in private practice, and consequently can give some figures which will throw light on the subject. I stress the importance of investigating "crises"; so-called "chronic hypochondria" really represents nothing but a bin into which are cast all sorts of unclassified depressive states.

I find that out of one particular series of 514 medico-psychological crises observed by myself 100 exhibited hypochondria as a prominent feature. Of these, sixty-five were undoubtedly manic-depressive in type, the remaining thirty-five being anxiety states. The incidence of hypochondriacal conditions—as occurring in one particular practice at any rate—is shown by reference to the whole series. Tabulated, my analysis gives the following results:

Manic-depressive psychoses	276
Acute anxiety states (psychoneuroses)	110
Schizophrenic-paranoid cases	77
Organic and toxic group	51
Total	514

The 276 manic-depressive psychoses are represented by:

Melancholia (including involutional types), 178; manic and hypomanic states, 33; hypochondria, 65.

These latter represent mild manic-depressive states in which anxiety associated with health matters was the most prominent symptom. Among the 110 acute anxiety states, all definitely representing psychoneurosis, there were thirty-

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five in which anxiety was predominantly associated with health.

Clinically, where hypochondriasis is not an anxiety state (psychoneurosis) it represents manic-depressive psychosis. The practical point is that, where it represents an anxiety state, direct psychotherapy of the personal influence and suggestion order will work miracles; but where it is of the manic-depressive type we find ourselves up against a self-limited disease not very amenable to treatment of any kind. Nevertheless, even here encouragement and personal support will do much to better the patient's lot.—I am, etc.,

EDWIN HOPEWELL-ASH.

London, W., April 16th.

Monilia in the Sputum

SIR,—With reference to Dr. Bertram Jones's paper—"The Significance of Monilia in the Sputum"—in the *Journal* of March 3rd (p. 368), the work was, as stated, undertaken after I had consulted with Dr. S. Roodhouse Gloyne, and the original suggestion agreed to was the cultural examination of saline washings obtained through the bronchoscope from the affected alveoli and bronchi.

I do not think that one is splitting hairs in pointing out that "monilia in the sputum" differs from bronchomycosis, as "pneumococci in the sputum" differs from pneumonia. We have to remember that monilia can be grown from tea and from tobacco-dust—these are tropical monilias; unfortunately, we are unable to differentiate these monilias from those which are derived from cow's milk.

With reference to Dr. Lawrence P. Garrod's letter (*Journal*, March 17th, p. 504), and the presence of monilia in pulmonary tuberculosis, this brings forward the factor of pyogenic organisms. Monilia are pyogenic, and the difference in outlook between surgical and medical tuberculosis lies in the fact that the patient suffering from tuberculosis of the lung usually presents himself when suppuration has become only too evident.

To stress the action of monilia I should like to quote Sampson, who states that "the lungs of tuberculous cattle often contain blastomycetes and other fungi, and that the blastomycetes are indistinguishable from those isolated from human tumours. They seem to render the tuberculous infection more virulent."

We in Jersey, dealing with tuberculous lungs, have dealt with the monilia present; coincident with this, the deaths from tuberculosis of lungs have fallen gradually from 69 in 1922 to 34 in 1932.—I am, etc.,

P. JANVIER MARETT.

Lieutenant-Colonel R.A.M.C. (ret.).

Jersey, April 12th.

Pathogenesis of Cancer

SIR,—I think Dr. Cronin Lowe (April 14th, p. 687), in saying that the observations and findings of Dr. Shaw-Mackenzie and other investigators "seem to be strangely forgotten," has missed the point. These findings are most valuable as showing the workings of the cancer cells, and especially as aids in the diagnosis of cancer. But surely the deficiency in the lipolytic enzyme in the blood is the effect, not the cause, of the cancer, since the enzyme reappears after removal of the cancer.

As Dr. Lowe says, not everyone who is exposed to cancerous agencies falls a victim. All the workers exposed to industrial cancer-irritants (soot, tar, paraffin, x rays, aniline, etc.) do not succumb; so there must be some "soils" which are immune, but, as yet, the immune factor has not been discovered. One "soil" has had the

reputation, in my experience justly, of being comparatively immune—that is, the "soil" which predisposes to, or harbours, tuberculosis. I wonder if blood or serum from a robust person of tuberculous stock would retard the growth of an inoperable cancer; or, if the comparative immunity is due to the tubercle bacillus, and not innate, whether a toxin-antitoxin form of tuberculin might do so—much as malaria improves general paralysis, and Coley's erysipelas sarcoma. But blood or serum from cases of "spontaneous cures"—if there are such cases—would, of course, be preferable.—I am, etc.,

M.D.

South Wales, April 16th.

Heredity and Scoliosis

SIR,—I do not wish for one moment to detract from the illuminating article by Dr. Garland upon heredity and scoliosis (February 24th, p. 328), and I do want to compliment him upon the work he has done in this respect, but I must emphasize the fact that such cases must be rare in comparison with the numerous other conditions that produce scoliosis. Heredity as being aetiological concerned in scoliosis is not mentioned in all in the textbooks, and this rarity is confirmed in the out-patient departments of hospitals and in private practice. Lamarck, a century ago, enunciated the theory that acquired modifications are being continually produced and perfected by any organism during life, and so that each generation will be rather better adapted to its surroundings ("and purposes in life") than its predecessor—for example, the great length of the neck of the giraffe can be explained in this way by the continued striving through many generations to reach the higher leaves on the trees. Yet it has to be proved that a degenerative condition as scoliosis could be designated as an acquired character. To my mind the inherited condition of scoliosis arises from the cumulative effect through generations of bad hygienic conditions. This again is confirmed in actual practice, as the patients suffering from this deformity in the great majority of cases come from our slum population.—I am, etc.,

CLEMENT BELCHER, M.B.
B Ch., D.P.H.

Birmingham, April 1st.

Conjugal Pulmonary Tuberculosis

SIR,—The statement that pulmonary tuberculosis is not communicable from adult to adult, from husband to wife, and vice versa, has so often been made—more especially by Harley Street, and also occasionally by those who should know better, such as tuberculosis officers, who come into constant contact through many years with entire family histories—and my impression has been so very different, that I decided to spend spare moments in dipping into dispensary records in order to ascertain whether I could substantiate my impressions.

I have not made a survey of all cases coming to the dispensary, but have noted down those cases coming to the minds of myself and of the dispensary staff, and can by these means alone account for forty instances in which there seems definite reason to believe that pulmonary tuberculosis passed from one to another of a married couple. The reason why this fact sometimes escapes recognition by the physician is, perhaps, the length of time which elapses before the infection is brought to light, and that the two victims are not seen at hospitals or in consulting rooms as they are at dispensaries, where the tuberculosis officer is personally acquainted with

all the sufferers from the disease for many years in succession.

The details of the forty cases are as follows. No cases have been included in which the sputum was not positive for tubercle bacilli (except where the patient died many years ago and the fact is not available). In twenty-one cases the husband was first notified, and in nineteen cases the wife. In twenty-five cases both husband and wife are dead, in three cases both are alive, in six the husband only is dead, and in six the wife only is dead. The period which elapsed between the notifications is, as accurately as can be ascertained, shown in the following table.

Period Elapsing between Notification of Husband and Wife

Period in years ...	1 year and under	2	3	4	5	6	7	8	10	14	16	29
Number of cases ...	6	4	4	6	3	3	4	4	1	3	1	1

Thus only 15 per cent. came to the knowledge of the physician during the first year after the notification of the first partner, and all these couples are dead, the infection having been acute. The shortest period between the notifications was eight days. It will be observed that in 70 per cent. of the cases a period of two to eight years elapsed between the notifications. In the remaining 15 per cent. the period between the notifications amounted to from ten to twenty-nine years. It may be contended that in twenty-nine years the infection may well have been contracted from another source; in this instance the man is alive, aged 59, suffering from chronic pulmonary tuberculosis (T.B. +), and was notified on September 5th, 1931, having lost his first wife from pulmonary tuberculosis in 1902.

It would aid the efforts of the dispensary staff if patients were not assured at hospitals that there is no danger of infection between married couples. They might then be more willing to take necessary precautions at home.—I am, etc.,

ROSE JORDAN, M.D., D.P.H.

Blackheath, S.E., April 6th.

Wanted: Bee Venom for Rheumatism

SIR.—Can any member of the B.M.A. assist the Devonshire Royal Hospital, Buxton, to obtain standardized bee sting for the treatment of arthritis, fibrositis, and neuritis? From January, 1932, to August, 1933, we have used bee sting at the Devonshire Royal Hospital, made by Wolff, under the name of apicosan, and have obtained excellent results; but in August, 1933, the Customs notified the hospital that an import licence was required, and the Ministry of Health wrote stating the necessity for a licence. On December 9th, 1933, we wrote a joint letter to the Ministry of Health, stating that we had found apicosan of definite value in the treatment of certain rheumatic conditions, and that we wished to continue our investigations. We offered to allow them to investigate our cases. There was no reply to this letter. After waiting three weeks a letter was sent asking for a reply. The Ministry replied to the last letter by asking for particulars of manufacture, and all the available information was forwarded to the Ministry; but we are still not allowed to obtain supplies. It is interesting to note how the Ministry of Health obstructs a genuine attempt at research into the treatment of rheumatism and allied diseases, and prevents the use of well-recognized remedies for English hospital patients suffering from the above diseases.—We are, etc.,

W. SHIPTON, M.D.,

J. BARNES BURT, M.D.,
Honorary Physicians.

Buxton, April 16th.

Medico-Legal

THE DUTIES OF THE MEDICAL WITNESS.—V

PROFESSIONAL SECRECY*

Medical men are often asked in cross-examination questions which they cannot answer without divulging information they have learnt in the course of their professional relationship with a patient. The medical man recognizes a moral and ethical duty to his patient to maintain strict secrecy concerning anything which he learns through his position as medical adviser. That duty is not recognized by the law of this country. Consequently, when a medical man is giving evidence, and is asked a question which he cannot answer without revealing a professional secret, the law is that he must answer the question if ordered to do so by the judge. Medical men have long protested against this rule, especially as they see that it does not seem to apply to legal advisers. Their discontent has aroused sympathy in eminent lawyers. For instance, the learned editor of *Taylor on Evidence* says:

"The rule has been confined, with perhaps understandable strictness, to communications which pass between a client and his legal adviser, and the protection has not been permitted to extend to any matters communicated to other persons, though such communications were made under terms of the greatest secrecy."

He instances clergymen and medical men. In *Greenough v. Gaskell* (1833) Lord Brougham said: "It might not be very easy to discover why a like privilege has been refused to others [than lawyers], especially to medical advisers." This, moreover, was a hundred years ago, when medical men were not trusted nearly as fully as they are to-day.

One of the most lamentable results of this rule is that it goes far to counteract the confidence which has been so carefully built up by the Government among an especially timid class of the community—patients with venereal disease. Under the statutory regulations governing the treatment of venereal disease in the clinics of local authorities, the strictest secrecy is maintained concerning the patients who attend. Only if this secrecy is guaranteed under statute can the State hope to render its scheme of treatment effective. Nevertheless, the pledge of secrecy cannot be put against the requirements of justice as interpreted by the courts.

In *Garner v. Garner* (1920) a lady petitioned for the dissolution of her marriage. Adultery by the husband was proved, and the cruelty which she alleged was that he had infected her with syphilis. One of the medical officers of the Western Hospital was called to give evidence of her disease. He handed to the judge trying the case (Mr. Justice McCardie) a letter from the chairman of the House Committee, stating that the hospital had adopted the national scheme for dealing with venereal disease, and enclosing a copy of the statutory regulations. The judge read these communications aloud, but added that they could not override the obligation of a medical witness to give evidence. He said that the witness was desirous of assisting the scheme in every way, and wished loyally to maintain the secrecy which rightly rested upon him; he would, however, appreciate that in a court of justice there were even higher considerations than those which applied with regard to the position of medical men. Apart from the obligations which might be imposed on medical men by the order of His Majesty's judges, it was desirable that there should be the most loyal observance of the confidence which was reposed in them by patients. He was glad to say that the history of the medical profession was most honourable, and it was to be hoped that its members would always retain the confidence reposed in them.

While the witness and medical men in general were probably grateful for Sir Henry McCardie's remarks, these could not have done much to sweeten the pill which

* The first of this series of five articles by a legal correspondent appeared on March 3rd (p. 407), the second on March 17th (p. 568), the third on March 31st (p. 600), and the fourth on April 14th (p. 692).

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he administered. This case is typical of many in which the doctor finds his duty to his patient conflict with his duty to justice.

Another common position is that of the general practitioner who is consulted by a woman suffering from the effects of an unsuccessful attempt at abortion. If he is afterwards called as a witness for the Crown against her, he will be compelled to state what he knows on pain of being committed to prison. I know of no case in which a medical man has accepted the penalty rather than disclose confidence. The choice is one for the individual, but few fair-minded persons could be found to condemn a doctor who obeyed the order of a judge to abandon the claims of professional ethics in favour of the claims of justice. It is not fair that a medical man should be placed in this position, but there seems no prospect that the dilemma will be removed in the near future. The witness should always make a strong protest; if the judge is not a very relevant one the judge may suggest to counsel that he should waive his right to ask it. After the witness has been cross-examined counsel for his side may "re-examine" him—that is, ask questions on points raised in cross-examination—in order to suggest a construction favourable to his own case. The judge may then put questions, but if he does not the witness is free. This is the moment when he or his counsel should ask for him to be released, unless he wishes to hear the rest of the case.

CONSULTATION BETWEEN MEDICAL WITNESSES

A practice which would go a long way towards reducing conflict in medical evidence, and, what is more, to discouraging partiality in medical witnesses, is that of conference between the medical witnesses to be called by the two sides. The effect of such a conference would be, not that any of the witnesses would alter his evidence, but that doubtful points might be cleared up and in agreement attained, so that the witnesses would be in a position to put before the court the considered medical opinion on the case from a particular aspect. If this result could be achieved it would undoubtedly be a great help to the judge and counsel. Sir William Wilcox has expressed himself strongly in favour of this procedure.

A letter in the *British Medical Journal* (1930, ii, 667) gave a good illustration of the possible value of consultations between medical witnesses.

A workman fell at work, and broke both bones of the leg just above the ankle. About nine months later, after he had been examined jointly by the employers and his own doctors, the employers stopped paying compensation, and the workman started arbitration proceedings in the county court. He pleaded that, although his fracture had healed perfectly, he was suffering from flat-foot due to the fall. He had not suggested to his employers that he was suffering from flat-foot until a few days before the case came on, and more than a year after the accident. His panel doctor, giving evidence, said that he had noticed the flat-foot at the joint examination, but had not called the attention of the employers' doctor to it. When the judge asked him why, he answered, "The man's foot was there, and I did not think it necessary to point it out." The judge decided against the panel doctor's attitude. He gave a general warning to doctors that workmen in compensation cases are to a large extent in their hands, and that they are responsible for seeing that sound and adequate advice is given.

As the writer of the letter points out, those familiar with the medical procedure in workmen's compensation cases will easily understand how such a regrettable position is reached. The two doctors meet, not as scientifically minded persons concerned only to arrive at the real facts and their causes and results, but as hostile witnesses, each one placing the success of his own side first. Hence, instead of full discussion of all the points and their possible issues, each may be trying to give as little information as possible about his own views while endeavouring to detect the weak points in the presentation of the case by the other side. The writer adds that the policy of the British Medical Association has

always been to encourage a frank and complete interchange of views between medical witnesses. This was a case of comparatively minor importance, but the principle is the same in a case where thousands of pounds are claimed for personal injury, or even when a man is being tried for his life.

THE NEW PROCEDURE RULES

An important step towards making general the practice by which medical witnesses for both sides meet and discuss the evidence has been taken by the High Court in framing the rules which are commonly called the "New Procedure." These rules were introduced in the summer of 1932 in order to quicken up litigation. They are mainly directed towards claims for damages for personal injury—which is more or less synonymous in these days with motor-car accident cases. A judge trying a New Procedure case may refer to an expert referee matters concerning the extent and permanence of any injury caused or alleged to have been caused by the negligence of a party. The special referee will presumably be a doctor, and may find it advisable to examine the injured person in the presence of the doctors of both sides. This provision should often enable the medical witnesses to agree, and avoid the necessity for a report to the court, and called. The referee furnishes a report to the court, and both parties are allowed to see it, though they need not accept it, and it is at the disposal of the judge for his assistance in trying the case. Under another rule the judge can limit the number of expert witnesses called by each side. When the judge hears the summons for directions—the preliminary hearing at which he determines the general lines on which the case shall be conducted—and fixes the date for the trial, he often asks the parties whether they have agreed their medical evidence, and, if not, whether they cannot do so. If they cannot, they ask him for leave to call experts, and he decides how many are necessary. He may at his discretion decline to allow the cost of more than those whom he considers necessary, and the result is an effective check upon the tendency to multiply the medical evidence in the hope of making the other side pay for it.

Counsel, when deciding on the witnesses he considers ought to be called in a case, is often apt to forget that the judge is a person of exceptional intelligence and experience. The other day the New Procedure judge was hearing a summons for directions in a claim made by a boy for peculiarly bad injuries to the face caused by a collision with a motor lorry. The injuries had healed, but there was considerable disfigurement. Counsel for the boy desired to call a plastic surgeon to testify to the extent of the disfigurement. "Won't it do if I look at it," asked the judge plaintively, "or do you want to call an R.A.?" This was an instance in which the judge could quite well decide the extent of the disfigurement, but a plastic surgeon could speak about the possibilities of improving matters. The judge willingly agreed that this was outside his scope, and allowed the costs of the witness. (Concluded)

The Lord Mayor of London (Sir Charles Collett), in presiding at the ninety-eighth annual meeting of the governors of St. Mark's Hospital, said that the last year was one of great activity and increasing work in all departments of the hospital; nearly 1,000 patients had been admitted to the wards and over 1,200 operations performed. He referred to the reconstruction and extension scheme, whereby it was proposed, in order to celebrate the centenary of the hospital's foundation, to increase the number of public beds, to build a nurses' home, to provide a self-contained paying patients' block, to install a second operating theatre, and to improve the cancer research, x-ray, and out-patients' departments. The cost of these extensions would be £60,000. The appeal was launched in January, and £2,300 had already been received.

Obituary

LADY BERRY, M.D.

Frances May Dickinson Berry, whose death occurred on April 15th, was the daughter of Sebastian Stewart Dickinson, a barrister, who after practising with great success in India returned to England and settled down in the village of Painswick, at the head of a beautiful valley in the Cotswold Hills, where he married the Squire's daughter. According to the custom of those days, Miss Dickinson was educated at home until the age of 16, when she was sent to the Continent; she spent two years in a school in Orleans, a year at Dresden, and several months in Spain, and acquired an excellent knowledge of languages, which was later to be turned to such good account. For the next three or four years she and her sister studied art, and her accomplishments in this direction were not inconsiderable. The artist, however,



soon felt the need for more serious work, and she began to study medicine at the Royal Free Hospital. At that time women medical students had to meet much popular prejudice as to what was a proper occupation for a "lady," and in many cases academic distinctions were gained only at the cost of some sacrifice of feminine grace in the course of the struggle, the crusade for freedom sometimes finding expression in the wearing of odd clothing of a pseudo-masculine character and the

cultivation of an aggressive manner which often gave offence. It is therefore gratifying to find that, according to contemporary records from the hospital, Miss Dickinson was distinguished among her fellow-students for her personal charm and her good taste in dress. It was not long before these qualities caught the discerning eye of a young demonstrator of anatomy, James Berry, who not only succeeded in giving her a sound knowledge of his subject, but was fortunate enough to win her heart.

After qualification she held resident appointments at the Belgrave Hospital and at the New Hospital (later renamed in memory of Elizabeth Garrett Anderson), and the experience so gained enabled her to pass with honours the degree of Bachelor of Surgery shortly after taking the M.D. Lond. At the Belgrave Hospital she made the acquaintance of Mr. Clinton Dent, who aroused her interest in mountaineering, and she was the first woman to reach the summit of a particularly difficult peak in Norway. For many years after this she and her husband visited the mountains and together climbed many ranges in the Austrian Alps, Pyrenees, and Carpathians; they made their arduous way with rope and alpenstock to the top of the Gross Glockner and explored the glaciers around Saas Fee. Outdoor exercise had been a tradition at Painswick, and the strain of work in London was relieved by horse-riding in Hyde Park—a form of recreation which she persuaded her husband to take up, so that early in the 'nineties the pair might often have been seen cantering down Rotten Row in the morning. She also taught him to ride a bicycle, and this led to many cycling holidays abroad, when they explored the greater part of Europe and crossed many formidable mountain passes. Not long after the assassination of King Alexander of Serbia, in 1904, they visited that country, to which they returned soon after the beginning of the Great War, when typhus broke

out in the valley of the Morava River. The present writer had the privilege of serving in the Berry Unit at Vrnjatschka-Banja, and can bear personal testimony to the success with which Lady Berry adapted herself to the strenuous conditions of life on active service, and the value of the work which she accomplished there. Her sympathetic understanding of the political entanglements in the Balkans led her to publish a book on the Slav subjects in the Austrian Empire, and she collaborated with her husband and other members of the unit in writing the story of their work in Serbia. Her interest in the country continued unabated after the war, when she and her husband founded a scholarship to enable women students from Yugoslavia to study medicine in London. It may be mentioned in passing that Lady Berry's sister, who is an accomplished artist, shared this interest in the Balkan peoples, and founded in Travnik a most successful technical school, lately moved to Belgrade, where the natural talent of the Slav in making beautiful embroidery, furniture, and decorative work is trained and organized, and a market found for the articles so produced. For many years Sir James and Lady Berry spent their holidays in exploring odd corners of Europe and in taking photographs, many of which were made into lantern slides and used to illustrate the "travel talks" which were delivered to parties of friends in Wimpole Street: one of these pictures would usually be selected for reproduction in the next annual Christmas card, which was further embellished by a few witty verses over the signature, "F. M. D. B." A collection of these cards was printed and circulated in the form of a small book among friends of the family a few years ago, and forms a most interesting souvenir of some thirty years of travel and adventure.

Lady Berry was an excellent hostess, and was an active member of the Lyceum Club, where she often took the chair at dinners and receptions: her wit and vivacity were greatly appreciated on these occasions, and she acquired a good command of the art of after-dinner oratory. Her interest in foreign affairs led naturally to her early and sustained support of the League of Nations and of other organizations for the promotion of international co-operation. Since her retirement from practice a few years ago she lived in the village of Dunsmore in Buckinghamshire, where she became a well-known figure, going for long walks in the district of Wendover, usually accompanied by her two black poodle dogs. She was fond of the woods and of wild flowers, and was always a welcome visitor in the homes of the country people, whose interests she made her own. She enjoyed the best of health up till the last few weeks, and used to say that she had never had so much as a headache in her life: only two days before her death she walked for nearly a mile through the woods.

The funeral service was of a very simple character; it was conducted in the village church of Little Hampden, and was attended by a few members of the family and personal friends and by many of her neighbours in the country. Among the floral tributes to her memory was a wreath from the President, Council, and Fellows of the Hunterian Society, of which she was the first woman Fellow. The churchyard in which she was laid to rest is close to the historic Little Hampden Common, and overlooks the fields and woods which she loved so well.

[The photograph reproduced is by Lafayette Ltd.] D. C. N.

The following well-known foreign medical men have recently died: Dr. ANGEL BRIOSO VASCONCELOS, professor of dermatology and hygiene at the medical faculty of Mexico, and Dr. ARTHUR LAMBERT CHUTE, associate professor of urology at Tufts College Medical School, Boston, and president of the American Association of Genito-urinary Surgeons.

OBITUARY

APRIL 28, 1934]

THE LATE DR. JAMES ANDERSON

Dr. W. F. J. WHITLEY, county medical officer for Northumberland, writes:

By the death of Dr. James Anderson last week, the profession has lost a very fine and representative type of general practitioner. Dr. Anderson took a very great interest in everything appertaining to the work of the St. John Ambulance Association. He was an enthusiastic lecturer on the subject, and devoted much time to training students, examining candidates for certificates, and adjudicating at competitions, at which he was a very popular judge. It was a great pleasure to watch him at these contests, especially in the colliery districts of Northumberland and Durham, in some of which he had adjudicated annually for the past thirty years. It speaks volumes for the confidence reposed in his judgement that his decisions were accepted year after year by local aspirants for cup honours without demur or question, and was for some years assistant county commissioner, and it gave great satisfaction to his many Ambulance friends when he was appointed a Commander of the Order of St. John of Jerusalem. It is asserted that he was the first medical man to go down a pit for the purpose of rendering surgical assistance to injured miners, and he introduced into this district the Low Moor jacket, which is a convenient form of vertical stretcher. At the outbreak of war Dr. Anderson was actually in camp as medical officer to the Northern Cyclists' Battalion, and very soon proceeded over-seas, where he remained until demobilization at the conclusion of hostilities. He was acting major and adjutant of his unit, retiring with the rank of captain. He was a prominent member of the British Legion, and took a great interest in its work. As a raconteur he was particularly successful. His wide and cultured reading gave him a very catholic view of life. He was possessed of a very fine library, and one seldom applied to him in vain for literary assistance; if he was not himself able to supply the information he knew where it could be found. An old member of the British Medical Association, he always endeavoured, if possible, to attend the Annual Representative Meeting, making it part of his holiday.

CHARLES PORTER, M.D. R.U.I.

Late M.O.H. for Johannesburg
On March 14th, a few weeks before his seventieth birthday, Dr. Charles Porter, late medical officer of health for Johannesburg, died of heart failure following coronary thrombosis at Muizenberg, Capetown, South Africa. Charles Porter was born in Cork in 1864, was educated there, and subsequently in Dublin and at University College, London. Intending to enter the Army or the Indian Medical Service, he graduated M.D., B.Ch., B.A.O. in 1889 (with honours and an exhibition). His sight proving unsufficiently good for the strict tests of the home and Indian military medical services, he took a certificate in mental diseases and the diploma in public health at Cambridge. In 1890 he was appointed assistant medical officer of health for East Kent, and in 1893 became medical officer of health for Stockport, a post which he held for five years. It was there that he showed his thorough grasp of public health matters, and under his stimulus Stockport became one of the first corporations to deal effectively with the question of maternal education. A health visitor was appointed to pay occasional visits to each school in order to supplement by demonstration the instruction given by the regular teachers. This work, initiated by Dr. Porter, was carried on by his successor. In 1898 Dr. Porter was called to the Bar, and in 1901, whilst vice president of the Society of Medical Officers of Health, he was invited by the Chief Medical Officers of the Local Government Board and of the London County Council to apply—as he did successfully—for the post of medical officer of health for Johannesburg.

Under the administration of Johannesburg by the first municipal council, nominated by Lord Milner, were laid the foundations of a public health service second to none in Africa. Dr. Porter's organization has stood the test of time, and has achieved results that are both encouraging and noteworthy. During his tenure of office the European death rate of Johannesburg decreased by 31 per cent., the incidence of enteric fever by 87 per cent., and the mortality from pneumonia by nearly 50 per cent. The immense improvement made in the mining capital during the last twenty years is often attributed due to the pioneer efforts of Dr. Porter, who changed wealth and industry, but a large measure of thanks is what was practically a slummy barrack town into a clean and sanitary city. Its progress offered a striking proof of his close touch with modern methods and scientific thought, while his service on various commissions was valuable in introducing highly necessary legislation, both provincial and Union. Besides organizing an efficient public health department, he put through schemes for purification of the city's water supplies, child welfare, disease prevention, control of milk supply, and disposal of refuse and sewage. In addition, he acted as consulting adviser to the Rand Water Board, member of the Public Health Council of the Union, specialist adviser in military hygiene to the Union Defence Force, and member of numerous Government commissions relating to education, hospitals, mining regulations, housing, and prisons. Dr. Porter was a man of broad, generous sympathy, plain-spoken, sincere of purpose, honest, and unselfish. His character and the influence he always exerted on behalf of progress and improvement won him the respect of all who worked with or under him.

Dr. WILLIAM SANDERSON, who died on April 15th at his residence in Croxeth Grove, Liverpool, was born in 1882, and received his medical education at Edinburgh, where he graduated M.B., Ch.B. in 1903, and won the Sheen medal for surgery. After holding house appointments at the Stanley Hospital, Liverpool, and the Southport Infirmary, he began general practice in Southport in 1907, specializing in diseases of the ear, nose, and throat. During the war he continued his specialty in two and a half years was similarly occupied in the Myrtle V.A.D. Auxiliary Hospital, Liverpool, and R.A.M.C. He was appointed honorary laryngologist and aurist to the Royal Southern Hospital, Liverpool, and the Southport Infirmary. Among his appointments were those of surgeon to the Liverpool Ear, Nose, and Throat Clinic, senior honorary aurist to the Ear and Eye Infirmary, Liverpool, and laryngologist and aurist to the National Union of Teachers and the National Association of Local Government Officers. He was a Fellow of the Royal Society of Medicine. He joined the British Medical Association in 1908, and contributed articles to the *British Medical Journal* and elsewhere on throat and nose work. He was a swift and skilful operator, and won high appreciation for his diagnostic ability and resourcefulness.

The Services

DEATHS IN THE SERVICES

Colonel William Henry Wilson Elliot, D.S.O., Bengal Medical Service (ret.), died at Torquay on March 18th, aged 69. He was born on October 7th, 1864, at Rugby, in the Central Provinces of India, was educated at Guy's, and took the M.R.C.S. and L.S.A. in 1886, also subsequently graduated M.B. Lond. in 1895, and took the D.P.H. of the London Colleges in 1911. He entered the Indian surgical service on March 31st, 1887, taking the Montrose surgical prize in the Army Medical School at Netley, became lieutenant-colonel after twenty years' service, and retired on November 15th, 1908. When the war of 1914-18 began he rejoined for service, and held the post of registrar of the Pavilion military hospital for Indian troops at Brighton till

the hospital was closed in 1916, and afterwards in various other parts, and for his services was promoted to honorary colonel on January 1st, 1919. From October 15th, 1919, to April 15th, 1922, he served as a temporary lieutenant-colonel in the R.A.M.C. His whole service in India was passed in military employment: from 1903 to 1907 he was Secretary to the P.M.O. of His Majesty's Forces in India. He served on the North-West Frontier of India in the Hazara campaign of 1888 (medal with clasp), the Miranzai expedition of 1891, and the Tochi campaign of 1897-8 (medal with clasp). When the South African War began he was sent in charge of an Indian field hospital to Natal, and served in the operations in Natal, including the action at Lombard's Kop and the defence of Ladysmith, and in operations in the Transvaal; was mentioned in dispatches in the *London Gazette* of February 8th and September 10th, 1901, and received the Queen's medal with three clasps, and on June 26th, 1901, the D.S.O.

Lieut.-Colonel George Holden Sylvester, R.A.M.C. (ret.), died at Bournemouth on March 23rd, aged 77. One of the seven sons of the late Samuel Augustus Sylvester of Tonbridge, he was born at South Petherton, Somerset, on October 25th, 1856, was educated at Bart's, and took the M.R.C.S. and L.R.C.P. Lond. in 1878; also, subsequently, the F.R.C.S. in 1886, and the D.P.H. of the London Colleges in 1889. Entering the Army as surgeon on July 31st, 1880, he became lieutenant-colonel after twenty years' service, and retired on October 19th, 1907. He served throughout the South African War of 1899-1902, first as staff officer to the P.M.O. at Army Headquarters, and afterwards, from February 12th, 1901, as P.M.O. of a general hospital; and took part in operations in the Transvaal and Orange Free State, was present at the actions of Paardeberg, Poplar's Grove, Driefontein, Pretoria, and Johannesburg, and received the Queen's medal with four clasps and the King's medal with two clasps. He was re-employed in the war of 1914-18, from February 1st, 1915. Colonel Sylvester had been a member of the British Medical Association for forty-six years. His younger brother, Dr. H. M. Sylvester, who practised at Leiston in Suffolk, died in 1927.

Surgeon Lieutenant Commander Annesley George Lennon Brown, D.Sc., R.N., died suddenly at Blackheath on April 8th. He was educated at Westminster Hospital, and took the L.M.S.S.A. in 1922. Entering the Navy as surgeon lieutenant on October 25th, 1922, he was promoted to surgeon lieutenant commander on October 25th, 1928.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week passed new clauses and schedules of the Unemployment Bill. The Budget Resolutions were down for discussion on report.

The Marriage (Extensions of Hours) Bill was read a third time in the House of Lords on April 18th, and a proviso added that the Bill should not apply to Scotland or Northern Ireland except in so far as it amends the Foreign Marriage Act, 1892. The Bill extends the legal hours for solemnizing marriages to 6 p.m. The Marriage Act (1886) and Foreign Marriage Act (1892) Amendment Bill has also passed the Lords.

The House of Commons on April 20th gave third readings to the Registration of Births, Deaths, and Marriages (Scotland) Amendment Bill, the Workmen's Compensation Act (1925) Amendment Bill, the Supply of Water in Bulk (No. 2) Bill, and the Arbitration Bill. The last two had already passed through the House of Lords.

On April 20th the Protection of Animals Bill passed through committee of the House of Commons, was reported, and read a third time. During the committee stage the Bill was amended to make it apply to untrained horses and bulls, these names having the same application as in previous Protection of Animals Acts.

The Birmingham United Hospitals Bill was read a second time by the House of Commons on April 23rd without discussion and sent to a select committee.

The Water Supplies (Exceptional Shortage) Bill and the Licensing (Standardization of Hours) Bill both passed through committees of the House of Commons on April 24th.

Mental Deficiency in Prisoners

The report of the Commissioners of Prisons and the Directors of Convict Prisons for 1932 was issued to members of Parliament on April 24th. The Medical Commissioner, Dr. W. Norwood East, deals in his report with the diseases of prisoners. In a section on mentally affected prisoners he remarks:

"It is suggested that whenever justices are in doubt in regard to the mental condition of an offender the fact should be determined before sentence, and that the contrary practice is undesirable and may be inequitable. The request by the justices for a report at the expiration of the sentence is usually unaccompanied by any information, and the prison medical officer is left entirely ignorant on the matter."

The Medical Commissioner announces that action is about to begin on the lines of the recommendation, by the Persistent Offenders Committee, that a medical psychologist should be attached to one or more penal establishments to carry out psychological treatment in selected cases.

Suicides from Gas Poisoning

On April 24th Mr. LECKIE asked the President of the Board of Trade whether, in view of the increasing number of suicides in gas stoves, he would make inquiries as to the practicability of introducing into coal gas at the place of manufacture some pungent or disagreeable chemical agent, which would render it more difficult for anyone attempting to commit suicide in this way to do so. Mr. RUNCIMAN replied that the practicability of introducing irritant or odorous material, other than that provided for in the Gas (Carbon Monoxide) Order of 1922, was considered by the committee on deaths from gas poisoning in 1930, but after reviewing the objections to such addition, the committee decided to make no recommendation in this respect. In accordance with another recommendation, a central advising committee was set up by the industries concerned, and he was satisfied that this committee would acquaint him with any development which would render further action practicable.

Blood Test Admissible as Evidence

Replying to Sir F. Fremantle, on April 24th, Sir JOHN GILMOUR said he was advised that if evidence with regard to a blood test in cases of disputed paternity was available it was admissible under the existing law in this country. Such difficulties as existed appeared to be rather of a practical than of a legal character, and to arise from the fact that the cost of arranging for such a test would fall on the man concerned, and that he would have to secure the co-operation of the woman. He was giving his careful consideration to the whole matter, but if there were any question of compelling persons to submit to a blood test legislation would be required for that purpose. Sir F. FREMANTLE asked if it would be possible for the Home Office to make the fact known to the magistrates of the country, that they might accept this evidence which at present they were refusing. Sir J. GILMOUR: I think there is no question that the magistrates are fully aware of that point. Sir F. FREMANTLE asked whether in cases where magistrates had refused such evidence, it would be possible for the case to be reopened. Sir J. GILMOUR: No, Sir. It would be for the magistrates to sum up what was the value of such evidence.

Examination by R.M.O. and Insurance Benefit

On April 24th Mr. CROOKE asked the Minister of Health if he was aware that certain approved societies refused health insurance benefits to members, although certified by their panel doctors, unless and until the applicants had been examined by the regional medical officer, and whether, seeing that that action caused unnecessary hardship, he would take steps to revise the rules of approved societies to ensure that payments of benefit were made before the members were sent to the regional medical officer. Mr. SHAKESPEARE replied that, when an approved society desired to obtain a second medical opinion on the subject of a member's incapacity for work, it was entitled to refer the case to a regional medical officer, and it was the general practice of societies in such cases to

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pay benefit in respect of any period of certified incapacity up to and including the date on which the member was examined by that officer. The payment was made at as early a date as accorded with the society's general administrative arrangements, and the Minister of Health did not think that it would be reasonable or practicable to impose on societies an obligation to make the payment in all cases before the date of the examination. Mr. MACQUISTEN asked if it was not notorious that panel practitioners were more facile than others in granting certificates in competition for patients. No answer was given.

Road Accidents During Easter.—Replying to Sir William Brass on April 18th, Mr. STANLEY announced that during the two weeks ended respectively April 15th and April 22nd, 1933, which included Eastertide, a total of 248 persons were killed or fatally injured in road accidents. Comparable figures were not available for the two weeks ended respectively March 31st and April 7th, 1934, which included Eastertide, as in many cases death from injuries did not take place until after the close of the week in which the accident occurred. It was, however, known that 187 persons were killed in road accidents during the two weeks in question. Past experience of the number of injuries which proved fatal after the close of the week in which they occurred indicated that at least sixty deaths would be added to the above figures. He regretted that fatal road accidents during the two Easter weeks of this year were likely to have been at least as numerous as during the two Easter weeks of last year.

Estimated Costs of Slum Clearance.—Replying to Mr. Craven-Ellis on April 19th, Mr. SHAKESPEARE stated that it was estimated that the annual charge to the Exchequer and local authorities when the programmes of slum clearance schemes so far submitted had been carried into effect would be about £3,100,000 and £1,070,000 respectively. It was not yet possible to furnish an estimate of the annual charge in connexion with the proposed scheme for the relief of overcrowding. These charges would remain a liability upon the Exchequer up to a maximum period of sixty years from the date of completion of the houses subject to some variation: (1) when loans were repaid under the Act of 1919, and (2) when subsidy ceased at the end of twenty years in the case of the Act of 1923, and at the end of forty years in the case of the Acts of 1924 and 1930. The liability on the local rates would continue with some variation for substantially the same period.

Derelict Areas.—Sir HENRY BETTERTON announced on April 19th that the Government had decided, before proceeding further with the special problem presented by the derelict areas, to have inquiries made in typical places within the districts of Durham, South Wales, Cumberland, and Scotland. Mr. J. C. C. Davidson would make investigations in Cumberland, Captain Euan Wallace in Durham and Tyneside, and Sir Wyndham Portal in South Wales. The Scottish investigator would be announced later.

Poor Relief.—Mr. SHAKESPEARE told Mr. T. Smith on April 19th that the total numbers of persons (men, women, and children) in receipt of poor relief in England and Wales (excluding rate-aided patients in mental hospitals, persons in receipt of domiciliary medical relief only, and casuals) on March 24th, 1934, and on the corresponding days in 1933, 1932, and 1931 were 1,413,780, 1,357,236, 1,188,077, and 1,038,432 respectively.

Health Insurance on Leaving School.—Replying to Mr. Rhys Davies on April 19th, Mr. SHAKESPEARE said careful consideration would be given to the suggestion that young persons, on entering employment after leaving school, should be brought within the scope of national health insurance as in the case of young persons under the provisions of the Unemployment Bill now before Parliament. Financial difficulties made it impracticable to adopt the proposal at the present time.

Anaphylaxis in Diphtheria Immunization.—On April 23rd, in reply to Mr. Groves, Sir HILTON YOUNG said that his attention had been called to cases of anaphylaxis due to the infection of toxin-antitoxin. Anaphylaxis was not a phenomenon peculiar to diphtheria immunization. The relevant facts were widely recognized, and he did not consider it necessary to take any special action in the matter.

Recruitment to Indian Medical Service.—On April 23rd Sir SAMUEL HOARE informed Dr. John Williams that the resolution of the Council of State of India that recruitment to the Indian Medical Services should be by simultaneous competitive examination in Britain and India was withdrawn after the Government spokesman had given reasons why the Government of India could not accept it, and after an undertaking had been given that the debate would be forwarded to him. He had not yet received any observations from the Government of India on the matter. Sir SAMUEL HOARE also told Dr. Williams that according to information available on March 1st the actual strength of the Indian Medical Service was 385 British officers and 240 Indian officers; twenty-nine of the latter held temporary commissions.

Methylated Spirit Drinking.—On April 24th Mr. SKELTON told Miss Horsburgh that during the last six months representations in favour of legislation to prohibit or prevent the sale of methylated spirit or kindred spirits for human consumption had been made to the Secretary of State for Scotland on behalf of the town councils of Aberdeen, Clydebank, Dundee, Edinburgh, Falkirk, Glasgow, Greenock, Inverness, Paisley, and Stirling. As from March 15th, 1934, new formulae for surgical spirit had been brought into operation by the Commissioners of Customs and Excise, and it was proposed to await the results of this experiment before considering whether further measures restricting the sale of methylated and surgical spirits were necessary.

Milk Supplied to Military Hospitals.—Mr. DUFF COOPER, replying to Lieut.-Colonel Heneage on April 24th, said that tenders were invited for fresh and for pasteurized milk for military hospitals, but not for "Certified" or Grade A milk. The fresh milk had to comply with the Department's specification, and was required to be not below the standard required by the Sale of Milk Regulations, 1901. Unless the cost was excessive, preference was invariably given to pasteurized milk, and this milk was being supplied to the majority of military hospitals under the existing contracts.

Notes in Brief

The Registration of Births, Deaths and Marriages (Scotland) Bill, which has passed the Commons, was read a first time in the House of Lords on April 24th.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Vice-Chancellor gives notice that the appointments committee of the Faculty of Biology "B" will shortly proceed to elect a university demonstrator in the Department of Biochemistry. Application should be made to Professor Sir F. G. Hopkins, from whom further particulars may be obtained, before May 2nd.

A course of eight lectures will be delivered during the present term by Dr. Walter Pagel of Heidelberg on the history of biology and pathology, entitled "Theories of Life and Disease." They will take place on Tuesdays and Fridays at 4.30 p.m. in the lecture room of the School of Biochemistry.

The Linacre Lecture will be delivered by Sir Henry Dale, M.D., F.R.C.P., Sec.R.S., director of the National Institute for Medical Research, on Saturday, May 5th, at 5 p.m., in the lecture room of physiology, New Museums. The title of the lecture is "Chemical Transmission of the Effects of Nerve Impulses."

UNIVERSITY OF LONDON

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The following candidates have been approved at the examinations indicated:

DIPLOMA IN PUBLIC HEALTH.—Part I: O. M. T. Ansari, W. H. Crichton, F. R. Dennison, H. A. Dirchze, Margaret L. Foxwell, Muriel O. Gibson, G. S. C. de S. Gunasekera, Ellen G. Heycock, F. E. Lipscomb, F. J. G. Lishman, G. H. Lowe, G. P. McC. Marshall, K. J. G. Milne, D. D. Payne, Ethel A. Perrott, C. D. Preston, Alison J. Rae, L. Roberts, L. B. E. Seneviratne, Mary Sutcliffe, L. G. W. Ulrich, S. L. Wright.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—With Special Knowledge of Psychiatry: Winifred M. Burbury, A. B. Carter, B. Cates,

M. S. Jones, W. G. Rees. *With Special Knowledge of Mental Deficiency*; R. M. Bates. *Part A*; R. W. Maxwell, Grace H. Thomson, W. P. Berrington, N. McDiarmid, W. E. McLroy, D. Prentice.

UNIVERSITY OF GLASGOW

A graduation ceremony was held on April 21st, when the following degrees, among others, were conferred:

M.D.—F. M. Christie, *H. Fairbairn (*in absentia*), †J. Flind, †S. I. A. Laidlaw, †P. Shannon, A. Duff, G. G. Macpherson, N. McE. Montgomery, A. Ogg, T. Paton, H. S. Russell, A. G. Smith, Jean W. Symington, R. N. Walker.
M.B., Ch.B.—E. W. Walls, †A. Muir, I. M. Anderson, C. Arak, A. Cameron, D. Campbell, J. Campbell, W. Clark, J. M. Cook, R. G. H. Cunningham, Elizabeth M. Deighton, J. C. Fitch, C. M. Fraser, W. Gibson, J. Gilmore, W. Guthrie, Jean A. Holburn, A. S. Hutcheson, A. B. Kabnick, J. Kelly, S. M. Laird, C. M. Lamont, Jean H. McL. Laurie, Magdalene Linton, S. Loman, A. McS. McArthur, A. D. MacArthur, K. MacColl, Jeanie J. MacDonald, Maud P. MacDougall, S. W. MacDougall, D. Macfarlane, P. A. McO. Macgregor, J. Mackenzie, M. J. MacLaughlin, W. B. McLean, J. McPheat, T. J. R. Miller, N. Morrison, W. W. Muir, J. Murray, S. S. Naftalin, J. S. Norwell, G. A. F. Quinell, H. J. Reid, Jessie V. M. Robb, W. Rodger, R. L. Roxburgh, J. B. Shield, E. I. Smith, Margaret B. Steel, J. N. R. Stephen, J. W. Strachan, J. C. Taylor, R. B. Taylor, Kathleen M. Warren, H. Weir, G. Wotherpoon, D. D. Young, B. Zahn.

* With high commendation. † With commendation.

‡ With honours.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY—A. E. Ginn, G. W. Hardy, R. G. Joyce, H. Murkus, D. Roeyn-Jones.

MEDICINE—S. Grodd, H. G. Howitt, L. A. Lewis, T. Morgan, F. D. Paterson, J. H. Playne, P. H. Wilcox.

FORENSIC MEDICINE—P. T. M. Clarke, S. Grodd, B. S. Minden, J. R. Owen, F. D. Paterson.

MIDWIFERY—J. A. Carter, S. Klein, J. E. T. Munn, C. W. O'Donoghue, F. D. Paterson, D. Walton, J. P. Walsh Conway.

The diploma of the society has been granted to S. Grodd, T. Morgan, F. D. Paterson, J. H. Playne, J. P. Walsh Conway, and P. H. Wilcox.

Medical News

The annual dinner of the Cambridge Graduates' Medical Club will be held at the Langham Hotel, W., on Wednesday, May 9th, at 7.15 for 7.45 p.m., with the president, Dr. H. Morley Fletcher, in the chair. The honorary secretaries are Dr. E. G. Chandler and Mr. W. D. Doherty.

The annual spring dinner of the Queen's University Club, London, will be held at the Dorchester Hotel, Park Lane, W., on Thursday, May 3rd, at 7.30 p.m. Professor Hinny will preside. Members may obtain tickets from the honorary secretaries, 101, Harley Street, W.1.

The lecture on "The Skin in Relation to Rheumatism in Childhood and after Puberty," arranged to be delivered by the late Dr. L. J. Llewellyn on Thursday, May 3rd, at 4 p.m., at the Medical Society of London, 11, Chandos Street, W., will be read, from the manuscript prepared by Dr. Llewellyn, by Dr. D. F. Fraser-Harris.

The Royal Sanitary Institute has arranged a sessional meeting at the Guildhall, Portsmouth, on Friday, May 11th, at 4.45 p.m., when there will be discussions on "The Housing and Slum Clearance Problem in Portsmouth," to be opened by Councillor A. E. Allaway, and on "Naval Hygiene," to be opened by Surgeon Commander H. St. C. Colson, Naval Health Officer for the Portsmouth Command.

The Hospital for Sick Children, Great Ormond Street, W.C.1, announces that a few vacancies exist for clinical assistants to the physicians to out-patients. Applications from practitioners registered in this country who are willing to give their services for a few hours on one or two mornings each week should be sent to the secretary. A post-graduate course on diseases of children will be held at the hospital from April 30th to May 12th, from 10 a.m. to 1 p.m., and from 2 p.m. to 4 p.m. daily, except Saturdays (10 a.m. to 1 p.m.). The fee is £6 6s.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that Dr. Clark-Kennedy will lecture on auricular fibrillation at 11, Chandos Street, on Tuesday, May 1st, at 2.30 p.m. The sixteenth lecture on digitalis will take place on Tuesday, May 8th. There will be a week-end course in cardiology at the City of London Hospital, Victoria Park, on May 5th and 6th, occupying the whole of both days, and including lectures, demonstrations, and films. There will be a fortnight's course in advanced urology at St. Peter's Hospital, May 7th to 19th; and a demonstration of cases by Dr. H. L. Marriott, dealing with blood diseases, at the National Temperance Hospital on Saturday, May 12th, at 3 p.m. For post-graduates who cannot find time to attend a special course, covering a period of two to four weeks, individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine.

The Central Association for Mental Welfare has arranged a course for officers of local authorities and local associations for mental welfare engaged in the ascertainment and supervision of defectives; and another course for persons engaged in the training of mental defectives in occupational centres, institutions, or mental hospitals. Both courses will be held in London from June 30th to July 21st. A syllabus and time-table will be sent to all students a week before the opening day of the course. Copies of the circulars, forms of application, and any further information may be obtained from the secretary, Central Association for Mental Welfare, 24, Buckingham Palace Road, S.W.1.

The German Society for Psychiatry will hold its annual meeting at Münster in Westphalia from May 23rd to 25th, when the following subjects will be discussed: clinical psychiatry and eugenics, introduced by Professor Bumke of Munich; encephalography in psychiatry and cerebral pathology, introduced by Professor Jacobi of Magdeburg; personality in psychotherapy, introduced by Professor Kretschmer of Marburg; and psychiatry and racial hygiene, introduced by Professor Rudin of Munich.

We are informed that the appeal on behalf of the fund to raise a memorial to Dr. Henry T. Hodgkin, of whom an obituary notice appeared in the *Journal* of April 1st, 1933, has met with a gratifying response. The sum already contributed amounts to £1,900, and the Executive Committee has decided to close the fund on June 23rd next. The Bishop of Croydon and Mr. Harold Morland have been asked to present the money to the governors of the West China Union University, at their annual meeting to be held at Oxford on June 25th and 26th. Cheques should be made payable to Mr. Harold J. Morland, 2, Eaton Gate, S.W.1.

The number of blind persons in Italy, according to the latest statistics, is about 25,000, as compared with 28,357 in 1911. The population of Italy, however, in 1911 was 34,000,000, as compared with 42,000,000 to-day, so that formerly the proportion of blind persons was 81 per 100,000, while now it is only 60.

The Minister of Health has appointed Mr. J. A. Lawther as secretary to the Departmental Committee on the Cost of Hospital and other Public Buildings, and all communications relating to the work of the committee should be addressed to him, at 2, Whitehall Gardens, S.W.1.

Professor Haven Emerson, M.D., of New York has been elected an Honorary Fellow of the Royal Sanitary Institute.

The King has confirmed the appointment of Major T. J. Hallinan, C.B.E., to be a nominated member of the Legislative Council of the Island of Jamaica.

The following have recently been elected members of the Académie de Médecine: Foreign corresponding members—Dr. Blanco Acevedo, professor of clinical surgery at Monte Video, and Dr. Constantin Daniel, professor of clinical gynaecology at Bucarest; national corresponding members—Dr. Paviot, professor of clinical medicine at Lyons, Dr. Halipré, director of the medical school at Rouen, Dr. Bridié of Algiers, and Dr. Veh of Casablanca.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, Aitology Westcent, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Medisecra Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

An Unusual Sign in Diabetes Mellitus

Dr. R. E. M. FAWCETT (Cirencester) writes: The following case is, I think, of sufficient interest to merit publication. A middle-aged man noticed that a white powdery substance kept appearing on the sides of his shoes; this happened in successive pairs of shoes after he had worn them a very short time. Thinking that there was some fault in the preparation of the leather, he returned a pair to the makers. The firm, which is a very well known one, sent the shoes to their analytical chemist, who reported that the substance was sugar, and suggested that the wearer worked with sugar; he is, however, a tailor by trade. He was worried by this report, and came for advice. He gave a history of indifferent sleep, and slight, but definite, loss of weight. On examination of the urine it was found by Benedict's method to be loaded with sugar, and subsequent investigation has established the case as one of diabetes mellitus of moderate severity. The method by which the diagnosis was arrived at is, I think, of interest, and I would be glad to know if such a condition is of at all frequent occurrence in diabetics.

Women's Shoes

"PEDIPUS" writes from Yorkshire: What can ladies do to prevent the bunions, corns, etc., which we so frequently see? Fashion demands that the shoe should be so narrow that the foot is crushed into it without complaint until the bunion arrives. Ladies' dress is years ahead in comfort and hygiene of that of the opposite sex, and yet they still tolerate the fashionable shoe. High heels no doubt improve the appearance of the calf and ankle, but why crush the foot sideways?

A Sudden Toupee

"G. M. R." writes: A lady aged 50 who wears a toupee through partial loss of hair complains that it deteriorates rapidly. This, the coiffeur says, is due to "acid sweat." Can any reader kindly suggest a remedy?

Mate Leaves for Rheumatism

"INQUIRER" writes: The leaves of *mate*—a Paraguay plant—have been vaunted as a specific for rheumatism. Is there any evidence that the taking of the infusion of these leaves has been beneficial?

Chronic Gonococcal Infection

"M. S." writes from Burma in reply to "Perplexed's" inquiry (February 24th, p. 363): I would suggest passage of both anterior and posterior urethral sounds on alternate weeks, and light massage over the same. The patient should have two to three doses of manganese butyrate to start with, once in three to seven days, depending on the reaction, and then a course of mixed detoxicated vaccines (stock), giving large doses, and a series of sterile milk injections (2 to 5 c.cm. for each dose), given intra-

muscularly. Orally, hexamine and sodium benzoate, in mixture, can be alternated with other milder antiseptics, like pyridium and acriflavine. As it is a very chronic infection, if irrigations are used at all, only the mildest should be used, and those infrequently. Such drugs are acriflavine and potassium permanganate, with an occasional irrigation with silver nitrate. I am assuming that "Perplexed" has not got a diathermy apparatus.

Income Tax

Car Transactions

"W. B. S." bought a second-hand "S" car for £52 10s. on June 13th, 1933, and sold it for £28 10s. on November 6th, 1933, buying a new "F" car on the same date for £126 10s. Should he claim depreciation or renewals?

** The inspector of taxes calculates the allowance as follows:

Depreciation: "S" car, 15 per cent. of £52 10s.	
for twenty-one weeks	£3 3 7
"F" car, 15 per cent. of £126 10s.	
for twenty-one weeks	£7 13 1
Say	£11 0 0

Obsolescence: £52 10s. - (£3 depreciation allowed and £28 10s. received for sale =) £31 10s. net £21.

Those allowances are the best obtainable. If cost of renewal were claimed the amount due would be £52 10s. - £28 10s. = £24, and the "dépréciation" claim would be excluded.

Car Used but No Car Allowance Received

"ASST. T.O." is required to do visiting as part of his work, but receives no allowance other than bus fares. He bought a car in July, 1933, and uses it about equally for work and pleasure. How should he proceed to obtain an allowance for income tax of his current expenditure?

** As "Asst. T.O." holds an office of employment his assessment is governed by the rules of Schedule E, and he will be required to show that the car expenditure is incurred "necessarily" in the performance of the duties of his office—that is, in making his visits, not in travelling to and from his residence. As the employing authority apparently considers that bus fares are adequate payments, he will probably have some difficulty in satisfying the tax authorities that the car expense is "necessary." However, he had better launch the claim by showing a specific deduction in his return for the current year on the basis of a reasonable proportion of his running expenditure between July, 1933, and April, 1934, and in due course explain the position fully if it should become necessary.

Basis of Assessment—Assistant

"D. P. H." earned £250 during the year 1933-4 by working as a locumtenent. For all the year 1934-5 he is employed as an assistant M.O.H., at a salary of £500. On which income will his allotment for 1934-5 be based?

** On the £500; as holding the specific appointment of M.O.H. he is assessable under Schedule E, whereas his former earnings fell under Schedule D, and the change necessitates a fresh start, which results in assessment on the current year's earnings for 1934-5.

Expense Incurred by Assistant

"D. H." is engaged as an outdoor assistant, receiving a salary plus car allowance at £1 per week. He has had to take a special house belonging to his chief at a rental of 25s. per week inclusive. Can he deduct (a) part of rent, wages of maid, etc., and (b) the excess of his actual car running cost over the allowance?

** (a) Yes; so far as the expenses are really increased by the professional work—in the circumstances probably quite a small amount. (b) Yes; provided all the cost arising out of private use is excluded.

Purchase of Practice and Debts—Basis of Assessment

"S. P. G." has bought out his partner, and has paid him his share of the outstanding bills; the money outstanding is now coming in. Is he liable for tax on those receipts as income?

** The receipts from his former partner's share of the outstanding debts are not "income" to "S. P. G."—he bought them, and to him they represent a return of capital. On the other hand, he is now liable for the full earnings of the practice, and for the first year or two of his sole proprietorship of the practice the Revenue authorities will

not be content to accept as the gross income of the whole the cash received from only a part of the practice. They will be entitled to require "S. P. G." to depart from the cash basis and adopt the "earnings" or "book debts" basis for the future; or, as an alternative, may be willing to accept the cash basis on condition that the whole of the receipts are brought into the computation, even though a part may represent capital and not income so far as he is concerned.

"Child Allowance"

"A. B." has a son 22 years of age who is taking a postal correspondence course for an accountancy examination—working on it at home the whole of his time. Can "A. B." claim the allowance for this financial year?

** The matter is governed by Section 21 of the Finance Act, 1920, and the relative requirement is that the child "is receiving full-time instruction at any university, college, school, or other educational establishment." We do not know of any judicial decision on the matter, but in our opinion a vocational postal course of tuition would not provide sufficient ground for a claim.

LETTERS, NOTES, ETC.

Barbiturate Poisoning

Messrs. MAY AND BAKER LIMITED, manufacturing chemists, Dagenham, London, write: Our attention has been drawn to the letter by Dr. Stafford Geddes with this heading in your issue of April 14th (p. 689), dealing with the cumulative effect of the barbituric group of drugs. We must confess that it does not appear to us that the case described affords any proof of the cumulative effect of the drugs referred to. The dosage of sodium soneryl should be based on the weight of the patient, and it would be interesting to know what the weight of the patient was. The patient was "apparently" in good health, but it is not evident that any subsequent examination was made to establish whether this really was the case. We know of only one death caused by soneryl, and that in the case of a lady whose general state of health was such that she should definitely not have taken a hypnotic of any description. She actually took a very large overdose. We do, however, know of cases where up to 100 tablets of soneryl have been taken, and the patient recovered. In one instance 1,500 grains were taken in a month. We maintain that soneryl is the least toxic of all barbituric acid derivatives, and a perfectly safe drug when administration is carefully controlled by a medical man.

Handy-women and Puerperal Sepsis

"Q. Q." writes: There is one factor which is persistently ignored in these discussions, and that is the problem of the untrained nurse. Practitioners are not supposed to attend maternity cases with untrained persons, but they do so in scores of cases, and I have to also. In these times of poverty, even if maternity benefit is available, there is not sufficient to pay both a doctor and a trained nurse, and hence the poor patient and the doctor have no choice. The remedy is not easy, but I suggest that the local public assistance committees take these cases on their merits and grant assistance, provided, of course, that the practice of these women was declared illegal. A few of these women are trustworthy, but many are not, and I have refused to attend cases with some, with the risk of the loss of the patients and much unpleasantness. Numerous examples of their irregularities can be given, which the medical officers of health and practitioners are up against. While attending a normal case an untrained person may have been in contact with a puerperal case or an abortion, and may be doing all kinds of nursing in the neighbourhood, septic or otherwise, which the attending doctor may know nothing about. Recently I had to report a woman to the M.O.H. here for doing vaginal examinations, without any precautions, before my arrival at a case! Surely this is a direction in which improvement could be made?

The Young Idea on Health

Over 25,000 children in elementary schools in Great Britain and Northern Ireland sat down one day in October last to answer five questions on how best to avoid disease. The best answers from each school, 582 in all, were sent up to the Empire Health Week Committee of the Royal Sanitary Institute for adjudication, and the assessors have now made their award, which is signed by Dr. George F. Buchan as chairman of council. A medal will be presented to each of the winners, while the successful schools will hold the two challenge shields for a year. Begun on a

modest scale in 1912, Health Week is now firmly established. It is celebrated annually in hundreds of centres in the United Kingdom, and in many cities and towns in India, the overseas Dominions, and the Colonies. The King and Queen have honoured the movement with their patronage. Many of the papers sent in for the competition reached a high standard, showing a grasp of the subject which does credit to their teaching. Some of the answers are unconventional: one boy was asked to describe the spine. "The spine," he said, "is a bundle of bones which runs up and down the back and holds the ribs together. The skull sits on one end and I sit on the other."

Treatment of Bilharzia Disease

Dr. F. G. Cawston (Durban) writes: The discovery of specifics has fostered the impression that parasites may be destroyed by a sufficiently large dose of a drug, even though its value is sometimes greatly enhanced by the addition of other drugs and by the use of vaccines. If antimony alone were responsible for the death of schistosomes a remedy would depend entirely on its antimony content, and the required dose of tartar emetic would cure a case of bilharzia disease in less than a month. Success depends rather on certain changes which are gradually brought about in the blood of patients whilst under the influence of antimony, which, in therapeutic doses, is an excellent hepatic stimulant. These changes are hindered by anything which upsets the general health, and attempts at the rapid destruction of these large blood parasites may even be dangerous. The changes in the constitution of the blood are indicated by the response to the complement-fixation test and by the eosinophil count. These changes help to explain why recent infections with a high eosinophilia are more difficult to cure than chronic infections. Toxic effects may cause the temporary disappearance of escaping ova. The final test of cure is evidenced by their permanent absence from both urine and faeces, by the return to normal of the eosinophil count six to eight weeks after treatment has been discontinued, and by the general improvement of the health. Evidence to show that the male parasites are dead has always been omitted from records of alleged cures where treatment has been continued for less than four weeks. Tartar emetic has been shown to effect a true cure when skillfully administered over a period of one month. Other preparations usually require to be given in two distinct courses before both male and female parasites are destroyed.

Allotments for the Unemployed

The Allotments Committee (Friends House, Euston Road, N.W.1) announces that it has accumulated a fund out of which it can offer seeds, potatoes, tools, and fertilisers at greatly reduced prices for unemployed men and women, those who are recovering from a bout of unemployment, and others who are seriously impoverished. Help has already been given to 100,000 unemployed men, and it is hoped to increase this number considerably during the current year. Information about the obtaining of allotments is available at the offices of town clerks, labour exchanges, or from the Allotments Committee. Details of the scheme can also be obtained from Friends House (Form H). It is added that cultivation of an allotment does not affect a claim for unemployment benefit.

"The Open Door"

Under the title "The Open Door" Dr. Barnardo's Homes, 18-26, Stepney Causeway, E.1, have issued an illustrated booklet showing how orphan and destitute boys and girls are rescued from pitiful surroundings, given a new environment, and trained for ways of useful citizenship. This title is apt, because under the charter no destitute child is ever refused admission. In 1932 alone 1,735 destitute children passed through the open door, and more than 1,500 young people, trained and equipped, passed out into the world. The family supported by Dr. Barnardo's Homes now numbers 8,478 boys and girls and babies; and on an average five newcomers join it every day. In all, 114,102 children have been admitted.

The photograph of Dr. David Lees reproduced with our obituary notice on April 7th was taken by Mr. Andrew H. Baird, scientific instrument maker, of Edinburgh.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 39, 40, 41, 42, 43, and 46 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45. A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 236.

STRANGULATED HERNIA

ITS PREVENTION AND TREATMENT UNDER LOCAL AND OTHER ANAESTHETICS

BY

R. WOOD POWER, M.B., F.R.C.S.I.

SURGEON, HEREFORD GENERAL HOSPITAL

The object of this paper is to record the results obtained by operation upon strangulated hernia under local and other anaesthetics. I have noticed that under the former the patients have less post-operative shock, their condition gives rise to less anxiety, and their eventual recovery is less hazardous and more rapid. I have come to the conclusion that it is the anaesthetic *par excellence* for this condition, and that it should invariably be employed. In discussing such vast subjects as toxæmia, pulmonary complications, and shock, I have only considered them from the anaesthetic point of view. Finally, I have endeavoured to show how strangulated hernia should become a tragedy of the past.

The treatment of strangulated hernia within recent years has been very scantily reviewed and too infrequently discussed. At the Centenary Meeting of the British Medical Association, when the subject of intestinal obstruction was debated by the Section of Surgery, one was struck by the absence of any special reference to strangulated hernia. This is all the more to be wondered at if one refers to the admirable statistics prepared by Vick¹ for that discussion; nearly half the cases (3,267 out of 6,892) of intestinal obstruction were due to strangulated or obstructed hernias. The importance of this subject may be judged from the fact that each year in England and Wales, according to the Registrar-General's returns, over 2,000 people die from strangulated hernia. If one takes Vick's mortality rate of 18 per cent., then over 11,000 operations are performed yearly upon this condition.

I do not intend to give detailed statistics of the various types and complications of strangulated hernia. Anyone requiring such information should read Frankau's² excellent paper, in which he has reviewed 1,487 cases from the various London hospitals. I find that my figures, though small, compare favourably with his.

The care of a patient with a strangulated hernia may be broadly divided into two stages: first, when he is in the hands of his own doctor, and secondly, when the surgeon takes charge. It was customary among surgeons at one time to throw the blame for the death of these patients upon the general practitioner. This day has rightly gone, and Sir Henry Newland³ further emphasized this point when he said:

"It is all very well for surgeons with one accord to excuse themselves, and to assert that the responsibility for that death-dealing delay is not theirs. The fact remains that acute intestinal obstruction is a surgical condition. It is to the surgeons attached to the medical schools throughout the Empire that the profession looks for light and learning."

I can only recollect two cases where the diagnosis was missed by the doctor in charge: in the first there was a small femoral hernia in a young girl, who unfortunately had a gangrenous bowel by the time the operation was performed, and died the following day, and in the second no examination was made, but luckily the patient recovered.

THE QUESTION OF TAXIS

When the general practitioner is called to a case there are two lines of treatment open to him, the first of which is taxis. Taxis should only be attempted in the early stages of strangulation, and should always be gentle. It

is impossible to lay down a definite time limit after which taxis is dangerous; it entirely depends upon the degree of strangulation. If I were pressed to state such a time limit, I would say that it was unwise to attempt this form of reduction if the strangulation had existed for more than four or five hours. The general practitioner, as a rule, has a limited experience in dealing with such cases; it is far safer to leave the attempt to the surgeon, who is generally better fitted to judge whether taxis is advisable or not. To effect a reduction *en masse* in a hospital where an immediate operation can be carried out is dangerous enough, but to attempt reduction in the patient's home, perhaps many miles from a hospital, may result in a catastrophe causing death.

When attempting taxis I have found it useless to grasp the fundus of the hernia and apply pressure at this point; it only causes further distension and congestion of the neck of the sac—the very place where relaxation is required. The reasoning of this must be apparent to all surgeons who use the gridiron incision for appendicectomy. In those cases in which it is necessary to deliver the whole caecum out of the wound for the removal of a high retro-caecal appendix, we have all experienced the difficulty at times of returning the bowel to the abdomen, and we all know how futile it is to grasp the caecum at its most dependent part and attempt to reduce it; such a procedure is never successful, and must cause damage to the bowel. The correct method is to replace it in the reverse order from which it was extracted—that is, the part lying between the edges of the wound is first returned to the abdomen, and as each succeeding portion of the intestine enters the wound it is replaced in the same manner. A strangulated hernia is an exactly similar condition, and if we hope to reduce it we must act on the same basis. The best method of taxis is to apply pressure at the neck of the sac or as near it as possible; direct pressure at this point will contract the neck of the sac and, if the constriction is not too firm, reduction may take place and the remaining bowel follow quite easily. This may be feasible in an early case of inguinal hernia, especially if the thigh is flexed and internally rotated to relax the pillars of the ring, but it is quite impossible in a femoral hernia. In the latter, taxis should on no account be attempted either by the general practitioner or by the surgeon. It is quite impossible to reach the neck of the sac, and any attempt at reduction will only damage the bowel further and possibly cause a rupture. I have never known a femoral hernia reduced by taxis, and any attempt to do so should be looked upon as dangerous practice. The same remarks apply to umbilical hernias in stout people: it is impossible to reach the neck of the sac, and so reduction is impracticable.

Should taxis fail, or if it has been deemed inadvisable, there is a second line of treatment open to the doctor on the spot—that is, to raise the end of the bed. This allows the distended bowel to fall away from the hernial opening, and must, I think, reduce the pressure at this point; in addition, it has a traction tendency. I have known several cases reduce themselves by this method, especially if morphine has been administered. It should never be used as an alternative to operation unless such has been refused, but may be employed while preparations are being made for the removal of the patient.

When the surgeon takes charge of the case the question of mortality at once presents itself, and may be considered under four heads: the social status of the patient, toxæmia, pulmonary complications, and shock.

SOCIAL STATUS OF THE PATIENT

The social status of the patient appears to be one of the chief factors in connexion with the mortality of strangulated hernia. By this I mean that the hospital class of patient seldom sends for his doctor until the case is far advanced, whereas the well-to-do patient will not tolerate the pain and discomfort for anything like the same length of time. There can be no doubt that if all cases of strangulated hernia were operated upon within the first few hours, the mortality would be extremely small. The present high mortality is very largely due to delay in operating. This delay is more marked in rural districts, where distance, conveyance, and the scarcity of doctors have all to be taken into account.

In considering the immediate causes of death—namely, toxæmia, pulmonary complications, and shock—the question arises: How are we to minimize these complications? This point presented itself to me some years ago, and since then I have been working methodically in an attempt to reduce the mortality. I have observed that many patients who die never appear to rally from the operation, and I have come to the conclusion that if these cases were operated upon under local anaesthesia they would stand a far greater chance of recovery.

TOXAEMIA

Everyone is aware of the early and extreme toxæmia associated with intestinal obstruction. If a small portion of the liver be removed at an operation for intestinal obstruction and sectioned it will be found that the cells show cloudy swelling. If a similar section is made from the liver of a patient who has died from intestinal obstruction it will be difficult to recognize the liver cells at all. The venous return from the intestine passes by way of the portal vein to the liver, and permeates the liver cells. The blood contains highly virulent toxins, and accounts for the condition of the liver cells just described. To put any further strain on the liver cells must lessen the chance of recovery, and by administering chloroform, or a mixture of chloroform and ether, we are undoubtedly doing this, for chloroform is poisonous to the liver and in advanced cases causes necrosis of its cells. Chloroform, then, should on no account be used in operations for strangulated hernia, and Frankau's figures show the highest mortality from this anaesthetic. I am quite convinced that it makes the difference in many cases between life and death.

PULMONARY COMPLICATIONS

It is well known that many of these patients are chronic bronchitics, and that the hernia is gradually enlarged by constant coughing. To administer ether in these cases is to run a very grave risk of setting up pulmonary complications, for such patients are usually aged and infirm, and readily show signs of pulmonary congestion. One of the frequent causes of pulmonary involvement is the inhalation of highly infective material from the stomach, either during the induction of the anaesthesia or following the operation. The chances of this can be greatly reduced by careful lavage of the stomach both before and after operation. The stomach in cases of intestinal obstruction and peritonitis can be compared to a bladder with overflow retention, for as a rule vomiting does not occur until the stomach becomes full. What is vomited is usually of an overflow nature; this can be verified by passing

a stomach tube after a patient has vomited, when large quantities can be drawn off. This overflow retention must be regarded in the same serious light as retention of urine in the bladder; in the latter condition we get back pressure on the kidneys and the consequent amassing of poisonous substances in the blood, while in the former we get toxins of a very lethal nature remaining in the system, if the stomach is not kept empty to receive them. Nothing brings more comfort to vomiting patients than a gastric lavage, after which they settle down to a slumber more restful than any drug can produce.

SHOCK

The fourth cause of death—shock—occurs in advanced cases. No one would consider anaesthetizing a patient suffering from shock following an accident unless it were imperative, yet here we have a patient on the very verge of this condition. It is little wonder that such patients never regain consciousness, and rapidly succumb after the operation. Spinal anaesthesia, as we know, causes a fall in blood pressure with resultant shock; this anaesthetic method is excellent when the abdomen has to be opened for intestinal obstruction, but people who suffer from strangulated hernia are often, as I have stated, aged and infirm, and it seems unreasonable to anaesthetize half the body, and so predispose them to shock, when a limited circumscribed area of anaesthesia is all that is required.

CAUSE OF DEATH

There have been fourteen deaths in seventy-eight of my cases, giving a mortality of 17.94 per cent. If reference is made to Table I the various causes of death will be found tabulated, together with the type of anaesthetic used in each case.

TABLE I

Cause of Death	No. of Cases	Anaesthetic Employed		
		Spinal	General (C. and E.)	Local
Toxaemia	8	2	4	2
Peritonitis	2	—	1	1
Pulmonary	1	—	1	—
Shock	3	1	2	—

Eight patients died from toxæmia—that is, they survived the immediate shock of the operation and succumbed within, as a rule, the next forty-eight hours. Two of these deaths occurred following spinal, four following general, and two following local anaesthesia. The degree of toxæmia depends on two factors: first, the time the strangulation has existed, and secondly, its intensity. If this condition were to continue there must come a time when any form of operation will fail to save the patient's life, but it is the period immediately preceding this stage that is the important one, and it is this period, I think, where the employment of local anaesthesia can make all the difference between life and death. Two patients died from peritonitis; they were very advanced cases, in which the bowel was found gangrenous at the operation. Such cases are usually hopeless, for a generalized peritonitis on the head of extreme toxæmia is more than the patients can endure. One patient who was operated upon under general anaesthesia died from pulmonary complications on the fifth day. Three patients died after the completion of the operation, and must be classified under shock. In one spinal anaesthesia was used; in the other two a general anaesthetic was given.

Table II shows the percentage mortality under each anaesthetic. The high mortality rate under spinal anaesthesia is accounted for by the fact that it was used in a small number of serious cases some years ago when stovaine was in vogue. I have often found this drug to cause an alarming fall in blood pressure, and it has now, I believe, been largely replaced by percaïne and tropacocaine. There were eight deaths in thirty-eight cases

TABLE II.—Mortality Rate under each Anaesthetic

	No. of Cases	No. of Deaths	Mortality Percentage
Spinal	6	3	50.0
General (C. and E.)...	33	8	21.05
Local	31	3	8.82

under general anaesthesia, giving a mortality of 21.05 per cent., and three deaths in thirty-four cases under local anaesthesia, giving a mortality of 8.82 per cent. The cases operated upon under local anaesthesia have been an uninterrupted series, so that all types and conditions are included. These figures are admittedly small, but still they are sufficiently suggestive to point to the fact that local anaesthesia is the ideal one for operations on cases of strangulated hernia.

OPERATIVE TECHNIQUE

On admission the patient is examined and taxis tried, if it be deemed advisable. Failing this the stomach is washed out until the fluid returns clear; the foot of the bed is then raised and the patient given 1/4 grain of morphine and 1/100 grain of hyoscine; the area for operation is shaved and the usual preparation of the skin carried out. I cannot speak too highly of the effect of twilight sleep, for by the time the patient is ready to go to the theatre he is invariably sound asleep, and can only be aroused with difficulty. These drugs are seen at their best in patients who have been in pain and without sleep for some time; these people have no recollection of going to the theatre or undergoing the operation. On several occasions I have been asked by them next morning when the operation was going to take place. I prefer these two drugs to the barbiturates; they are less toxic, simpler to administer, and more certain in their action. If one of the barbiturates is preferred, it should be given intravenously, since it is very doubtful if a secreting stomach has the power to absorb it.

When the patient reaches the operating theatre he is at once placed upon the table, and the area for operation infiltrated with 1 per cent. kerocaine. This drug is of British manufacture and extremely cheap; I have employed it in all my cases, and have found it as efficient as any other. It is non-toxic, and I have used as much as sixteen ounces at an operation without any ill effect. I infiltrate with Labot's syringe and needle; this needle is fine and long, and allows practically the whole area to be infiltrated through the one puncture. The needle is inserted about an inch and a half internal to the anterior superior spine; the deep tissues are first infiltrated around the hernial swelling, next the subcutaneous tissues, and finally the needle is reinserted at the top of the scrotum and passed up along the spermatic cord beneath the hernial sac to the internal ring, and this area infiltrated. This is a most important area to anaesthetize if the operation is to be painless, and it cannot be reached by a direct route. If this is not done there is bound to be pain when dealing with the peritoneum.

THE INGUINAL OPERATION

I do not wish to dwell on the technique of this operation, except to make a few remarks on the repair of the hernial opening. When the sac has been removed my procedure is to turn down a flap of fascia from the internal oblique and suture it to Poupart's ligament, which is scarified to receive it. These two raw areas of fascia unite firmly, and make a strong and lasting floor to the inguinal canal. It was my custom at one time to take strips of fascia from the thigh for this repair, but I now consider this unnecessary, except in rare instances. The graft from the internal oblique is a living one, and I have not yet experienced any ill effects from the use of it. In large hernias in elderly patients I remove the cord and testicle; this permits complete closure of the inguinal canal, and adds greater strength to the wound. In these cases, after the internal oblique fascia has been sutured to Poupart's ligament, the upper edge of the external oblique is sutured to the same position, the lower edge overlaps this, and is sutured down in completion of the operation. This operation provides a treble layer of fascia, and I have never seen a recurrence of the hernia. When it is completed the scrotum is raised and firmly bandaged to the pubis to prevent the occurrence of an haematoma.

THE FEMORAL OPERATION

In considering the femoral operation we have the choice of two approaches—namely, the inguinal or Lotheisen's, or the femoral, associated with the name of Lockwood. Of the two the inguinal route is the better, and is more frequently employed. The advantages of this operation are: (1) the constricted neck of the sac is easier to deal with; (2) a better inspection of the intestine can be carried out and a resection performed if necessary; (3) it allows better repair of the wound; and (4) there is less danger of wounding the bladder or an abnormal obturator artery. The real danger of the femoral operation is the possibility of the bowel slipping back into the abdomen before the sac is opened, and thus preventing a proper examination being carried out. Those who employ the femoral route claim that it is a quicker operation, and this is undoubtedly a fact, but I do not think the saving of a few minutes (especially when local anaesthesia is used) outweighs the advantages of the inguinal operation. I only perform this operation in early cases, when the necessity of a resection is unlikely and the patient a poor operative risk.

When repairing the hernial orifice I bring down a living graft from the internal oblique, as in the inguinal operation, and suture it to the pectineus fascia. I think this is a wise procedure, for Husted⁴ has reported 21 to 32 per cent. of recurrences following the operation of suturing Poupart's ligament to the pectineus fascia or the periosteum of the pubic bone.

Hey Groves has introduced a modification into Lotheisen's operation which is worthy of note. It consists in detaching Poupart's ligament from the pubic bone and turning it outwards, after which the sac can be lifted from its bed without any difficulty. I had a very striking example recently of the usefulness of this, when I came across a very inflamed and adherent sac of a femoral hernia, which turned out to contain a pus tube. To have attempted to deal with it in the ordinary manner would have caused considerable damage, and the probable rupture of the tube into the abdominal cavity. This modification is to be strongly recommended in those cases where one is led to expect some damage to the bowel, for even very gentle manipulation may cause a rupture of the intestine if it is damaged.

THE UMBILICAL OPERATION

The Mayo operation is the operation of choice in this type of hernia. After the sac has been removed and the peritoneum closed, the fascia of the rectus sheath is overlapped and sutured in position. The transverse incision is usually employed.

AFTER-TREATMENT

In cases of strangulated hernia the usual post-operative treatment to combat toxæmia and shock is carried out, and stomach lavage is continued until the patient ceases to vomit.

PREVENTION OF STRANGULATED HERNIA

I have already stated that over 2,000 people die yearly from strangulated hernia, and I hope I have outlined a method by which this mortality can be reduced; but if things continue as they are we shall still have a heavy death roll. There is a way, and only one, by which we can eradicate this mortality; that is a radical cure of the hernia as soon as it appears. Wilkie² has stated:

"If we are to reduce the distressingly high mortality in acute intestinal obstruction I believe we must spread the knowledge of the early signs of the malady, first, among our students and practitioners, and secondly, among the public, through our health organizations."

There can be no doubt as to the wisdom of these words in cases other than strangulated hernia, but why in this condition should we advise students and practitioners to await until strangulation has occurred? We have taught them in the past the wisdom of removing a troublesome appendix before it can cause serious symptoms; surely the time has come to teach them the same about a hernia. As to the public, we can teach a certain class, but there is a far larger class which we shall never educate. I have heard this "spreading of knowledge" advocated ever since I qualified, but one has only to refer to the Registrar-General's returns (Table III) for the decade 1921-30 to realize that this is bearing little fruit, for strangulated hernia is on the increase.

TABLE III.—Registrar-General's Returns, 1921-30

Cause of Death	Sex	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Strangulated hernia	M	752	830	822	867	830	812	957	593	1,090	950
	F	930	885	916	947	931	923	1,008	974	1,029	1,032
Appendicitis	M	1,474	1,524	1,608	1,545	1,621	1,535	1,524	1,623	1,657	1,693
	F	1,237	1,211	1,218	1,211	1,238	1,175	1,236	1,245	1,169	1,248

If one refers again to Table III and compares the death rate for strangulated hernia during the past decade with that of appendicitis one must be struck with the nearness of approach of these figures. No medical man would allow a patient to go about with a grumbling appendix, yet the country is teeming with men and women going about their daily work with hernias, not realizing that the mortality nearly approaches that of appendicitis. Are medical men fully alive to the significance of these figures, and, more important, do they impress the meaning of them on their patients? I think the answer must be in the negative, for I know of no greater prejudice among general practitioners than that against advising operative cure for hernias in patients over the age of 45.

It is not my wish in this paper to disparage general practitioners in any way, but I cannot help feeling that the safety of this operation at the present time is not wholly realized by them. I hope that any who read this paper will acknowledge that I am making full allowances for their views when I say that up to a few years ago theirs was the accepted teaching—namely, that it

was unwise to operate on such cases, as there was invariably recurrence. But since then Gallie has come forward and shown us how recurrence can be prevented by the use of fascial grafts. Gallie's operation consists in taking strips of fascia lata from the thigh and interlacing them across the hernial opening. I have performed this operation on several occasions with most satisfactory results, but I only employ it in very large hernias where the tissues have been greatly stretched. The operation of fascial repair which I have previously described is a modification, and has the advantage of being a living graft. This operation performed under local anaesthesia is perfectly safe, and recurrences do not take place.

The technique of the operation is the same as I have described above. In elderly patients I give an injection of ephedrine about ten minutes before the operation is started; this greatly lessens any tendency to shock. Should they have a double hernia I perform two operations at fortnightly intervals. On returning to bed the patient is placed in the sitting position, and provided everything is satisfactory he is allowed to sit out of bed on the second or third day. This procedure is to be highly commended, since it lessens the chances of pulmonary complications, and, provided there is no strain on the fascial graft, it can do no harm.

The truss has still its adherents, and will continue, I suppose, for the present, to have a certain amount of popularity. If it fulfilled all that is claimed for it, strangulated hernia would be unknown. When we remember that some 11,000 people are operated upon yearly we cannot with a clear conscience consider it as a satisfactory form of treatment. For some years I have invariably advised a radical cure for all types of hernia, and so far I have had no reason to regret this advice. All patients over 40 are operated upon under local anaesthesia. Table IV shows the number of patients, with age

TABLE IV.—Operations upon Non-strangulated Hernia under Local Anaesthesia

Age	No. of Cases	Deaths
31-40	4	—
41-50	16	—
51-60	18	—
61-70	27	—
71-80	9	—

incidence, on whom I have performed this operation, and I have not yet lost a single case. The few under 40 were operated upon because of complications, usually pulmonary.

In conclusion I should again like to stress the safety of this operation and the enormous saving of human life resulting from its timely use.

REFERENCES

- ¹ Vick: *British Medical Journal*, 1932, ii, 546.
- ² Frankau: *Brit. Journ. Surg.*, 1931, xix, No. 74, 176.
- ³ Newland, Sir Henry: *British Medical Journal*, 1932, ii, 539.
- ⁴ Husted: *Zentralbl. f. Chir.*, June, 1932, 1465.
- ⁵ Wilkie: *British Medical Journal*, 1932, ii, 545.

At a recent meeting of the Permanent Committee of the International Office of Public Health, Sir George Buchanan gave an account of an outbreak of acute poliomyelitis which had occurred six weeks after the commencement of the summer term in a boarding school in the country, containing eighty-eight boys aged from 10 to 18. Between June 10th and 30th, 1933, eleven boys contracted the disease, of whom five recovered completely in two to six days, two in a somewhat longer period, the four developed paralysis, and one died in four days. The chief points of interest in the outbreak were its intensity and short duration, the small number of cases in which paralysis actually occurred, and the rapidity of recovery, in spite of the severity of the symptoms in several cases. No convalescent serum was used in any case.

VITAMINS A AND D: THEIR RELATION TO GROWTH AND RESISTANCE TO DISEASE

BY

ROBERT SUTHERLAND, M.D., D.P.H.

ASSISTANT MEDICAL OFFICER OF HEALTH, ABERDEENSHIRE

Within the last twenty years, and especially during the last decade, there has accumulated an extensive literature on the subject of vitamins, which shows clearly that an adequate, though minute, amount of these accessory food factors in the diet is essential to the proper functioning of the animal organism. Of the vitamins so far known, two of the most important are the fat-soluble vitamins A and D.

VITAMIN A

Our knowledge regarding the functions of vitamin A has been gained largely as the result of animal experiment. It has been found that a deficiency of this vitamin interferes with the rate of growth in animals^{1, 2, 3}; produces a metaplasia and keratinization of mucous epithelia cells^{4, 5, 6, 7, 8, 9}; and increases the susceptibility to local infections of the degenerated epithelia.^{4, 8, 9, 10, 11, 12, 13} No evidence of any effect upon general resistance to disease has been forthcoming.

It would be unwise to assume, however, that conclusions drawn from animal experimentation can be rigidly applied to human beings in whom deprivation of vitamins is conditioned by naturally arising dietary deficiencies. For humane reasons the complete withdrawal of all vitamin A from the diet is impossible. When compared with animal experiments, therefore, where it is the rule that the basal diet is complete and well balanced except for the absence of the vitamin to be tested, human experiments are complicated by the fact that the basal diet of many of the subjects is incomplete and imbalanced, and that the vitamins which are being investigated are only partially, if at all, deficient. Consequently it has been difficult to obtain clear-cut results in man.

Hess found no evidence of vitamin A supplements improving the rate of growth of children¹⁴; and only one case has been reported where the degenerative changes of epithelia occurred as in animals.^{7, 15} Further, the evidence concerning the effects of vitamin supplements upon susceptibility to infection and resistance to established disease is conflicting, since a relation between vitamin A deficiency and infections has been found by some investigators,^{16, 17, 18, 19, 20, 21, 22, 23} while it has not been observed by others.^{14, 24, 25, 26, 27}

VITAMIN D

It is now generally recognized that a deficiency of vitamin D interferes with the metabolism of calcium and phosphorus.^{28, 29, 30, 31, 32, 33, 34, 35} When this fact is coupled with the observation that a slowing of the rate of growth of animals follows an upset of the calcium or phosphorus content of the blood,^{28, 37, 38} it seems highly probable that an optimum amount of vitamin D is necessary if maximum growth is to proceed. Experiments on vitamin deficiency support this view.^{33, 35} Whether or not vitamin D plays any part in determining susceptibility to infection is as yet unproved, as the evidence of different observers is at variance.^{8, 13, 36, 39}

AN EXPERIMENT UPON SCHOOL CHILDREN

In view of the uncertain state of our knowledge concerning the prophylactic and curative value of vitamin supplements in man, and having regard to the fact that large amounts of these substances are being prescribed

at considerable expense to the general community, it was felt that there was a definite need for a test of such preparations by a controlled experiment. Accordingly, for a period of six months during the winter and spring of the school session 1931-2, a concentrate of vitamins A and D was administered to 294 children of both sexes and of all ages from 5 to 15, attending the North School, Peterhead. These children were selected at random, and had as controls 281 contemporaries. It was shown by a census of the parents' occupations that the pupils of this school were drawn almost entirely from the lower working classes.

The purpose of the experiment was to study the effect of the addition of supplements of vitamins A and D to the average home diet of children of the poorer classes. The effects that were especially looked for were those upon growth, general nutrition, susceptibility to infection, and resistance to established disease.

For a period of six months from November 9th, 1931, to May 15th, 1932, each child in the treated group received one capsule of the vitamin concentrate twice daily—one in the morning and one in the afternoon of every day upon which it attended school. Each child in the control group was given instead, but at the same time, an arachis oil capsule, which was similar in taste but entirely deficient in vitamins. According to the statement of the manufacturers, one capsule of the vitamin concentrate contains 1,000 blue units (Carr-Price value) of vitamin A, and 1,200 international units of vitamin D. The children in the treated group were thus receiving the equivalent in vitamin A of over one ounce of cod-liver oil during each day that they attended school.

Children who consistently experienced difficulty or showed marked distaste when swallowing the capsules were eliminated during the first three weeks, and, before the experiment was concluded, others were eliminated because they were suffering from tuberculosis or other serious illness, or because they had left school, or because they were absent at the time of the second examination. In the last event, however, they were included in the observations recorded below regarding the incidence of disease. By all these eliminations the numbers in the experiment were reduced from 326 in the experimental group and 325 in the control group to 294 and 281 respectively.

MEASUREMENTS

Each child was physically examined at the beginning and at the end of the experiment by the writer, who did not know to which group the pupil belonged. It was found impracticable to weigh the children without clothing, and they were therefore weighed and measured in their indoor garments. In order that a fair comparison might be made between the findings at the two examinations, however, the number of garments was counted on each occasion, an average weight per garment was determined for each 2-year age group, and an allowance was made for any difference in the number of garments at the second examination. The height was measured without footwear to the nearest eighth of an inch, and the weight to the nearest eighth of a pound.

CLINICAL OBSERVATIONS

It was recognized, of course, that quantitative measurements are the most reliable of the observations that can be made at a physical examination, but a wealth of other valuable criteria of comparison of health and of resistance to disease would have been lost had the examination been restricted to them.

If the examiner is unaware which of his subjects belong to the experimental group and which to the control group, if he sets down in writing fixed standards by which

he can measure the degree of abnormality of each factor and to which he can refer before undertaking the second examination, if each individual is examined for the presence or absence of all the factors which are to be analysed, and, most important of all, if examinations from which comparisons are to be made are carried out by the same observer, then these "clinical" observations may be of the utmost value as data of comparison. In the present instance all these requirements were met, and the data in question were obtained by the use of certain standards which, though they might vary with each examiner, were reasonably constant when used by the same observer at both examinations. Observations based on these fixed standards were made upon the general nutrition and development of the child; its posture; the width of the subcostal angle and the breadth of the shoulders; the development of the breasts in females; the condition of the teeth; the presence or absence of enlargement of the tonsils and of the cervical lymphatic glands, of nasal catarrh, of external eye disease, of nail biting, or of anaemia, as determined by a clinical examination of the conjunctiva, lips, palate, and finger-nails; and the degree of cleanliness as measured by the presence or absence of head-nits or vermin and of flea-bites on the body. It will be noted that observations were made on certain factors upon which the vitamin concentrate could not be expected to have any effect. Such observations, however, were found to be of value in establishing the initial comparability of the groups.

RECORD OF ILLNESS

In order that an indication might be obtained of the effect, if any, of the vitamin supplements upon susceptibility to infection and resistance to established disease, a record of the number of days of illness from specified diseases observed in school or the cause of absence was kept by the teachers from January 5th to May 20th, 1932, in the case of every child. This record was kept on a form upon which a dated space was left for each school day, and illnesses were noted under appropriate headings.

The records of illness causing absence were compiled from medical certificates, or from information supplied by the attendance officer. Illnesses observed in school were the record of the class teacher's observations. The writer, however, visited the various classes on an average once a week, checked the observations of the teachers, demonstrated new conditions, and generally exercised reasonable supervision. In this way the degree of accuracy of the observations made was kept at a high level. The numbers observed as regards the incidence of sickness were 294 in the treated group and 288 in the control. These numbers differ slightly from those examined physically because some were absent at the time of the second examination.

INITIAL EQUALITY OF THE GROUPS

Space does not allow a detailed account of the methods by which the initial equality of the groups was proved. Suffice it to say that a careful comparison of the original heights and weights and of the data obtained from all the observations referred to under the heading "clinical observations" served clearly to establish the comparability of the groups at the beginning of the experiment.

COMPARISON OF THE FINDINGS OF THE TWO EXAMINATIONS

With the similarity of the groups at the beginning of the experiment satisfactorily determined, it is possible to proceed to a consideration of such of the data as will indicate if any significant difference between the two

groups existed at the close. A comparison of the gains in height and weight in the two groups during the period of the experiment will determine if there was any difference in the rate of growth, but, in order to make the comparison a fair one, the gains must be expressed as a percentage of the original measurements. This is done in Table I, from which it will be seen that the treated groups show a slight advantage in respect of the gains in both height and weight. If both sexes are taken together, the treated group shows an average gain in height and in weight of 2.3 and 5.3 per cent. respectively of their original measurements, compared with 2.1 and 4.9 per cent. respectively in the controls.

TABLE I.—Average Gains in Height and Weight at all Ages in the Respective Groups

Observations	Groups					
	Females		Males		Both Sexes	
	C	T	C	T	C	T
Number of children in groups at all ages	146	149	135	145	281	294
Height:						
Average at first examination (inches)	50.288	50.087	49.104	48.724	49.719	49.412
Average at second examination (inches)	51.360	51.235	50.101	49.818	50.735	50.534
Actual average gain in inches at second examination	1.072	1.148	0.997	1.094	1.075	1.122
Average gain expressed as percentage of average height at first examination	2.1	2.3	2.0	2.3	2.1	2.3
Weight:						
Average at first examination (pounds)	59.699	59.705	57.844	56.818	58.803	58.296
Average at second examination (pounds)	62.833	63.128	60.455	59.530	61.691	61.383
Actual average gain in pounds at second examination	3.134	3.423	2.611	2.742	2.883	3.087
Average gain expressed as percentage of average weight at first examination	5.2	5.7	4.5	4.8	4.9	5.3

C = Control. T = Treated.

The extent to which the gains in height and weight in the treated groups exceed those of the control group can also be expressed as a percentage of the control gains. This method shows that the treated group as a whole gained 8 per cent. more in height and 7 per cent. more in weight than did the control group.

An examination of any changes in the state of nutrition in the two groups is another observation which may fairly be regarded as an index of the rate of growth. This was done in two ways: first by comparing the numbers in the various nutritional categories (better than normal, normal, subnormal) in the groups as a whole at the first and second examinations; and secondly, by noting at the end of the experiment whether the nutrition of each individual had improved, deteriorated, or remained unchanged. By this means it was found that there was, in the case of both these observations, a slight balance in favour of the treated group. This accords with the findings regarding height and weight.

In summing up the results of a statistical analysis of the data, which he was kind enough to make, Dr. J. O. Irwin of the London School of Hygiene and Tropical Medicine reported that the balance in favour of the treated group was significant for height in males but not in females, and not significant for weight in either sex. In view of this report the value of the supplements in the promotion of growth must be regarded as, at best, slight.

In order to determine if any effect upon the resistance to local infection had been obtained the relative frequency of abnormal conditions of the tonsils, lymphatic glands, nose, eyes, and skin was studied in the various groups

TABLE II.—Summary of the Results of the Different Observations upon the Susceptibility and Resistance of the Various Groups to Colds

School or Absence	Observations	Females			Males			Both Sexes		
		C	T	T Excess	C	T	T Excess	C	T	T Excess
School	1. Average amount of illness in days	5.057	5.671	+0.614	7.212	5.970	-1.242	6.014	5.837	-0.207
	2. Percentage affected	36	43	+7	48	43	-5	42	43	+1
	3. Average number of separate illnesses	0.756	0.913	+0.157	1.236	1.022	-0.214	0.959	0.953	-0.006
	4. Average duration in days of each illness	6.7	6.2	-0.5	5.8	5.8	0	6.2	6.0	-0.2
Absence	1. Average amount of illness in days	1.263	1.36	+0.053	1.095	1.07	-0.052	1.188	1.150	+0.002
	2. Percentage affected	19	17	-2	17	20	+3	18	18	0
	3. Average number of separate illnesses	0.233	0.205	-0.058	0.197	0.216	+0.019	0.233	0.210	-0.023
	4. Average duration in days of each illness	4.8	6.4	+1.6	5.6	4.8	-0.3	5.1	5.7	+0.6

C = Control. T = Treated. School = Cold observed in school. Absence = Cold causing absence.
 - = Balance in favour of the vitamin supplement. + = Balance against the vitamin supplement.

at the close of the experiment. Here again, as in the case of nutrition, two methods of comparison were adopted. In the first place, the condition of the groups as a whole at the end of the experiment was compared with regard to the presence in any degree of the factor under review; and, in the second place, a comparison was made of the individual improvements and deteriorations. As a result no definite evidence was found of the vitamin supplements having been of use in the prophylaxis or treatment of any of the conditions studied by this means.

COMPARISON OF THE RECORDS OF ILLNESS

In order to determine from the records of illness if there is any evidence of difference in the resistance to disease of the two groups several methods may be adopted. A broad indication of any differences in the general resistance of the groups will be obtained from a comparison of the average number of days of illness from all, and from specified causes; the presence or absence of a diminished susceptibility to infection in the treated group will be indicated by a comparison of the percentage of cases in which illness from the various causes occurred, and by a comparison of the average number of separate illnesses in the groups; and, lastly, any effect upon the resistance to established disease will appear from a comparison of the average duration of each separate illness. All these methods appear to be of value, and were accordingly used in the case of all the diseases observed in school or causing absence.

When the average number of days of illness from all causes, except pulmonary tuberculosis, was compared in the groups no evidence of an increased resistance to disease was found in the treated group. Actually the treated boys and girls averaged one and a half more days of illness in school than the controls. As far as absence from school is concerned, however, the groups were equal, with an average of approximately four and a half days' illness.

In the same way, when the data regarding the incidence of the specified diseases, colds, sore throat, influenza, infectious diseases, skin disease, eye disease, and ear disease were examined in detail by the various methods described above, no definite evidence was forthcoming of diminished susceptibility to infection or increased resistance to established disease. Accordingly it is not proposed to include the tables showing the results of these methods of analysis.

It has been thought worth while, however, to marshal the evidence concerning colds in Table II. This has been done, first, because of the claims that are made for

vitamin A supplements as a prophylactic against colds, and, secondly, on the assumption—reasonable in the light of the experimental evidence—that if these supplements have any prophylactic or therapeutic value they will show it in the case of mild infections of mucous epithelia. Incidentally this procedure will serve to show how all the data were analysed. From Table II, then, it will be seen that no significant differences have been found in the groups as a result of any of the observations made. The vitamin supplements therefore had no prophylactic or therapeutic effect upon the common cold.

QUESTIONNAIRE TO PARENTS

At the conclusion of the experiment a questionnaire was sent to the parents of all children in the control and treated groups. They were asked to state their opinion of the effect of the capsules upon the health and the appetite of their children. In order to encourage them to give an unfavourable verdict if they thought it merited, they were informed that two forms of the preparation had been used and that their help was required to determine which was the better.

In approximately 80 per cent. of each group an improvement of both health and appetite was reported—surely a striking example of the power of suggestion upon the human mind, and a warning of the necessity of judging the value of such preparations by controlled experiments rather than by "impressions."

DIETARY SURVEY

The writer is indebted to Dr. J. B. Orr and Mr. W. Godden of the Rowett Research Institute for information concerning a survey of the diets of sixty-six Peterhead families, which they carried out during the course of the experiment.⁴⁰ The diet of these families may fairly be considered to be representative of that of the children attending the North School, Peterhead, as in each case at least one member of the family was a pupil of that school. From this information Table III has been compiled. In it the findings of the 1932 survey are compared with those of 1927 in largely the same families, and with the British Medical Association standards⁴¹ for calories, protein, carbohydrate, and fat, and McLester's standards⁴² for minerals. In addition, the percentages of the sixty-six families below the average and below the standards are shown.

It will be seen that there is a notable lowering of the amounts of all the constituents of the diet in 1932 as compared with 1927, when Orr and Clark⁴³ stated that it was more than probable there was a deficiency of some

of the vitamins, especially vitamins A and D. Further, in the case of all the constituents, more than half of the families are below the average, and the great majority are below the standards. Commenting upon the high calorie intake in 1927, the authors¹³ considered that there was either an unnecessarily high consumption or excessive waste. This is explained, no doubt, by the fact that the herring fishing was very successful in 1926 and 1927. As Peterhead is chiefly a fishing town everyone shared in this prosperity; 1930 and 1931, on the other hand, were poor fishing years, and it is not surprising, therefore, to find the dietary giving evidence of decreased purchasing power, as indicated in Table III.

TABLE III.—Results of a Dietary Survey of Sixty-six Peterhead Families in 1932 compared with that made in 1927 and with Certain Standards.

Constituent of Food	Average Amount Purchased per Man Unit per Day (Grams)			1932 Survey	
	1927 Survey	1932 Survey	B.M.A. and Mc Lester's Standards	Percentage of the Families Below the Average	Percentage of the Families Below the B.M.A. and Mc Lester's Standards
Protein...	125.1	80.5	100.0	56	82
Carbohydrate	685.7	431.9	500.0	56	80
Fat ...	85.2	56.9	100.0	58	94
Calcium ...	1.19	0.683	0.75	55	68
Phosphorus ...	2.14	1.272	1.50	62	80
Iron ...	0.021	0.0115	0.015	55	83
Calories ...	4,120	2,629	3,400	53	85
Income in shillings	1.52	1.18	—	56	—

A study of the actual foodstuffs purchased affords valuable information concerning the vitamin content of the diet. The average amount of milk bought per man value per day was one-third of a pint. There was a marked lack of animal fats—only one-third of a pound out of every 100 lb. of food purchased being butter—and the consumption of animal foods was low. Vegetables and fruit were used very sparingly indeed. It seems probable, therefore, that, although no evidence of vitamin deficiency so gross as to produce xerophthalmia was found, the vitamin content of the diet did not amount to the optimum requirements. The observation that the addition of vitamins A and D to the diet produced a slight improvement in the rate of growth supports this conclusion.

AVERAGE DAILY ATTENDANCE

The average daily attendance, expressed as a percentage of the average daily roll, is the best index of the amount of illness occurring in a school. This figure for the period of the experiment has been compared with the average for the same months during the preceding five years. The figures are: 86.6 per cent. for 1931-2, and 86.4 per cent. for the preceding five years. The period of the experiment may be regarded, therefore, as occurring during an average year.

DISCUSSION

The results of the administration of vitamin supplements to children whose diet was considered to be deficient in them are disappointing. Not only has no conclusive evidence of any beneficial effect upon susceptibility to infection or resistance to established disease been demonstrated, but the effect upon growth compares unfavourably with that observed in the milk experiments of Orr¹⁴ and Leighton and Clark¹⁵ in 1927 and 1928, as shown in Table IV. The North School, Peterhead, was one of the schools chosen for these experiments, and the interval

between the first and final measurements was the same seven months of the year.

It will be seen, then, that the basal diet + vitamins A and D and other constituents of milk produced a material improvement in the rate of growth, whereas the basal diet + vitamins A and D *without* the other constituents of milk produced only a slight improvement. Therefore the supplement of vitamins A and D failed to produce substantial improvement because of a deficiency in the basal diet of some or of all of the other constituents of milk. Of these deficiencies perhaps the most important were those of first-class animal protein and of minerals. The protein content of the diet was drawn in

TABLE IV.—Comparison of the Increases of Height and Weight in the Various Groups in the 1927 and 1928 Milk Experiments^{14, 15} and in the Peterhead Vitamin Experiment.

Experiment	Group	Number in Group	Height Increase (All Ages) (Inches)	Weight Increase (All Ages) (Pounds)
1927 Milk experiment	Milk Non-milk	551 731	1.470 1.212 = + 0.258 (i.e. 21.29%)	3.617 2.974 = + 0.643 (i.e. 21.52%)
1928 Milk experiment	Milk Non-milk	567 590	1.4583 1.1810 = + 0.2775 (i.e. 23.50%)	3.5776 2.4510 = + 1.1156 (i.e. 45.37%)
1932 Vitamin experiment	Treated Controls	234 231	1.122 1.035 = + 0.085 (i.e. 8%)	3.087 2.883 = + 0.204 (i.e. 7%)

+ = Balance in favour of the treatment.

large measure from starchy foods, and consequently was of poor biologic value. As for the mineral content of the diet, although the averages both for calcium and for phosphorus were only just below Sherman's standards¹⁶ of 0.68 and 1.32 grams respectively in the 1932 survey, the fallacy must be avoided of regarding a satisfactory average established by a dietary survey as an indication that all members of the group investigated are receiving adequate amounts of the substance under review. Actually, in the case of calcium and phosphorus, 55 and 62 per cent. respectively of the families were below the average. The average figure, therefore, tends to create a false impression of the true state of affairs. It was by supplying deficiencies in those below the average and bringing their rate of growth up to that of their more fortunate fellows that the milk supplements effected the raising of the average rate of growth.

It appears clear, then, that the milk supplements succeeded where the vitamin addenda largely failed, because, in addition to correcting the vitamin deficiency, they made good the associated deficiencies which almost always go hand in hand with a shortage of vitamins. The correction of one partial deficiency in man, while other associated deficiencies remain uncorrected, can never produce the dramatic results that are obtained from the restoration to the otherwise complete diet of experimental animals of a factor which was previously entirely absent. That this applies to the question of susceptibility to disease as well as to growth is shown by McCarrison's work in India.¹⁷ He found that rats fed on a completely balanced diet were practically free from disease, while animals living in the same environment, but on badly balanced diets, suffered the whole gamut of human ailments. He stated, further, that the most disease-producing of these diets was one of "white bread, margarine, tea, sugar, jam, preserved meat, and scanty, overcooked vegetables." The Peterhead dietary survey showed that

such a diet was extremely common. The correction of only one of its many errors could not then be expected to compensate for all its other deficiencies.

As the optimum requirements in man are not known it has been possible to produce only presumptive evidence that the dietary of the treated children was deficient in vitamins A and D. The diet, as a whole, however, was so bad that few people in this country can be faring worse. If these children were not suffering from a vitamin deficiency, therefore, the condition must be relatively uncommon. Whether the vitamin supplements failed to produce striking results for the reasons suggested—namely, the failure to correct associated deficiencies, or because no vitamin deficiency was present—the fact remains that little benefit resulted from the administration of vitamin concentrates to those members of the community who had been shown by an investigation of their diet to be among those most likely to receive benefit.

On biological grounds, then, there can be no comparison between the value of milk and that of vitamin concentrates as supplements to a defective basal diet. To this there is added the potent economic argument that not only does milk produce better results than vitamin concentrates, but it does so at no greater cost. The time has come when the public must be educated to realize that vitamin supplements do not constitute a nutritional short cut to health. A vitamin concentrate can correct only a vitamin deficiency; it has no magic power of assuming the functions and properties of other essential factors of the diet. The metabolism of food in the body is a chemical process, and if this process is to proceed to the best advantage the correct constituents must be present in sufficient quantity, and they must be present in approximately correct proportions.

SUMMARY

1. A dietary survey in Peterhead showed that the diet of many families of the poorest classes was grossly inadequate in several respects, and presumably deficient in vitamins A and D.

2. A concentrate of vitamins A and D was therefore administered for six months in daily doses equivalent in vitamin A to rather more than one ounce of high-grade cod-liver oil to 294 school children of the lower working classes in Peterhead; 281 contemporaries acted as controls.

3. The rate of growth of the treated children appeared to be only slightly better than that of the controls.

4. Susceptibility to infection and resistance to established disease were apparently unaffected by the treatment.

5. Evidence is produced to suggest that the cause of this failure lay in the fact that the vitamin supplements made good only one dietary deficiency and left uncorrected associated deficiencies of equally essential constituents of the diet.

6. The importance of a well-balanced dietary is therefore stressed, and the value of milk supplements, as a step in this direction, is compared favourably on both biological and economic grounds with that of vitamin addenda.

This experiment was made possible by the generosity of the manufacturers of the vitamin concentrate, who placed large quantities of their product at the disposal of Professor L. S. P. Davidson of Aberdeen University, by whom, in turn, the concentrate was made available for the Peterhead experiment. To him I am deeply indebted, also, for his never-failing interest and advice. In addition, I wish to thank Dr. Harry J. Rae, chief regional medical officer of health, Aberdeen, Aberdeenshire, and Kincardine, for his kindness in affording me every facility in carrying out the work, and Dr. J. B. Orr and Mr. W. Godden of the Rowett Research Institute, Bucksburn, for supplying me with valuable information and much helpful advice. I am especially grateful to Mr. W. G. Mair, head master of the North School, Peterhead, and his staff for their constant courtesy and helpfulness, without which the experiment could not have been carried out.

REFERENCES

- ¹ McCollum, E. V., and Davis, M.: *Journ. Biol. Chem.*, 1913, xv, 167.
- ² Osborne, T. B., and Mendel, L. B.: *Ibid.*, 1913, xv, 311.
- ³ Sherman, H. C., and Cammack, M. L.: *Ibid.*, 1926, lxxviii, 69.
- ⁴ Mori, S.: *Bull. Johns Hopkins Hosp.*, 1922, xxxiii, 357.
- ⁵ Cramer, W., and Kingsbury, A. N.: *Brit. Journ. Exper. Path.*, 1924, v, 300.
- ⁶ Steenbock, H.: *Journ. Path. and Bact.*, 1924, iv, 27.
- ⁷ Wolbach, S. B., and Howe, P. R.: *Journ. Exper. Med.*, 1925, xlii, 753.
- ⁸ Goldblatt, H., and Benischek, M.: *Ibid.*, 1927, xlvii, 699.
- ⁹ Harris, L. J., Innes, J. R. M., and Griffith, A. S.: *Lancet*, 1932, ii, 614.
- ¹⁰ McCarrison, R.: *Nutr. Abstr. and Rev.*, 1932; ii, No. 1.
- ¹¹ Osborne, T. B., and Mendel, L. B.: *Journ. Biol. Chem.*, 1913, xv, 316.
- ¹² Steenbock, H., Nelson, E. M., and Hart, E. B.: *Amer. Journ. Physiol.*, 1921-2, lviii, 14.
- ¹³ Green, H. N., and Mellanby, E.: *British Medical Journal*, 1928, ii, 691.
- ¹⁴ Hess, A. F., Lewis, J. M., and Barenberg, L. H.: *Journ. Amer. Med. Assoc.*, ci, 657.
- ¹⁵ Wilson, J. R., and Du Bois, R. O.: *Amer. Journ. Dis. Child.*, 1923, xxvi, 431.
- ¹⁶ Bloch, C. E.: *Journ. Hyg.*, 1921, xix, 283.
- ¹⁷ Green, H. N., Pindar, D., Davis, G., and Mellanby, E.: *British Medical Journal*, 1931, ii, 595.
- ¹⁸ Wolff, L. K.: *Lancet*, 1932, ii, 617.
- ¹⁹ Moore, T.: *Ibid.*, 1932, ii, 669.
- ²⁰ Green, H. N.: *Ibid.*, 1932, ii, 723.
- ²¹ Mellanby, E., and Green, H. N.: *British Medical Journal*, 1929, i, 984.
- ²² Ellison, J. B.: *Ibid.*, 1932, ii, 708.
- ²³ Fox, F. W.: *South African Med. Journ.*, November 12th, 1932, p. 3.
- ²⁴ Burton, A. H. G., and Balmain, A. R.: *Lancet*, 1930, i, 1065.
- ²⁵ Wright, H. P., Frost, J. B., Puchal, F., and Lawrence, M. R.: *Canadian Med. Assoc. Journ.*, 1931, 412.
- ²⁶ Mellanby, E.: *British Medical Journal Supplement*, 1931, ii, 89.
- ²⁷ Orenstein, A. J.: *South African Med. Journ.*, November 12th, 1932, p. 16.
- ²⁸ Mellanby, E.: Medical Research Council, Special Report Series, 1921, No. 61.
- ²⁹ McCollum, E. V., Simmonds, N., Shipley, P. G., and Park, E. A.: *Journ. Biol. Chem.*, 1922, li, 41.
- ³⁰ Korenchevsky, V.: Medical Research Council, Special Report Series No. 71.
- ³¹ Goldblatt, H.: *Biochem. Journ.*, 1923, xvii, 298.
- ³² Howland, J., and Kramer, B.: *Amer. Journ. Dis. Child.*, 1921, xxvii, 105.
- ³³ Orr, W. J., Holt, L. E., Wilkins, L., and Boone, F. H.: *Ibid.*, 1923, xxvi, 362.
- ³⁴ Bauer, W., Marble, A., and Claflin, D.: *Journ. Clin. Invest. (Harvard)*, 1932, xi, 1.
- ³⁵ Mitchell, F. T., and Coley, S. W.: *Journ. Amer. Med. Assoc.*, 1932, xcix, 1768.
- ³⁶ Brown, A., and Tisdall, F. F.: *British Medical Journal*, 1933, i, 55.
- ³⁷ Elliot, W. F., Crichton, A., and Orr, J. B.: *Brit. Journ. Exper. Path.*, 1922, iii, 10.
- ³⁸ Orr, J. B., Macleod, J. J. R., and Mackie, T. J.: *Lancet*, 1931, i, 1177.
- ³⁹ Eicholz, W., and Kreitmair, H.: *Munch. med. Woch.*, 1928, lxxv, 79.
- ⁴⁰ Davidson, L. S. P., Fullerton, H. W., Howie, J. W., Croll, J. M., Orr, J. B., and Godden, W.: *British Medical Journal*, 1933, i, 685.
- ⁴¹ Report of Committee on Nutrition, *British Medical Journal Supplement*, November 25th, 1933.
- ⁴² McLester, J. S.: *Nutrition and Diet in Health and Disease*, 1927, pp. 93, 95, 97.
- ⁴³ Orr, J. B., and Clark, M. L.: *Lancet*, 1930, ii, 524.
- ⁴⁴ Orr, J. B.: *Ibid.*, 1928, i, 202.
- ⁴⁵ Leighton, G., and Clark, Mabel L.: *Ibid.*, 1929, i, 40.
- ⁴⁶ Sherman, H. C.: *Chemistry of Food and Nutrition*, second edition, 1924.
- ⁴⁷ McCarrison, R.: *British Medical Journal*, 1931, i, 966.

The returns from universities and university colleges in receipt of Treasury grants for the academic year 1932-3 have now been issued by the University Grants Committee (H.M. Stationery Office, 1s. 3d.). Of the 50,155 full-time students to which this publication relates, medicine and dentistry claim 11,247; of these 9,835 were men and 1,412 women. Edinburgh and Glasgow Universities head the list with totals of 1,233 and 1,067 respectively. The schedule of degrees and diplomas obtained during the year and analysed according to faculties gives a total of 1,055 degrees and 1,183 diplomas under "medicine including dentistry" in Great Britain.

RECENT ADVANCES IN ANAESTHETICS *

BY

RONALD JARMAN, M.R.C.S., L.R.C.P.

ANAESTHETIST TO THE CANCER HOSPITAL; SENIOR ANAESTHETIST,
PRINCESS BEATRICE HOSPITAL, AND WOOLWICH MEMORIAL
HOSPITAL

There are three main types of anaesthesia in use to-day: (1) inhalation combined with premedication, (2) spinal combined with premedication, and (3) intravenous, with or without premedication. I will deal with them in this order.

Before considering the anaesthetics themselves it is advisable to stress an important point—namely, that all patients who are to undergo a major surgical operation ought to be carefully investigated. This should include a blood and urine analysis, in addition to a general clinical examination. Special attention is paid to the blood pressure and the Moot-McKesson cardiac energy index. The formula for this index provides an approximate index to the cardiac reserve.

$$\text{Moot's index} = \frac{\text{pulse pressure} \times 100}{\text{diastolic pressure}} = 50 \text{ (in normal subjects)}$$

Patients presenting an index of between 40 and 60 show ample cardiac reserve; those in whom the index lies between 25 and 40, or between 60 and 75, have probably adequate cardiac reserve, whilst the reserve is gravely inadequate in those having an index below 25 or above 75. (This index is unreliable in cases of thyrotoxicosis, owing to the high pulse pressure.) No enemata, purges, or any other form of dehydration should be permitted for at least forty-eight hours before any major operation. The patient is supplied with ample fluids and glucose, and everything is done to ensure that his general condition is the best the pathological state allows.

Inhalation Anaesthesia with Premedication

The public has lately become aware of the tremendous advantages which are derived from being put to sleep in their own beds, and many patients more or less demand some drug that will bring about complete oblivion before any type of operation. For this purpose the chief drugs that we have at our disposal are as follows. First, the popular barbiturate group, which includes nembutal, sodium amytal, pernocton, medinal, di-dial, and the latest—evipan. All these may be given intravenously except medinal, and all may be administered orally except pernocton. Evipan appears to be the least toxic of all the barbiturates. The next group consists of drugs administered per rectum, such as avertin, paraldehyde, and ether-olive-oil emulsion.

It is possible to produce a mild surgical anaesthesia with any of these drugs, and they may be used either as premedication to inhalation anaesthesia or as the total anaesthetic. For the latter purpose, however, large doses must be given, and toxic effects are apparent. Headaches, nausea, and vomiting have been reported following the use of all these drugs—complications which have rarely been seen when evipan has been the sole general anaesthetic. With evipan, induction and return to consciousness are much more rapid than with any other barbiturate, and if reasonable care is used it does not appear possible to give a fatal dose. Patients generally prefer an intravenous injection to either a rectal or inhalation anaesthetic. A combination which has proved efficacious over a very large number of cases is that of omnopon and scopolamine, the dose varying according to

age. The routine dose is omnopon 2/3 grain, scopolamine 1/150 grain, and these amounts may be given to patients between the ages of 16 and 65. It is fairly easy to produce the desired effect with any of the drugs mentioned above, and each has its merits.

In my opinion the best type of inhalation anaesthetic to use after them is nitrous oxide and oxygen. This is best given at varied pressures with an apparatus such as the McKesson.

Before and during the war the most popular anaesthetics were chloroform and ether. Why, one asks, have they fallen into disuse with up-to-date anaesthetists? It is on account of the complications which frequently follow their administration to dangerously ill patients. The complications following chloroform and ether are many and well known. They are: delayed chloroform poisoning, sudden collapse or status lymphaticus, chest complications, bronchitis, bronchial pneumonia, lobar pneumonia, pulmonary collapse, paralytic ileus, post-operative vomiting, and shock. It became essential to find another anaesthetic which would reduce these complications, particularly the shock. Nitrous oxide and oxygen, combined with only small amounts of ether, was the result.

ADVANTAGES OF N₂O-OXYGEN AS AN INHALANT

The use of nitrous oxide and oxygen considerably lessens the incidence of the complications described above. Its particular advantages are as follows.

1. It is the safest and the least toxic of all general anaesthetics, and there is therefore little sensitization of the tissues to surgical shock. It is pleasant for the patient at the time of induction, even if little or no premedication has been given, while sufficiently large doses of narcotics may with safety be given beforehand, so that after the operation the patient cannot remember that he was removed from his bed.
2. Surgical relaxation is quickly obtained when required.
3. Operations with the diathermy knife can be done with absolute safety.
4. Bodily functions are scarcely interfered with, and the clinical state is not aggravated.
5. The most desperate cases may be operated upon with comparative safety so far as the anaesthetic is concerned.
6. Dangerous signs of an overdose are conspicuous enough to give timely warning, and the respiratory centre remains responsive until late.
7. In the absence of premedication, recovery of consciousness and rational control is almost immediate, even after prolonged administration.
8. The after-effects are conspicuous by their absence. There is never any vomiting, except when it is caused by other conditions, and so thirst may be quenched and nourishment taken soon after the operation.
9. The anaesthetic may with safety be repeated many times at short or long intervals.
10. The stay in hospital is shortened and the convalescent period is reduced.

The advantages of the McKesson apparatus are as follows.

1. It delivers the mixture at the percentage desired, whether the breathing is shallow or deep, whether re-breathing is employed or not, and whether the pressure of the gases is high or low.
2. The percentage of oxygen can be varied accurately, definitely, and simply.
3. Rebreathing can be employed at all pressures.
4. The pressure at which the gases are delivered can easily be varied at will without disturbing the percentage of oxygen in the mixture.

* Read before the Chelsea Clinical Society and the Watford Division of the British Medical Association.

The scope of nitrous-oxide-oxygen anaesthesia is unlimited. By means of the ordinary facepiece any operation may be performed, though spinal analgesia gives a better relaxation for abdominal work. In order to exteriorize the larynx a transnasal intratracheal tube may be passed, which prevents anything from going down into the trachea or a bronchus. A direct intratracheal tube may be passed for nasal operations, and the field of operation can be completely closed off and the patient entirely covered without any danger whatsoever. Dental operations and tonsillectomy can also be done with safety. Further, this form of anaesthesia is extremely valuable in all cases of midwifery, whether it be a natural delivery, a forceps case, or a Caesarean section. It can be given intermittently during the first two stages, and continuously for the third. The uterine contractions are actually strengthened, thus shortening the time of labour. The mother's condition is definitely better than when chloroform is used, and the baby is not affected in any way, and usually cries as soon as it is born.

OTHER INHALANTS

Apart from nitrous oxide, there are two other gases that are in use to-day. One, ethylene, has been employed for some years; the other, a new gas called cyclopropane, is in the process of being investigated.

Ethylene has had many advocates, but owing to its unpleasant odour and the possibility of an explosion it has not come into general use. The great advantage of this gas is that it gives a deeper and quieter anaesthesia than nitrous oxide and oxygen alone, and enables a higher percentage of oxygen to be given.

Cyclopropane (trimethylene) is a hydrocarbon gas, an isomer of ethylene. It produces an anaesthesia as deep as that from ether, and the induction and return to consciousness are as quick as is the case with nitrous oxide. It is extremely potent, and oxygen from 75 to 90 per cent. has to be given with it. As yet only one cylinder of this gas has to my knowledge been used in this country, and it is difficult, therefore, to give an opinion on it; but so far as one can see it has real possibilities. A full report has been made by its users at the University of Wisconsin Medical School, U.S.A.

Spinal Analgesia with Premedication

With spinal analgesia I usually employ *omnupon* and *scopolamine* premedication, and sometimes supplement this with *evipan*. The advantages of a spinal anaesthetic are as follows: (1) it can be employed in certain cases where an inhalation anaesthetic must be avoided; (2) it produces a complete *anoci-association*—that is, cutting off of all apparent pain impulses—and it provides an adequate relaxation in abdominal surgery; (3) as spinal analgesia does not increase the sensitization of the tissues with histamine, the resulting shock to the patient is considerably less than with an inhalation anaesthetic such as ether or chloroform.

There are, however, certain disadvantages as well—namely, headaches, which occur in 1 per cent. of cases; pain in the back (0.02 per cent.); severe nausea and vomiting (0.5 per cent.); paralysis (0.01 per cent.); and sudden collapse (0.01 per cent.). There is also a definite fall in blood pressure, and this varies with different types of patient.

THE SOLUTION

The solution I prefer for a spinal analgesic is *percaïne*, though I have also used *stovaine*, *spinocain*, etc. *Percaïne* is the least toxic of the preparations. Its effect

upon the blood pressure is considerably less than that of any other spinal analgesic, while, as it has a prolonged and lasting effect covering from one to three hours, the surgeon need not work against time. A high abdominal anaesthesia can be produced with a maximum of safety, and the same solution may be used to infiltrate the skin before introducing the intrathecal needle. The anaesthesia is so enduring that the patient is free from pain for from six to twelve hours after the operation, and the amount of narcotics required is thus minimized. This is particularly valuable with piles and operations on the perineum, and others that give a great deal of discomfort. Finally, a smaller number of headaches occur than is the case when *stovaine*, etc., are used.

Percaïne is used in two strengths—the dilute (20 c.cm. of a 1 in 1,500 solution) and the strong (2.3 c.cm. of a 1 in 200 solution). The dilute solution is being used more often than the other, and this is the one I employ myself for all types of operation, though the stronger is most useful for operations of the perineum, etc., where small doses from 0.6 c.cm. upwards to the full dose may be given.

Operations such as removal of piles, cystoscopy, and prostatectomy may be done with this strong solution with ease. It may be given either in the lateral or the upright position, and the operation can be proceeded with almost at once. Certain operators mix this solution with the spinal fluid, but this course is not necessary unless one requires anaesthesia at a slightly higher level than that of the crest of the ilium.

TECHNIQUE OF ADMINISTRATION

There are two quite different methods of administering the dilute solution. The one most frequently used is known as the Howard Jones technique; the second, which has only recently been brought to notice, is the Etherington Wilson technique. I have used the former for my last 1,200 cases, and it is performed as follows:

One hour before the operation the patient is given the routine premedication of *omnupon* 2/3 grain and *scopolamine* 1/150 grain. When he is brought into the theatre or anaesthetic room he is put into the lateral decubitus, and the skin and the tissues down to the spinal column are infiltrated before the spinal needle is inserted into the third lumbar space. This needle is one of fine calibre, and the fluid is allowed to drip from it in order to ensure that it has penetrated to the spinal theca; the *percaïne* solution, having been heated to blood heat, is slowly introduced with a syringe into the canal. The quantity varies with the upward extent of analgesia required. For low abdominal operations 10 c.cm. are necessary, for medium 12 c.cm., and for high 15 or 16 c.cm. After the needle has been withdrawn the patient is immediately turned on his face, and the table tilted into 15 degrees Trendelenburg. After six minutes he is turned over on to his back, and the operation proceeds. No further anaesthetic is necessary, but if for any reason it is desired to have the patient unconscious gas and oxygen may be given throughout the operation. When the operation is over he is kept in the slight Trendelenburg position for some hours in order to avoid the complications that may occur after any spinal anaesthetic. This is effected by raising the foot of the bed on high blocks for eight hours, then on low blocks for eight hours. The patient is finally kept supine for the same length of time, after which he may be slowly raised into the sitting position. In cases of necessity Fowler's position may be assumed gradually three hours after the injection.

Etherington Wilson's technique differs from that described above in that the injection is given in the upright sitting position. After the commencement of the injection this position is maintained for twenty-five seconds to produce anaesthesia up to and including the perineum and hypogastrium, for thirty seconds for the level of the umbilicus,

and for forty seconds to reach the epigastrium. The patient is immediately laid on his back in the 15 degrees Trendelenburg position, and the operation may begin at the end of seven minutes. This technique is the method of choice for pregnancy, for patients with large abdominal tumours, and for similar cases.

Intravenous Injections

This is the third and most recent method of producing a general anaesthesia. I have been using evipan over a period of twelve months, and for upwards of 1,000 cases. It may be used as a form of premedication, followed by either gas and oxygen or a spinal anaesthetic, or it may be used by itself as a general anaesthetic. There are two distinct types of case for which this anaesthetic may be employed.

SHORT ANAESTHESIA WITH EVIPAN

It is useful for operations in the out-patient department, where anaesthesia is only required for a moment or two. No premedication is necessary or desirable here, and only the minimum dose of evipan should be used. There is no need to withhold food, or to wait until three or four hours have elapsed since the last meal. The dose of evipan injected intravenously is from 2.5 to 5 c.cm. The operations which are commonly performed under this minimum dose are: dental extractions, the opening of abscesses, whitlows, etc., the removal of nails and specimens for biopsy, and any similar procedures in out-patient work where anaesthesia from thirty seconds to a few minutes is required. The operation should be commenced immediately the patient is unconscious, and everything should be quite ready before the injection is begun. If no more than the minimum dose is injected the patient is "round" in two or three minutes. He is allowed to rest on a couch or chair for from twenty to thirty minutes, and is then able to go home, preferably with attendance. If, however, more than the minimum dose has been injected a longer period must be allowed for recovery, and it will be necessary to have a friend to see him home safely.

Technique

The first 2.5 or 3 c.cm. is injected fairly quickly (five to ten seconds), and a pause of about thirty seconds (which is the normal time for the complete circulation of the blood) is then allowed. At the end of this time unconsciousness usually takes place. If not, a further 2 to 3 c.cm. is injected, and the minor operation is performed. The patient regains consciousness almost as quickly as he went under. If the injection is steadily continued after the first 2 or 3 c.cm. without any pause, a further 3 or 4 c.cm. will be injected before unconsciousness supervenes. This means that the patient gets double, or more than double, the minimum dose; unconsciousness lasts from ten to twenty minutes, a longer time is needed in the recumbent position for recovery, and the patient is more apt to pass into a sort of drunken state, and for a longer period, than if a smaller dose had been used.

EVIPAN ANAESTHESIA WITH PREMEDICATION

For in-patients evipan may be combined with premedication, so that before the patient is removed to the theatre complete oblivion, or at any rate somnolence, is produced to eliminate all psychic shock, permit any necessary preparations for the operation to be made without the patient's knowledge, and provide a peaceful sleep for some hours afterwards.

In order to ensure successful anaesthesia with evipan I use my routine premedication method of omnopon and scopolamine. This produces a satisfactory state of somnolence. The Hoffman-La Roche preparation, containing omnopon 2/3 grain and scopolamine 1/150 grain, I

have found most reliable for all patients between the ages of 16 and 70. Half this dose may be given to a large child or elder person. The preparation contains the laevorotatory scopolamine, which is the sedative alkaloid of hyoscyne, and does not include the stimulating dextrorotatory alkaloid. The injection is given one hour before the operation. The patient is then left quietly in a darkened room, or with a bandage round his eyes, in order to encourage sleep. The majority of patients are quite unconscious by the time they reach the theatre. Among private patients, when this state of affairs has been promised and is not attained, an injection of evipan is given one hour after the premedication, with the patient still in bed. He is then transported to the operating table, and a further injection of evipan is given for all but short operations.

DOSAGE AND GENERAL INDICATIONS

For minor operations upon in-patients a full dose of evipan (1 gram dissolved in 10.5 c.cm. sterile water) may be given without premedication, or combined with omnopon and scopolamine, one hour before. Evipan is without doubt very useful in cases of manipulation of the back, shoulder, knee-joints, or ankle-joints; complete relaxation is obtained, especially if omnopon and scopolamine have been given previously. For major operations, as I have already said, evipan may be used as a total, as well as a basal, anaesthetic. When used as a total anaesthetic the full dose may be repeated as often as required during the operation. For a strong, healthy young adult it has often been found necessary to repeat the full dose within a few minutes. But in younger and older patients it seldom becomes necessary under twenty to thirty minutes. The maximum number of times I have repeated the injection has been four, over a period of two hours.

As already stated, evipan may be used as a basal narcotic, preferably after omnopon and scopolamine; it may be given to render the patient unconscious before being taken from his bed, or for the injection of a spinal analgesic, or for the passage of an endotracheal tube. As a subsequent inhalation anaesthetic, nothing should be given but nitrous oxide and oxygen, the use of either chloroform or ether being avoided, these drugs not only being dangerous in themselves, but notoriously more so in combination with barbiturates. For example, for such operations as gastrectomy, cholecystectomy, hysterectomy, rectectomy, etc., evipan is frequently used after the premedication, a spinal anaesthetic then being administered: and later, in order to maintain unconsciousness throughout the whole period of operation, the dose of evipan is repeated or anaesthesia is continued with nitrous oxide and oxygen by means of the McKesson apparatus. Where a closure of the upper air passages is indicated, anaesthesia should be produced with evipan, and the intratracheal tube passed transnasally, anaesthesia being continued if and when necessary with more evipan or with N_2O and O_2 .

CONTRAINDICATIONS OF EVIPAN

There are certain contraindications to the use of evipan. It is metabolized in the liver very rapidly, and any gross disease of this organ, or the presence of jaundice, should definitely preclude its employment. General feebleness of the patient and low blood pressure, or low Moot-McKesson ratio, are also contraindications, because evipan does cause a definite, though temporary, fall in blood pressure. Again, it is felt that the upright position is another contraindication to the use of large doses of the drug, on account of this sudden fall in blood pressure.

It is therefore advisable that for dental extractions, etc., the patient should be lying down and not upright. (Lack of available space only applies to institutions where large numbers of cases are to be dealt with, and where sufficient room is not available to allow all patients to recover sufficiently to be able to proceed home. This question does not arise in the in-patient department.) Lastly, it is not advisable to give evipan to patients who have already had other barbiturates as premedication. Slow recovery and prolonged depression of respiration and blood pressure have only occurred in patients who have been given nembutal previously.

SOME DANGERS AND DIFFICULTIES

The Jaw.—In from fifteen to twenty-five seconds after the administration of evipan the patient is completely unconscious, and the first phenomenon to be observed is the dropping of the jaw. An attendant should always be present to see that this is not allowed to happen, and to maintain an adequate airway. Dropping of the jaw may be partly avoided by the patient's head being to one side, and the jaw is more easily supported if the patient has a small dental prop between his teeth. The airway is always completely maintained if a rubber (Phillips's) airway is inserted into the pharynx immediately unconsciousness takes place. It cannot be too strongly emphasized that the danger of allowing the jaw to fall and the tongue to drop back, thereby causing obstruction of the air passage, is a most serious one, and must never be allowed to occur. Evipan should therefore only be administered single-handed in the most unusual circumstances.

Blood Pressure.—A fall of some 20 per cent. or even more in the blood pressure always occurs. This is both systolic and diastolic. In my experience it has produced no deleterious immediate effects or after-effects, but I have not used evipan for patients with a low blood pressure, as trouble can be expected, especially if old and feeble persons are anaesthetized in the sitting posture.

Respiration.—A similar depression of respiration occurs, but again this is very transient, and provided the airway is maintained should cause no alarm.

Restlessness and Twitchings.—Slight involuntary movements and tremors occasionally take place. These are never gross, but are a little disconcerting to the beginner working with evipan. They very seldom happen if the premedication described above has been given beforehand, and they are readily overcome by a further injection of from 5 to 10 c.cm. of evipan.

Signs of Drunkenness.—Patients who have been given more than the minimum dose and allowed to go home when they had apparently recovered have been known to exhibit signs of drunkenness in the street. If more than 3 c.cm. have been given, ample time must be allowed for recovery to take place, and a comrade should see the patient home.

After-effects.—I have had no deaths following the use of evipan in over 1,000 cases. Careless nursing and failure to maintain an airway after the patient's return to bed have given me some minutes' anxiety in a few cases in my earlier experience. No pathological process appears to have been aggravated, though restlessness has been very marked in some dozen instances—all, I think, in the highly strung type. A definite though very small proportion of patients are found to vomit after the use of any opium derivative. I feel that the very small proportion, about 1 per cent., of patients who have vomited after evipan is not greater than the proportion who vomit after the use of an opiate alone. No case that has

had evipan alone—that is, without premedication—has vomited.

Antidotes.—The antidotes for evipan do not differ from those for any other form of general anaesthetic, nor are they more often needed. During collapse coramine is by far the most reliable drug for general purposes, but it must be used liberally; 5 c.cm. should be the average dose, and 10 c.cm. may be given quite readily for any general collapse. Recently I have been trying the effect of icoral and picrotoxin, which appear to be even more potent general stimulants than coramine. For simple respiratory failure from whatever cause alfalobeline is the only drug causing direct respiratory stimulation. A dose of 3/20 grain, or even twice that amount, may be given intravenously for rapid action, or, for slow action, subcutaneously. The other direct respiratory stimulant is carbon dioxide. It should be given, if possible, under pressure, in a mixture consisting of 7.5 per cent. carbon dioxide with oxygen. Cylinders of these gases in the above proportions should be in every operation room and every recovery room. Incidentally, they should be carried on every fire-engine, and found in every first-aid box—especially on river-banks and in lifeboats. I regret to say that there are, as yet, very few doctors' surgeries or nursing homes which have them.

Conclusions

I believe the best modern anaesthetic to be nitrous oxide and oxygen, which is administered most successfully by the McKesson apparatus, without the use of ether or chloroform, and which is best preceded by omnopon and scopolamine as premedication. Where it is essential that no drop in blood pressure should occur, nitrous oxide and oxygen is the general anaesthetic of choice. Similarly, where instantaneous recovery is desirable it is extremely valuable. This form of anaesthesia allows full premedication, so ensuring a complete absence of psychic shock; it is not followed by vomiting, and it does not aggravate any pathological condition present.

Surgical cases of already established pulmonary disease can be dealt with without any form of inhalation anaesthesia, and for many of these evipan has proved ideal. No expensive or heavy apparatus is required, though it is strongly advisable always to have at hand a positive pressure apparatus for the administration of CO₂ and O₂, or nitrous oxide and oxygen. It must be remembered that, except in a few centres, it is difficult to get a good nitrous-oxide-oxygen anaesthesia, or even to avoid ether or chloroform. Chloroform, I believe, should never be used at all, and ether only in extraordinarily rare circumstances.

The council of the Royal Sanitary Institute, London, has decided to offer for award annually a challenge shield for the best celebration of Health Week in the Empire, outside the British Isles. In view of the great interest which was taken by the late Professor Bostock Hill in the Health Week movement from the date of its inception, the challenge shield will be known as the "Bostock Hill Memorial." The date fixed for Health Week this year is October 7th to 13th, and over-seas centres wishing to enter the competition for the shield must submit, by December 31st, 1934, full programmes and reports of any celebration held.

The Istituto Ortopedico Rizzoli in Bologna announces a competition for the prize Umberto I for the best orthopaedic work or invention. This prize of 3,500 lire will be awarded according to the decision of the Provincial Council. Italian and foreign doctors may take part in the competition, which closes on December 31st, 1934. Copies of the regulations may be had from the president of the Rizzoli Institute, Bologna.

ON THE NATURE OF HIGH ARCHED PALATE

BY

O'C. O'SULLIVAN, M.C., M.B., B.Ch.

ASSISTANT SCHOOL MEDICAL OFFICER AND INFANT WELFARE MEDICAL
OFFICER, NORTHUMBERLAND COUNTY COUNCIL

In the course of an investigation as to the evidence of vitamin D insufficiency among children one of the most constant and striking features was the frequency of the presence, in varying degrees and a variety of forms, of high arched palate. Most of the explanations of this phenomenon which have been put forward¹ assume the action of some forces which, in conjunction with softening of the bony tissues, press the hard palate upwards in the centre, whilst at the same time laterally compressing the alveolar arch. Certain observers (G. C. M. M'Gonigle, J. C. Brash²) have questioned the feasibility of these explanations. It is not difficult to see, when the general architecture and structure of the facial bones is considered, that a very much greater force would be necessary than could be derived from the neighbouring muscles. The feeble action of the buccinators, for example, would be more than antagonized by the action of the tongue, which tends to press the palatine arch outwards as well as pushing the roof upwards. Again, the type of deformity usually found in a very large series of cases did not correspond to that which would be expected as the result of forcible deformation of the palate. Direct inspection with a well-illuminated speculum failed to reveal any encroachment upon the nasal fossa, even in cases of extremely narrow highly arched roof; nor was there observed any cockling up or marked deviation of the septum nasi. Convincing evidence of lateral compression is likewise absent. If the lips are well retracted it will be seen that there is no real narrowing of the outer circumference of the alveolar arch, and that the teeth do not point inwards and downwards, as would be expected under the influence of inward pressure on the alveolar arch.

As a result of the examination of a series of children from birth up to the completion of the first dentition, and also of the children at school medical inspections, an alternative explanation suggested itself—namely, that there is actually no elevation of the palate, the apparent height of the roof being entirely due to abnormal downward elongation of the alveolar process, the narrowing being due to the inward expansion both of the alveolar and, to a varying extent, of the palatine processes. The number of children examined at school, extending into thousands, ensured that every variety of buccal cavity would be included in the investigation, which extended over a period of three years.

The normal course of development of the roof of the mouth appears to be somewhat as follows. At birth the roof of the mouth generally shows a slight degree of cupping, resembling somewhat a segment of a dinner plate. After a varying period—usually about one to three months—the anterior edge of the alveolar process becomes markedly enlarged in the centre, at a place corresponding to the two centres of ossification of the premaxilla and maxilla. This enlargement increases and spreads backwards, and, as dentition progresses, the descent of the teeth and the deepening of the alveolar arch result in the formation of a moderately high, rounded arch by the middle of the third year. At the commencement of the second dentition this condition appears normally somewhat accentuated, the alveolar arch now containing the twenty erupted deciduous, as well as the fourteen calcified crowns of the permanent set. The size and rate of growth

of the alveolar process is thus greater during the period of dentition, particularly in the vertical direction, than the lateral growth of the palate. During the second dentition, with the loss of the deciduous and the gradual descent of the permanent teeth, an approach is made to the adult type of flattened wide roof, with short, gently sloping sides, the growth of the palate being now relatively greater than that of the alveolar process (and arch).

This is roughly the normal course of events. In certain cases, however, the thickening of the premaxillary area is greatly exaggerated, forming a distinct swelling, marked off on either side from the rest of the maxillary edge by a U-shaped vertical groove. This hyperplasia may remain confined to the region of the incisor and canine teeth or may spread a varying distance along the alveolar arch, resulting in exaggeration of the normal vaulting. This becomes further accentuated during the second dentition, when thickening of the arch becomes a prominent feature, especially if the descent of the permanent teeth is obstructed by the retention of the stumps and fragments of the deciduous teeth (removal of these leading to marked diminution of the thickening). Thickening of the buccal surface of the palatine process is also frequently present in a marked degree.

The various types of deformed roof described in the literature of the subject depend chiefly upon variations in the relative degrees of downward elongation and thickening of the alveolar processes, and also upon the degrees of thickening of the palate bones. For example, when the arch is much thickened in front and tapers away behind we have the well-known Λ -shaped roof. Great hypertrophy of both palate and alveolar process brings about obliteration of the normal angle of the roof, and produces the saddle-shaped type of roof, the latter resembling the under surface of a saddle. With the progress of dentition the bony hyperplasia diminishes and deformity becomes less marked.

The bony hyperplasia differs in no way from the thickening of the cranial bones in rickets, and, like it, commences at the centres of ossification, is there more marked, and often remains limited to that region. Of the children investigated 80 per cent. showed unmistakable evidence of previous rickets, and the diet was notably poor in foods containing calciferol. The tendency for the deformities to become modified with age has also been noted, as is the case in rickets.

The conclusion drawn from the investigation is that there are two distinct varieties of high arch: (1) The *congenital*, which is a persistence of a certain stage of foetal development. In this type there is actual elevation of the floor of the nasal fossa, which slopes up and inwards to meet the nasal septum. (2) The *acquired* variety described above, in which there is no actual elevation of the roof of the mouth, the *apparent* elevation being due to hyperplasia of the alveolar and palatine processes, and is probably of a rickety nature. The two types may coexist.

As the acquired variety is very widespread, at any rate in this district—20 per cent. of "infants," 30 per cent. "immediates," and 15 per cent. of "leavers" among school children, showing *marked* deformity—it is only to be expected that it will be found associated with other conditions, such as adenoids, mouth-breathing, nasal obstruction, and mental deficiency, with which it appears to have no aetiological connexion.

I am greatly indebted to Dr. G. C. M. M'Gonigle for his criticism and help in drawing up this memorandum.

REFERENCES

- ¹ Choyce and Beattie: *System of Surgery*, first edition, vol. iii, pp. 156 and 260.
- ² Brash: *Aetiology of Malocclusion and Irregularities of the Teeth*.

MAY 5, 1934]

CLINICAL MEMORANDA

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Clinical Memoranda

AN UNUSUAL CASE OF HYPERPYREXIA IN MALARIA

High temperatures in single or double infections with malaria may possibly occur and escape observation if the readings are taken at too long intervals. Observations on such patients should be made with special highly calibrated thermometers—if such instruments are procurable—and at short intervals. The results might prove of considerable interest. It must be a rare occurrence for a patient to sustain a hyperpyrexia, such as is here recorded, and live.

On January 11th, 1934, a man was admitted to the Hospital for Tropical Diseases under the care of Dr. A. E. Horn. His history was as follows. Born in England, he had resided in Nigeria since 1928, except for periods of furlough at home. In Nigeria he had had five attacks of malaria. He returned home in November, 1933, and on December 9th, while in London, he had another attack of malaria, which developed into blackwater fever, and from this he was recovering when admitted into the Hospital for Tropical Diseases.

For twelve days after admission he showed some swing of temperature from 97° to 99.4° F.; the spleen was palpable, but no malarial parasites could be found in the blood. On January 23rd, a rigor occurred, and the temperature reached 102° , but no parasites were found; the next day the temperature subsided. On February 7th the temperature again shot up to 101° , but on this occasion the blood showed malignant tertian malaria to be present. This was followed on February 9th by another rigor, which commenced at 7 p.m., and blood slides taken immediately showed, in addition, parasites of benign tertian malaria. At 8.15 p.m. the temperature had risen to 107° (pulse 104, respirations 24), and orders were given for it to be recorded every fifteen minutes. At 8.30 p.m. the thermometer showed 110° and orders were given for it to be recorded every fifteen minutes. At 8.40 p.m. the mercury reached and passed the 110° mark, the limit of the calibration used (which thermometer, while on the second thermometer above the had been selected as it showed some calibration above the 110° mark), the mercury reached the top of the instrument level with a mark estimated at 115° . Orders were at once given to sponge the patient, but before this was done the temperature showed a fall to 105.4° (pulse 104, respirations 24). Sponging showed a fall to 105.4° (pulse 104, respirations 24). At 9.25 p.m. 105° (pulse 138, respirations 26); and at 10 p.m. 104° (pulse 122, respirations 24).

During the whole period of the hyperpyrexia the patient's condition was good; he was quite rational, no cerebral symptoms were present, and there was no loss of consciousness. The pulse was soft and regular, and showed no marked acceleration until 9.25 p.m., when it quickened to 138. Respiration was regular all through the period, but at the peak was "panting" in type, expiration ending with a soft grunt, while the patient complained of a sensation of compression "like a weight" on his chest. A feeling of nausea was present throughout, but vomiting only occurred once, just after 8.55 p.m. There was no sweating until after 9 p.m., and then only to a slight degree. The urine showed no return of "blackwater." Treatment with atabrine was at once instituted, and no subsequent hyperpyrexia occurred. The patient is now convalescent. All temperatures were recorded in the mouth, and it is to be regretted that neither rectal nor axillary readings were taken.

The original thermometer was continued in use in the wards, and its readings have excited no suspicion of inaccuracy. The second thermometer was submitted to the experts at the National Physical Laboratory at Teddington, it having been laid aside at once with the mercury still showing the height recorded, estimated at 115° F. Examination disclosed a flaw in the bulb, which in the expert's opinion, was the type of flaw that would follow great expansion of the mercury consequent on

exposure to too high temperature, rather than one consistent with rough usage. There was no evidence of defect in the instrument before use.

That the patient sustained a temperature exceeding 110° F. is undoubted. He had been accustomed to his temperature being taken, and had no idea that it was higher than usual during this particular period, so the suspicion of biting both thermometers can be eliminated. No hot drinks were given, and all other sources of possible error have been investigated without result. It is unfortunate that the defect in the thermometer precluded the accurate estimation of the temperature attained being made at the National Physical Laboratory.

We are indebted to Dr. A. E. Horn for permission to publish the details of the case.

W. E. COOKE, F.R.C.S.I.,
Medical Superintendent, Hospital for
Tropical Diseases, London.
JAMES S. MCNAIR, M.B., Ch.B.,
House-Physician, Hospital for
Tropical Diseases, London.

EXTREME HYPERPYREXIA IN MEASLES

In most respects this case seems to conform with the toxic type in which Ker's *Manual of Fevers* states: "The patient succumbs to the virulence of the measles toxins quite apart from complications. . . . Death occurs on the second or third day of eruption, and the temperature reaches hyperpyretic levels towards the end." Yet it seems difficult to correlate the apparently normal course for the first few days of the illness, during which normal sweating took place, and the terminal hyperpyrexia, in which it seemed impossible to produce sweating, unless one supposes that the toxæmia had completely disorganized the heat-regulating centre. It must be most exceptional for any toxin to cause such extreme hyperpyrexia as 109.2° F.

A puny, underweight infant, aged 3 months, developed measles on January 16th, 1934, the rash appearing on the 18th. The illness ran a normal course, apparently, and on the morning of the 20th the fever had subsided after a profuse perspiration and the rash was fading. At about 6.30 p.m. the child seemed ill and feverish again, and had a convulsion.

On examination at 8 p.m. on January 20th the child was having a convulsion, which lasted two or three minutes. He was greatly overclothed, and in an overheated room. He was obviously very ill. The temperature in the axilla was at the incredible level of 109.2° . Every care was taken to exclude fallacies in recording the temperature. The pulse was 140. Respiration could not be counted accurately, but did not appear to be excessively rapid.

The child was immediately put into a lukewarm bath, and after about fifteen minutes the temperature fell to 104° , but the skin was still dry and burning, and within a few minutes the temperature had risen to 104.4° . He was troubled with mucus in the throat, but could not cough properly. All the physical signs of meningitis were absent, and there were no signs of bronchopneumonia. He could suck and swallow a little. Within the next three hours he had two more convulsions, and two lukewarm baths which relieved him but failed to make him sweat.

At the time of the second examination—at 1 a.m. on January 21st—the temperature was 106° , pulse much more rapid and weak, respirations rapid. There were short intervals of sleep with quiet, easy breathing, alternating with periods of distress with noisy breathing and attempted coughing. The skin was still hot and dry. The child was too collapsed to permit of a long lukewarm bath. During the previous two hours there had been repeated passage of mucus, slightly tinged with faeces.

There were no more convulsions, and the child lapsed into coma and died about 2.30 a.m., eight hours after the first convulsion.

K. M. PURVES, M.B., F.R.C.S.Ed.
Chagford, Devon.

A CASE OF SEVERE ANAPHYLAXIS IN GENERAL PRACTICE

The rarity of severe anaphylaxis is, I believe, still considerable, in spite of the many thousands of people who receive injections of serums, and in general practice, where comparatively fewer serum injections are given, this very grave complication must be rare indeed. The following case would appear to be worth recording on account of its severity, rarity, and recovery.

The history of the case begins with an acute infection of the fauces and palate, with much oedema, particularly of the uvula, and a profuse, slimy exudate. The case occurred during an epidemic of sore throats in which the causative organism had almost invariably been a streptococcus, usually of the haemolytic variety. After consultation with my partners, and in view of previous successes with this treatment, it was decided to give an intramuscular injection of antistreptococcal serum.

After inquiries had been made from the patient as to whether he had previously been given antitoxin and a negative answer received, 10 c.cm. of streptococcus antiserum were injected into the gluteal muscles at 8 p.m. on December 29th. About a minute afterwards the patient complained that he was feeling queer and going blind. In a few seconds the face became engorged and cyanosed, there was frothing at the mouth, loss of consciousness, and finally cessation of breathing. An intramuscular injection of 10 minims of liq. adrenalin. hydrochlor. was given immediately, and artificial respiration started. At this time the eyes were upturned and the pupils widely dilated; no pulse was palpable at the wrist. A cylinder of oxygen was sent for, and about ten minutes after the onset of the attack O_2 and CO_2 were being administered in conjunction with the artificial respiration, which had been continuous.

At 8.15 an intramuscular injection of 1/2 c.cm. of pituitrin was given; this was followed by an injection of camphor in oil. About five minutes later (at 8.20) the patient began to take deep, sighing respirations, and after a few moments to breathe spontaneously, though slowly, and artificial respiration was discontinued. As the patient was still cyanosed the administration of O_2 was continued. Another injection of 5 minims of adrenaline was given at 8.30. At this time the pupils had become contracted, and there were flickering movements of the eyelids. The radial pulse was still undetectable, and noisy breathing and crepitations masked any sounds at the apex beat. The patient was still unconscious, and there was incontinence of urine and faeces. Half an hour later (at 9 o'clock) the radial pulse became just palpable at a rate of 134 beats per minute. The patient passed blood and mucus per rectum at 9.30.

At 10.45, as the pulse was only palpable for short periods, another 1/2 c.cm. of pituitrin was injected. At 11.20 1/6 grain of morphine was given subcutaneously, as the patient was becoming very restless. Blood and mucus were again passed per rectum at 11.40, after which the patient became quieter and lapsed into a deep sleep until 12.20 a.m. The pulse rate had now fallen to 118 beats per minute, but was still very feeble. For the first time, at 1.15, the patient vomited, and 10 minims of adrenaline were injected. The pulse at 2.30 was 109 and at 3.30 108 beats per minute. At 5.30 the patient again vomited slightly; the pulse was then 106. The temperature at 8.30 was 99°, and the pulse was 100. By 9 o'clock this had dropped to 98. At this time there was no recollection of the incidents of the night, or of the original injection which had caused all the trouble.

On this day, December 30th, at about 5 p.m., a few small patches of urticaria appeared on the face, and an hour later the patient passed about a pint of urine, which contained protein and a trace of sugar. This was the first passed since the incontinence of the early part of the attack. The urticaria spread, and at 8.15 the upper lip became much swollen, and the patient again passed mucus and blood per rectum; accordingly another 5 minims of adrenaline were injected. By 10.30 the lip had regained its normal size, and the urticaria had disappeared. About this time another half a pint of urine was passed. During the night there were profuse sweats, and small quantities of urine were passed twice.

On December 31st the patient was still unable to remember any of the incidents of the illness, or to retain in his mind anything that he was told for more than a few minutes, but the questions that he asked indicated that his mind was active. The pulse was now of full volume and normal pace and rhythm. The apex beat was in its normal situation, and no abnormal physical signs were found in the chest or abdomen. The subsequent history of the case is one of progressive recovery. The gastro-intestinal symptoms, though decreasing, persisted for several days, but there was a return of swelling of the upper lip five days after the original attack. This quickly responded to adrenaline. The patient returned to work on January 30th, and although the mental processes are normal there is no memory of events immediately preceding the attack and for a day or two afterwards.

Since the patient's return it has been elicited that seven years ago he had a severe haemorrhage after tonsillectomy and was given haemoplastin. This would appear to have been the sensitizing agent. It is interesting that after the lapse of such a time the patient should have been so sensitive to horse serum. Other points are the rate and order of return to normality of the various systems, and the recurrence of the milder forms of serum poisoning for several days after the attack. The dramatic effects of the administration of adrenaline on the milder symptoms suggest that much larger quantities of this substance could have been given in the first instance and repeated more frequently.

West Malling. H. R. R. MAVOR, M.R.C.S. L.R.C.P.

AN UNUSUAL CASE OF HAEMATOCOLPOS

The case to be recorded is of interest for two reasons: (1) the age of the patient; and (2) the fact that she gave no history of any previous symptoms that might act as a guide to her condition. On this occasion an attack of appendicitis proved a blessing in disguise.

HISTORY OF CASE

On December 19th I was called to see a young Jewish schoolgirl, aged 12 years, who was suffering from severe abdominal pain. History and examination suggested an acute appendicitis; the temperature was 101.4° F.

On December 20th the patient felt better, but experienced the sensation of a lump in the abdomen; this was difficult to examine on account of the general tenderness and the nervousness of the child, but it was certainly evident, and seemed like a faecal mass. By this time the temperature had dropped to 100° F.

On December 21st an enema was administered with a good result. Examination elicited a movable tumour at about the level of the umbilicus. It was rather hard, rounded, and tender on pressure, and appeared to be about the size of a tangerine orange; otherwise the patient was better.

On December 22nd the patient had had a restless night, with frequent attacks of intestinal colic, and appeared anxious and distressed. The temperature was normal, but I urged operation.

On December 23rd I performed a laparotomy, making a midline incision from the umbilicus downwards. On entering the peritoneal cavity a slightly congested normal uterus presented itself at the upper angle of the wound. The vaginal cavity was greatly distended and fluctuating, so I realized I was dealing with a case of haematocolpos. I then isolated and removed the appendix, which was considerably swollen and inflamed. This done, and having sutured the abdominal wound, I proceeded to examine the vagina, where I found a bulging, bluish membrane of a resistant nature, requiring quite an amount of force to cut through with a knife. When I had perforated this membrane the best part of a quart of menstrual blood drained away, and in a couple of days the patient experienced complete relief of all her symptoms. She made an uneventful recovery, and at the end of a fortnight I made a vaginal examination and found the uterus in its normal position, with an opening in the hymen that would admit my index finger.

Hove.

J. G. HAYES, L.R.C.P.S.I.

ALLERGIC SENSITIVITY

The circumstances of the reaction described below would appear to be unique and therefore to warrant recording.

An apparently healthy girl, aged 23, a probationer nurse at the Coventry City Isolation Hospital, was Schick-tested on January 9th, 1933, and showed a strongly positive reaction. Accordingly injections of toxoid-antitoxin (T.A.M.) were given on February 3rd, 10th, and March 10th. On September 13th, 1933, she was Schick-tested a second time, and the resultant reaction was deemed to be mildly positive. A further series of toxoid-antitoxin injections were given on October 14th, 21st, and November 23rd.

A third Schick test was carried out on January 5th, 1934, and some twenty minutes after this intradermal injection of 0.2 c.cm. of test toxin the nurse complained of feeling very ill, with pains in the back and cutaneous irritation over the whole body. A copious serum rash of the urticarial type made its appearance, and for some time there was swelling of the eye-lids. The rash faded from the face after an hour, and from the rest of the body, save on the "test" arm, a little later. On the "test" arm the following day there remained a brawny swelling at and about the site of the injection, with a surrounding circle of scarlatiniform erythema some three inches in diameter. Several days later the skin of this region remained brownish red, scaly, dry, and tender until finally the arm cleared up. The "control" arm showed no reaction.

It appears that despite the violent reaction to the third Schick test the nurse was then in fact Schick-negative. A specimen of blood was taken on February 13th, 1934, and was submitted to Dr. R. A. O'Brien (of the Wellcome Research Laboratories), who kindly undertook to titrate it for diphtheria antitoxin. Dr. O'Brien's subsequent report stated that the nurse had 1/10 of a unit of antitoxin, and that she should therefore have been Schick-negative.

It is difficult to explain the generalized reaction resultant upon the third intradermal injection of the test toxin, for no similar reaction followed the first or second test injection, nor was there any reaction following the six immunizing injections. At the same time as this nurse received her third injection, three other nurses were tested with material from the same batch of toxin, and showed no uncommon reaction. There was no question of faulty technique. The nurse in this case did not appear in any way an unusual subject, and she had no past history of asthma, hay fever, migraine, or the like. The persistence of the scaly condition of the skin would appear completely to remove the case from the range of "hysterical" phenomena.

It may be that the first and second injections of test toxin had together conferred a hypersensitivity to some specific element contained only in the test toxin itself. If sensitivity had been thus acquired the case appears as a form of anaphylaxis. Alternatively, it may be that the case was a strange form of allergy or "inborn" sensitivity. Professor Langdon Brown has admirably described the latter as a chemical idiosyncrasy which exemplifies the variation in the response of different individuals to similar stimuli. Whether the anaphylactic or the allergic theory is pursued in this case, it is indeed extraordinary that the nurse had not shown an abnormal reaction to any of the eight previous test and immunizing injections.

Our thanks are due to Dr. R. A. O'Brien, to whom particulars of the above case were submitted, for his helpful suggestions. He informs us that the batch of Schick toxin associated with the case was a large one, and has been used in many hospitals. He has never met a similar incident connected either with this batch of toxin or with any other, and is unable to trace a like case in the literature.

A. MASSEY.

E. R. W. GILMORE.

Coventry.

Reviews

THE CANCER PROBLEM

The fact that cancer is much more frequent among civilized than savage races, and is increasing in frequency, is one of the outstanding features of the disease. Two books on the cancer problem have recently appeared which deal with this question and are of particular interest in that they reach the same conclusion by diametrically opposite routes. Mr. J. P. LOCKHART-MUMMERY, who has acted for eleven years as editor of the *Annual Report of the British Empire Cancer Campaign*, and has therefore been in close touch with the results of scientific research, approaches the subject mainly from the experimental side in his book on *The Origin of Cancer*.¹ Mr. HASTINGS GILFORD, on the other hand, in a brochure on *The Cancer Problem and its Solution*,² rejects in toto the vast mass of information that has emanated from laboratory experimentation, which he considers has merely served to obscure the problem. He relies solely on the clinical and post-mortem observations which have been made during the last hundred years.

Mr. Lockhart-Mummery's conclusion is that civilized man, not having been subject to the law of natural selection for some thousands of years, has gradually suffered a diminution in the natural stability of his cell nuclei, and has acquired an abnormal tendency to gene mutation, which the author regards as the essential cause of cancer. Naturally, as long as present conditions persist, this degradation will continue to progress and the disease increase in frequency. Mr. Hastings Gilford comes to very much the same conclusion, expressed in somewhat different terms. He considers that our civilization makes for degeneration; that an ever-increasing growth of national degeneracy is now displaying itself in our nation; that race suicide may almost be said to be in sight; that everywhere around us, in our hospitals and charitable institutions, movements are at work which act benevolently on the individual but malevolently on the race; that sentimentality prevails over common sense. The effect of this general degeneration is, he considers, to produce a degradation of cell structure, a precancerous condition in which the cells, if left to themselves, tend to die out, but under suitable stimuli take on the abnormal cell proliferation obtaining in cancer. In this way are explained the prevalence of cancer and its continued increase in frequency. It should be said that Mr. Lockhart-Mummery's book contains much more than the discussion of this question. It gives a detailed and very interesting description of the theory of which he is the author—namely, that all the characteristic features of simple and malignant growths may be readily explained on the supposition that tumours are the result of the mutation of one or more of the constituent genes of the chromosomes of somatic cells.

OPERATIONS ON CHILDREN

No one book can cover the entire field of surgery, so that each author must seek for some point of division that will enable him to decide what material to include and what to leave out. Certain ages, certain regions, certain infections, are all well recognized as useful boundaries to the extent of a book. But the boundary that M. FÈVRE has chosen in his *Chirurgie Infantile d'Urgence*³—that of

¹ *The Origin of Cancer*. By J. P. Lockhart-Mummery, M.A., M.B., B.C., F.R.C.S. London: J. and A. Churchill, 1934. (Pp. 159; 29 figures. 10s. 6d.)

² *The Cancer Problem and its Solution*. By Hastings Gilford, F.R.C.S. London: H. K. Lewis and Co., Ltd. 1934. (Pp. 59. Cloth, 2s. 6d.; paper, 1s. 6d.)

³ *Chirurgie Infantile d'Urgence*. Par M. Fèvre. Paris: Masson et Cie. 1933. (Pp. 452; 110 figures. 70 fr.)

urgency—is surely one of the least satisfactory. To take only a few of the subjects treated—hernia, mastoiditis, empyema, or the malformations of the rectum: in all of these the urgent cases shade into the non-urgent, and both groups are governed by the same fundamentals of anatomy, physiology, pathology, and technique. The merit of any work depends on the setting out of these fundamentals, and once they are set out the question of urgency becomes comparatively unimportant.

This somewhat captious criticism of the plan of the book is really a tribute to the excellence of the material arranged upon that plan. M. Fèvre follows closely throughout the teaching of his revered senior, Professor Ombredanne, whose vast and authoritative work on the surgery of children was lately reviewed in these columns. As might be expected from one taught in this school, his conclusions are clearly set down and admirably arranged under headings in a way that might with advantage be copied in this country. There is also a good deal to be said in favour of the French custom of trying to reduce the essentials of a condition to diagrammatic form, as opposed to the English one of giving photographs of its external appearance.

Particularly interesting and instructive sections are those on appendicitis, on acute inflammations of the testicle, and on pericarditis. Many in this country will agree with the author that general anaesthetics and rib resections are unnecessary and dangerous for the empyemata of children, and with his recommendation that the lateral sinus (why not also the middle cranial fossa?) should be inspected as a routine in operations for mastoiditis. To help in the notorious difficulties of abdominal diagnosis in the young he recommends exploration through a "button-hole" incision in the peritoneum made under local anaesthesia; and to ward off threatening ischaemia of the forearm advises incision of the aponeurosis confining the muscles.

Less admirable are his figures showing ligation of the splenic pedicle *en masse*, and the omission of warning against the tendency to stenosis following the high tracheotomy which he advises: the tannic acid treatment of burns has apparently yet to penetrate to France. On the whole, however, this is a book to the writing of which much experience, thought, and hard work have gone; and it is worthy of careful study by all interested in the surgery of the young.

OCCUPATIONAL SKIN DISEASES

A pathetic interest attaches to the appearance of a new edition of ROBERT PROSSER WHITE's well-known treatise on *Occupational Affections of the Skin*,⁴ for it was but a day or two after he had revised the final proofs that he died. This subject, to which Prosser White devoted his life, has grown more and more in importance with the progress of modern industry, and this book has necessarily grown with it. Nevertheless the fourth edition, although including a considerable amount of new material, has been prevented from exceeding the size of the third, which appeared in 1928, by the use of a smaller type and closer general arrangement. More than ever this work remains a mine of information which must be indispensable to all those who are concerned with industrial medicine. It has no serious rival in the English language, and it is to be hoped that successors to the author will be found to keep it abreast of the modern developments of the subject, and that further editions may be forthcoming from time to time as they may be required. Prosser White's *Occupational Diseases of the Skin* has become a

⁴ *The Dermatogoses or Occupational Affections of the Skin*. By R. Prosser White, M.D., C.M. Fourth edition. London: H. K. Lewis and Co. Ltd. 1934. (Pp. xvi + 716; 72 figures on 66 plates. 35s. net.)

classic, and as such deserves immortality. The memoir of the author, by his friend Dr. W. E. Cooke of Wigan, which appeared in the *British Medical Journal* last January, has been expanded by Dr. Cooke as a preface to this posthumous edition.

AN ENGLISH LEECHBOOK.

The fifteenth century *Leechbook*,⁵ which has long been in the possession of the Medical Society of London, was brought to light when Mr. WARREN DAWSON catalogued the Society's library in 1932. It seemed to be interesting, so Mr. Dawson transcribed it, dedicated his transcription very appropriately to the honorary librarian, Dr. A. Francis Voelcker, and got it published by the Royal Society of Literature of the United Kingdom under the terms of the Dr. Richards Trust. The manuscript itself consists mainly of recipes for injuries, ailments, and affections of all kinds, arranged alphabetically. Its date is probably not later than 1443, and it does not differ greatly from the *Leechdoms* of an earlier period published by the Rev. T. O. Cockayne and by the Rev. George Henslow. The present manuscript is in English, and is easy to read by those who enjoy Chaucer, but Mr. Dawson has contributed a version in modern English for those who are less educated in their own language. He has, too, added explanatory notes, most of which are ingenious and correct, though others like "Pin and Web" and "Morphew" are clearly wrong. In an appendix Mr. Dawson prints some medical prescriptions from a manuscript of the Tudor period used by various members of the Purefoy family.

Some of the recipes in the *Leechbook* are interesting, as, for instance, that "for the biting of a dog: Take cress and pennyroyal and seethe them in water and give him to drink. And lay of the dog's hair thereto if thou mayest have it." The prescription remains in common use at the present time as an injunction to "take a hair of the dog that bit you." The absence of any means of measuring short periods of time is exemplified in the recommendation to let the materials used in making a confection "seeth while thou may say this psalm miserere mei, deus." And again, when a longer time is required, "boil them in running water mile way," which is interpreted as whilst you walk a mile. Mr. Dawson has done a good work in publishing this manuscript, but it would have been still better if he had made an index, for, although it is arranged alphabetically, it is not easy to discover any individual recipe.

THE HISTORY OF MALARIA

The *History of Malaria in the Roman Campagna*,⁶ by the late Dr. ANGELO CELLI, who died at the age of 57 in 1914, while engaged in the preparation of the work, has been worthily completed by his widow, Madame ANNA CELLI-FRAENTZEL, who herself has made several interesting contributions to the subject. The book is divided into eight chapters, devoted respectively to the pre-Roman Period, the Roman Republic, the Empire, the early Middle Ages, later Middle Ages, Modern Period, Latest History, and Epilogue. In the pre-Roman Period and the early centuries of Roman history malaria was unknown, or if it did exist was so mild as to form no hindrance to civilization, traffic, and intensive cultivation. At the beginning of the period of Roman domination part of the Campagna

⁵ *A Leechbook or Collection of Medical Recipes of the Fifteenth Century*. By Warren R. Dawson, F.R.S.E., F.R.S.L., F.S.A.Scot. London: Macmillan and Co., Ltd. 1934. (17p. 34d. 25s. net.)

⁶ *The History of Malaria in the Roman Campagna*. By the late Angelo Celli. Edited and enlarged by Anna Celli-Fraentzel. London: John Bale, Sons and Danielsson, Ltd. 1933. (17p. viii + 226. 15s. 6d. net.)

at least was intensely inhabited and cultivated. The general decline, however, of the peasant class led to the spread of malaria. During the Empire malaria was widespread in Rome and the surrounding country, in spite of the improvement in the hygienic condition of the capital and its water arrangements, carried out by Augustus and his successors.

The introduction of Christianity into Rome was accompanied by an attenuation of the disease, but the barbarians who destroyed the aqueducts of the Campagna converted the land into a desolate and fever-stricken desert encampment, which caused heavy losses among them. In the later Middle Ages the popes and bishops made constant attempts to improve the condition of the Campagna by means of hydraulic works, but without success. The "air of Rome" proved particularly fatal to foreigners who were appointed to the papacy, as well as to the armies which invaded Roman territory. In the modern period, extending from the Renaissance down to the present time, the attempts were continued to reclaim the marsh land. At the end of the sixteenth century, however, and during the next two centuries, malaria became more extensive and violent, in spite of the revival of medical science and the introduction of cinchona bark in the second part of the seventeenth century. Although in 1870, when Italy became a united kingdom, a great effort was made to free Rome and the surrounding country from malaria, it was not until after Ronald Ross's discovery in 1898 that reclamation, colonization, and rational farming in the Roman Campagna began. During the first fourteen years of the present century Angelo Celli initiated a vigorous campaign against malaria, which led to the passing of special laws with regard to the sale of quinine, agrarian reclamation, and colonization. A copious bibliography is appended to the book.

THE SPAN OF LECTURES AND THE SPAN OF LIFE

There is no need to quarrel with the ambition to convey to the public an intelligent knowledge of the mechanism of the human body and of the methods by which the impairment of this mechanism by disease can be prevented. But success in these aims is not given to every author, and, in particular, it has not been given to Dr. FRANKLIN R. NUZUM in his book entitled *The Span of Life*.⁷ The directors of his hospital have urged Dr. Nuzum to the enterprise, and so far as literary exposition is concerned he has done well. It is his judgement in the choice of appropriate materials that we question. In his early chapters he deals with the heart and its diseases, and it is conceivable that on these topics something reasonable and helpful might be said to an attentive public. But what is the educational value of such statements as, "The blood makes a complete circuit of the body in twenty to thirty seconds"; "Five to six quarts of blood course through the body between three and four thousand times each day"; "During exercise the amount of blood pumped into the arterial circuit may rise to thirty-five pints per minute"; "Each red corpuscle makes the circuit from the left heart to the periphery of the body, thence to the right heart by way of the veins, to the lungs, and back to the left heart in twenty seconds"? Such propositions announced from the platform may well make a lay audience gasp and stare, but they will hardly provide either illumination for the mind or practical guidance in the conduct of life. Again, we should doubt the wisdom of an attempt to give to non-technical listeners an introduction to the significance of the electrocardio-

gram; or to describe to them the various theories of angina pectoris; or to engage their interest in the clinical and pathological features of coronary thrombosis. What actually happened at the Santa Barbara Cottage Hospital during these exercises we of course do not know, but we will venture a shrewd suspicion that not a few of Dr. Nuzum's listeners were successful in finding that effective protection from the pronouncements of the platform which secret and stolen slumbers conveniently provide. The popular lecture on medicine is a rare art, and it is not achieved in the volume before us.

Notes on Books

Laboratory Medicine,⁸ by Dr. DANIEL NICHOLSON, aims at supplying for medical students information on the indication, method, and interpretation of diagnostic tests which will prove most useful when they commence to practise. More highly technical diagnostic tests, which a physician would have performed for him by a trained pathologist, are outlined in principle and the interpretation given. As the author points out, no hard-and-fast line can be drawn between these two groups because physicians vary in their training and liking for laboratory work. But whether this book is made use of as a guide to the actual performance of these tests or only consulted for their interpretation, there is no doubt that it will be a very useful addition to the practitioner's bookshelves. The first edition was published three years ago. The work is now slightly larger, and contains descriptions of new procedures in clinical pathology.

The Pathology of the Urinary Tract, by Dr. PASTEUR VALLERY-RADOT,⁹ is one of a series of short books on different branches of medicine intended to serve as an introduction for the student coming fresh to the subject. It begins with a chapter on the symptoms for which patients suffering from urinary diseases first consult a doctor. Succeeding chapters describe methods of examination, and then discuss, in turn, the different diseases of the kidney and bladder. A book of this sort would be very useful to students in this country, and if any teacher is considering the question of ministering to this need he would probably gain a good deal from a study of the volume which Dr. Vallery-Radot has completed.

The January issue of *Arquivos de Medicina Legal e Identificação*,¹⁰ the official publication of the police of the Federal district of Brazil, edited by LEONIDIO RIBEIRO, director of the Brazilian Institute of Identification, is an imposing-looking volume. It contains a large number of original articles, clinical lectures, reports of cases of forensic interest, together with reviews and abstracts. The original articles include: psychological essays on pain, by E. Mira; the cardio-pneumo-psychogram in the detection of lying, by I. Castellanos; the comparative method in psychopathology, by A. Ramos; the fingers in the elucidation of crime, by F. Belletti; and hysteria and errors of diagnosis, by Nerio Rojas. The chief subjects of the lectures are as follows: asphyxia in general, by A. Costa; psycho-analysis, by H. Roxo; anthropology, by J. Bastos d'Ávila; identification by the teeth, by Aloysio de Carvalho Filho; the legal protection of the child by Levi Carneiro; and investigations of paternity, by the editor, who also delivered lectures on the criminal code of Brazil and the role of the medical criminalist. The volume is sent free to foreign scientific institutes and specialists in forensic medicine on application to the editor, Dr. Leonidio Ribeiro, Instituto de Identificação, 84, rua do Lavradio, Rio de Janeiro.

⁷ *Laboratory Medicine: A Guide for Students and Practitioners*. By Daniel Nicholson, M.D. Second edition, thoroughly revised. London: H. Kimpton. 1934. (Pp. 566; 124 figures, 3 coloured plates. 30s. net.)

⁸ *Pathologie de l'Appareil Urinaire (Reins, Vessie)*. Par Pasteur Vallery-Radot. Paris: Masson et Cie. 1933. (Pp. 202; 10 figures. 22 fr.)

¹⁰ *Arquivos de Medicina Legal e Identificação*. Edited by Leonidio Ribeiro. Rio de Janeiro: Imprensa Nacional. 1934. (Pp. 403.)

⁷ *The Span of Life: As Influenced by the Heart, the Kidneys, and the Blood Vessels*. By F. R. Nuzum, B.S., M.D. London: Baillière, Tindall and Cox. 1933. (Pp. xii + 108, 9s.)

Dr. KATE CAMPBELL HURD-MEAD'S little work on *Medical Women of America*¹¹ is, as its subtitle states, a short history of the pioneer medical women of America and of a few of their colleagues in England. The leading medical women were Elizabeth Blackwell and her sister Emily, who left England and qualified in 1849 and 1852 at New York and Cleveland respectively, and subsequently played an important part in the medical education of women; Mary Putnam Jacobi, who gained a high reputation as a practitioner, lecturer, and writer, and was the first woman admitted to the New York Academy of Medicine; Ann Preston, who helped to found the Women's Medical College of Philadelphia in 1850, where she became professor of physiology and then dean; Marie Zakrzewska, founder of a hospital for women and children at Boston in 1862; and Eliza Mosher, professor of hygiene and dean of the Women's University of Michigan. The English women graduates mentioned are Sophia Jex-Blake and Elizabeth Garrett Anderson, the founders of the London School of Medicine for Women, and Dame Mary Scharlieb, and many eminent living specialists in obstetrics, gynaecology, and other departments of medicine. The appendix contains the autobiography of Elizabeth Cushier, the leading woman surgeon of her time, who graduated in 1872 and died in 1932 at the age of 93, and is followed by portraits of the principal persons mentioned in the text, including the author.

High Days and Bye Days,¹² by RALPH GREAVES, is medical only in that it will appeal to those members of the profession who love hunting and survive the atmospheric change from that of hay to that of petrol which has taken place in this country during the life of James Cockayne (1860-1929), who was connected with packs not only in England but in Hungary. It is a brightly written story based on his diaries, but, as the author confesses, somewhat apocryphal rather than gospel in parts. The printing and general get-up of the volume are an appropriate garb for its attractive contents.

¹¹ *Medical Women of America*. By Kate Campbell Hurd-Mead, M.D. New York: Froben Press. 1933. (Pp. 95. 1 dollar.)

¹² *High Days and Bye Days, being Stray Chapters from the Life of a Huntsman*. By Ralph Greaves. London: Philip Allan. 1933. (Pp. xii + 244; illustrated. 12s. 6d. net.)

Preparations and Appliances

ELECTRO-MEDICAL APPARATUS FOR ALTERNATING CURRENT MAINS

With the replacement all over the country of direct by alternating current from the national grid, suppliers of apparatus for electro-medical treatment are adjusting their models accordingly. The Medical Supply Association, Limited (167-173, Gray's Inn Road, W.C.1) sends us a catalogue of 1934 models, which is wholly concerned with new apparatus for alternating current mains. Particulars are given of several types of rectifiers for the production of galvanic and sinusoidal current for ionization, electrolysis, muscle reaction testing, and similar purposes. Another range is concerned with radiant heat and infra-red applications. One apparatus consists of a telescopic stand, with extension arm and aluminium reflector, for taking infra-red and radiant heat elements over a treatment couch or bed. A portable diathermy apparatus is a new introduction, connecting to any alternating current supply from 70 to 250 volts, and built into a compact attaché case, weighing altogether only twenty-three pounds. With it are supplied eight electrodes of various sizes, suitable for treatment of different parts of the body. A number of devices are included for what is known as short and ultra-short electric wave therapy. By short-wave therapy is meant treatment in the electrical condenser field with high-frequency energy of from ten to thirty metres wave-length, while ultra-short-wave therapy corresponds to wave-lengths of below ten metres. With these waves a uniform distribution of energy is secured over the part of the body between the electrodes, and consequently, if the electrodes are suitable, it is possible to obtain localized effects at depth. The apparatus is for connexion to alternating current supplies of forty to sixty cycles.

SOME SURGICAL DIFFICULTIES IN INDIA

BY

RUFUS C. THOMAS, F.R.C.S.Ed.

CHIEF MEDICAL OFFICER TO HIS LATE HIGHNESS THE MAHARAJAH
JANSAHEB OF NAWANAGAR

So far as I am aware very little has been written by surgeons in India in regard to the difficult conditions encountered by them in the course of their work. My own experience has, no doubt, been that of hundreds of other surgeons, particularly those in the I.M.S.; but I am not aware that these experiences have ever been put on record, and I feel that a short description of some of the conditions might be of interest, both to those who have encountered the same difficulties, and to others to whom surgery abroad has so far been only a name. Six years' surgical work in an Indian State, ruled over by one of the most enlightened of Princes—the late Ranji, of world-wide cricket fame, whose people may be taken as typical of India in general—seems to me to justify this excursion into print. As far as the people themselves were concerned the most obvious thing noticed was their innate distrust of surgery and all its works, coupled with a blind ignorance and lack of ability to understand the most simply expressed reasons for recommending any operation to them. Even the so-called better classes took a lot of convincing that whatever was recommended was solely for their own good.

THE HOSPITAL: OLD STYLE

When I arrived I found the hospital was a sort of combination of "ancient and modern." It was equipped with the telephone and electric light, but there was no provision for hot and cold water, baths, sanitation, or storerooms for such things as sheets, blankets, and all the hundred-and-one articles required for the proper running of a hospital on modern lines. The building itself was a good one, but an operating theatre had been left out of the builder's calculations, and one of the main wards had been taken over to remedy the omission. The bed accommodation was reduced thereby considerably. Sheets, blankets, and other hospital stores were kept in wooden cupboards dotted all over the place, chiefly on the verandas. There were two privies attached to the hospital itself, and a row of foul places at the back of the compound, which were supposed to be cleaned out periodically by the Bhangis (sweepers). This necessary duty was always forgotten unless one led the Bhangis literally by the nose to their task. When the wind blew from the north-east the hospital got a practical illustration of what the expression "Odours of Araby" can mean.

There being at first no such thing as a bathroom the patients were put straight into bed as they arrived. As many of them had walked miles from outside villages there was no possibility of keeping sheets clean. Beds and mattresses were, of course, bug-infested. The water supply for all purposes was obtained from a well in the compound, where a pair of bullocks plodded their weary way, hour after hour, up and down a track, pulling a skinful of water at each journey. Water for washing patients or floors, water for cooking or cleaning food utensils, for the surgeon's hands, and for the operating theatre—all of it came up in the skin. The water for the operating theatre used to be boiled in buckets in the cook-house by the Brahmin cook, and then carried across the compound to the theatre by the ward boys. *Labor omnia vincit*. But I always wondered how sterile, if at all, was the water I used for the first six months. It was a decided shock after the modern sterilizing methods of British hospitals. Later on I was able to alter all this.

The operating theatre was, as I have said, one of the large wards appropriated for the purpose. In this room everything necessary was done. It constituted surgeon's changing room, preparation room, anaesthetizing room, and operating theatre all rolled into one. On an operating morning there would be about nine primus stoves roaring away, some with instruments being sterilized, some with towels, others with dressings. The doors and windows were of necessity kept closed to keep out the dust of

the compound and incidentally the relatives of the poor unfortunate patient. It was possible to keep the dust out. We were sometimes not so successful with the relatives, and I have had to suspend "operating" while the theatre was being cleared of a horde of anxious "friends," who had succeeded in storming the door. On one or two occasions they forbade the operation after I had started it, and would have removed the patient there and then if allowed. A fearful and timid people. The heat of the theatre, aided by the sun and the primus stoves and the number of people in it, rose steadily till at last it must often have reached 110° F., almost double the temperature of the English theatre. I lost gallons of fluid in sweat. Six months after I arrived I transferred the operative work to two small wards, installed electric sterilizers and other refinements, and my theatre life became much more bearable. Even here, however, the problem of cooling the theatre was a formidable one. During the hot weather my plan was to have a block of ice weighing a maund (40 lb.) placed in a large bowl, behind which a hand-fan blew its full blast towards us. This certainly made a considerable difference. Unfortunately, however, it cooled one side of us more than the other. I took the temperature on the operating table after one morning's work and found it to be 107° F.

THE PATIENTS

The condition of many of the patients on admission to hospital was appalling. The ovarian cyst reaching to the ensiform cartilage is in England, happily, a rarity. In India it is a common occurrence, and the difficulties of removal can be imagined. It was a common thing to evacuate pus in half-gallons from a liver abscess or an appendicular abscess, the duration of whose history had been a month or more, while carcinomas of the breast often presented themselves with a huge fungating and stinking mass, the contemplation of which almost brought on an attack of vomiting. The only course open to the surgeon was to remove the breast to get rid of the foul and penetrating smell; all hope of complete eradication of the disease had, of course, passed months before. How these poor women could have borne their own conditions for so long was a mystery to me. I saw a chronic mastoid which had burst of its own accord, the opening now full of maggots. Maggots in the nose was quite a common condition. It was treated with plugs of gauze soaked in pure turpentine. Chronic suppurating ulcers of the leg were, on being radiographed, found to be the result of an osteomyelitis affecting the whole length of a tibia or fibula, or both. Tuberculous disease of the spine was quite common also, and was often accompanied by abscess formation, the bursting of which was the reason for seeking medical advice. Here one's suggestion of a plaster jacket was refused on the ground that the time was too long to secure the parents' permission for treatment. Even early cases, those merely with deformity and pain but no abscess, were often taken away on hearing that a plaster would have to be worn for months to ensure a cure.

SOME CASES

A few examples will serve to show some of the difficulties one had to contend with. Ignorance had a tremendous influence, as can be imagined.

I well remember a girl of about 10 years of age being brought in with a sarcoma of the lower end of the femur. At that time I had no x-ray plant, but it was not needed, for the diagnosis was obvious. I explained to the parents that amputation was the only course open, to save the child's life. They refused at once. On being asked their reason for depriving their child of its chance of life they said that nobody would be prepared to marry her if she only had one leg. I then pointed out that if the leg was not removed she would be dead in a year or less. The answer came immediately: "We can bury her, but who will marry her with one leg?" I spent another half-hour trying to persuade them to see reason, and even went to the length of getting a priest to talk to them, but to no avail.

Another very similar case occurred a year or so later, when the mother of a girl of about the same age, with a sarcoma above the wrist-joint, on hearing that an operation was necessary, took her child away at once.

Until I got together an efficient nursing staff it used to be quite a common occurrence for patients to disappear mysteriously in the night. The night before an operation was a favourite time, but it used to happen even several days after an operation, too. Parents who had given their consent a day or so before would get more and more "windy" as the ordeal approached, till at last their fears would get the better of them and they would remove their child, bag and baggage, while the back of the dresser on duty was turned for a moment. Even an abdominal incision with stitches still *in situ* did not deter them from these nocturnal flights. Sometimes they came back, sometimes not.

One of these disappearing patients, I remember, was an old man from a village miles out in the district, who had come in with an enlarged prostate. He had been catheterized on many occasions, and had at last been persuaded to try the hospital. I did a suprapubic drainage first, with which he was delighted, as of course it relieved his difficulty of micturition at once. Ten days later the necessity for the removal of his prostate was explained to him, and he agreed without demur. The morning of his operation, however, he was missing. Four months later he turned up again, with his tube in his hand and his suprapubic wound closed. His bladder difficulty had returned, much to his astonishment and annoyance, hence his return to the fold. This time he submitted to Fate without a murmur, and I removed his prostate a fortnight later. I found out, incidentally, that he had blossomed out into quite a hero in his village, as he used to take his suprapubic tube out to show his friends how his urine came out from his stomach, putting the tube back after each demonstration. He must have suffered considerable agony of mind as well as great loss of prestige when his fistula closed!

The fear of an operation loomed very large in the minds of these simple and timid people. They sometimes refused in face of the certainty that their condition was bound to be fatal if nothing was done. Many a weary hour have I spent trying to convince a patient that an operation would give him a good chance of being cured, and that to do nothing was as good as signing a death warrant. There was, of course, a religious influence at work in those cases where patients were taken out of hospital against advice when they were very ill. Certain ceremonies had to be performed in their own house for a dying man. The fact that the patient still had a chance of recovery if left in the care of the hospital staff did not weigh much if the relatives once got the idea that he might die. The removal to his own home sometimes entailed a journey across country in a bullock-cart, of ten, perhaps fifteen, miles. To a man with, perhaps, a suppurating hydatid of the liver just drained, or a pneumonia approaching the crisis, the result of such a journey was a foregone conclusion.

Another case comes to mind of a woman whom I had taken in from a village, in difficult labour. I had obtained the husband's permission to do a Caesarean section, had actually removed the child, and was proceeding to suture the uterus when the husband burst into the theatre and demanded to take his wife home immediately. When it was explained that the operation was almost over he waited outside, and when I came out repeated his intention of removing her forthwith. The danger of such a course did not seem to impress him, though it was fully explained to him in his own language by my house-surgeon. After much argument he eventually agreed to leave her in the hospital for a week. He made several nocturnal attempts to remove her before the week was up, and we finally had to let her go. I sent someone to her house to remove the stitches, and—*mirabile dictu*—she recovered.

Another habit of some patients was to take their dressings off at night and have a look at their incisions. If there was a tube *in situ* they would often remove this too. One old man made a habit of removing the tube from his suprapubic every night and replacing it in the morning, until he was caught in the act by the house-surgeon.

THE PROBLEM OF CASTE

Religious customs often made for great difficulties in treating patients in hospital. There is a caste of Hindu called the "Bhatia," the members of which are precluded

from eating any food not prepared by their own hands. Even a husband's hands are apparently taboo. One such lady came to me, with, I think, an ovarian cyst. The question of an operation was put to her, whereupon she said she could only remain in hospital for three days, owing to this food question. The difficulty was such a real one, and she was so insistent on it, that I had to compromise by agreeing that she should go home on the fourth day, which she did. Other Bhatias came in occasionally, and all had to be accommodated in the same way.

The problem of the "Untouchable," those unfortunates who, spurned and despised by their own people, did all the dirty work for the whole of India, getting in return a minimum of pay and a maximum of abuse, was one which gave much trouble at first. They were never admitted into the main hospital, but had two small wards separated from the main building. No caste Hindu would remain in a ward which contained an Untouchable, no matter how ill either or both might be. The shadow of an Untouchable falling on the food of a Brahmin was enough to contaminate that food, and the meal was at once discarded. Later on, when the numbers of in-patients began to rise and beds were continually full, the outside wards had to be used for septic cases, and the question arose as to where to put the Untouchables. I decided to make a fight against the prejudice towards them, and admitted the next one into the main hospital, among the other patients. There was an immediate protest from several of the other patients, who, of course, were caste Hindus. They threatened to leave the hospital if the poor outcast was not removed from their presence. The Untouchable was, as far as I can remember, suffering from some acute abdominal condition, which required immediate operation, but although this was explained to the objectors, and an appeal made to them on these grounds, it had no effect. I then appealed to their religious feelings, but this, to my disappointment, also had no effect, and I was practically given an ultimatum to the effect that either the Untouchable was to go or they would. This I countered by refusing to move the Untouchable. Indeed, I had no available bed for him, except by putting him out on the veranda, where he would have stood every chance of getting pneumonia, as it was the cold season and the weather was very bitter. There were many mutterings and black looks for the rest of that day, but the objectors gave in ultimately, only making the request that they should all be placed at the other end of the ward, as far from the outcast as possible.

This attitude towards the outcast community was, incidentally, very inconsistent, as many of my staff—my house-surgeon, house-physician, anaesthetist, and so on—were all very high caste Brahmins themselves, did all they could for the outcast as well as for the Brahmin, and backed me up most loyally in this fight against a religious prejudice which did not even consider human lives in the scale of justice.

I had the same sort of trouble with the dressers in connexion with such essential nursing matters as the giving of bed-pans to bed-ridden patients. They refused in a body to carry out these duties, and threatened to resign immediately unless such tasks were relegated to the Bhangis (Untouchables). I had always tried to ensure that the Bhangis did not enter the wards, not on account of their "untouchability," but because their work was such that they were better outside the ward than in, from the point of view of asepsis and general cleanliness. I won this battle—a most important one for me, as will be readily admitted—by turning the tables, so to speak, on the dressers. I asked their spokesman, a very astute and hard-working boy, what arrangements he would expect me to make for him, if he was ever admitted as a patient, in view of the fact that he, a Brahmin, could not, by his religious laws, allow a Bhangi to give him a bed-pan. He was very quick to see that he had put himself in an untenable position, and was in danger of being hoist on his own petard. He at once took his fellows aside, and convinced them that I was right.

THE "QUACKS"

Before terminating this somewhat depressing article I would like to mention the dangers to which the people often exposed themselves by consulting a class of "quacks" who styled themselves "Mulls," the equivalent of bonesetters—men who were really wrestlers. These people claimed to be masseurs and manipulators, and would "treat" any kind of deformity which was brought to them by forcible movement and the application of splints and what-not. There are, in the museum at Jamnagar, three forearms, removed for gangrene, the result of the "treatment" of fractured radius and ulna by some of these menaces to health. Splints had been applied by them, made of bamboo or the like, and left on for two or three weeks. When taken off a blackened and ghastly mess was revealed, and the victim was then brought to hospital. These "Mulls" used to treat the deformity of a tuberculous spine by placing the knee over the angle of deformity and forcibly trying to extend the trunk. Other unqualified "practitioners" were equally dangerous, treating cancer of the breast with nitric acid, caustic ointments, and such-like "remedies." Many of them had notices on their doors, positively "guaranteeing" the cure of tuberculosis, asthma, chest diseases, and so on.

CONCLUSION

The above are some instances of what may be encountered in surgical practice in India. It is not a pretty tale. Some may accuse me of "poetic exaggeration." This is a true story—much stranger than fiction. I shudder to think what the early surgeons must have gone through when there was no electric light, no fans, none of the modern ameliorations of conditions of work. The sufferings of the people of India must have been simply beyond the realm of imagination. The brighter side of the picture came during the last three years of my service, when I had the pleasure of superintending the building of a new hospital of 100 beds, and in which task I had the never-failing encouragement of His late Highness, the Maharajah Jamsaheb. This building, which with its equipment cost about six lakhs of rupees (£45,000), was, as nearly as I could make it, designed and fitted out according to British standards, had its own sanitary system, hot and cold water, baths, electric sterilizing unit (which was a great boon), two theatres, and every modern convenience. It was a red-letter day when we moved into it. The joy of working in a modern environment is best appreciated by those who have spent some years in the other manner.

Conditions, then, became perfect in 1932; but the ovarian cyst filling the abdominal cavity, the carcinoma of the breast a foul sloughing ulcer, the liver abscess as big as your head—all these remain. The education of the people up to modern methods of medicine and surgery will still take much time. It has been said that only one-tenth of the Indian people are within reach of hospital treatment. Mortality in childbirth, infant mortality, the death roll from epidemics, fevers, and so on—all these still reach colossal figures. A gigantic task lies in front of those who serve India's gigantic population. It needs endless perseverance on the part of the workers, an unceasing devotion to duty of a not too well paid body of medical practitioners, and, lastly, and equally important, the financial and moral support of those in authority.

The annual meeting of the American Orthopaedic Association will be held at Rochester, Minnesota, from June 6th to 9th, under the presidency of Dr. Melvin S. Henderson. The main subject in a full programme of papers, discussions, and demonstrations is the open treatment of congenital dislocation of the hip. Mr. Rowley Bristow, orthopaedic surgeon to St. Thomas's Hospital, will be the guest of the association, and will read a paper on internal derangements of the knee. The honorary secretary is Dr. Ralph K. Ghormley of the Mayo Clinic, where the scientific sessions will be held.

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PATHOLOGY OF INTESTINAL OBSTRUCTION

In a paper read before the Medical Society of New York, Atchley¹ emphasizes the essential similarity between the secondary effects of high intestinal obstruction and those of such diverse conditions as cholera, Addison's disease, extensive burns, and diabetic acidosis. The serious complications of all these diseases he attributes not so much to the primary aetiological agents themselves as to the physiological responses of the tissues to these agents, consisting in every case of a loss of water and salts, and leading to a common state of dehydration, diminished blood volume, shock, and peripheral circulatory failure. He finds support for his views in the unique effects of sodium chloride solution in intestinal obstruction and cholera, and in the recent discovery by Loeb that many of the symptoms of Addison's disease are due to a loss of sodium. Further confirmation is found in the experimental work of Gamble, who showed by analysis that in the case of high obstruction all the chemical changes in the body fluids could be fully explained by the loss of gastro-intestinal secretions, particularly sodium chloride, either by vomiting or passive accumulation in the intestine. Raised blood urea and renal failure are the direct results of diminished blood volume and capillary stasis, and it is unnecessary to postulate any toxic action on the kidneys. In low obstruction and obstruction with gangrene other factors—bacterial action, interference with blood supply, and tissue necrosis—complicate the issue, but the factor of dehydration here also plays an important part. Atchley makes no attempt to explain the precise mechanism by which dehydration is brought about in these diseases, but he presents a simple and coherent view of the problem which, so far as it goes, is consistent with the known facts.

The arguments of Sweet² are less easy to follow. Seeing a close resemblance between high obstruction and the condition produced by bilateral adrenalectomy in dogs, he argues that the secondary effects of obstruction are the result of adrenal damage, the latter being caused by the action of a toxin. To him the external loss of water and salts is of subsidiary importance; the essential pathology is a disturbance of the water exchange between the blood stream and the tissues. He quotes the experiments of Swingle, who showed that one of the functions of the adrenal cortex is the maintenance of a normal volume of circulating fluid; cortical damage results in a withdrawal of fluid from the blood stream by capillary transudation, which pro-

duces the pathological basis of shock. Sweet explains the preservation of consciousness in these states by assuming that the tissues (including the brain cells) "hold" their normal quota of fluid against a depleted blood stream; and the loss of consciousness in severe haemorrhage by supposing that the circulation here makes good its losses at the expense of the tissues, because the adrenals remain intact. There are undoubtedly points of resemblance between the clinical syndrome of acute intestinal obstruction and the condition produced by bilateral adrenalectomy in dogs, but, as Standard points out in the discussion, it is dangerous to assume a common aetiological factor because of a clinical similarity. Sweet's theory is defective in assuming, not merely the presence of a toxin, but its peculiar mode of action on the adrenal gland. The latter assumption has hardly received serious consideration, though Sweet states that he has found necrosis of the gland following intestinal obstruction. The question of toxins has been the subject of numerous experiments, and it is probably true to state that no convincing evidence has yet been produced for the existence of a specific toxin in obstructed intestine free from gangrene. Toxic substances have certainly been found, but the investigations of Wangensteen and others, quoted by Best, Newton, and Meidinger,³ would indicate that the contents of the normal and obstructed bowel are equally toxic. In view of the possibility of an increased rate or selectivity of absorption of normally present toxins under the conditions of obstruction, these workers have carried out a further series of experiments on the absorption of colloid and crystalloid dyes from the intestinal lumen above and below the site of obstruction. They found no evidence of such an increase in the case of the crystalloid dyes, nor of any absorption whatever of the colloid dyes. They suggest that the lethal effect may be determined by a physico-chemical disturbance rather than by toxic action, due to a failure of the upper intestinal contents to mix with the lower.

The therapeutic requirements of this type of intestinal obstruction are fortunately more clearly defined than are our theories of its pathology. By far the most important of the non-operative measures is the restoration of the water and salts which have been lost to the circulation. The principle of replacement therapy is well established and needs no advocacy; it conforms with theoretical requirements, and has stood the tests of clinical experience and laboratory experiment. This aspect of the subject has been dealt with by numerous writers, and was discussed at the British Medical Association Meeting in 1932.⁴ There is no standardized technique, but normal saline given by the intravenous route meets immediate needs, and is probably the method in most common use. The increase in blood volume so produced may be maintained by slow, continuous infusion, hypodermic or intravenous. Injection of hypertonic saline rapidly compensates for loss of sodium chloride; increases the osmotic pressure of

¹ *New York State Journ. of Med.*, 1933, xxxiii, 1191.

² *Ibid.*, 1933, xxxiii, 1194.

³ *Arch. of Surg.*, 1933, xxvii, 1081.

⁴ *British Medical Journal*, 1932, ii, 540.

the blood, so tending to prevent further loss of fluid ; and notably stimulates peristalsis. For the latter reason its use is limited to the period immediately preceding operation, or after the obstruction has been relieved. The addition of 5 per cent. glucose, preferably with insulin, provides a ready source of energy when it is greatly needed. The relief of distension, especially before inhalation anaesthesia, is also of importance ; this can best be accomplished by the duodenal tube. Other accessory methods of treatment are the use of *B. welchii* serum and bile enemata. In simple high obstruction toxæmia is not a prominent feature. No benefit, therefore, can be expected from the use of serum, and this appears to be borne out by experience. It is worthy of note, however, that pathological changes have been found in the adrenal gland following death from *B. welchii* infection, a fact which may possess some significance in view of Sweet's theory of adrenal failure in obstruction. In this connexion, too, the recent introduction by Swingle and Pfiffner of an active extract of the adrenal cortex offers the possibility of an entirely new factor in treatment which is worthy of investigation.

DEFECTIVE DIETS

While the experimental evidence regarding the effects of a deficiency of vitamins is clear in animals in which the deficiency is isolated, the problem is complicated in man by the fact that a vitamin deficiency in his diet is rarely if ever complete, and is generally associated with a partial shortage of other important substances. The need for the clinical testing of the value of vitamin supplements by controlled experiments is therefore obvious. In our present issue Dr. Robert Sutherland describes his investigations into the effects of the addition of supplements of vitamins A and D to the diet of children of the poorest classes. The effects for which he specially looked were those upon growth, general nutrition, susceptibility to infection, and resistance to established disease.

For a period of six months a concentrate of vitamins A and D was given to 294 children attending the North School, Peterhead. It was shown by a census of the parents' occupations that these children were drawn almost entirely from the poor working classes. They had 281 contemporaries as controls. Each child in the treated group received a vitamin supplement equal in vitamin A to more than one ounce of cod-liver oil daily. The daily dose of vitamin D was 2,400 international units. The results of the administration of vitamin supplements were found to be disappointing. This was all the more surprising since a dietary survey clearly indicated that the diets were deficient in many respects. The rate of growth of the treated children was only slightly better than that of the controls, while susceptibility to infection and resistance to established disease were apparently unaffected by the treatment. Dr. Sutherland believes that the cause of the failure lay in the fact that the vitamin supplements made good only one dietary shortage, and left uncorrected asso-

ciated deficiencies of equally essential constituents of the diet. The correction of one partial deficiency in man while these other associated deficiencies remain uncorrected can never produce the dramatic results that are obtained from the restoration to the otherwise complete diet of experimental animals of a factor which previously was entirely absent. Support of this contention was obtained from a comparison with an earlier nutritional experiment carried out in the same school in 1927 and 1928, when a daily milk ration was given as a supplement. In the milk experiment of 1928 increases of 24 per cent. in height and 45 per cent. in weight occurred, as compared with 8 per cent. and 7 per cent. respectively in the present experiment. In searching for an explanation of these results, Dr. Sutherland suggests that the milk supplements succeeded where the vitamin addenda largely failed, because, besides correcting the vitamin deficiency, they made good the associated deficiencies which almost always accompany a shortage of vitamins. In this respect milk has particularly beneficial effects compared with vitamin concentrates, because of its rich supply of first-class protein and minerals.

The attention of the medical profession has been focused so strongly on the problem of vitamin deficiency, and the results of animal experiments have been so impressive, that the importance of correcting the multiple deficiencies which almost always go hand in hand with a vitamin deficiency is apt to be overlooked. Where there is a clear indication of a specific vitamin deficiency as occurs in rickets or scurvy, administration of a concentrated preparation of the requisite vitamin is good therapeutic practice. But in the absence of gross signs of vitamin deficiency the indiscriminate administration of vitamin concentrates is evidently of doubtful value. The cheapest and best way of preventing nutritional disorders, and of increasing resistance to disease in so far as that can be done by nutritional measures, is to improve the diet as a whole. Provided the diet contains adequate amounts of milk, eggs, and green vegetables, the occurrence of a deficiency of vitamins, minerals, or protein is unlikely.

SAFE MILK

We have consistently advocated in these columns that until milk has been made safe at the source pasteurization is the best way of protecting the population from bovine tuberculosis and other infections that are conveyed by milk, such as scarlet fever, septic sore throat, and undulant fever. The matter has recently been considered by the Royal College of Physicians, and in a letter to the *Times* of May 1st Lord Dawson communicated the following resolutions passed at the comitia held on April 26th: "(1) That a daily ration of milk is important for the growth and health of children. (2) That the risk of tuberculosis and other diseases following the consumption of raw milk is considerable. (3) That such risk can be obviated by the use of milk submitted to low-temperature pasteurization, as defined in the official Order. (4) That such pasteurization does not materially interfere with the

nutritive value of the milk." The College, while realizing the importance of milk being produced from cows free from infection and under conditions of cleanliness, recommends: "(a) That local sanitary authorities should be given power to require that milk sold within their areas should be pasteurized under official control. (b) That steps should be taken to permit of the pasteurization and sale, as such, of milk from tuberculin-tested herds. (c) That in areas where adequate pasteurization is at the moment impracticable milk should be boiled before use." Lord Dawson's statement that "within the medical profession there is for pasteurization a consensus of opinion the strength of which is perhaps unfamiliar to those occupied in the world of politics" was confirmed, if confirmation is needed, at a special meeting of the Joint Tuberculosis Council on April 20th, when a memorandum on this question, prepared by Professor G. S. Wilson, was considered and discussed. It was felt that in the prevention of tuberculosis of bovine origin we are behind other countries, notably the United States of America and Canada. A resolution was passed welcoming the prospect of an increased milk consumption, but averring that the Government proposal to subsidize a milk ration for school children should be supported only if the safety of the milk supplied was ensured by adequate pasteurization or boiling.

VITAMIN A DEFICIENCY

An important investigation into the results of vitamin A deficiency in children has been conducted by Dr. Helen Mackay at the Queen's Hospital for Children, London, working as a member of the scientific staff of the Medical Research Council. In the current number of the *Archives of Disease in Childhood*¹, which is incidentally the fiftieth issue of the periodical, this author gives a most valuable survey of present knowledge of the clinical effects of deficiency of this vitamin, with special reference to children. The results of her own investigations are to be reported in the next number. It is true that severe vitamin A deficiency rarely, if ever, occurs alone, but from the literature and her own studies, Dr. Mackay has produced a valuable clinical picture of the likely course of such a defect. The child, otherwise in apparently good health, will develop an increased susceptibility to infections of the skin; he may have boils, sores, impetigo, napkin rash, or other evidence of skin sepsis, and this susceptibility continues throughout the disease, the lesions often being chronic. Later the skin may become drier and show desquamation. There may be periods of looseness of the bowels, followed in some instances by a chronic diarrhoea and retardation of growth. The child will probably become lethargic and lose the alertness of health. The hair will lose its normal gloss, and if the child belongs to a dark-skinned or yellow race some slaty pigmentation of the conjunctiva and skin will probably appear. The voice frequently becomes hoarse, and bronchitis may develop. The abdomen tends to be enlarged at this stage, and there is a great eagerness for food. Evidence of night-blindness—the classical symptom of vitamin A deficiency—now begins to develop, most easily shown if the child is old enough to play in the dusk. Objective eye changes are found later, and may consist either

of some conjunctivitis or a mild degree of xerosis with the "foam spots" described by Bitôt. If the deficiency still remains untreated the weight will become stationary and even begin to fall. An irregular pyrexia may occur, possibly from diminished sweating. The skin becomes shrivelled, hair falls out, and the eye changes progress with involvement of the cornea. Death most often occurs from diarrhoea or from pneumonia. The older the child the slower the course of the disease. This is briefly the clinical picture, although the order of onset of the symptoms and the dominant changes vary from case to case. The incidence of vitamin A deficiency in Europe is probably less now than it used to be, but Dr. Mackay suggests that the evidence she is bringing forward in Part 2 of the study supports the view that deficiency of a slight grade is not uncommon among the infants of the poorest sections of the population in this country. Eye changes, as the clinical summary suggests, are clearly not the earliest symptoms, and it is with reference to infections of the skin that her work is most suggestive. No quantitative knowledge exists as to the vitamin A requirements of children, and it is suggested that in some circumstances even a breast-milk diet may provide insufficient vitamin A for a baby. If treatment is begun early the prognosis at all ages is good, but if this is delayed then there is a serious risk of loss of vision. Dr. Mackay's object in producing this clinical summary is to enable clinicians to recognize the disease at an early stage. She is also anxious that pathologists should keep in mind the characteristic epithelial changes. We would take this opportunity of congratulating Dr. Mackay upon the distinction of being the first woman to become a Fellow of the Royal College of Physicians of London.

BRITISH EMPIRE CANCER CAMPAIGN

A meeting, at which H.R.H. The Duke of York was present, was held at the Mansion House on May 1st in aid of the Empire Day appeal of the British Empire Cancer Campaign. The Lord Mayor presided over a distinguished company, including the Minister of Health, Lord Moynihan, Lord Horder, Sir William Willcox, Sir Francis Fremantle, Sir Cuthbert Wallace, many other members of the Grand Council and the various committees, and a number of mayors of metropolitan boroughs. The Duke of York reminded the company that at the Mansion House ten years ago he had said that some day the mystery of cancer would be lifted. It could not be claimed that that had fully happened, but the shadow gave signs of slowly passing. The progress of research during the ten years had been wonderful, though much remained to be done. It had not been the policy of the Campaign to husband its financial resources, but it had applied them liberally in the way of grants, and it had fulfilled every reasonable claim made upon it to aid research. The result was that its finances had been heavily depleted, and an Empire Day appeal was being organized, towards which the King had already contributed £100, the Queen £50, and other members of the Royal Family had made donations. The co-operation had also been promised of a thousand mayors and heads of local authorities. Lord Horder spoke briefly in thanking His Royal Highness and in expressing gratification at the presence of the Minister

¹ April, 1934, ix, 65.

of Health, whose Department evidently realized the importance of this greatest of all problems in medicine to-day—a problem which he was sure would yield to careful observation and patient research. Sir Hilton Young said that the number of recorded deaths due to cancer continued to increase. It was now second in the list of fatal diseases. The task of the Campaign was mainly to promote and co-ordinate research concerned with causation, to a lesser extent with diagnosis by laboratory methods, and with treatment. He was confident that local government authorities would help cordially in the creation of a public opinion in support of the present efforts of the Campaign. Mr. R. C. Davis, vice-chairman of the Executive Committee, mentioned that up to this year the Campaign had made grants totalling just over £175,000, largely to the great hospitals and research centres, but grants to the total of £26,400 had been made to individual workers in London and five other cities. Professor W. S. Lazarus-Barlow, vice-chairman of the Investigation Committee and chairman of the Appeal Committee, said that during the thirty years in which he had been connected with cancer research the type of investigation had been modified. At the same time, it must not be thought that the paths pursued thirty years ago had proved fruitless. The surgeons of that day had accepted three years' freedom as a criterion, and now looked forward to ten years of freedom from the disease. Although this extension from three to ten years indicated greater respect for the enemy, it showed also a sense of growing mastery over the enemy. The work on radium and x rays told the same story. He claimed that by virtue of the financial help the Campaign gave to institutions and researchers, and by its associations and affiliations throughout the British Empire and its friendly relations with cancer research organizations in foreign countries, it was a live body worthy of national and imperial support. Mr. Lockhart-Mummery proposed, and Mr. Cecil Rowntree seconded, a vote of thanks to the Lord Mayor for the hospitality of the Mansion House.

A NEW ANTISPASMODIC

The opium alkaloid papaverine has a powerful depressant action on plain muscle, and on this account finds a certain amount of employment in therapeutics. A new synthetic derivative of papaverine named perparine has recently been investigated¹ which has a more powerful action in this respect. Papaverine consists of an isoquinoline nucleus united with a benzene nucleus, with two methoxy groups attached to each nucleus. Perparine has the same structure, except that the four methoxy (CH_3O) groups are replaced by four ethoxy ($\text{C}_2\text{H}_5\text{O}$) groups. Animal experiments have shown that perparine has an action like that of papaverine, but two or three times more intense, whilst the toxic action of the former drug is only about one-third that of the latter. A combination of perparine and novatropine (brom-methyl homatropine) has been found particularly efficacious, and the mixture has been named surparine. Clinical studies suggest that perparine and surparine may prove a valuable substitute for morphine in the treatment of

a number of conditions in which pain is produced by spasm of plain muscle. Some of the disorders that have been treated with success are biliary colic, cholecystitis, vesical spasm, renal calculus, asthma, and dysmenorrhoea.

ROLL OF BIO-PHYSICAL ASSISTANTS

The question of the establishment of a comprehensive register, under the control of an independent body, of those engaged in services ancillary to the work of the medical profession, has been under consideration for some time past by the Science Committee and the Council of the British Medical Association. A scheme for such a register has now been prepared by representatives of the bodies concerned—namely, the Society of Apothecaries, the Chartered Society of Massage and Medical Gymnastics, the Society of Radiographers, and the British Medical Association—and received the approval of the Council on April 4th. It is proposed that the register shall be known as the *National Register of Medical Auxiliary Services*, and brief particulars appeared a fortnight ago in the Annual Report of Council.¹ Admission to the roll will be confined to persons possessing qualifications granted by the qualifying bodies represented on the Board, subject to certain conditions, including one that they will not treat any patient except under the direction and control of a registered medical practitioner. Pending the establishment of a comprehensive roll of medical auxiliaries, we republish this week as a Special Supplement the complete list of names on the *Register of Bio-Physical Assistants*, revised to March 31st. The entries in Part I are arranged in alphabetical order, with postal addresses; in Part II the names are regrouped geographically. Since the British Medical Association was primarily responsible for the setting up of this register, we hope that members will preserve the *Supplement* and send their patients who require treatment by light and electricity to technicians holding the diploma of the Society of Apothecaries.

G.M.C. ELECTION

The result of the voting in the recent election of a direct representative for England, in the place of the late Dr. Christine Mary Murrell, was as follows: Dr. H. G. Dain, 11,091; Dr. E. A. Gregg, 3,194. Dr. Dain has accordingly been elected a member of the General Council of Medical Education and Registration of the United Kingdom, representing the registered medical practitioners resident in England, for a period of five years from April 27th, 1934. Dr. Dain's letter asking for the support of medical practitioners in his election was printed in the *Supplement* of April 7th, along with a list of those officers of the British Medical Association, of Local Medical and Panel Committees, and others, who signified their intention to forward his candidature.

We regret to announce the death, at the age of 84, of Professor William Henry Welch. One of the pioneers in bacteriology, Professor Welch was appointed pathologist and the first dean of the Medical School at the Johns Hopkins Hospital when it was opened in 1889, and has been president of the Board of Scientific Directors of the Rockefeller Institute for Medical Research.

¹ Pouchet, M. G.: *Bull. de l'Acad. de Méd. de Paris*, 1933, cx.

¹ *Supplement*, April 21st, p. 173.

"CINERADIOGRAPHY"

DEMONSTRATION AT ROYAL SOCIETY OF MEDICINE

A special meeting of Fellows of the Royal Society of Medicine was held on May 1st for two demonstrations of x-ray cinematography, one by Dr. Russell J. Reynolds of Charing Cross Hospital, and the other by Dr. Robert Janker of Bonn. There was a large attendance. Mr. WARREN LOW, the president of the Society, said that Dr. Russell Reynolds, as long ago as 1925, had shown motion pictures of the joints and the thorax; Dr. Janker also had been working on the subject since 1926.

DR. REYNOLDS'S FILMS

Dr. RUSSELL REYNOLDS said that his first experiments were made in 1921, when he was impressed with the extreme value of cinematography in studying movements of joints and functions of organs. Rapid serial skiagrams could be obtained by the direct or indirect method. With the former the series was taken on a band of film by the action of x rays passing through the subject, as in ordinary radiography, but that was costly on account of the size of film and amount of apparatus. With the indirect method the actual photograph was taken of the shadow on the fluorescent screen. An ordinary cinematograph camera, fitted with certain adaptations, was used. The three essentials were: a sufficiently brilliant screen image; the cutting off of the direct x-ray beam so that only ordinary light reached the film; the protection of the subject from excessive radiation. Satisfactory pictures of the movements of the abdominal viscera had only lately been made possible by improved x-ray tubes, photographic lenses, and cinematograph film. The camera and film were protected from radiation by a lead shield; the lens itself sufficiently protected from direct rays the portion of film being exposed. By synchronization of the work of the x-ray tube with the movements of the shutter it was ensured that radiation from the tube was only emitted during the successive openings of the shutter, and in that way the subject was spared undue exposure. Sixteen seconds' exposure to one area had been given, and repeated within a few days, without ill effect on the patient. For making and breaking the primary current a series of contacts around a rotating disk made of insulating material was employed. The source of radiation was a 20 kilowatt "metallix" tube, and the power plant a one-volt unit. A Zeiss lens, aperture 0.85, fitted with a micrometer screw collar for adjusting the focus, was adapted to the standard cinematograph camera, and a special screen and specially coated films had been employed. The film was sub-standard, 16 mm., thus ensuring a process simple enough for routine practice in hospitals, and an apparatus of not undue bulk, and capable of being operated by one person. A small length of film could be made into a band and projected continuously, so that movements could be studied for an indefinite period instead of for the few moments of the ordinary screen examination. The actual exposure generally occupied only a few seconds, and the resulting negative was repeated over and over again, either as a continuous band or a long spool. The material was non-inflammable acetate film, and so could be projected without special protection against fire. The field for research by this method was large and varied. It should prove of use in investigating conditions of the lungs and pleurae; the movements in the alimentary tract with the opaque medium could be followed; in orthopaedic lesions the movements of the joints could be closely studied. In cardiology the present use of x rays was chiefly to check physical signs, and radiology had contributed little to a knowledge of the function of the heart. The cinematograph method was likely to add greatly to such knowledge. A method of cardio-analysis in the shape of a slow-motion film correlated with graphic records of the heart's action had been worked out. The permanent records of these and the other subjects had the value for diagnosis, for teaching, for comparison with previous records to watch the effect of treatment or the progress of a pathological condition, and for trans-

mission at home or abroad for examination by other specialists.

Dr. Russell Reynolds next exhibited two reels, beginning with x-ray cinematograph pictures of the movements of the hand and the elbow, shoulder, and knee-joint, illustrating both normal and pathological conditions, and he then passed on to a study of the stages of deglutition with the opaque meal, the mechanism of swallowing liquid and solid medium, and the movement of food in the oesophagus, where the food appears to build up at the lower end, and then suddenly to pass into the stomach. The pathological stomach, including one with an ulcer crater on the lesser curvature, was excellently shown. A view of the thorax had an almost stereoscopic effect, and the movement of the normal heart, including its accelerated action after special exertion, was studied, together with two views of pathological conditions, illustrating the irregularity of movement in auricular fibrillation and the effect of pericardial adhesions.

DR. JANKER'S FILMS

Dr. ROBERT JANKER, who spoke in German, gave a brief summary of the history of this subject, pointing out, as Dr. Reynolds had also done, that the idea was first conceived by the late Dr. John MacIntyre of Glasgow, as early in x-ray history as 1897, when he showed movements of bones of living animals. Dr. Janker then illustrated his own technique, carried out at the Roentgen Institute Clinic at Bonn University. He had used, and partly modified, both the indirect method, in which a photograph of the screen image is taken, and the direct method, as in ordinary skiagrams. With the direct method only small objects had been taken, the rate of exposure being 22 frames per second. With the indirect method he had produced many films of laboratory animals, showing physiological and pathological reactions. Some of these had been taken at the normal rate, and in others the movement had been accelerated or slowed down as required, for special observation. The cinematograph apparatus he employed was of his own construction, with specially adapted lenses, and he had employed a Schering Kahlbaum screen and either Kodak supersensitive film or film coated with a Schleussner x-ray emulsion.

Dr. Janker then showed three reels, apparently on ordinary 35 mm. film, illustrating experiments on the anaesthetized rabbit and cat. The first illustrated normal respiration, followed by respiration under abnormal thoracic pressures and with unilateral and bilateral pneumothorax. He drew attention to the accommodation in size of the heart to changes of thoracic pressure. The changes following a thoracotomy were also demonstrated. Another effect illustrated was that of the inhalation of CO₂ in increasing the size of the heart. The filling-up of the bronchial tree with a contrasting medium was remarkably well shown, also the pumping action of respiration on the contents of the bronchus, and the pulsation of the bronchus caused by the pulsation of the heart. In another series an experimental embolism of the lungs in these small animals was shown, the purpose being to demonstrate to students the dangers of air embolism. Finally, a series of films illustrated the filling of the oesophagus and stomach, the passage of the opaque meal through the cardiac orifice, the dilatation of the oesophagus in front of the bolus—a characteristic pointed out in this country by Barclay—and the changes brought about in peristalsis by the injection of certain substances. The kneading movements of the caecum, the effect of pilocarpine, and the mechanism of defaecation were all clearly depicted in motion.

VOTE OF THANKS

In proposing a vote of thanks Dr. R. S. PATERSON said that, as often happened, workers on independent lines in this field had achieved success almost simultaneously. He foresaw great possibilities for the method in teaching and research, wherever critical analysis of movements of any sort—peristalsis, respiration, or pulsation—was desired. Interesting work had been done in recording the sound of muscle and heart movements, and there was no reason why sound should not be synchronized with the pictorial record, and a sound track attached to the film. Dr. K. J. FRANKLIN seconded the vote of thanks.

ONE HUNDRED AND SECOND ANNUAL MEETING
of theBritish Medical Association
BOURNEMOUTH, 1934

THE one hundred and second Annual Meeting of the British Medical Association will be held in Bournemouth this summer, under the presidency of Dr. S. Watson Smith. The Sectional Meetings for scientific and clinical work will be held on Wednesday, Thursday, and Friday, July 25th, 26th, and 27th, the morning sessions being given up to discussions and the reading of papers, and the afternoon to demonstrations. The Annual Representative Meeting for the transaction of medico-political business will begin on the previous Friday, July 20th. The full list of presidents, vice-presidents, and honorary secretaries of the sixteen Scientific Sections, together with the provisional time-table and programme, was published in the *Supplement* of March 31st. Other details of the arrangements for the Annual Meeting will appear in subsequent issues. We publish below the third of a series of descriptive and historical articles written for the occasion. The first, on Bournemouth and its attractions, appeared on January 6th (p. 22), and the second, on the hospitals and benevolent institutions, in our issue of March 3rd (p. 391).

SOME GEOLOGICAL AND ARCHAEOLOGICAL FEATURES IN THE NEIGHBOURHOOD
OF BOURNEMOUTH

During the Miocene Period, perhaps some twenty-five million years ago, the surface deposits in the South-East of England were gradually folded into a series of east and west ridges and valleys, resulting in the formation of the Thames Valley and the Hampshire Basin. The axis of the latter runs roughly from Poole Harbour along the Solent to Spithead. The so-called Solent River which drained it was bounded on the south by a continuous line of hills from Lulworth via Swanage to the Isle of Wight. The sea subsequently made a breach in this barrier, and the gap between the chalk cliffs at Old Harry near Swanage and the Needles is now some fifteen miles wide.

The process of rock-folding produced remarkable contortions in the strata, some of the beds being pushed through an angle of nearly 100 degrees. Very fine examples may be seen in the Purbeck Beds in the neighbourhood of Lulworth Cove, and on a smaller scale at Peveril Point near Swanage. At the base of the Purbeck formation occurs the well-known fossil forest, which consists of the silicified remains of tree trunks and roots. This deposit, together with the overlying Wealden formation, has yielded the fossilized bones of various prehistoric reptiles, including the *Iguanodon* and the Swanage *Goniopholis*. This creature, like other primitive air-breathers, had the nose passage opening into the mouth not far from the snout, whereas the modern crocodile has the passage connected with the extreme back of the mouth, enabling it to hold a victim in its jaws under water without inconvenience. In 1932 a double track of footprints was found in the Purbeck limestone (Fig. 1). The footprints were each about 11 inches across, and appeared to belong to the *Iguanodon* or some creature closely related to it. Remains of various early species of mammals have also been found, all of very similar size.

The line of hills north of Swanage consists of chalk. The strata have been disturbed by a very remarkable thrust fault, which is well exposed in the cliff section near Ballard Point, and may be seen on a steamer trip from Bournemouth to Swanage. By way of contrast, the east-west valley, in which Swanage is situated, consists of the soft Wealden clay. The parallel hills and valleys of the Isle of Purbeck and the curious series of coves at its western extremity afford a striking illustration of the effects of alternating formations of hard and soft rocks on regional topography. It is instructive in this connexion to examine a geological map of the neighbourhood.

Passing eastward from Swanage we lose sight of the Purbeck, Wealden, and Chalk formations, which in the neighbourhood of Bournemouth lie many hundreds of feet below the surface. Bournemouth consists of a wide expanse of Eocene sand, in which are occasionally found remains of plant leaves, indicative of a subtropical climate. At a much later period, subsequent to the Miocene folding, the whole of the Bournemouth area seems to have lain in a wide estuary, and became covered with a considerable spread of gravel, which is responsible for the porous nature of the soil. The presence in these gravels of many thousands of stone implements shows that we have now

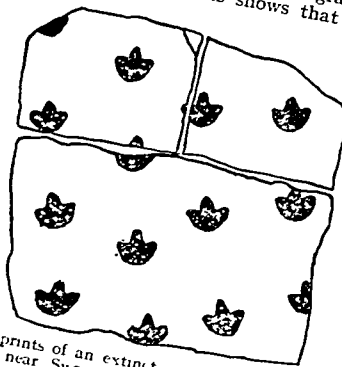


FIG. 1—Footprints of an extinct reptile found in the Middle Purbeck Beds, near Swanage (1932) (By permission of the Editor of *Discovery*.)

reached the age of Palaeolithic man. Some of the implements bear marks of striation on their surfaces, and it is supposed that this scratching was produced when the ground was frozen. Other evidence of the glacial conditions, which compelled early man to give up an open-air life and take shelter in caves, is furnished by the discovery of mammoth remains in the river gravels not many miles from Bournemouth. Evidence is slowly accumulating which points to the occupation of this area through all the succeeding periods of the Stone Age.

BRONZE AND EARLY IRON AGE RELICS

In the Early Bronze Age, which opened about 1900 B.C., this island was invaded by a race remarkable for its

pronounced brachycephalic skulls. These people are known as the "Beaker folk," on account of their practice of placing a cup or beaker in the graves of their dead. The body was usually laid on its side with the knees drawn up to the chest, and a monument was frequently erected over the site in the form of a large tumulus. The beakers are sometimes of singularly beautiful workmanship, being decorated with geometrical patterns incised on the clay before firing. Seldom are two found alike. They are comparatively rare, and as far as is known to the writer only seventeen have been recovered from the whole of Hampshire. Of these no fewer than eight come from Bournemouth (see Fig. 2). Two of the latter are unusual in being ornamented with finger-nail impressions. In the Late Bronze Age cremation was the traditional practice, the remains of the dead being buried in flat cemeteries in cinerary urns of rather crude shape. The chief centre of this culture lies in Dorset and Hampshire. Confining our attention to urn-fields with ten or more burials, we find eleven urn-fields recorded in Dorset and twelve in Hampshire. Of the latter, half belong to Bournemouth.

The remarkable concentration of Beaker and Late Bronze Age sites in Bournemouth is significant, and for the Early Iron Age which followed, distribution maps show a similar concentration, except that the area is now somewhat enlarged. The explanation lies in Bournemouth's geographical position near the mouth of the rivers Stour and Avon, which provided successive waves of newcomers from the Continent with easy access to the attractive hinterland of Cranborne Chase and Salisbury Plain. Furthermore, safe anchorage was to be found on the north side of Hengistbury Head in the sheltered waters opposite Christchurch. Indeed, during the whole period of the Early Iron Age, Hengistbury appears to have been one of the most important harbours on the south coast of Britain, only losing its importance with the coming of the Romans in the first century A.D., when the development of London caused the main route of Continental traffic to shift eastwards up the channel.

Evidence has recently been produced that the Dorset and Hampshire coast, between Weymouth and Southampton, was subjected to an invasion of Iron Age folk about 50 A.C. The invaders were the Belgae, who came from Northern Gaul, and shortly afterwards spread out over the whole of Wessex, making their headquarters at Silchester under a king named Commius. His kingdom was not destined to survive very long, giving way, after a stubborn fight, to the power of Rome. Remains of Belgic settlements have been identified at five different sites in Bournemouth, and at seven others in the adjoining neighbourhood. The series of hill forts situated in the Stour Valley between Dudsbury and Hambledon Hill probably belongs, in its origin, to the Early Iron Age. Such spots would have been used as places of refuge in local tribal warfare. In the Romano-British period there was a considerable peasant population, spread through villages in and around Cranborne Chase, and it was probably to protect this civilization from Saxon invaders from the north-east, that Bokerly Dyke and Combs Ditch were thrown up in the fourth and fifth centuries of our era.

OTHER LOCAL RELICS OF INTEREST

Further details of certain local discoveries are here added partly because of their intrinsic interest and partly because they throw light on the problems and methods of archaeological research. A Neolithic long barrow, now very nearly ploughed out, has recently been identified near Hadden's Hill by the aid of aerial photography. In the Pokesdown urn-field, a Late Bronze Age burial was found to cut into a previous burial of Middle Bronze Age date, the later urn resting on the broken fragments of the earlier one. At Kinson an interesting example of overlap of cultures was recently discovered, Late Bronze Age and Early Iron Age burial urns being found side by side. The three sites last mentioned are all situated within the county borough boundary.

Two remarkable instances may be given which illustrate the richness of certain local sites in archaeological remains. A Roman well (circa A.D. 100), excavated by the writer last year in a quarry near Swanage, was found to have been dug through an Early Iron Age habitation site, some five hundred years older, while a few yards away an Early Iron Age pit had disturbed a Middle Bronze Age interment containing a food vessel, flint knife, and human skull; the rest of the body was probably destroyed in making the later excavation. The other example is that of a gravel pit near Wimborne, which has yielded Palaeolithic and Neolithic implements, a Late Bronze Age urn, large quantities of Belgic pottery, as well as two storage pits containing grain of the same period, and a Romano-British kiln, with remains of upwards of two hundred vessels.

The preservation of antiquities necessarily depends to a considerable extent on the nature of the soil. Early Iron Age sites in Bournemouth generally yield little beyond pottery fragments, but when sites of the same age are examined in the limestone district around Swanage the record is found to be much more complete. Bones of the sheep, horse, and ox are commonly met with, as well as limpets and other shells, revealing something of the diet of these early days. Bone needles and combs have also been found (see Fig. 3). Such discoveries do not indicate that Bournemouth was formerly less civilized than her neighbours in the Isle of Purbeck, but merely that all the bone objects on the Bournemouth sites have long ago perished, owing to the porous nature of the soil. While a subsoil of sand or gravel may be an excellent asset for publicity purposes, the archaeologist secretly prefers limestone!

J. BERNARD CALKIN, M.A. CANTAB.

The Board of Education has reissued in pamphlet form a revised list (No. 42) of certified special schools for blind, deaf, defective, and epileptic children in England and Wales, and also institutions recognized by the Board as providing higher education for such children, together with a list of nursery schools. The institutions are grouped according to type and arranged in counties, details being given of the available accommodation in each. Copies of the list may be obtained from H.M. Stationery Office or through any bookseller (price 9d., postage extra).



FIG. 2.—Early Bronze Age beakers found in Bournemouth. Date circa 1750-1600 B.C. Left to right: 1 to 3, Sheepwash, Ford (1933); 4, Kinson (1929); 5, Boscombe Cemetery (1921).

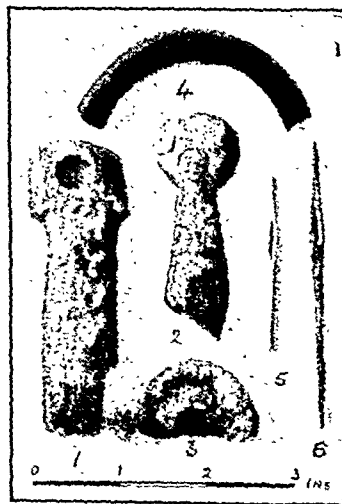


FIG. 3.—Iron Age objects found near Swanage, Dorset. 1 and 2, bone comb handles; 3, spindle-whorl of earthenware; 4, shale bracelet (Romano-British); 5 and 6, bone needles.

JOINT TUBERCULOSIS COUNCIL

SOME RECENT PUBLICATIONS

The report of the Joint Tuberculosis Council for the year 1932-3 contains a reference to the important memorandum on improvement of the Tuberculosis Service, which has received mention previously in these columns. It envisaged better training for medical students and the wider utilization of the clinical material available at dispensaries and sanatoria. Emphasis is again attached to the need for taking all possible steps to secure the active co-operation of general practitioners in the prevention and treatment of tuberculosis. Topics singled out for special consideration include the utilization of residential institutions for tuberculosis; the nature of the tuberculin reaction; and the diagnosis, treatment, and prevention of thoracic tuberculosis in children.

REPORT ON RESIDENTIAL INSTITUTIONS

In May, 1931, the Joint Tuberculosis Council appointed a committee to report on the best utilization of residential tuberculosis institutions, and the resulting memorandum has now been issued. With the inauguration of sanatorium benefit under the National Insurance Act, and the consequent demand for increased institutional accommodation, an unfortunate idea became generally prevalent that the necessary period for sanatorium treatment was only about three months. This affected the provision of special facilities for the serious treatment of the disease, with the consequence that some institutions have become to-day convalescent homes rather than sanatoria. Small pavilions in fever hospitals are still being used for the reception of tuberculous patients who really need active treatment under expert direction. The council believes that at the present time the most important needs of many tuberculosis institutions are efficient x-ray plants and facilities for collapse therapy. Where facilities for major surgery cannot reasonably be provided, it is added, arrangements should be made whereby this can be undertaken at another institution. To this primary recommendation is joined the warning that institutional beds should be used for their intended purpose; greater attention ought therefore to be paid to diagnosis and intensive clinical and pathological investigation. A properly equipped treatment institution should deal with patients in all stages of the disease where definite improvement may be anticipated. It is insisted that to submit a patient with a cavity to sanatorium regime limited to rest, food, and fresh air for a period of from three to six months, and to hope for arrest, is to hope for the improbable. In some cases surgical measures taken without delay may be successful. It is regretted by the committee, therefore, that many cases are still being relegated to institutions where no active treatment on modern lines is being conducted. Special accommodation may have to be found for advanced pyrexial cases which are steadily going downhill. Some of these patients may be accommodated in the "sanatorium-hospital"; others in the public assistance hospital, which should possess adequate facilities for dealing with tuberculosis; and others at home if the conditions are suitable. Some patients will require maintenance in residential institutions owing to poverty. Those who are steadily improving, or are capable of responding to active medical or surgical treatment, should be treated in tuberculosis institutions belonging to the public health authority, or at its expense elsewhere. Progressively deteriorating cases will at present come into the hands of the public assistance authority, as also will those patients who are mentally defective and intractable, while the disposal of stationary cases should be a matter for the joint consideration of public health and public assistance committees. In any scheme, it is recommended, the dispensary and institutional sides should be operated in the closest liaison. The criterion for treatment in approved institutions should be clinical rather than economic. Major operations should be performed by surgeons with special experience of this work, and attached for this purpose to the staff of the institu-

tion. Special attention should be given to young adults suffering from pulmonary tuberculosis, and residential treatment for them be arranged as quickly as possible. For the ambulant, apyrexial, sputum-positive cases—essentially an economic and public health problem—some extension of village settlement principles might be envisaged. In an appendix to this report Drs. G. Lissant Cox and D. A. Powell discuss the erection and equipment of such tuberculosis institutions on the basis of their experience in Lancashire and Wales. Copies of the report may be had from the honorary secretary, Dr. Ernest Ward, 123, Torquay Road, Paignton, price 6d., post free.

THE TUBERCULIN REACTION

Dr. W. H. Tytler, of the Central Tuberculosis Laboratory of the Welsh National School of Medicine, reviews the bearing of laboratory data on the tuberculin reaction in a pamphlet published by the council. The work of recent years has shown definitely that the active principle of tuberculin responsible for eliciting the characteristic skin reaction is contained in the normal protein fraction of the tubercle bacillus. The most readily prepared and most active protein is one which is soluble in water at neutral reaction, and may be extracted from the bacillary bodies in amounts up to at least 10 per cent. of the original dry weight. It is combined with relatively large amounts of nucleic acid, which may be split off by appropriate means, and its activity is strikingly constant. Protein recovered from tuberculins derived from the growth of tubercle bacilli in liquid media usually shows some evidence of denaturing; it has a much lower nucleic acid content, and usually a lower solubility than the extract preparations, while its tuberculin activity is usually less, though still high. These purified tuberculo-protein preparations give skin reactions which are as a rule rather more clean-cut than those produced by old tuberculin, and show less surrounding erythema. They can be stored indefinitely in the dry form without loss of activity or solubility; they are assessable on a dry weight basis, and can be made up in permanent glycerin solution at a strength at least ten times that of standard tuberculin. Their use has spread rapidly in America, and Dr. Tytler believes that they will supplant old tuberculin for diagnostic skin testing. He calls attention to the variability of standardization of tuberculin, the hitherto universally used lethal reaction method now giving place gradually to the intradermal method, which is probably more sensitive, cheaper, and gives values relevant to the method employed in the great bulk of diagnostic tuberculin testing. While the danger of any error arising from artificial sensitization in the non-tuberculous subject seems to be remote with any type of tuberculin, Dr. Tytler points out that there is considerable evidence that in the tuberculous subject the application of tuberculin may produce a temporary increase in general sensitivity, or more particularly in local sensitivity at the site of application. He concludes that, where quantitative values are sought from the intradermal method, by progressive increase of the tuberculin concentration, it is probably important that no injection shall be made at the immediate site of a previous test.

THORACIC TUBERCULOSIS IN CHILDREN

The Joint Tuberculosis Council also issued this year the report of a special committee on the diagnosis, treatment, and prevention of thoracic tuberculosis in children. It is strongly urged that a positive diagnosis and notification should be avoided unless there is definite clinically active disease. In the first two years of life positive tuberculin skin reactions are significant, but not later. Positive x-ray findings are of prime importance, but "large root shadows" with inner zone striation are common in healthy town children, especially in those who have had measles; such shadows are not in themselves evidence of tuberculosis. Tracheo-bronchial glands are clearly seen in antero-posterior films only when they are large, calcified, or laterally situated, especially on the right side. A lateral film is essential to confirm their presence in many cases. Such glandular enlargement may

be associated with clouding of the adjacent parenchyma. Apical shadows suggest tuberculosis if recent pneumonia can be excluded, as also do woolly shadows if well out in the lung fields. Of the forms of blood examination the red cell sedimentation test, the Arneth index or its modifications, and the lymphocyte-monocyte ratio may all give early indications of activity even in cases which still maintain a normal temperature and a satisfactory body weight. Gastric lavage and the examination of the faeces may be helpful in many cases, and pharyngeal swabs taken during fits of coughing sometimes yield positive results.

ROCKEFELLER MEDICAL FELLOWSHIPS

The Rockefeller medical fellowships for the academic year 1934-5 will shortly be awarded by the Medical Research Council, and applications should be lodged with the Council not later than June 1st. These fellowships are provided from a fund with which the Medical Research Council has been entrusted by the Rockefeller Foundation. Fellowships are awarded by the Council, in accordance with the desire of the Foundation, to graduates who have had some training in research work in the primary sciences of medicine, or in clinical medicine, or surgery, and are likely to profit by a period of work at a university or other chosen centre in the United States, before taking up positions for higher teaching or research in the British Isles. In special circumstances the fellowships may be tenable at centres of research not in America.

A fellowship held in America will have the value of not less than £350 a year for a single Fellow, with extra allowance for a married Fellow, payable monthly in advance. Travelling expenses and some other allowances will be paid in addition. Full particulars and forms of application are obtainable from the Secretary, Medical Research Council, 38, Old Queen Street, Westminster, S.W.1.

England and Wales

London Mental Hospital Provision

The total number of persons of unsound mind under the Lunacy Acts for whom the London County Council was responsible on January 1st last, and of voluntary and temporary patients received under the Mental Treatment Act at the county mental hospitals on the same date, was 25,852 (11,185 males and 14,667 females), an increase of 119 on the year. This excludes the figures for Maudsley Hospital, where 230 patients, all of them voluntary, were being accommodated; in addition, the Council provides accommodation at Tooting Bec Hospital for 1,008 aged patients of unsound mind without formal reception orders. On the same date the number of London patients detained under the Mental Deficiency Acts in certified institutions provided by the Council was 5,319. The financial estimates for the Council for 1934-5 include £45,000 and £34,285 for the erection of the first sections of Ewell Mental Hospital and Maudsley Hospital respectively, £56,710 for the provision of additional accommodation for nurses, new admission villas, and works at various mental hospitals, and £71,710 for works at certain institutions for the mentally defective.

A New Mental Hospital in Essex

The local authorities of East Ham and Southend, though separated almost by the breadth of a county, are co-operating in the establishment of a new institution for their mental patients, to be known as the East Ham and Southend Mental Hospital. An area of 500 acres has been secured at Runwell, near Wickford, in Essex, in one of the pleasantest parts of that county, and here it is intended to erect an institution accommodating at first 875 beds, and ultimately, when further blocks have been built, a

total of 1,015. Between forty and fifty separate buildings will be put up, comprising administration, admission, and "closed" units, nurses' home, infirmary, convalescent home, chapel, and recreation hall. The estate will have its own power-house, electric plant, water storage tanks, laundry, farm, large vegetable gardens, and playing fields. A feature of the construction, and one which has marked recent mental hospitals, will be an absence as far as possible of signs of restraint; the buildings will be light and airy, and sanatorium-like, and much use will be made of verandas for sun treatment. The new hospital has been designed to afford opportunity for the earliest expression of some of the new regulations which the Board of Control has under review concerning the planning and construction of such institutions, and there has been considerable conference with officials of the Board, whose chairman, Mr. L. G. Brock, will lay the foundation stone on June 20th. The architects are Messrs. Elcock and Sutcliffe, who designed the new "Bethlem" in its country surroundings, and the work is expected to take from eighteen months to two years.

London Ambulance Service

The London Ambulance Service now comprises in its accident section sixteen stations with eighteen motor ambulances in commission and seven reserves. The total number of calls received during the calendar year 1933 was 42,384, involving 44,250 cases, an increase of 1,746 on last year's calls, but below the highest recorded total, which was 44,178 in the year ended March 31st, 1930. Of the total cases involved, street accidents numbered 17,789, or 40.2 per cent. The other principal causes were: accidents other than street accidents, 4,852 (11 per cent.); sudden illness, 9,926 (22.4 per cent.); and parturition cases, 4,416 (10 per cent.). The total mileage amounted to 190,965. The average time occupied in reaching casts was 6.3 minutes, and the average time between the receipt of call and arrival at hospital was 14.4 minutes.

Scotland

Co-ordination of Public Health Services

At a meeting of the Public Health Committee of Edinburgh Town Council, on April 24th, it was stated that at the present time the departments of the medical officer of health, the chief veterinary inspector, and the chief sanitary inspector had each, as a general rule, no cognizance of what was going on in the other two departments. It was agreed by the heads of these departments that this was an undesirable state of affairs, and that the medical officer of health should be provided with full information on matters arising in connexion with the other two departments. It was also arranged that if the medical officer of health, on information given to him, decided that action was necessary for the public welfare, the other departments would take precautions along the lines which he indicated. In regard to staffing, it was agreed that while a complete fusion of staffs would not be practicable, changes in this direction should be made whenever opportunity offered. This would achieve as large a measure of co-ordination as was possible in the present circumstances. At the same meeting the question was discussed of the best type of building to be erected for the rehousing of persons dispossessed through slum clearance operations. In a new area, laid out on the margin of the city at Niddrie Mains, there would be about 1,930 houses spaced at twelve to the acre; the disadvantage of this scheme, from the workers' point of view, was that the furthest house would be an additional

three-quarters of a mile from the centre of the city. The problem of rebuilding on cleared areas in the centre of the city was still more acute; many workers had to begin work in the morning before transport was available, and they had, therefore, to live close to their place of occupation. For this reason four-storied houses had been built on most of the areas already demolished. In some parts of the country the balcony type of house had allowed as many as twenty-five houses to be built with one staircase. There were certain disadvantages to this type, however: light was cut off from the windows and there was a lack of privacy. The common access balcony, as used by the London County Council, was hardly ever found in modern Continental houses; in several large cities, such as Vienna, it was shown by pre-war experience to be disadvantageous. It thus appeared that for Edinburgh the conditions now adopted in central London were unsuitable, and that houses should be limited to four stories, and should be built with a central staircase. The question of nursery schools was also considered, and it was recommended that their development under voluntary bodies should be encouraged, and that grants should be increased where necessary.

Mental Health Lectures

The two Dr. James Watson lectures were delivered in the Hall of the Royal Faculty of Physicians and Surgeons, Glasgow, on April 26th and 27th, by Dr. Hamilton C. Marr, Commissioner of the General Board of Control for Scotland. In his first lecture, on "Madness in Literature and Life," Dr. Marr cited classical cases of insanity described in literature, and referred to the madness of Dido and the *Orlando Furioso* of Ariosto, and the vein of madness running through George Borrow's *Lavengro*. An abnormal power of sensation existed in some individuals, who could tell when cats, spiders, mice, and other animals, to which they had a peculiar aversion, were in the neighbourhood. These susceptibilities were akin to the hypersensitiveness of individuals in whom certain plants produced an erythematous rash. All these idiosyncrasies were abnormal when they engendered fear and led to impulsive action. Into this category fell many phobias of mentally unstable persons, such as fear of closed or open spaces, or of darkness, and phobias leading to impulsive action were exhibited in their gravest forms by homicidal and suicidal insanities. In his second lecture, in which he considered the causes of dreams, Dr. Marr said there was a widespread belief that dreams took place in normal sleep, but there was no evidence to support that view. Dreams might be dimly impressed on consciousness, but when they were suddenly impressed, as in a nightmare, they interrupted sleep, and might induce morbid fear. In many cases of shell-shock disturbing dreams had been a cause of insomnia and melancholia. Such dreams usually occurred between waking and profound sleep, and if the dreamer were watched his condition exhibited deep agitation and restlessness, and he frequently talked. Dreams bore the same relation to sleep as confusional mental states did to normal mental action, and he believed that both were almost invariably excited by toxic conditions of the blood. In both, dissociation was marked and orientation was disordered. Perceptions and ideas might be formed and grouped without reference to place or time in the dreamer's conscious life, and these could not be turned into a logical or coherent whole. The individual might know that he had been dreaming, and when dreams obtruded on the conscious personality they might be remembered with a feeling of depression or even of fear, which might sometimes induce suicidal impulse; but in general these effects were counterbalanced by the mental relief of realizing that the dream was unreal.

Reports of Societies

THE VALUE OF THE TREATMENT OF MENTAL DEFICIENCY

The Sections of Epidemiology and Psychiatry of the Royal Society of Medicine held a combined meeting on April 27th for a discussion on "The Value of the Treatment of Mental Deficiency." Dr. J. D. ROLLESTON was in the chair.

Dr. F. C. SHRUBSALL said that "mental deficiency" was a legal or social term rather than, strictly speaking, a medical one. The earlier enactments for the care of mental defectives were directed to the protection of their property, and only in the last century had there come any idea of the social rehabilitation of individual defectives. Mental deficiency was defined in the Act of 1927 as a condition of arrested or incomplete development of mind existing before the age of 18, whether arising from inherent causes or induced by disease or injury. This definition regularized the admission to institutions of those suffering from the after-effects of sleepy sickness; it also opened the doors to some young sufferers from organic psychoses. Of 10,000 mentally deficient individuals in London, 29 per cent. were found to belong to the category of secondary amentia, but it was generally estimated that the proportion of secondary to primary amentia among persons who remained in the community was much lower, the secondary aments being often of lower grade and so more likely to be dealt with by local authorities. Dr. Lewis, for the Wood Committee, found the proportion of grades as follows: idiots 4.1 per cent., imbeciles 17.7 per cent., feeble-minded 78.3 per cent. In the first 10,000 cases dealt with in London the proportions were respectively 5.3, 35.7, and 59 per cent. The Wood Committee also estimated that in the population at large about 8 in every 1,000 were mental defectives, which in London would mean about 35,000 defectives, but on another computation would only be 25,000. Those ascertained in London were: 11,000 under institutional care, 4,000 under guardianship or supervision, and 4,500 in special schools; the names of over 11,000 special school leavers not under supervision were also known, so that the ascertained figure was about 31,000, or midway between the two estimates. The average weekly cost in institutions for mental defectives ranged from 26s. for the training of the higher-grade defectives to 35s. 6d. for children. It was sometimes said that mental defectives were prospective criminals, but in fact the after-careers of those leaving London special schools showed very definitely the stabilizing effects of education. In two recent years 168 mental defective adults were brought to notice through police court action, and of these sixty-five had attended special schools—a very small proportion indeed of the special school leavers. Dr. Shruballs also gave some interesting figures relative to defective parents and their children.

Defective Parent	Number	Average Intelligence Quotient	Number of Children Examined	Average Intelligence Quotient
Father	36	63.0	62	87.2
Married mother ...	83	61.0	113	85.5
Unmarried mother ...	150	59.5	169	78.8

He pointed out that the average intelligence quotient of the children was considerably above that of the defective parents. As to actual medical or surgical treatment there was little to be said. A few cretins were benefited by thyroid treatment, but their number in any event was small, and by the time the case came to the attention of the education authority the opportunity for effective glandular treatment with the hope of preventing mental arrest had passed away.

Dr. W. REES THOMAS asked what was to be the aim of those who dealt with mental deficiency, assuming that it could not be eradicated. He defined such aim as the endeavour to instil a measure of ability to adapt to modern social conditions. Methods of social treatment included voluntary and statutory supervision, guardianship, institutional care, home training, and occupational and industrial centres and schools. The success of the training methods in an institution might be judged from the fact that a large number of defectives returned from institutions to resume ordinary family and community life. The defectives who were retained in institutions were those who must be there because they needed training and supervision unobtainable for them elsewhere, or because they were a danger to society. It did not follow that the great majority of high-grade defectives required permanent segregation, but they did need such training and control during childhood as to bring out the best in them. One of the most important functions of the institution was to train the patient to make him wholly or partly self-supporting, thereby giving him a better chance to make normal adjustments. Occupation formed an essential part of the life of the defective inside a colony, and if he could be made partially self-supporting it brought happiness to himself and some measure of financial relief to his friends. When guardianship had been a failure it was because the patient was unfit for this mode of treatment, or because of some unhappy selection of the guardian. Under statutory supervision many patients were able to remain at home, and, on a reduced scale, to live happy and useful lives. By voluntary supervision was meant the visiting of defectives in their homes, such visits often proving extremely helpful both to the parents and to the patient. There were 154 occupation centres in this country, and twenty-two industrial centres. At the beginning of this year the number of defectives reported to mental deficiency authorities was 106,500, or 2.65 per 1,000 of the population. The expected proportion, according to Dr. Lewis, was 4.25, so that apparently only rather more than half of the defectives were known to the authorities at the present moment. It was considered that approximately 2 per 1,000 of the population would be defectives requiring institutional treatment, and that proportion had actually been reached in one or two areas. This would make it probable that institutional treatment for about 80,000 would be required. He believed that in present circumstances the methods of dealing with the defective should be regarded as a compliment to British good sense and medical instinct.

Dr. NOEL BURKE said that in discussions of this kind there was an unfortunate tendency to generalization and simplification, which was not justifiable. The point should be emphasized that mental deficiency was not a disease entity, but a symptom or state occurring in several different forms and in many entirely different conditions. It was necessary to consider not only degrees of deficiency, but all sorts of distinct conditions revealing different qualities and temperaments. Within each group of defectives there was considerable diversity in the pattern of the deficiency, and the title of the discussion should have been not "The Treatment of Mental Deficiency," but "The Treatment of Patients with Mental Deficiency." Many patients of the medium and higher grades suffered from the feelings of the outcast and inferior when exposed to the competition of the normal world. The provision of a modified or specialized environment built to suit the defective saved him from this situation, and to that extent made him happy. It was not uncommon for parents, with every good intention but with unconscious cruelty, to apply to the defective child a continual drive and pressure in the effort to procure normal standards of attainment which could not possibly be reached. Some defectives suffered from specialized physical handicaps as well as a lack of intelligence, yet even these people, as the speaker showed by exhibiting some specimens of their work (needlework, basket-work, and the like), could overcome their handicaps in a remarkable manner. He emphasized the value to the patient of restoring his usefulness to the community.

There were instances where wrong treatment had been applied, and the results were detrimental to the individual. He had seen several young adults only slightly defective on intellectual standards who, because of behaviour problems in their boyhood, had been certified and sent to institutions for defectives. In the present day such cases could, and probably would, be given the benefit of the child guidance clinics. He had also found a definitely adverse effect on many defectives if they were subjected to treatment in the environment of a mental hospital instead of in that of a mental deficiency institution.

Dr. RALPH WILLIAMS mentioned that mental defectives were often happier at monotonous work than persons of normal intelligence. At a special school in Bermondsey, adjacent to a packing factory, the defectives were taught packing, and those who afterwards entered the factory succeeded at the job against the competition of normal girls. As a medical officer at Broadmoor many years ago he was brought into contact with a number of feeble-minded persons who had committed serious crime, and under the regime of the asylum they were quite satisfactory and well-behaved individuals. In his view the happiness produced and the crime prevented by institutional care were well worth the expenditure and trouble.

Dr. LETITIA FAIRFIELD commented upon the relative unpopularity of this subject as compared with the sterilization of the defective or any aspect of the sex problem. It was not fashionable to think of defectives as fellow human beings, towards whom the community had an obligation. Many false deductions had been drawn as to the criminal character of the defective, yet the activities of the criminal defectives in London would only make one busy morning's work at one police court in the year. The casual wards of London had been combed out by expert officers, but last year only two defectives were discovered. She reminded the meeting that the problem of training the defective was a permanent one. However drastically they might attempt to deal with their fellow citizens by sterilization or other means, there would always be a lower 10 per cent., unless, of course, human beings began to breed completely to type. There would always be certain individuals who tended to be exploited by their more intelligent fellows, and the problem of training and adjusting the less intelligent was a permanent one, not to be shirked on account of any "pseudo-scientific smatterings of applied biology."

Dr. G. R. A. RUDOLF spoke of the work at Bredbury colony, where during the past few years some radical changes had been made in administration, giving certain of the defectives increasing privileges in parole and the management of their own quarters. The behaviour records showed a marked improvement under this regime. The number of attempted escapes was a rough index of the state of discontent, and this number had also notably diminished since the new system had been instituted.

Dr. ISABEL WILSON said that one often heard the criticism that money spent on defectives was wasted, but the case, not only of the defective child but of the hard-pressed home from which he came, had to be remembered. Those who had seen the stress of mothers with defective children would not agree that this was wasted expenditure. It was also said that the institutions did not teach the children anything. This again was not true, except, perhaps, that not enough was taught the defective about the common facts of life.

Dr. MURDO MACKENZIE commented upon the optimistic picture presented by those concerned with mental deficiency as compared with the darker one which psychiatry in general must exhibit. Despite Dr. Burke's objection to generalizations he would frame one—namely, that neurologists saw patients who were moderately affluent, and called their condition a neurosis; psychoanalysts saw patients when they had lost some money, and called their condition a psychoneurosis; while psychiatrists saw patients in whom the precipitating factor of the illness was financial distress, and their condition was described as a psychosis. Dr. Burke had also objected to simplification, but while this might be undesirable in mental deficiency

it was the one thing wanted in psychiatry. There were now in psychiatry so many clever people that the subject was becoming too complex for any ordinary person to understand.

Dr. W. A. POTTS corroborated Dr. Rudolf's observations as to the response which might be obtained from the proper treatment of mental defectives. It had to be remembered that the mental defective was a different type from the psychotic. The latter was suffering from a condition which affected his whole mentality, whereas a certain number of defectives had exceptional ability in particular directions. Dr. Potts also mentioned the influence of environment. A Birmingham observation had shown that feeble-mindedness corresponded fairly closely in incidence with the squalor character of the area and the death rate, but idiots were in the same proportion in the better areas as in the worse.

Dr. C. J. C. EARLE, as one who had care of a hostel for high-grade boys, spoke of some of the advantages and disadvantages of institutional treatment. When boys left the institution they were quite unused to freedom, and tended to behave foolishly at first, but under a system of semi-complete freedom they showed very marked improvement. Sir WELDON DALRYMPLE-CHAMPEYNS, who as one of the honorary secretaries had suggested the discussion, remarked on its encouraging character, and its indication that real progress had been made in this field of mental deficiency, but it was a progress which would have been unthinkable in any other than a Christian civilization.

Dr. SHRUBSALL, in reply, said that treatment should not be judged from the curative standpoint, but envisaged as the socialization of the mental defective. The real emphasis should be laid on the home and on the individual. In an institution there could be little chance for moral choice, but there was something to be said for allowing the inmates of an institution to have a measure of moral option so that they might be better immunized against the temptations of the outside world on discharge. Dr. REES THOMAS commented on the large number—from 10 to 15 per cent.—of mental defectives who were certified under the Lunacy Acts; many of them had received training as mental defectives. Dr. NOEL BURKE repeated the remark of the Jesuit: "Give me the child before he is 7, and you can do what you like with him afterwards." He looked forward to the time when defectives would be ascertained before they reached the age that brought them within the purview of the education authority, and before they became ruined by contact with the less favourable aspects of the world against which, from their own resources, they could find no suitable defence.

BREECH PRESENTATION

At a meeting of the North of England Obstetrical and Gynaecological Society, held at Liverpool on April 6th, with the president, Professor DANIEL DOUGAL, in the chair, Dr. J. W. BURNS and Mr. MARSHALL (Liverpool) read a paper entitled "Breech, its Aetiology, Diagnosis, Prognosis, and Treatment, with Special Reference to the Treatment of the After-coming Head."

Dr. Burns contended that much of the present-day teaching on breech presentations in the textbooks was old-fashioned, unquestioned by recent writers, and in many instances unsupported by facts. As a result there was a foetal mortality of 15 to 30 per cent. in breech cases throughout the country. The bulkiness of the full breech was the main cause of vertex presentation, and any factor which disturbed the normal relation between the size of the full breech and the cephalic pole of the foetus encouraged breech presentation. Anything, too, which altered the shape of the interior of the uterus also predisposed to breech presentation. Difficulties in diagnosing these cases, especially the frank breech, were described. The great risks of breech labour, for both mother and child, were emphasized. Dr. Burns maintained that there was considerable risk of separating the placenta by the manipulations of the uterus which were necessary in carrying

out the operation of external version. It should not be carried out as a routine, nor attempted before all the aetiological factors had been considered. In the management of labour everything possible must be done to prevent early rupture of the membranes. The patient was put to bed as soon as labour started. She was encouraged not to bear down during the pains. The usual enema or purgative was not given, as being likely to cause expulsive efforts. One vaginal examination was made to find out whether the cord was presenting. A comfortable binder ("labour belt") was applied, devised by Sister Miller of the Liverpool Maternity Hospital; it had numerous buckles and straps, which could be readjusted from time to time. There was much to be said for inserting a sausage-shaped balloon filled with water into the vagina to support the forewaters until the os was fully dilated. It was very much like that suggested by Farquhar Murray for the treatment of placenta praevia. During the first stage the patient was given nourishing drinks. She was encouraged to rest between pains. Bromides and chloral were useful, particularly the latter. When the membranes ruptured a vaginal examination was made to find out whether the cord was prolapsed, how much dilated the cervix was, and whether the legs were extended, if this had not been discovered in the ante-natal period. Nothing more was done until the breech appeared at the vulva, except that the labour belt was adjusted periodically from above down as the uterus descended. When the breech appeared the patient was placed in the cross-bed position, and a Clover crutch applied; the binder was tightened. No handling of the fundus was allowed, because of the danger of causing premature separation of the placenta. The attendant felt for the feet as soon as the buttocks were born, and gently lifted them over the perineum; he took care not to pull on the limbs. The umbilicus usually followed with the next pain. The cord was found and drawn down, so that further descent of the infant might not cause tension on it, and either damage the umbilicus or pull on the placenta. Dr. Burns thought it high time that teachers refrained from instructing pupils to endeavour to place the cord in some position where it would not be subjected to pressure. This was an impossibility, and no one nowadays attempted it. After the next pain a finger was inserted to find out whether the arms were in the pelvis; if so, they were gently drawn down. The shoulders followed with the next pain. At this stage the head was entering the brim. The attendant supported the body, and allowed internal rotation of the head to occur; as soon as the occiput had come forward he allowed the body to hang from the vulva. This brought about flexion of the head, and brought the nape of the neck well into the subpubic angle, as follows. The mother's perineum and soft tissues acted as the fulcrum. The suboccipital area of the infant's skull was in contact either with the back of the symphysis or the descending rami of the pubes. The child's weight, acting through the neck and across the fulcrum, forced the head to rotate on its horizontal axis—that is, flexion was induced. This method of producing flexion acted whether the head was just above the brim or whether it had entered the pelvic cavity. If the head was at the brim this method had several advantages: no traction was required by the operator; the shortest diameters of the child's head were rolled through the brim (that is, the suboccipito-frontal and suboccipito-bregmatic); there was a minimum of force necessary to produce flexion of the head (that is, the child's body weight was used); undue haste in delivery was avoided; there was no need for fundal or suprapubic pressure, and so the danger of premature separation of the placenta was minimized. If the head was in the cavity flexion of the head was still necessary, so that the shortest diameters of the child's head might distend the perineum, and thus the risk of tearing it or damaging the child's head might be minimized. By allowing the baby to hang from the vulva for one or two minutes the nape of the neck was brought more into the subpubic angle without the use of undue force. The force employed was limited by the child's body weight. As soon as the suboccipital area of the head could be seen in the subpubic angle delivery could be brought about by lifting the child up

towards the mother's abdomen. The operator should stand on the right side of the patient, and, taking the child's feet in his right hand, exert tension on the body from the moment the feet were seized. This tension must be enough to keep the neck of the child taut, and it was maintained while the legs and body were lifted in an arc until the body was vertical. By this manoeuvre the suboccipital area was made to rotate around the point of contact between the skull and the pubic rami, so that the suboccipito-mental diameter distended the perineum, then the suboccipito-frontal, and lastly the suboccipito-bregmatic. If tension was not maintained throughout this manoeuvre the child's head simply rotated within the pelvis. The occiput receded and the perineum was not distended. Further, the child's neck was merely bent, and much damage might be done to the structures in it without the head being delivered.

Mr. Marshall described the technique he used in delivering the frank breech in primigravidae. As soon as the anterior buttock was showing the mother was put in the lithotomy position, the whole perineum infiltrated with about 50 c.cm. of 1/2 per cent. novocain solution, the index finger placed in the anterior groin, and descent with the pains aided by traction. When the anterior buttock was showing well, and the posterior strongly bulging the perineum, a medio-lateral episiotomy was performed. The posterior groin was then reached, if necessary, and the buttocks were born. Chloroform was administered on an open mask, and the extraction completed. When the arms had been brought down the body was allowed to hang from the vulva for some moments. In under half the cases the amount of neck visible lengthened, and the head entered the pelvic cavity. The head was then delivered by Dr. Burns's method. If the head did not enter readily, or there was delay in its descent through the passage, pressure with the free hand was applied to the head just above the pubes. In most cases delivery was easily effected by these methods. In a few of the very early cases forceps were used, but now this was very seldom necessary. Results of thirty-three consecutive breech deliveries in primigravidae were shown. One infant (3.03 per cent.) was stillborn: this was one of the early cases, and was one of twenty-seven in which the legs were extended. The head was difficult to extract, and Mauriceau's grip was used to bring it through the outlet. The average weight of the babies was 7 lb. The value of the perineal anaesthesia was stressed: the mother bore down with less pain and apprehension, groin traction could be done almost painlessly, and episiotomy could be done at any time without resorting to general anaesthesia. To patience and the above methods Mr. Marshall attributed the small number of cases in which it had been necessary to decompose the extended breech and extract. This was done in only two cases: groin traction had failed in one, and in the other unsuccessful attempts had been made to deliver before admission. The technique was illustrated by a film, in which the delivery of four recent cases was shown. In the summing up it was emphasized that no midwife should be allowed to undertake a breech labour unassisted: she should send the patient to her own family doctor or to an institution as soon as the diagnosis had been made.

Fluid Restriction in Hypertensive Albuminurics

Mr. W. J. CHISNALL (Liverpool) read a paper on "Fluid Restriction in those Albuminurics of Pregnancy associated with Hypertension."

His paper was based on records of thirty-nine cases of pre-eclampsia, defined as a disorder of pregnancy associated with albuminuria, oedema, and hypertension without evidence of previous nephritis. They were treated at the Walton Hospital between October, 1932, and October, 1933. The treatment advocated was described by Arnold and Fay in *Surgery, Gynecology and Obstetrics* of August, 1932. He said that there was a disturbance of fluid metabolism in pre-eclampsia, resulting in a storage of fluids. This was not the cause of the con-

dition, but one of many effects due to an unknown cause. The treatment advocated had as its object the correction of the disordered fluid metabolism. There occurred in the disease a progressive diminution in urinary output: in eclampsia itself as little as 100 c.cm. might be passed in twenty-four hours, although there was no diminished intake before the onset of severe symptoms. This diminution, in the absence of evidence that the lungs, bowel, and skin compensated by increased excretion, meant that fluid was being stored in the body. The suggested method of correcting this state of hydration was to reduce the fluid intake, so that it never exceeded the urinary output of the day before. Accessory measures adopted in some of the cases with a view to reducing intracranial tension were the intravenous injection of glucose (40 c.cm. of a 20 per cent. solution) or magnesium sulphate (20 c.cm. of a 20 per cent. solution), and spinal drainage. These methods were only used if high blood pressure, headache, and dimness of vision were not quickly responding to reduced fluid intake. A standard diet was employed. Its calorie value was 1,500, and it contained 70 grams protein, 30 grams fat, 240 grams carbohydrate, and 3 grams salt. Beef or mutton, cod or hake, boiled puddings, bread-and-butter, tea, and cocoa were allowed. Meals were taken at 8 a.m., 12 noon, and 4 p.m., and a drink was given at 8 p.m. No eating or drinking between meals was allowed. When a patient was admitted a history was taken and a complete examination made. An arbitrary figure was chosen for fluid intake for the first twenty-four hours, from 600 c.cm. in a mild case down to *nil* for a severe case. All urine passed was collected and measured, and the amount recorded. A dose of mist. alba was given each morning before breakfast. On the morning after admission a catheter specimen of the urine was obtained and a simple enema given. A sample of the twenty-four-hour specimen was put in an Esbach tube each night. After the first day the amount of fluid allowed was equal to the urinary output for the previous day. If the patient was discharged undelivered she was instructed to keep to the diet and fluids taken in hospital; she still took the mist. alba every morning, and attended the ante-natal clinic weekly. If improvement was only temporary, or not adequate, labour was induced by the bougie method. Twenty-eight patients were primigravidae and eleven multigravidae. Medical treatment sufficed in thirty-six cases. In the other three—all primigravidae—labour was induced as improvement was not maintained. The treatment in favourable cases was followed by reduction of blood pressure to normal figures, disappearance of oedema, diminution of albumin, and cessation of headache, dimness of vision, dizziness, vomiting, and drowsiness. In all cases a healthy live child was born; in thirty-six instances the mother was cured, and in three symptoms recurred after partial relief. Despite the restricted fluid intake a progressive increase in the daily volume of urine occurred, lasting from four to ten days, after which the volume remained steady. This was equal to the volume of fluid which could be allowed without storage occurring. If the intake was increased beyond this figure there tended to be a recurrence of symptoms.

Mr. M. DATNOW (Liverpool) showed a lighted vaginal speculum of new design.

The following appointments have recently been made in the German faculties of medicine: Dr. M. Kirschner, director of the surgical clinic of Tübingen University, professor of surgery at Heidelberg in succession to Geh. Rat Enderlen; Dr. Ernst Ruickoldt of Göttingen, professor of pharmacology at Rostock; Dr. R. Sirberk, professor of internal medicine at Heidelberg. Dr. Walter Kurten, lecturer on problems of race and heredity, has been nominated professor of internal medicine at Halle; Dr. B. Spiethoff of Jena, professor of dermatology at Leipzig; Dr. Kurt Goertler of Zürich, professor of anatomy in Hamburg, in succession to Professor H. Poll; and Dr. Gottfried Raestrup, professor of forensic medicine at Leipzig, in succession to Geh. Rat Kockel.

CORRESPONDENCE

The Milk Question

SIR,—In his letter in the *Journal* of April 21st (p. 727) Dr. W. S. Forbes, referring to the League's report on tuberculosis of bovine origin in Great Britain, reads into the conclusions of that report a meaning which was certainly not present in the minds of those who compiled it. He states: "The P.L.H. report suggests that milk from tubercle-free herds should be sold raw or pasteurized, which means that other infective organisms, whose presence is used as an argument for pasteurization, are adequately dealt with by clean methods: I am glad to find that the committee agrees with me in this." The reason why it was recommended that milk from tubercle-free herds should be sold raw or pasteurized was because the committee's terms of reference allowed them to deal only with tuberculosis. If milk-borne disease as a whole had been under consideration, then doubtless the advisability of submitting all milk to adequate heat treatment would have been pointed out.

When Dr. Forbes states: "An all-round clean milk means fewer cases of tuberculosis, despite the presence of tubercle bacilli," does he mean to say that clean milk containing tubercle bacilli is less infective than dirty milk containing the same number of tubercle bacilli, and if so will he be kind enough to bring forward the evidence on which this statement is based?—I am, etc.,

People's League of Health, W.I.
April 30th.

C. O. HAWTHORNE.

SIR,—Will you allow me to make a belated reply in correction of a statement made in Dr. Kitching's letter in the *Journal* of March 31st. The laboratory to which my letter in the *Times* of March 5th referred was the Research Institute in Animal Pathology of the Royal Veterinary College, working with a grant from "United Dairies." Dr. Kitching scolds me for not having specified the laboratory in my letter to the *Times*. The necessity for brevity was my reason for not doing so.

The brochure, "The Nation's Milk Supply," published by the United Dairies Laboratory Department, contained only a very short résumé of the experiment conducted at the Royal Veterinary College. The full report is published in the *Journal of the Society of Chemical Industry* (1933, lii, 379).

May I refer Dr. Kitching to the important letter in the *Times* of to-day, over the signature of Lord Dawson, conveying resolutions of the last comitia of the Royal College of Physicians (April 26th), in which the danger of supplying raw milk under present conditions is again stressed.—I am, etc.,

House of Commons, May 1st.

E. GRAHAM-LITTLE.

* We refer to Lord Dawson's letter on p. 810—*Ed. B.M.J.*

Periodical Sterility

SIR,—The form in which "X" in his discussion of periodical sterility (*Journal*, April 21st, p. 740), records the time of menstruation and ovulation prompts us to submit a simple diagrammatic representation of the menstrual cycle which we have found useful when presenting the subject to students.

In the last three or four years much has been added to our knowledge of menstruation and of the occurrences which take place in the early days following fertilization of the ovum: so much, indeed, has been added that the bewildered student requires a framework on which the more elaborate structure may be built and explained to

him. The following scheme, of which simplicity, brevity, and approximate accuracy are the main features, enables the beginner to see at a glance the outstanding events in the cycle when pregnancy does and does not occur.

DIAGRAMMATIC REPRESENTATION OF MENSTRUAL CYCLE

When Pregnancy does not occur		When Pregnancy occurs
1	2	1
2	3	2
3	4	3
4	5	4
5	6	5
6	7	6
7	8	7
8	9	8
9	10	9
10	11	10
11	12	11
12	13	12
13	14	13
14	15	14
15	16	15
16	17	16
17	18	17
18	19	18
19	20	19
20	21	20
21	22	21
22	23	22
23	24	23
24	25	24
25	26	25
26	27	26
27	28	27
28		28

1. MENSTRUAL DISCHARGE
(Blood and uterine debris.)

REPAIR

HYPERTROPHY

OVULATION

Marked hypertrophy of mucosa due to stimulus of corpus luteum and possibly also of anterior lobe of pituitary gland.
Crenations in glands develop.
Epithelial cells filled with mucus.

Mucous membrane more or less stationary in hypertrophic condition.

1. MENSTRUAL DISCHARGE
(Blood and uterine debris.)

REPAIR

HYPERTROPHY

OVULATION

Zygote in tube.
Zygote now imbeds by means of trophoblast. Mucosa further hypertrophies. Sinuses in uterine form, and villi of chorion appear as buds extending into blood spaces.
(1) Corpus luteum;
(2) Anterior lobe of pituitary;
(3) Zygote.

Details can be elaborated when the important points have been mastered. Thereafter we proceed to describe fully endocrine activity, imbedding, and metabolism (maternal and foetal). Thus is the student introduced to the study of obstetrics.—We are, etc.,

J. M. MUNRO KERR.
D. F. ANDERSON.

University of Glasgow, April 22nd.

Insulin in the Early Morning

SIR,—In your issue of April 7th (p. 628) is an annotation on carbohydrate metabolism and liver function, in which the suggestion of Mollerstrom that a dose of insulin should be given very early in the morning is regarded with disfavour as being not without great practical inconvenience. It may therefore be of more than passing interest to state the experience of the Ministry of Pensions, whose cases have been under the care and treatment for many years of Dr. J. G. Willmore and other medical officers assisting him.

Almost without exception the cases of diabetes under treatment by the Ministry of Pensions are of considerable severity and of not less than fifteen years' standing, in that a man is only pensioned for diabetes if it be proved that the disease arose during—and/or by reason of military service during—the Great War. The few exceptions—not so much as to severity but as to duration—are those in whom the diabetic condition has supervened on long-continued suppuration, or constantly recurring "flares," of gunshot wounds. Up to four years ago great difficulty had been experienced in keeping the blood sugar values within normal limits between the early morning fasting blood sugar and the value at 12 noon. Very frequently the morning fasting blood sugar, taken as a routine practice at 7.30 a.m., was found to be far too high—in the neighbourhood of 0.2 per cent. In spite of massive doses of insulin given before breakfast a further hyperglycaemic rise would take place at 10 a.m., to be followed by a rapid fall to hypoglycaemic levels at noon. In other words, a violent oscillation took place between breakfast and lunch, which did not respond to large quantities of insulin given, in a single dose, twenty minutes before breakfast. On the other hand, there was hardly ever any difficulty in controlling the blood sugar

between 1 p.m. and bedtime. Increasing the evening dose, giving a small dose at bedtime, and waking the patient up in the middle of the night or in the small hours of the morning to give a dose of insulin were all tried. All that happened was that the patient became hypoglycaemic in the small hours of the morning, was given sugar and/or adrenaline to combat it, and his blood sugar taken at 7.30 o'clock next morning was higher than ever.

In common with those who have worked at all extensively on diabetes it had been noted that the critical time for a diabetic was always between waking and 12 noon, and it was therefore decided to try the effect of splitting the before-breakfast dose of insulin into a smaller fraction at 6 a.m. and a larger fraction just before breakfast at 8 a.m. It was found not only that the blood sugar taken at 7.30 a.m. was materially lower, but that the forenoon swing from high to low was abolished; and in most cases it was found possible to attain the ideal of keeping the fasting and post-absorptive blood sugars somewhere below 0.1 per cent. and the absorptive (that is, after-breakfast rise) round about 0.15 per cent. Any tendency to hypoglycaemia between 11 a.m. and lunch is easily averted by the taking of one or two Rabinowitch equivalents—usually in the form of fruit or biscuits—at 11 a.m. as a routine practice. It was somewhat surprising, however, to find that the urine collected first thing in the morning (that is, secreted during the night) as well as that at 7.30 a.m., when the first blood sugar value was taken, was free from glucose. This suggested that the blood sugar value had not exceeded the renal threshold between the previous evening and the following 7.30 a.m. (This only happens, of course, provided that the renal threshold for glucose is not unduly low: curiously enough, a true diabetic may have an inconstant threshold, especially if thorough and prolonged insulinization has been effected.) The physiological explanation of this would seem to be that the blood sugar value does not rise, as had previously been supposed, during sleep, to reach a maximum when the patient wakes in the morning; but rather that endogenous glycconeogenesis occurs during sleep, that the carbohydrate so formed remains condensed in the liver as glycogen during sleep, and that it is only on the resumption of the waking phase of metabolic activity that glycogenolysis occurs with a rise in the blood sugar.

It seems rational to assume that the normal, non-diabetic person calls upon his liver to supply the necessary heat and power to enable him to get up and dress. The liver of a healthy person supplies only just as much hexose as is required: the liver of a diabetic, on the other hand, does not know when to stop, with the result that what one may term a "glycogenolytic crisis" takes place and hyperglycaemia ensues. It would seem, too, as though insulin were much more effective in preventing excessive hydrolysis than it is in recondensing a hexose once glycogenolysis has occurred. Otherwise it is difficult to explain why, in these cases, the large dose of insulin given before breakfast seemed to be unable to control the forenoon hyperglycaemia, and did not lower the blood sugar until the excess had been got rid of by the kidneys.

This plan of early morning dosage was found so successful that practically every patient who showed a high morning blood sugar has, during the past four years, been put on a dose of insulin for which he must be woken up. This routine, which was initiated by the Ministry four years ago, has been published and described in detail by a former medical officer of the Ministry of Pensions—Dr. Sidney Vatcher—in his recent thesis for the Cambridge M.D. In hospital the administration is, of course, easy, and it is given at 6 a.m. Outside hospital patients are advised to prepare their syringe with the

requisite dose overnight, to set their alarm clock to about half an hour or so before they normally wake up, to keep the previously sterilized needle protected by gauze soaked in spirit, and, when the alarm clock rouses them, to give themselves an injection. They can then either go to sleep again or read in bed until their normal time for getting up, which should not be less than half an hour after the insulin injection.

In practice few patients have complained of inconvenience; none have protested against the practice as inhuman; and the majority (including all the more intelligent) have been so impressed with the greater sense of well-being, and the very marked reduction in the total quantity of insulin necessary, that they have willingly and conscientiously co-operated. The ultimate decision as to whether the advantages outweigh the inconvenience must be one to be made by the patient himself.—I am, etc.,

Ministry of Pensions, April 23rd.

J. H. HEBB.

The Medical Curriculum

SIR.—The final report of the Committee on Medical Education was presented to the Council by Sir Henry Brackenbury on Wednesday, April 4th (*Supplement*, April 14th), and during the course of his remarks he made special reference to the position of physical medicine in the curriculum, and drew attention to the inclusion in this report of the following paragraph.

"It is clear that the teaching of the need for physical methods of treatment, of the occasions on which they should be used, and of their modes of action is no less important to the student than is the corresponding teaching with regard to drugs given in the course on pharmacology."

As chairman of the Physical Medicine Committee I should like to take an early opportunity of thanking the committee and the Council for taking this practical step in recognition of the advances that have been made during recent years in our knowledge of the treatment of disease by physical means. Such recognition will also receive the warm gratitude of all practitioners of physical medicine who have struggled so long against scepticism on the one side and the inroads of quackery on the other.

As physicists are reducing all substances in nature to problems in electrophysics, the time is probably not far distant when the physician in charge of physical medicine will take his place on the ordinary staff just as does the physician with a bent towards cardiology or biochemistry. The Council has now laid the foundation stone, and it is for the practitioners of physical medicine to erect a scientific building worthy of the support accorded to them.—I am, etc.,

London, W.1, April 25th.

C. B. HEALD.

SIR.—I hesitate to suggest any addition to the already burdened curriculum of the medical student, but seeing that it is again under review, and that up to the present I have never seen the point discussed, may I be allowed to draw attention to the importance in every form of practice of a sound knowledge of the subject of diet and of the methods of cooking food so as to render it suitable for the individual patient? From the first day he begins to practise the newly qualified practitioner will be consulted by patients of all ages on these points; but how can he give directions about a subject of which usually he is entirely ignorant? Bacon said: "There will be seldom use of physic in a sound or well-dieted body." Anyhow, the question of a suitable diet has to be settled, as a rule, long before that of drugs and medicaments, and

surely requires some *practical* knowledge. May I therefore plead that at least some provision for acquiring it should be made for the post-graduate, if impossible earlier?—I am, etc.,

LIONEL CALTHROP.

Radlett, April 24th.

SIR,—The report of the Committee on Medical Education devoted a page and a quarter to pre-registration subjects and dismissed the question of anaesthetics in less than seven lines.

"The administration of anaesthetics becomes more and more a speciality." Why? Because they, in their wisdom, insist on a medical student doing a minimum of nine months' chemistry, physics, and biology—not to mention botany—and one month's anaesthetics!

Considered in the cold light of reason this must be regarded as an absurdity. How much better to cut the nine months down to three, and use the remaining six in longer courses of anaesthetics, "district," fevers, insanity, and children—subjects of rather more importance to the general practitioner than vascular bundles and Wheatstone's bridge!—I am, etc.,

W. A. BELLAMY, M.R.C.S., L.R.C.P.

Sydenham, April 27th.

Injuries of the Knee-Joint

SIR,—I have read with interest the excellent article by Mr. T. P. McMurray on certain injuries of the knee-joint which appeared in the *Journal* of April 21st (p. 709).

May I be permitted to criticize his statement that internal lateral ligament sprains and tears should be treated by complete rest for a period of from fourteen to twenty-one days? I have seen many of these cases which have been completely rested for two to three weeks. The joint has lost its function of flexion, the muscles have wasted, and it requires between four to eight weeks' daily treatment, besides often a manipulation under an anaesthetic, before the knee is normal again. Is it not an important pathological principle for a ligament, when strained, to shorten either by replacement by fibrous tissue or by becoming bound down with adhesions? This point is so well demonstrated in sprains of the external lateral ligament of the ankle-joint. The movement of adduction and inversion is limited and painful in cases which have been rested completely, as the ligament has contracted and shortened as a result of the sprain. In sprains of the internal lateral ligament of the knee-joint, if the knee is gently flexed, the points of attachment of the ligament are approximated, so that no strain whatsoever can be thrown on the strained ligament. Therefore gentle active movements without weight-bearing are, in fact, beneficial, as they help the absorption of fluid, keep up the tone of the muscles, and prevent stiffness of the joint.

Another important point to realize is that in almost every case of internal lateral ligament sprain the knee automatically becomes flexed 5 to 10 degrees after a few days. The reason for this is that the posterior fibres of the ligament have shortened and contracted, and flex the joint to this degree. This means that extension is limited 5 to 10 degrees. As there is often, as well, a characteristic spring felt in trying to force extension, a diagnosis of a misplaced cartilage may be made, especially if bruising has spread into the surrounding tissues and tenderness can be felt over the cartilage. The importance of this point cannot be overestimated, as an operation otherwise may be undertaken unnecessarily. If these cases are treated with diathermy, faradic contractions, massage, and gentle active movements without weight-bearing, and gentle manipulative movements daily, they are completely right in most cases in from two to four weeks.

Mr. Fisher, in his book *Internal Derangements of the Knee-joint*, states:

"There can be no doubt that many practitioners err on the side of prolonged immobilization in the treatment of this injury. Carefully regulated movements play an important role in the absorption of intra-articular effusion and prevent the formation of adhesions. . . . The treatment of sprains by means of prolonged immobilization in splints is deeply rooted in the medical profession. It is a fruitful cause of muscular atrophy and stiff joints, upon which the bonesetter flourishes."

—I am, etc.,

London, W.1, April 27th.

W. ELTON TUCKER.

SIR,—It is presumptuous for one in general practice to criticize such a specialized paper as that of Mr. T. P. McMurray, as naturally the opportunity of seeing many of these cases is very limited. I am referring here to displacement of the semilunar cartilages. There is one statement, however, in this very interesting and instructive paper with which I cannot fully agree—namely, "these injuries *always* occur when the knee-joint is in a position of flexion." This statement is too sweeping to be universally applicable, and I know of two at least out of about a dozen cases where the knee joint was fully extended at the time of rupture, and the internal cartilage in each case was torn anteriorly, and laterally for part of its circumference, from its attachment, the joint remaining locked until the cartilage was removed.

The first was a man helping to lay tram rails. He was at one end of a rail, supporting it, when his foot became wedged in the angle of a "point," being firmly fixed thereby. The men at the other end of the rail began moving to the right, the injured man acting as a pivot. As they moved round, he was unable to turn round his foot and leg, but his body and femur were forcibly moved round. At this moment he felt something tearing in his joint, but he dared not drop the end of the rail through fear of it injuring him. He cried out with the pain, and when relieved fell down with the knee in the locked position.

The second instance was that of a hefty young footballer. Whilst running with the ball he was collared from behind and twisted clean round. At the moment his right foot was on the ground, and the studs in his boot prevented the foot and leg from turning in unison with the body and thigh. The weight of his own body, plus that of his opponent, applied to the powerful leverage of the femur, tore off his cartilage, the joint remaining locked until the cartilage was removed. In this case, also, the leg was straight, as it was the fixed foot which was on the ground.

It is quite reasonable to think that the leverage of the femur plus the weight of the body, plus the force applied is sufficient to grind off the cartilage even in the straight position; but the foot and leg must be fixed.—I am, etc.,

Leeds, April 29th.

J. STEWART.

Heredity and Mental Deficiency

SIR,—Professor Charles McNeil's interesting article in the *Journal* of March 31st (p. 584) as to the causation of mental deficiency has given prominence, apart from heredity, to such aetiological factors as environment, birth injury, etc. May one therefore suggest for consideration another—namely, the potential traumata of conception. As to mongolism, for instance, there is, among the less educated people of London, a widespread belief that the condition is produced by attempts at chemical contraception; and many an unhappy mother has, upon this ground, been subjected to the ribald or lugubrious comments of her neighbours. This may be of little importance, but I have on more than one occasion listened to the bitter plaint of a patient who had

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become the father of a mongol, and who roundly attributed his misfortune to this cause; and in none of these cases was the man likely either to know of or to be influenced by such popular beliefs.

It appears to be universally accepted either that the chemical contraceptive completely exterminates all sperms or, in the event of failure, that some or all of them escape scathless. Why should this be so? It would seem to be equally reasonable to suppose that one sturdy spermatozoon, weathering the lethal waves, might be cast again on shore, thence to stagger his intoxicated way into the haven of an unsuspecting ovum. And who would say that the product of such a union would be normal? On the other hand, a case of mongolism has been described to me in which not only was the birth ardently desired by both parents, but was carefully "prepared for." It would be pertinent to inquire, as I did not at the time, whether the "preparation" took the favourite form of a "course of douching," and whether, therefore, the conception in question took place, as it were, under a libation of lysol. Again, is it not possible that the regular use of chemicals for any purpose might so permeate the female reproductive organs that no ovum could exist therein in an unpoisoned condition?

Consideration of these questions leads to others too numerous to mention. Theoretical as some of them may be, they require an answer, even if only happily to be eliminated. Few will dispute that the present state of our knowledge leaves much to be desired; and I am therefore of opinion that it would not be unprofitable to make a careful inquiry into the circumstances of conception in all cases of mental deficiency, slight and severe, and in all cases of physical developmental anomaly, whether separate or concurrent, and would make the suggestion to those whose special interest it is to evaluate the causes of human defect. The occurrence of mental deficiency and the practice of treating the maternal passages with chemicals of many kinds are equally old as far as medical history is concerned; and they are both increasing.—I am, etc.,

A. C. HILL.

Kensington, W., April 21st.

SIR.—I can support Dr. Grundy's criticism (*Journal*, April 21st, p. 728) of Professor McNeil's paper in every detail. The exclusion of persons over 5 years of age rules out all but the lowest grades of mental defect, and it is only to be expected that such an investigation would lack evidence of heredity. If Professor McNeil extends his investigations to older children he will find a very different story.

It can be shown that the higher grades of mental deficiency tend to be associated with low social status and a high birth rate, whereas the lower grades tend to be associated with higher social status and a definitely lower birth rate. There is also a high death rate among the sibs in the former group. These facts are no doubt due partly to environmental causes; but it is surely not too great a stretch of the imagination to think that many of the sibs who have died might have proved to be grossly mentally defective if they had survived. Low-grade defectives are often of very poor physique, and considerable care and attention is necessary to enable them to survive. A mother of low social status would have great difficulty in rearing such low-grade children. I suggest that this is a very possible explanation of the failure to find many cases of low-grade deficiency with bad family history. They are absent because they have died.

Professor McNeil's experience with the mothers of the mentally defective children attending the Edinburgh Hos-

pital Clinic is very different from my own in Nottingham, where so many of the mothers of mentally defective children that have come under my observation are obviously of low intelligence. No fewer than 173 parents of 1,003 educable mental defectives and seventy-three parents of 414 idiots and imbeciles acknowledged to illiteracy, and in an area where the education has been efficient this is most suggestive. I feel confident that, as our records of mental deficiency become more complete, the more apparent will the hereditary factor become. Referring to the penultimate paragraph in Professor McNeil's paper, does he demand that the parents be mentally defective before he admits the likelihood of heredity?—I am, etc.,

A. A. E. NEWTH,
Senior Medical Officer, City of Nottingham
Education Committee.

Nottingham, April 24th.

Haemorrhage from Peritonsillar Abscess

SIR.—I was interested in Mr. T. G. Wilson's description (*Journal*, April 28th, p. 755) of a case of haemorrhage from a peritonsillar abscess. Mr. Wilson suggests that removal of the tonsil would be successful in these cases, and it proved so in a recent case of mine.

A similar type of patient was being exsanguinated by repeated haemorrhages from a quinsy which had ruptured spontaneously. Blood clot was being extruded from a small opening above the tonsil. Removal of the tonsil under a general anaesthetic was easy, as a dissection had been in the main done by a large clot lying between the tonsil and its bed. There was no difficulty in securing the bleeding-point, which was a fairly large arterial one.—I am, etc.,

Cheltenham, April 28th.

T. D. DEIGHTON.

Mind and Body

SIR.—The letter of Dr. Hugh Woods which appeared in your issue of February 24th (p. 356) has a strong flavour of the philosophy of nineteenth century science. I quote two continuous sentences from that letter: "We all know what the 'body' is, though we know much less about it than we would [sic] like. I do not even admit the existence of any actual thing called the 'mind.'" Now do we all know what the body is? And what does Dr. Woods mean by a "thing"?

In the issue of *Nature* for March 10th, 1934 (p. 341), there is a leading article on "Science and Philosophy" which medical men would do well to read. I quote from it the following passage as the science of the nineteenth century.

"The notion that to be real a thing must be of the same nature as a piece of matter, became the predominant axiom upon which was based any explanation of scientific results; and as matter can be seen and touched, whatever was real ought to be seen and touched, at least theoretically. . . . Yet, it is a curious fact that the further analysis of the objects perceived finally exploded the very 'reality' they represented.

"This is, however, the epic of the contemporary development of our knowledge. With matter considered as a hump in space-time and gradually vanishing into nothingness, the obvious and solid foundation of nineteenth century science has disappeared. . . . Not only does scientific thought affect the nature of the things it studies, but also matter itself becomes simply an appearance of the mental or spiritual unity which alone is real."

—I am, etc.,

P. D. STRACHAN, M.A., M.D.
Maseru, Basutoland, South Africa, April 4th.

Obituary

DAVID LECHMERE ANDERSON

Medical Officer of Health, Doncaster

With regret we record the death, on April 18th, of Dr. D. L. Anderson, at the age of 73. Born in Clackmannan he received his medical education at Edinburgh, where, in 1883, at the age of 21, he obtained the diplomas L.R.C.P. and S. and L.M. Ten years later he took the D.P.H. of Edinburgh and Glasgow. His first practice was at John-o'-Groat's, and his second at Peterhead, where he spent fifteen years. He was medical officer of health for Peterhead during his last three years there, and he held a similar office in the burgh of Ellon for six years. In 1902 he went to Doncaster as its first whole-time medical officer of health. From the start he had a great deal to do with tuberculosis, for the voluntary notification of this disease was already in operation, the small-pox hospital being then used for institutional treatment. When the Tuberculosis Act came into force Doncaster naturally became the centre for the treatment of patients from such towns as Dewsbury and Wakefield. In 1908 Dr. Anderson was appointed school inspector, and he helped to bring into being numerous school clinics for special treatment. He was regarded as an authority on miners' nystagmus; on the basis of his carefully compiled records of thousands of cases in the South Yorkshire coalfields he came to the conclusion that the disease was caused by the inadequate lighting in the mines and the abnormal postures adopted in colliery work, but that these conditions brought on nystagmus only in men suffering from, or predisposed to, common defects of vision, such as squint, ametropia, and astigmatism. He advocated that no boy with imperfect vision should be allowed to start work in a mine, arguing that in this way it should be possible to eliminate nystagmus. His theories received much support, and steps were taken to improve the lighting of mines, but this has not been universally accepted. Dr. Anderson was well known as a writer under the name of David Lechmere, and his books include *An Aesculapius of the North* and *In Deadly Peril*. Fond of racing, he had been one of the medical attendants at Doncaster races for many years. He was an excellent after-dinner speaker and a popular lecturer, a Freemason, one of the original members of the Danum Literary Society, and a former president of the Caledonian Society of Doncaster. His wife predeceased him about four months ago. He leaves a son, Dr. R. M. L. Anderson, who is in practice at Stainforth, near Doncaster.

WILLIAM HOWARD STURGE, M.D.

We regret to announce the death, on April 23rd, of Dr. Wm. Howard Sturge of Hoddesdon, as the result of a motor accident. Dr. Sturge was educated at the London Hospital, and qualified M.R.C.S., L.R.C.P. in 1891; he graduated in medicine at London University in 1892, and proceeded to his M.D. in 1893. After holding the resident posts of house-physician and house-surgeon at his old hospital, and of house-physician at the Brompton Chest Hospital, he went out to South Africa as civil surgeon to the South African Field Force. On his return to this country he settled down at Hoddesdon, where he was in general practice for many years. He was honorary physician to the Hertford County Hospital, and at the time of his death was the senior member of the staff.

Dr. Sturge was an old and active member of the B.M.A. Elected in 1894, forty years ago, he was a Representative at London in 1919, chairman of the East Hertfordshire Division 1929-30, and President of the Hertfordshire Branch at the time of his death. He took a great interest

in the administration of the Insurance Act, and was a member of the original Insurance Committee of Hertfordshire until he died. Other committees on which he served were the Panel Committee, of which he was also an original member, and the Medical Service Subcommittee. Always conscientious in anything he undertook, Dr. Sturge rarely missed a meeting of any of these bodies. In addition, he found time to take an active part in local public work, and was chairman of the Hoddesdon Urban District Council in 1928. Dr. Sturge's death will leave a gap in the profession in Hertfordshire that will be difficult to fill. He earned the respect and affection of all his colleagues, by whom he will be greatly missed.

CECIL WILLIAM CUNNINGTON, M.R.C.S., D.P.H.

The death has recently occurred, at the age of 79, of Dr. Cecil William Cunnington, at his residence at Kilburn, Dr. Cunnington, who was born in 1855, received the diploma of L.S.A. in 1882, and the M.R.C.S. and D.P.H. in 1893. He was a Warneford Scholar and an Associate of King's College. Dr. Cunnington had been a member of the British Medical Association for over forty years, and his was, until recently, a familiar figure at headquarters, as representative of the Hampstead Division on the Council of the Metropolitan Counties Branch. He was also for some years a member of the General Purposes Committee of the Branch, and had served on the Executive Committee of the Hampstead Division. Dr. Cunnington attended the annual meetings of the British Medical Association in the official capacity of Representative from 1915 to 1931 (except 1919). He had been a member of the Hampstead Borough Council since 1922, and in 1929 he was elected an alderman of that borough.

RICHARD LLEWELLYN JONES LLEWELLYN, M.B.

Consulting Physician, Royal Mineral Water Hospital, Bath

To the profound regret of a large number of friends Dr. Llewellyn Jones Llewellyn died in his sleep on April 19th, at the age of 64.

He was the son of Surgeon Major Morris Jones of Aberystwyth, and assumed the name of Llewellyn in 1911, when he married the Hon. Mrs. Crosse. He took the degree of M.B.Lond. in 1895, and from 1900 to 1902 was resident medical officer to the Bath Royal Mineral Water Hospital. His work at Bath filled him with interest in the problems of rheumatism and allied diseases, and he rapidly became an international authority in this field. He wrote, with the assistance of his brother, Mr. A. Bassett Jones, several important books on rheumatism and gout, the best known of which is perhaps *Arthritis Deformans*, while his articles on "The Gravity of Rheumatism as a Menace to National Efficiency," "Goitre in Relation to Rheumatism," and "The Endocrines and Rheumatic Fever" are standard references. He was an excellent writer, and could not only express his facts clearly but could make them sound interesting.

In 1912 he was appointed honorary physician to his old hospital at Bath, in 1913 he was elected a governor, and from 1915 to 1922 he served on the committee. In the latter year he was appointed consulting physician, a post which he filled until he died. During the war he became a member of the Central Appeals Tribunal of the Ministry of Pensions, where his specialist knowledge was of great value, but he came in contact with a much wider field of medicine. From his experience there he wrote "Malingering, or the Simulation of Disease" and "Pensions and the Principles of their Evaluation." His knowledge of rheumatic diseases, especially fibrositis, brought him a large consulting practice, from which he only recently retired. He held office in a large number of learned societies; he had been president of the Balneo-

logical and Climatological Section of the Royal Society of Medicine; a member of the Medical Research Council's Conference on Chronic Arthritis; chairman of the medical committee of the National Campaign for the Prevention and Relief of Heart Disease in Children; and vice-president of the British Committee on Rheumatism in the International Society of Medical Hydrology. He was also a member of the Board of Medicine in the Welsh National School of Medicine, and a fellow of the Royal Meteorological Society. When he died he was studying the causal significance of the absence of sunlight in rheumatism. The Hon. Mrs. Llewellyn survives him, with one daughter.

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on April 26th the degree of Doctor of Medicine (D.M.) was conferred on F. J. Sale.

UNIVERSITY OF CAMBRIDGE

At a congregation held on April 28th the following medical degrees were conferred:

M.D.—F. A. Richards, H. Taylor.

M.B., B.Chir.—A. Bowen-Davies.

M.B.—R. H. Fish, E. W. Taylor.

B.Chir.—P. R. Goodfellow, H. J. M. Robinson, W. F. Nicholson.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

A comitia of the Royal College of Physicians was held on April 26th, with the President, Lord Dawson of Penn, in the chair.

Fellowship

The following were elected Fellows of the College:

Thomas Gillman Moorhead, M.D. Dub., President of the Royal College of Physicians of Ireland; Duncan Graham, M.D. Toronto (Toronto); Patrick Playfair Laidlaw, F.R.S.; Geoffrey Eden, M.D. Camb. (Birmingham); Helen Marion Macpherson Mackay, M.D. Lond.; Walter Rupert Reynell, M.D. Oxf.; Richard Christopher Clarke, O.B.E., M.B. Bristol (Bristol); James Riddell Bell, M.D. Melb. (Melbourne); Thomas Sidney Nelson, M.B. Oxf.; William Stobie, O.B.E., M.D. Ed. (Oxford); Thomas Arthur Hughes, M.D. Dub. (Lahore); Claude Blaxland Levick, M.B. Syd.; Peter Knight McCowan, M.D. Ed. (Cardiff); Maurice Elgie Shaw, M.D. Oxf.; Sidney Campbell Dyke, M.D. Oxf. (Wolverhampton); William Moodie, M.D. St. Andrews; William Ernest Lloyd, M.D. Lond.; Victor John Frederick Lack, M.D. Lond.; Bernard Edward Schlesinger, M.D. Camb.; Alan Aird Moncrieff, M.D. Lond.; William Edmund Cooke, M.D. Lond.; Edward Revell Cullinan, M.D.; K. J. Camb.; Henry Cohen, M.D. Liverp.; Fitzgerald Collis, M.D. Camb. (Dublin); William Norwood East, M.D. Lond.; Robert Dick Gillespie, M.D. Glas.; Warrington Yorke, M.D. Liverp. (Liverpool); Fergus Robert Ferguson, M.D. Manch. (Manchester); Sir Penndrill Varner-Jones (Papworth), and John St. Clair Elkington, M.B. Camb.

Lord Dawson of Penn was re-elected representative of the College on the governing body of the British Post-Graduate Hospital and Medical School.

Membership

The following were admitted Members of the College:

Stanley George Browne, M.B. Lond., L.R.C.P.; William Allen Daley, M.D. Lond.; Ramanlal Ambalal Desai, M.B. Bombay, L.R.C.P.; Kenneth James Franklin, M.D. Oxf.; John Bishop Harman, L.R.C.P.; Arthur Landau, M.B. Capetown; Charles Roger Tassen Lane, M.B. Camb.; Gordon Alan Macdonald Lintott, M.B. Lond., L.R.C.P.; Leonard Joseph Alphonse Leewenthal, M.B. Liverp.; Harold Edward MacMahon, M.D. Western Univ., Ontario; Naguib Bey Mahfouz; Arthur John Rushon O'Brien, M.C., M.C. M.B. Ed.; Matthew Burrow Ray, D.S.O., M.D. Ed.; Fox Caullod Ritter, M.B. Glas.; Cuthbert Harry Rogerson, M.D. Lond., L.R.C.P.; Martin Richard Thomas, M.B. Lond., L.R.C.P.; Harold Williamson, O.B.E., M.D. Durh., L.R.C.P.; Alexander Louis Waindell, M.B. Lond., L.R.C.P.; Barbara Edith Woodhead, M.B. Penn., L.R.C.P.

Licences

Licences to practise were granted to the following candidates:

A. K. Ahlraja, A. R. Aebi, Helen M. B. Alcock, E. C. Allibone, J. C. O. Amegatcher, J. B. Andesca, R. A. Andrews, M. Appelman, R. C. B. Barber, A. H. Bartley, C. H. D. Bartley, H. H. Bayley, R. A. Bonning, L. C. Bosfield, J. Boyle, Joyce M. Brackington, Judith I. R. Browne, J. C. H. Browne, A. G. Batters, N. A. Buxton, J. M. Buzzard, H. Cameron, Ruth M. Campbell, A. M. R. Cann, H. Taylor, C. M. Carlyle-Gall, R. Carpenter, R. M. Clarke, C. D. Clements, C. J. Colbe, A. N. F. Critchley, I. H. J. Crosse, J. M. Donald, H. H. Davies, D. W. A. De Garzon, Andrew P. Dence, Rosalind M. S. Derham, A. E. De Sa, A. M. Desmond, J. A. Diacka, Lynette Dowsett, F. W. Dunn, C. E. Elliott, H. J. Fenn, A. B. R. Finn, J. M. Fleming, P. A. Flood,

J. F. A. Forster, J. A. C. Franklin, Violet Fry, L. B. Furber, W. R. Gavin, S. W. Gillman, Bessie W. Goodwill, H. W. Gordon, R. I. N. Greaves, J. Greenhalgh, T. F. Greenwood, G. D. Hadley, G. J. Hamilton, W. H. Hamilton, J. W. Hannay, J. Handman, J. H. T. Harrington, L. D. Harris, T. N. Hart, Violet C. Hart, A. E. M. Hartley, L. A. Hawkins, Barbara D. F. Hay-Cooper, J. N. Heales, D. F. Heath, R. R. Henderson, T. S. Heslop, R. Hill, L. W. Hockley, N. T. Holden, R. D. Holloway, M. H. Hosny, A. G. Hounslow, D. A. Hovenden, H. G. Howitt, G. B. Hughes, N. G. Hulbert, J. A. C. Hunter, D. B. Hyslop, R. S. Illingworth, A. Innes, J. E. Jameson, C. C. Jeffery, B. S. Jones, I. D. Jones, A. C. Kannar, H. R. Kasday, L. M. Kelly, R. L. Kerr, M. A. Khan, J. Kingston, J. W. J. Knowles, Hilda I. Lanceley, K. A. Latter, A. M. Lester, T. Levitt, Margaret M. C. Loeud, D. Lubin, K. Lumsden, W. D. F. Lytle, W. M. Macleod, I. Magdi, T. F. Malcolm, K. W. Martin, L. C. Martin, J. D. Martin-Jones, S. P. Mason, H. B. May, Queenie I. E. May, N. H. Merchant, Lida O. Meredith, W. G. Q. Mills, R. H. Moodie, J. N. Morris, L. O. Mountford, D. J. M. Moynahan, J. H. Neal, G. P. Neogy, A. Orlek, N. C. Oswald, B. H. Page, C. G. Parsons, J. E. G. Pearson, D. S. Piper, G. T. Pitts, C. H. G. Price, R. E. A. Price, Sylvia W. Pyddoke, S. Rameshwar, T. A. Ratcliffe, K. B. Rogers, G. H. Saunders, K. G. Seager, B. Selwyn, A. I. Shaw, J. G. Sheldon, T. L. H. Shore, H. S. Shucksmith, M. Shun-Shin, G. E. T. Soden, H. G. Stanton, W. J. Stokes, G. L. R. Tapsall, W. P. McK. Teller, Elizabeth J. McQ. Thomas, A. S. Till, G. C. Tooth, Elsie E. Vincent, J. H. Walters, W. F. Walton, C. W. Warne, C. R. H. Weekes, Elizabeth B. White, P. A. Wilkinson, M. Williams, J. W. Wishart, Audrey R. Wood, O. H. M. Woodbridge, A. R. C. Young.

The names of the recipients of the Diploma in Tropical Medicine and Hygiene, conferred jointly with the Royal College of Surgeons, were printed in our issue of April 21st (p. 734).

The Diploma in Gynaecology and Obstetrics was granted jointly with the Royal College of Surgeons to K. S. Jayakar.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The quarterly meeting of the Council was held at the College House on April 27th, with the President, Dr. J. S. Fairbairn, in the chair.

The following were elected to the Membership of the College: Agnes Marshall Cowan (Manchuria), Charles Leopold Granville Chapman (Grimsby).

The President formally admitted to the Fellowship of the College Lieut.-Colonel Duncan Coutts (India), Lieut.-Colonel Peter Fleming Gow (India), Professor Gordon Grant (Johannesburg), Lieut.-Colonel Sydney Nuttall Hayes (India), Major Maurice Lawrence Treston (India), and James Hayward Willett (Liverpool).

The following were admitted to the Membership: Margaret Emily Anderson, Gavin Stiell Brown, John Lloyd Davies, Charlotte Ann Douglas, Gwyneth Griffith, Kathleen Marguerite Douglas Harding, Jocelyn Adelaide Medway Moore, Percy Peltz, John Marshall Scott, Arthur Joseph Wrigley.

A silver mace was presented to the College by the Gynaecological Club.

The annual general meeting of the College was held at the College House on April 27th. The President, Dr. J. S. Fairbairn, was in the chair, and thirty-eight Fellows and Members were present. The annual report of the Council and financial statement were adopted. Messrs. Barton, Mayhew and Co. were elected auditors for the ensuing year.

UNIVERSITY OF DUBLIN

TRINITY COLLEGE

At the first summer commencements, held on April 25th, the following degrees were conferred:

M.D.—W. Gallagher, F. M. Hilliard.

M.B., B.Ch., B.A.O.—I. A. Mallie.

The Services

NAVAL COMPASSIONATE FUND

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on April 19th, Surgeon Vice-Admiral Sir Reginald Bond, K.C.B., K.H.P., Medical Director-General of the Navy, in the chair, the sum of £235 was distributed among the several applicants.

DEATHS IN THE SERVICES

Captain Edward Barton Eedle, Indian Medical Service, died at Weston-super-Mare on February 5th, a few days before his thirty-fourth birthday. He was born on February 17th, 1899, and was educated at Bristol University, where he graduated M.B., Ch.B. in 1924. After filling the posts of resident medical officer at Cossham Memorial Hospital and resident obstetrical officer at Bristol Royal Infirmary he entered the I.M.S. as lieutenant on August 27th, 1929, and became captain three years later.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The Betting and Lotteries Bill was read a second time by the House of Lords on May 1st without a division. A report of the debate appears below.

The House of Commons this week resumed discussion on the Unemployment Bill. The House again went into committee on Clause 19, and Mr. Neville Chamberlain proposed a reduction in the future payments to be made to the Treasury as interest on the debt of the Unemployment Insurance Fund.

The Road Traffic Bill is before a Standing Committee of the House of Commons, which will not consider for some time the amendments proposing compensation to doctors and to hospitals treating road accidents. These amendments will probably be moved as new clauses at the end of the committee stage. Conversations about them are proceeding between medical Members of Parliament and the Minister of Transport.

Sir Francis Fremantle has taken up Lord Dawson of Penn's Contraceptives Bill, sent from the Lords to the Commons, and has put down its second reading for May 7th. The Government has not promised facilities for this Bill.

The Royal Assent was given on April 26th to the Army and Air Force (Annual) Bill.

In the House of Lords, on April 30th, the Firearms Act (1920) Amendment Bill passed through committee.

In the House of Lords, on May 1st, the South Devon and East Cornwall Hospital, Plymouth, Royal Albert Hospital, Devonport, and Central Hospital, Plymouth (Amalgamation, etc.) Bill was read the third time and passed, and the South Downs Preservation Bill was read the second time.

The Employers' Liability Bill, introduced by Sir Walter Greaves-Lord, came before a House of Commons committee on May 1st, and was withdrawn.

Lotteries Bill

The MARQUESS OF LONDONDERRY moved the second reading of the Betting and Lotteries Bill in the House of Lords on April 26th. He said that when the Royal Commission of 1932 was set up new factors had brought about social mischief which called for urgent remedies. These included the growth of lotteries, particularly of lotteries promoted abroad, and the exploitation of the population through the introduction of greyhound racing. The Royal Commission presented unanimous reports in January and June, 1933, covering the whole field of lotteries, betting, gambling, and cognate matters. The Government had decided to confine the present Bill to the more urgent problems—betting on the course, the legalization of the totalisator on greyhound tracks, lotteries, and certain competitions of mixed skill and chance. In respect of Part I of the Bill, which dealt with betting, the Government was satisfied that the provision of facilities for continuous betting on greyhound racing tracks had undesirable social consequences. The Royal Commission called attention to a general deterioration of character among young persons in poor neighbourhoods from night betting on greyhound races. Among other provisions, Part I of the Bill prohibited betting on a track with a young person under the age of 17 years.

Turning to Part II of the Bill, Lord Londonderry said that under the existing law all lotteries were unlawful unless expressly authorized by Act of Parliament, but an administrative practice had grown up in England and Wales under which the police did not set the criminal law in motion against private lotteries confined to members of a genuine club or society, or against small public lotteries, such as raffles at bazaars. A new situation had arisen from the sale of tickets in lotteries promoted abroad, in the United Kingdom of tickets in lotteries promoted abroad, notably the Irish Hospitals Trust sweepstakes. Ever since the introduction of these sweepstakes there had been an agitation for the legalization of large lotteries for charitable and

other objects. So far, Parliament had set its face against any relaxation of the existing law, and maintained the prohibition of all forms of lotteries, whether promoted for charitable or other objects. The Royal Commission approached the subject of lotteries from the point of view that present circumstances seemed to call for a considerable relaxation of the existing prohibition of large-scale lotteries in this country. After close consideration of the subject, it reached the conclusion that a relaxation of the existing prohibition of large lotteries was undesirable and not called for. The Government had also given independent consideration to the question of the legalization of large lotteries in this country. In addition, the Government had studied the views expressed in the debate in the House of Lords on November 30th, 1933, and was in agreement with the conclusion of the Royal Commission—that large-scale lotteries, whether promoted by the State for the direct benefit of the Exchequer, or by a statutory board for charitable objects, or by individual charities under a system of permits, were socially undesirable.

Lord Londonderry said the Royal Commission questioned whether in the long run voluntary hospitals in the United Kingdom would benefit by participation in the proceeds of lotteries. He himself, as a president of two hospitals, was convinced that the adoption of the system of public lotteries for the support of British hospitals would be disastrous. The total receipts of 1,014 British hospitals for the year 1930 was over £15,500,000. Unless the total subscriptions to lotteries amounted to a very large figure the proceeds would not be a material factor in hospital finance. He was also of opinion that it would be calamitous to this country if, by encouraging hospitals to derive their finances from the proceeds of lotteries, hospitals were to lose that element of personal service and personal interest which the present voluntary system achieved. If the promotion of large lotteries in this country was prohibited, the prohibition of the sale of foreign lottery tickets was a necessary corollary.

VISCOUNT BERTIE OF THAME moved the rejection of the Bill. He asked what mandate there was for it. Lord SANDERSON welcomed the proposals dealing with lottery and sweepstakes tickets, and congratulated the Government for resisting the demand to legalize State and other forms of lotteries. The DUKE OF SUTHERLAND said nobody wished hospitals to be dependent for their funds on sweepstakes or lotteries if they did not so wish, but a national sweepstake, licensed and controlled by the Government, would benefit medical research and the National Exchequer. The man in the street wanted to be allowed to take tickets in a lottery. The DUKE OF ARHOLL said that in 1931 the receipts of the voluntary hospitals were £15,108,855, of which £14,501,184 was spent. In London there was a deficit of £101,453; in the English provinces a deficit of £51,907, but in Scotland a surplus of £206,326 and in Ireland a surplus of £554,705. This latter figure—namely, £554,705—represented Irish sweepstake money for Irish hospitals. The £15,108,855 included interest from investments, legacies, and so forth, as well as the voluntary contributions of the current year. Sir Charles Harris, in the *Hospital Year Book*, had said that broadly the maintenance surplus was applied in making good the capital deficiency. It would relieve these responsible for the finances of the hospitals if they only had to be responsible for maintenance, and if the money for capital expenditure and medical research could be found from other sources. With regard to the Irish sweepstakes for the eleven between November, 1930, and March, 1934, the total subscribed, as shown in the accounts, was £31,300,874. Of this, taking the figure of 83 per cent. calculated by the Royal Commission on Lotteries to be the amount subscribed from Great Britain, £25,975,000 was subscribed in this country. They must add £21,331,000, as representing the undisclosed British subscriptions, making a total of £47,310,000, which, after deducting £13,769,000 returned in prize money to this country—on the basis of 53 per cent. given by the Royal Commission—resulted in a total of £33,541,000 lost to Great Britain in forty-one months, or £818,000 per month, or an average of £9,816,000 per year, representing about two and a half times the amount of the entire annual voluntary subscriptions to British hospitals.

The debate was resumed on May 1st. The BISHOP OF WINCHESTER said that in the previous debate it was shown that by far the larger part of the money raised for hospitals

by lotteries never reached the hospitals. Lord SOMERLEYTON said that there was still a general opinion that voluntary hospitals were in danger, and ought to be supported by sweepstakes or lotteries. Hospitals in this country were in a flourishing condition if they considered the bad times through which the country had passed in the last few years. In 1931 the aggregate surplus for the London hospitals was £76,000, and in 1932 £101,000. The figures for last year would probably be better still. In 1930 voluntary gifts to hospitals amounted to £12,274,000, and in 1931 to £11,568,000. In 1931 the total income was £13,741,000. Those voluntary gifts would be jeopardized by sweepstakes and lotteries.

The EARL OF FEVERSHAM said that the Government agreed with the Royal Commission as to the inadvisability of State lotteries. If the State inaugurated or tolerated the inception of lotteries to raise money for hospitals there would not be the same individual interest that was now taken by private persons in the maintenance of hospitals.

Lord BERTIE withdrew his motion for the rejection of the Bill, and the measure was read a second time.

Duty on Arc Lamp Carbons

During consideration of the Budget resolutions on report stage in the House of Commons, on April 26th, Sir PERCY HARRIS opened a discussion on the Government proposal that from April 18th the customs duty leviable on imported arc lamp carbons should be increased. The duty under the Safeguarding of Industries Act was 1s. per lb.; the resolution increased this to 5s. per lb. for carbons exceeding 14 millimetres in diameter, and to 7s. 6d. per lb. for other carbons. Sir Percy said most up-to-date private hospitals and some public hospitals were equipped with arc lamps for therapeutic treatment. To get satisfactory results in treatment of skin diseases, such as lupus, it was essential to have efficient carbons. The consulting engineer of St. Bartholomew's Hospital had made experiments in order to use British carbons, but had not met with success. A specially manufactured carbon was needed in the hospitals to provide the ultra-violet rays. An inefficient carbon gave variation. This engineer said it would be cheaper to buy British carbons, but whereas the British carbon lasted four to six hours, the foreign carbon lasted twelve hours. In 1933 this hospital used 516 lb. of carbons, valued at £180; the extra duty would cost them over £100. Members would see what a tax this would be on all the hospitals which were applying the treatment. In spite of the extra duty the hospitals would still require to import the foreign article if successful results were to be obtained. The Chancellor of the Exchequer should have consulted the medical profession before putting on this new tax. Sir ROBERT HAMILTON seconded the amendment, and also alluded to the case of St. Bartholomew's. Dr BURGIN, replying for the Government, said one great London hospital joined in the statement that the Continental carbons were required. Further inquiry showed that one department of the hospital thought it necessary to have Continental carbons while another department had for years used British carbons. The British carbon was not inferior. He had a list of 300 hospitals, including most of the well-known London ones, to which British carbons were supplied now, and had been supplied for years. These carbons were used to provide a stable and definite light during operations and other therapeutic work. The Finsen lamp was often supplied from Scandinavia, but was fitted with carbons supplied from this country.

Sir Percy Harris's amendment was defeated by 237 to 54.

Working Conditions in Distributive Trades

On April 30th Sir JOHN GILMOUR moved the second reading of the Shops Bill, which has already passed the House of Lords. He said that much remained to be done since the passing of the Children and Young Persons Act, 1933, to prevent employment putting an undue strain on the health of young people, and the purpose of the Bill was to tackle that problem. Its objects were twofold. First, it contained provisions for regulating the hours of young persons between 14 and 18 years of age employed in the distributive trades.

Secondly, it provided for improvement, in various directions, of conditions affecting the health and comfort of all shop-workers, of whatever age, employed in retail and wholesale shops and warehouses. Clause 1 fixed the normal maximum working hours at forty-eight in any week, exclusive of meal intervals. The Bill also secured an elasticity, which was necessary in certain cases, by providing: (1) for a limited amount of overtime; (2) that in certain special trades the hours might be averaged over a period of two or three weeks; and (3) for the general operation, during a transitional period, of a rather higher normal weekly maximum of hours. It was provided that, until the end of 1936, the normal weekly maximum hours should be fifty-two instead of forty-eight, with corresponding reduction in overtime. Under the Bill the distributive trades were having considerable restrictions placed on them, and those restrictions would demand certain adjustments. It was reasonable, therefore, that there should be time to deal with them. The provisions in Clause 3 were designed to secure a proper night's rest to all young persons, the staple requirement being at least eleven consecutive hours. The privilege of a weekly half-holiday and a statutory meal interval was now to be given to all young persons employed about the business of the retail and wholesale establishments covered by the Bill. The Select Committee on Shop Assistants, which reported in 1931, stated that, while health and welfare conditions in shops had changed substantially for the better in recent years, others still existed in shops which called for very considerable improvement, as, for example, in heating arrangements, ventilation and lighting, and the provision of suitable and adequate sanitary conveniences and washing facilities. That problem, which needed careful attention, was dealt with in Clause 10, under which the local authority was given discretion to serve the statutory notice requiring a remedy of any contravention of the requirements on either owner or occupier. Mr. RHYS DAVIES welcomed the Bill, particularly the provisions for the health and comfort of the shopworkers. The Bill, he said, did nothing to deal with the terribly low wages of boys and girls in the distributive trades. The long hours permitted under the spread-over system for the catering trade and garages should also be reduced. Mr. LUNN urged that the transitional period was too long, and that the forty-eight-hour week should be brought into operation at once.

The Bill was read a second time and committed to a standing committee.

The Warren Fisher Report

On May 1st Mr. HORS-BELISHA informed Captain Elliston that the Government had adopted the recommendations of the Warren Fisher Committee in their application to the medical branches of the Army and Royal Air Force. As regarded the Royal Navy, it had been considered necessary to modify the scheme recommended in certain particulars. The changes would take effect from May 1st, and details would be found in Orders which were on the point of publication.

Water Supplies Bill

In the House of Commons, on April 30th, the Water Supplies (Exceptional Shortage Orders) Bill passed through the report stage. Sir HILTON YOUNG, in moving the third reading, referred to the position to date of the water supplies of the country in relation to the recent rainfall. He said that, although there had been a welcome change, it had not been so substantial as to make the measure unnecessary. We had not had more than normal rains, and we should have to have abnormal rains to relieve us from the necessity for the emergency measures. He had received returns from nine of the places where the difficulties were greatest, and in only one had there been such a large increase as to put a new face on the situation. In another place there had been a substantial improvement; in six others there had been only a slight improvement or a mere maintenance of the original position when the Bill was introduced, and in one the situation, in spite of the rain, had become worse. That showed how far-reaching the problem was. The Government still looked to the country as a whole for its co-operation in protecting itself against the evil consequences of the drought. It looked to the water undertakers to

consider well in advance what alleviating measures could be taken, with the assistance of the Bill, and to put them into force. It also looked to the general public, who must still do all it could to exercise care and moderation in the use of water.

The Bill was read the third time. Later in the day it was introduced in the House of Lords and read a first time.

The Punishment of Juvenile Offenders.—Replying to Mr. Bernays, on April 26th, Sir JOHN GILMOUR stated that in a circular letter about the Children and Young Persons Act of 1933, sent by the Home Office to courts of summary jurisdiction in August last, it was pointed out that, while in the new Act the power to order a child to be whipped was retained, the practice of the most experienced juvenile courts for many years showed that these courts rarely or never needed to exercise this power. It should be for the discretion of the justices to decide when use should be made of any form of penalty authorized by law.

Medical News

The annual meeting and dinner of the University of London Medical Graduates Society will be held at the Langham Hotel, W., on Tuesday, May 8th, at 7 for 7.30 p.m. Lady Barrett will preside at the commencement, and subsequently the incoming president. Members may bring guests, who must be medical graduates of the university. Applications for tickets (12s. 6d. each) should be sent to the honorary secretaries, 11, Chandos Street, W.1, not later than May 5th.

The ninety-first half-yearly dinner of the Aberdeen University Club, London, will be held at the Trocadero Restaurant at 7 for 7.30 p.m. on Thursday, May 17th, under the chairmanship of Professor Alexander Low, M.D. Secretary's address: 16, Tregunter Road, S.W.10.

The annual supper of the Paddington Medical Society will be held at the Cumberland Hotel, Marble Arch, W., on Thursday, May 17th, at 8.45 for 9 p.m. The guests of the evening will be Dr. G. C. Anderson (Medical Secretary, British Medical Association) and Mrs. Anderson, and Dr. and Mrs. E. Morland.

A reception will be held by the Royal Society of Medicine at 1, Wimpole Street, on Wednesday, May 30th, when Fellows and their friends will be received in the library at 8.30 p.m. by the President and Mrs. Warren Low. At 9.15 p.m. an address will be given by Professor William Wright, entitled "Richard III and the Princes in the Tower." Admission is by ticket only, obtainable from the secretary.

The eighth annual medical reunion of the University College (late Queen's College), Galway, North of England, and Midlands Alumni Association will be held at the Queen's Hotel, Piccadilly, Manchester, on Saturday, May 12th, at 7.30 p.m.—dinner at 8. The subscription is one guinea, which includes the dinner, cost of organization, printing, etc. Graduates who have not received notice of the reunion should notify their intention of attending to Dr. P. J. Webb, 127, Rochdale Road, Harpurhey, Manchester, 9.

Professor Charles Singer, M.D., F.R.C.P., will deliver the annual oration on "The Contrast Between Ancient and Modern Science" at the London Jewish Hospital Medical Society, Stepney Green, E., on Thursday, May 10th, at 4 p.m.

The fifth Hugh Owen Thomas Memorial Lecture will be given in the Liverpool Medical Institution on Thursday, May 10th, at 4.30 p.m., by Professor John Fraser, on "Lipoid Granulomatosis of Bone." Tea at 4 p.m.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that Dr. Clark-Kennedy will lecture on digitalis, at 11, Chandos Street, on May 8th, at 2.30 p.m. The next lecture-demonstration, dealing with quinine, will take place on Tuesday, May 15th. The fifth of the demonstrations on blood diseases, by Dr. H. L. Marriott, at

the National Temperance Hospital, will take place on May 12th, at 3 p.m. A fortnight's course in urology, for advanced post-graduates, will be given at St. Peter's Hospital from May 7th to 19th. Other forthcoming courses include: diseases of the chest, a week-end course at the Brompton Hospital, May 26th and 27th; a week's course in chest diseases, at the Victoria Park Hospital, May 28th to June 2nd; a fortnight's course in gynaecology, at the Chelsea Hospital, May 28th to June 9th; and a month's course in venereal disease, at the London Lock Hospital, May 28th to June 23rd. Individual clinics in various branches of medicine and surgery are available daily for those who cannot find time to attend a full course.

The German Pathological Society will hold its annual meetings at Rostock from May 23rd to 25th, under the presidency of Dr. W. Hueck of Leipzig. The subject for discussion will be gliomata, introduced by Professor Folke-Henschen of Stockholm.

An international congress of medical motorists will be held at Utrecht from May 20th to 24th, when the following papers, among others, will be read: "The Rights of Priority in Circulation on the Roads and Diminution of Taxes for Medical Motorists," by Rudolf Keil of Regensburg; "International Medical Requirements for Permission to Drive," by Hochsinger of Vienna; "The Organization of First Aid in Holland," by Prins of Utrecht; "Diminution of the Expenses of Medical Automobility," by Westermayer of Dresden; and "Special Insurance of Medical Motorists in Denmark," by L. Martin of Middelafahrt. Further information can be obtained from M. G. A. Prins, Utrecht.

Dr. Thomas Roberts Griffiths of Kidwelly, who died on January 17th, left estate of the gross value of £22,257, with net personalty £13,443. He bequeathed the residue of the property to the British Empire Cancer Campaign and Dr. Barnardo's Homes.

The New York University and Bellevue Hospital Medical College has opened a special out-patient department for the treatment of industrial diseases such as silicosis, lead poisoning, professional dermatoses, and benzol poisoning.

ROYAL ARMY MEDICAL CORPS

NEW CONDITIONS FOR OFFICERS

A Royal Warrant published in a special Army Order promulgates the new conditions under which commissions in the Royal Army Medical Corps will in future be granted to medical men. These conditions give effect to the recommendations in the Report of the Fisher Committee on the Medical Branches of the Defence Services issued last year, in so far as they affect the Army. Entry will be by short-service commissions for five years, at the end of which time officers will be eligible for a gratuity of £1,000, unless selected for permanent commissions. Promotion will be to captain after one year and to major after ten years' service, instead of after three and a half years and twelve years respectively. The increments of pay, which have hitherto been given in these ranks after eight and ten years in the case of captains, and after fifteen, eighteen, and twenty years in the case of majors, will in future be given to captains after six and eight years, and to majors after thirteen, sixteen, and eighteen years. The establishment of permanent officers will be maintained at a number which it is calculated will ensure promotion to lieutenant-colonel and colonel after approximately seventeen and twenty-five years' service respectively. In the past the rank of lieutenant-colonel has been attained after about twenty-four years' service, and that of colonel after about twenty-nine years' service. Ample professional opportunities exist, as the duties of officers of the Royal Army Medical Corps not only comprise the medical care of the soldier, but also extend to the medical care of their wives and families, and officers are encouraged to specialize in selected subjects. Full particulars of the conditions can be obtained either by personal application, or by letter addressed to the Assistant Director-General, Army Medical Services, War Office, London, S.W.1. A selection of candidates will be made about the middle of June.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, Aitology Westcent, London.

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate Westcent, London.

MEDICAL SECRETARY, Medisecra Westcent, London.

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drum-hugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

An Unusual Sign in Diabetes Mellitus

Dr. S. VATCHER (Barnet) writes: In reply to Dr. Fawcett's inquiry (*Journal*, April 28th, p. 785) I may state that in the course of routine examinations, while I was in charge of the Ministry of Pensions Diabetic Clinic, I noted in about fifteen cases out of 300 investigated that the first sign which the patient had noticed had been a white powdery deposit on his trousers, underclothes, or boots.

Dr. H. J. STARLING (Norwich) writes: I have frequently met with this deposit of sugar on the boots of male diabetic out-patients, and it has struck me how careless such men must be in the final stages of micturition. Quite a few diabetics come to my out-patient department on account of this white boot deposit. In the females the complaint is sometimes of the stiffness of their undergarments.

"R. C. C." (Petersfield) writes: I was asked by an elderly glycosuric patient the other day to test a specimen of his water, and when I told him it was sugar-free he replied, "I thought so, as I have no white powder on my boots." In his younger days he used to gauge his trouble by the encrustations on his boots!

Income Tax

Amount of Liability

"BLIMEY," writing from abroad, asks what will be his position as regards income tax with an income of £500, all derived from dividends.

* If unmarried our correspondent's liability will be as follows:

On the first £100	nil
On the next £175 at 2s. 6d.	£17 10s 0
On the balance of £225 at 4s. 6d.	£50 12s 6
	£70 6s 3

If he is married the "first" section is £150, and the amount payable will be £12 10s. less.

Assistant—Cash Allowance for Rooms, etc.

"B. R. C." was employed at a salary plus free lodging and housekeeper's services. After a few years this arrangement was changed, and in lieu of those benefits he receives a cash allowance of £52 a year. Must he include this as an assessable emolument?

* Yes. The other arrangement was of a special type. "B. R. C." now receives a total cash remuneration (like most employees), and is liable on the full amount. The previous year's basis applies, so that if the change was made from, say, the end of September, 1934, he will be liable to include one-half of £52 = £26 in his return for the year commencing April 5th, 1934.

LETTERS, NOTES, ETC.

Sedatives in Lobar Pneumonia

"NEST" writes: Professor Arthur J. Hall, in his article on "Bodily Diseases in Mental Disorders" in the *Journal* of January 27th, when dealing with pneumonia in mental patients, draws attention to the marked effect of restful nights, so noteworthy. He suggests that "a free use of effective sedatives may do more good than harm." This reminds me of the teaching of Dr. G. W. Ballour, the eminent heart specialist of Edinburgh, who some fifty years ago strongly advocated chloral hydrate in this disease. In my youthful days I ventured in this way, with what appeared excellent effect. Unfortunately youth's rashness mellowed into middle-age timidity, and I listened to the sage advice of the vaccine therapist, who offered me the crumbs of comfort that dropped from his bench. No doubt typing and Felton have promoted the literature of the subject, but I wonder whether the comfort of the patient has yet had its therapeutic due.

Tannic Acid Dressing

Dr. A. H. BENNETT (Northwich) writes: It may be of some interest to readers to hear of a very simple method which I use to apply tannic acid to burns. Messrs. Woolley and Sons of Manchester have prepared for me surgical lint impregnated with tannic acid and mercuric chloride in such proportions that when the lint is thoroughly saturated with water it contains a 2 per cent. solution of tannic acid and a 1 in 2,000 solution of mercuric chloride. This affords a simple and convenient means of applying tannic acid to a burn, as suggested by Mr. Mitchiner, both as a first-aid and as a permanent dressing. I have successfully used this method in a number of cases, and the results have compared very favourably with those of others treated with fresh solution made from tablets.

The Cause of Hypertension

Dr. G. ARBOUR STEPHENS (Swansea) writes: May I be allowed to state that the value of Dr. Donnison's article (*Journal*, April 21st, p. 704) would have been greatly increased had he (1) given us a definition of what he understands by "hypertension," and (2) stated the size of the sphygmomanometer armlets used by him for his investigation. The estimations of the blood pressure vary with the size of the armlet, from 150 mm. Hg as normal with a two-inch armlet, to 120 mm. Hg with one four inches in width. A definition is necessary so that readers may have a good idea of what is in the mind of the writer when he talks about systolic and diastolic pressures and how they are related to one another. If the diastolic be the pressure on the blood in the arteries which the systolic pressure of the heart stroke has to overcome there must obviously be a normal ratio of greatest efficiency. By my method, using a two-inch armlet, the systolic pressure is normally 150 mm. Hg, and the basic pressure is 50 mm. Hg—that is, the most efficient ratio is three to one. When the ratio becomes two to one or lower, either as 150/80 or 90/50, it is obvious that the heart is pumping against an increased force and is working under great difficulty. The raising of the basic from 50 to 80, or the dropping of the systolic from 150 to 90, disturbs the normal ratio to apparently about the same extent, but the cause is greatly different in each case. The raising of the basic from 50 to 80 mm. would probably be due to the presence of toxins in the blood, whereas the lowering of the systolic from 150 to 90 mm. might be due to some nervous disturbance. The treatment in each case would therefore be quite different.

Corrigenda

Leucocyte Counts

Dr. JAMES ADAM (Glasgow) writes: In my letter in the *Journal* of April 28th (p. 775), the phrase "injection of urea" in regard to increase of eosinophils should read "ingestion of urea."

Health of the Navy 150 Years Ago

Surgeon Captain B. PICKERING PICK, Editor, *Journal of the Royal Naval Medical Service*, writes (from Gosport): A mistake occurred in the article entitled "The Health of the Navy 150 Years Ago" (*Journal*, April 28th, p. 700). The abstract from the *Journal of the Royal Naval Medical Service* was by R. R. James, and not R. R. Jones, as stated.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 48, 46, 47, 48, 49, and 52 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 50 and 51. A short summary of vacant posts notified in the advertisement columns appears at page 534.

Naval and Military Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Commander N. A. H. Barlow to the *President*, for Royal Tournament.

Surgeon Lieutenant D. W. Walker to the *Furios*.

F. H. Ward has entered as Surgeon Lieutenant for short service, and is appointed to the *Victory*, for Royal Naval Hospital, Haslar.

ROYAL NAVAL VOLUNTEER RESERVE

Surgeon Lieutenant W. B. Wilson's resignation has been accepted. C. J. T. Watson has entered as Probationary Surgeon Lieutenant, and is attached to List 2 of the London Division.

ROYAL ARMY MEDICAL CORPS

Major C. H. H. Harold, O.B.E., to be Brevet Lieutenant-Colonel, and retires on retired pay.

ROYAL AIR FORCE MEDICAL SERVICE

Flight Lieutenants F. P. Schofield and G. J. Hanly to be Squadron Leaders.

Flight Lieutenant (honorary Squadron Leader) E. E. Isaac, M.C., relinquishes his temporary commission on completion of service.

Flight Lieutenant M. J. Cahalane relinquishes his temporary commission on completion of duty.

Flying Officers H. J. Melyville, J. L. Walsh, and A. H. Osmond to be Flight Lieutenants.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Lieutenant W. F. de C. Veale, from Wiltshire Regiment, Supplementary Reserve of Officers, to be Lieutenant.

TERRITORIAL ARMY

Colonel L. D. Bailey, M.C., T.D., vacates the appointment of A.D.M.S., 47th (2nd London) Division, on completion of tenure.

Colonel P. H. Mitchiner, T.D., to be A.D.M.S., 47th (2nd London) Division.

ROYAL ARMY MEDICAL CORPS

Lieut.-Col. F. R. Harris, T.D., resigns his commission and retains his rank, with permission to wear the prescribed uniform. (Substituted for notification in *London Gazette* of March 2nd.)

Captain P. W. MacLagan, M.C., having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

A. W. Henderson to be Lieutenant.

Supernumerary for Service with O.T.C.—W. M. Nichol's (late Cadet Sergeant, Glasgow University Contingent, Senior Division, O.T.C.) to be Lieutenant, with seniority October 6th, 1933, for duty with the Medical Unit of the Glasgow University Contingent, Senior Division, O.T.C.

INDIAN MEDICAL SERVICE

The Governor-General has accepted the resignation by the Hon. Major-General C. A. Sprawson, C.I.E., of his office of Member of the Council of State.

Major-Generals W. V. Coppinger, C.I.E., D.S.O., and J. D. Graham, C.B., C.I.E., retire from the Service.

Colonel D. P. Goll to be Major-General.

Colonel C. A. Gill, Inspector-General of Civil Hospitals, Burma, has been duly nominated as a member of the Medical Council of India under Clause (a) of Subsection (1) of Section 3 of the Indian Medical Council Act, 1933 (XXVII of 1933).

Colonel L. Cook, C.I.E., retires from the Service.

Lieut.-Cols. H. C. Buckley and C. H. Reinhold, M.C., to be Colonels, seniorities August 1st, 1928, and March 1st, 1929, respectively.

Lieut.-Col. S. J. Bhatnara retires from the Service.

Majors N. S. Jatar, D.S.O., M. L. Treston, A. Chand, R. Lee, T. S. Shastri, C. de C. Martin, J. H. Smith, J. B. De W. Molony, O.B.E., K. R. Batra, B. H. Singh, M.C., O. R. Unger, A. H. Hart, N. Briggs, F. R. Thornton, M.C., R. L. Vance, F. Griffith, and J. P. Huban, O.B.E., to be Lieutenant-Colonels.

Major W. M. Will, Officer-in-Charge, Medical Store Depot, Bombay, is appointed to officiate as Assistant Director-General, Indian Medical Service (Stores) during the absence of Lieut.-Col. Sweet, D.S.O., on leave.

The services of Captain H. M. Sein are placed temporarily at the disposal of the Government of Burma as from February 26th.

Captains B. Singh and J. M. Gole relinquish their temporary commissions.

Lieutenants F. A. B. Sheppard, M. K. Bryce, and J. L. O'Neill to be Captains.

Lieutenants T. R. Pahwa, M. A. Gaffar, and J. N. Vasudeva to be Captains (temporary).

Lieutenants E. H. Lossing and M. Sendak to be Captains (provisional).

Lieutenant (on probation) H. H. Mahmood to be Captain (on probation).

R. K. Misra (seniority April 2nd, 1925), A. N. Duggal (seniority May 19th, 1930), and A. A. Pullar to be Captains (on probation).

Lieutenant B. F. B. Russell is restored to the establishment.

To be Lieutenants (on probation): R. L. H. Minchin, W. G. Kingston, R. de Soudenhoft (seniorities February 5th, 1932, April 28th, 1932, and February 5th, 1933, respectively), and R. R. Taylor Prosser, J. Scott, J. Edis-Myers, T. K. White, D. W. Taylor.

(seconded), C. J. Hassett, S. G. O'Neill, F. J. Doherty, J. W. D. Goodall (seconded), C. B. Miller (seconded), E. Parry, and W. G. Kennedy.

Association Notices

SIR CHARLES HASTINGS CLINICAL PRIZE

The Sir Charles Hastings Clinical Prize, which consists of a certificate and a money award of fifty guineas, is again open for competition in respect of 1935. The following are the regulations governing the award:

1. The prize is established by the Council of the British Medical Association for the promotion of systematic observation, research, and record in general practice; it includes a money award of the value of fifty guineas.

2. Any member of the Association who is engaged in general practice is eligible to compete for the prize.

3. The work submitted must include personal observations and experiences collected by the candidate in general practice, and a high order of excellence will be required. If no essay entered is of sufficient merit no award will be made.

4. Essays, or whatever form the candidate desires his work to take, must be sent to the British Medical Association House, Tavistock Square, London, W.C.1, not later than December 31st, 1934.

5. No study or essay that has been published in the medical press or elsewhere will be considered eligible for the prize, and a contribution offered in one year cannot be accepted in any subsequent year unless it includes evidence of further work.

6. If any question arises in reference to the eligibility of the candidate, or the admissibility of his or her essay, the decision of the Council on any such point shall be final.

7. Each essay must be typewritten or printed, must be distinguished by a motto, and must be accompanied by a sealed envelope marked with the same motto, and enclosing the candidate's name and address.

8. The writer of the essay to whom the prize is awarded may, on the initiative of the Science Committee, be requested to prepare a paper on the subject for publication in the *British Medical Journal*, or for presentation to the appropriate Section of the Annual Meeting of the Association.

9. Inquiries relative to the prize should be addressed to the Medical Secretary.

SCHOLARSHIPS AND GRANTS IN AID OF SCIENTIFIC RESEARCH

Scholarships

The Council of the British Medical Association is prepared to receive applications for Research Scholarships as follows: an Ernest Hart Memorial Scholarship, of the value of £200 per annum, a Walter Dixon Scholarship, of the value of £200 per annum, and three Research Scholarships, each of the value of £150 per annum. These Scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State medicine) relating to the causation, prevention, or treatment of disease. Each Scholarship is tenable for one year, commencing on October 1st, 1934. A Scholar may be reappointed for not more than two additional terms. A Scholar is not necessarily required to devote the whole of his or her time to the work of research, but may hold a junior appointment at a university, medical school, or hospital, provided the duties of such appointment do not interfere with his or her work as a Scholar.

Grants

The Council of the British Medical Association is also prepared to receive applications for Grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

Conditions of Award: Applications

Applications for Scholarships and Grants must be made not later than Saturday, May 12th, 1934, on the prescribed form, a copy of which will be supplied on application to the Medical Secretary of the Association, B.M.A. House, Tavistock Square, W.C.1. Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated.

BRANCH AND DIVISION MEETINGS TO BE HELD

ABERDEEN BRANCH: CITY OF ABERDEEN AND ABERDEEN AND KINCARDINE COUNTIES DIVISIONS.—Conjoint meeting at 29, King Street, Aberdeen, Thursday, May 10th, 5.15 p.m. Election of representatives and deputy representatives. Annual Report of Council.

BIRMINGHAM BRANCH: WARWICK AND LEAMINGTON AND RUGBY DIVISIONS.—Joint meeting at Warneford Hospital, Leamington Spa, Thursday, May 10th, 4 p.m. Election of representative and deputy representative for the two Divisions at A.R.M.; nomination of candidate or candidates for election as direct representative(s) for England and Wales on the General Medical Council; lecture by Dr. John Parkinson: "Common Forms of Heart Disease."

DERBYSHIRE BRANCH: BUXTON DIVISION.—At Devonshire Hospital, Buxton, Tuesday, May 15th, 8.15 p.m. Annual general meeting. Election of officers, etc. Dr. F. R. Ferguson (Manchester): "Headaches: Their Differential Diagnosis and Treatment."

EAST YORKSHIRE BRANCH:—Friday, May 11th, 1 p.m., luncheon, and presidential address: "Blaming the Doctor." 2.15 p.m., Annual general meeting. 3 p.m., Visit to Hull Trinity House, where members will be joined by their ladies.

EDINBURGH BRANCH: EDINBURGH AND LEITH DIVISION.—At B.M.A. Scottish House, 7, Drumsheugh Gardens, Edinburgh, Tuesday, May 8th, 8.15 p.m. Annual meeting. Election of, and instructions to, representatives to Annual Representative Meeting, 1934; consideration of Annual Report of Council (members are requested to bring the *Supplements* of April 21st and 28th with them); election of officers, etc.

EDINBURGH BRANCH: SOUTH-EASTERN COUNTIES DIVISION.—At Railway Hotel, Newtown St. Boswells, Wednesday, May 9th, 3 p.m. Annual meeting and dinner. Election of officers; consideration of Annual Report of Council, etc.

KENT BRANCH: BROMLEY DIVISION.—Joint meeting with Peckham Medical Society at Railway Hotel, Beckenham, Friday, May 11th, 8.45 p.m. Mr. N. L. B. V. Eckhoff: "Infections of the Hand." Preceded by supper at 7.45 p.m.

KENT BRANCH: ISLE OF THANET DIVISION.—Annual golf competition at North Foreland Golf Club, Sunday, May 13th, after lunch.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—At Metropolitan Hospital, Kingsland Road, E., Friday, May 11th, 4.30 p.m. Mr. J. R. Peacock: Ear and throat cases.

METROPOLITAN COUNTIES BRANCH: HAMPSTEAD DIVISION.—At Hampstead General Hospital, Thursday, May 10th, 8.30 p.m. Discussions on Annual Report of Council.

METROPOLITAN COUNTIES BRANCH: KENSINGTON DIVISION.—At St. Mary's Hospital, W., Tuesday, May 15th, 8.45 p.m. Clinical meeting.

METROPOLITAN COUNTIES BRANCH: ST. PANCRAZ DIVISION.—At B.M.A. House, Tavistock Square, W.C., Tuesday, May 8th, 9 p.m. Annual general meeting.

METROPOLITAN COUNTIES BRANCH: STRATFORD DIVISION.—At Goxmaves Mental Hospital, Tuesday, May 8th, 3 p.m. Clinical meeting.

SOUTHERN BRANCH: PORTSMOUTH DIVISION.—Thursday, May 10th. Annual business meeting.

SOUTH WALES AND MONMOUTHSHIRE BRANCH: NORTH GLAMORGAN AND BRECKNOCK DIVISION.—At Brecon, Thursday, May 10th. Ordinary meeting.

SOUTH-WESTERN BRANCH: TORQUAY DIVISION.—At Torbay Hospital, Wednesday, May 9th, 4.15 p.m. General meeting of profession to consider the nomination of candidate or candidates for election as direct representative(s) on the General Medical Council. 4.30 p.m., Annual meeting. Election of officers, etc.; consideration of Annual Report of Council.

SURREY BRANCH: CROYDON DIVISION.—At Croydon General Hospital, Tuesday, May 8th, 8.30 p.m. Annual general meeting.

SURREY BRANCH: KINGSTON-ON-THAMES DIVISION.—At Surbiton Hospital, Tuesday, May 8th, 8.30 p.m. Colonel R. H. Elliot: "Glaucoma."

SURREY BRANCH: RICHMOND DIVISION.—At Richmond Royal Hospital, Friday, May 11th, 9 p.m. Annual meeting.

YORKSHIRE BRANCH: DRAWSBURY DIVISION.—At Carlton Club, 8, Red Street, Draxbury, Friday, May 11th. Annual meeting. Preceded by supper at 8.15 p.m.

YORKSHIRE BRANCH: WAKEFIELD, PONTIFRACT, AND CASTLEFORD DIVISION.—At Stratford Arms Hotel, Wakefield, Thursday, May 10th. Annual meeting. Preceded by supper at 7.45 p.m.

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE
TAVISTOCK SQUARE, W.C.1

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IRISH MEDICAL SECRETARY: 18, Kildare Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 62550 Dublin.)

Diary of Central Meetings

MAR

- 4 Fri. Public Medical Services Subcommittee, 2 p.m.
- 8 Tues. Central Ethical Committee
- 9 Wed. Hospitals Committee, 2 p.m.
- 10 Thurs. Insurance Acts Committee, 11.30 a.m.
- 11 Fri. Public Health Committee
- 15 Tues. National Register of Medical Auxiliaries, Drafting Subcommittee, 2 p.m.
- 15 Wed. Medico-Political and Parliamentary Committee
- 17 Thurs. Dominions Committee, 2.30 p.m.
- 18 Fri. Journal Committee
- 22 Tues. Naval and Military Committee
- 23 Wed. Finance Committee
- 25 Fri. Insurance Acts Rural Practitioners Subcommittee, 2.30 p.m.

JUNE

- 1 Fri. Fractures Committee, 2 p.m.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Therapeutics and Pharmacology.—Tues., 3.30 p.m., Annual General Meeting at Pharmacological Laboratory, University College, W.C. Election of Officers and Council for 1934-5. 3.30 p.m., Demonstrations by Sir William Bragg and Mr. R. Paul, Katherine H. Coward, F. J. Dyer, J. C. Gage, H. Harcourt, S. L. Cowan, W. Fellberg and O. Kravet, and G. W. Theobald. 5 p.m., Communications by G. W. Theobald, H. R. Ing, B. Szabuniewicz, and G. W. Theobald and E. B. Verney.

Section of Psychiatry.—Tues., 8.30 p.m., Annual General Meeting. Election of Officers and Council for 1934-5. Paper by Professor A. Adler: The Aspects of Delinquency.

Section of Surgery: Subsection of Proctology.—Wed., 5 p.m., Annual General Meeting. Election of Officers and Council for 1934-5. Discussion: Surgical Treatment of Carcinoma of the Colon. Openers, Dr. Fred W. Ranken (Lexington, Kentucky), and Dr. T. E. de Martel (Paris). Followed by Sir Charles Gordon-Watson, Mr. J. P. Lockhart-Mummery, and others.

Clinical Section.—Fri., 4.45 p.m. (Cases at 4 p.m.) Annual General Meeting. Election of Officers and Council for 1934-5. 4 p.m., Cases of Affections of the Gall-bladder: Mr. Mortimer Woolf, Dr. Dorothy Hare and Mr. Cecil Joll. Dr. Charles Newman, and Dr. J. E. A. Lyham. 4.45 p.m., Short Papers by Professor H. H. Woodland, Dr. C. E. Newman, Dr. H. K. Graham Holtzman, and Mr. A. J. Walton.

Section of Obstetrics and Gynaecology.—Fri., 8.15 p.m., Annual General Meeting. Election of Officers and Council for 1934-5. Discussion: Genital Prolapse. Openers, Mr. Victor Bonney, Professor Fletcher Shaw, Professor A. Leyland Robinson, and Dr. C. A. Robinson.

Section of Physical Medicine.—Fri. and Sat., at Harrogate. Annual General Meeting. Election of Officers and Council for 1934-5.

HACKNEY MEDICAL SOCIETY.—At Metropolitan Hospital, Kingsland Road, E., Wed., 9.20 p.m. Annual General Meeting.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—Sponner Green, E.—Thurs., 3 p.m. Annual Oratorical by Professor Charles Singer: The Contrast between Ancient and Modern Science.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.—At 11, Chandos Street, W., Thurs., 8.30 p.m. Dr. Mary B. Farnham and Dr. Hilda Weber: Case Reports Illustrating Menopausal and Post-menopausal Neuroses.

NORTH LONDON MEDICAL AND Gynaecological Society.—Wed., 8.30 p.m., Annual General Meeting and Dinner.

PADDINGTON MEDICAL SOCIETY.—At Great Western Royal Hotel, Paddington, W., Tues., 9 p.m. Addresses by Paddington representatives on London and District Committee: The Work of the London District Committee.

SOUTH-WEST LONDON MEDICAL SOCIETY.—At Blandford Hospital, Wimbledon Common, S.W., Wed., 9 p.m. Mr. Cecil P. G. Wakeley: Head Injuries.

MIDLANDS PHARMACEUTICAL SOCIETY.—Wed., 4.30 p.m., Midland Meeting.

WATERLOO MEMORIO-CONSTRUCTION SOCIETY.—At M.C.C. General Hospital, Greenwich, S.E., Fri., 8.15 p.m. President's Address.

POST-GRADUATE COURSES AND LECTURES

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*Maudsley Hospital*, Denmark Hill, S.E.; Course in Psychological Medicine, afternoons. *St. John's Hospital*, Leicester Square, W.C.; Course in Dermatology, afternoons and evenings (open to non-members). *St. Peter's Hospital*, Henrietta Street, W.C.; Advanced Course in Urology, all day. *Medical Society of London*, 11, Chandos Street, W.; Tues., 2.30 p.m., Lecture-Demonstration on Digitalis by Dr. Clarke-Kennedy. *National Temperance Hospital*, Hampstead Road, N.W.; Sat., 3 p.m., Demonstration of Cases dealing with Blood Diseases, by Dr. H. L. Marriott. *Panel of Teachers*: Individual clinics in various branches of medicine and surgery are available daily by arrangement in advance with the Fellowship. Courses of instruction arranged by the Fellowship are open only to members and associates unless otherwise stated.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn Road, W.C.—*Daily*, Intensive Course.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.—*Thurs.*, 5 p.m., Professor J. B. S. Haldane, F.R.S., Experimental Study of Diathesis.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester Square, W.C.—*Mon.*, 5 p.m., Dr. H. MacCormac, Treatment of Syphilis. *Tues.*, 5 p.m., Dr. W. N. Goldsmith, The Nervous System in Relation to Skin Diseases. *Thurs.*, 5 p.m., Dr. J. M. H. MacLeod, Infections of the Skin with Yeast-like Organisms. *Fri.*, 5 p.m., Dr. W. K. Sibley, Alopecia.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.—*Wed.*, 5 p.m., St. Cyres Lecture by Dr. J. M. H. Campbell, Cardiac Arrhythmias.

ST. PAUL'S HOSPITAL, Endell Street, W.C.—*Wed.*, 4.30 p.m., Mr. C. H. Mills, Some Interesting Urological Cases, with Demonstration of Pathological Specimens, and Radiograms of same.

UNIVERSITY COLLEGE, Gower Street, W.C.—*Mon. and Tues.*, 5 p.m., Dr. K. J. Franklin, History of Physiology.

ABERDEEN MEDICAL SCHOOL.—At Royal Aberdeen Hospital for Sick Children: *Tues. and Thurs.*, 3.15 p.m.; Mr. Alexander Mitchell, Congenital Dislocation of the Hip-joint and Congenital Club-foot; Demonstration of Cases of General Interest.

DUNDEE ROYAL INFIRMARY.—*Thurs.*, 3.15 p.m., Professor Patrick, Demonstration of Medical Cases; Dr. R. P. Mathers, Demonstration of Ear, Nose, and Throat Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Victoria Infirmary: *Wed.*, 4.15 p.m., Dr. W. Herbert Brown, Skin Cases.

MANCHESTER ROYAL INFIRMARY.—*Tues.*, 4.15 p.m., Mr. P. R. Wrigley, Oesophageal Obstruction. *Fri.*, 4.15 p.m., Dr. T. H. Oliver, Demonstration of Medical Cases.

LEEDS POST-GRADUATE CLINICAL DEMONSTRATIONS.—At Leeds General Infirmary: *Tues.*, 3.29 p.m., Mr. Munby, Demonstration of Aural Cases.

LIVERPOOL UNIVERSITY CLINICAL SCHOOL ANTE-NATAL CLINICS.—Royal Infirmary: *Mon. and Thurs.*, 10.30 a.m. Maternity Hospital: *Mon., Tues., Wed., Thurs., and Fri.*, 11.30 a.m.

VACANCIES

ALNWICK INFIRMARY.—H.S. (male).

ASHTON-UNDER-LYNE: DISTRICT INFIRMARY.—H.S.

BATTERSEA METROPOLITAN BOROUGH.—M.O.H.

BEDFORD COUNTY HOSPITAL.—(1) First H.S. (2) Second H.S. Males, unmarried.

BIRMINGHAM CITY.—(1) C.O. at Selly Oak Hospital. (2) J.M.O. at Yardley Green Road Sanatorium. (3) Deputy M.O. at Erdington House, Males.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—H.S. (male)

BRIDGE OF WEIR SANATORIUM.—A.R.M.O. (male)

BURY INFIRMARY.—Third H.S. (male)

BURY ST. EDMUNDS: WEST SUFFOLK GENERAL HOSPITAL.—H.P.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—H.P. (male, unmarried).

CANCER HOSPITAL (FREE), Fulham Road, S.W.—Laryngologist.

CARDIFF CITY.—(1) J.R.M.O. (male) at City Lodge Hospital. (2) J.R.M.O. at Llandough Hospital, Penarth.

CHELMSFORD AND ESSEX HOSPITAL.—H.S. (male, unmarried).

CHICHESTER: ROYAL WEST SUSSEX HOSPITAL.—(1) Senior H.S. (2) J.H.S.

COVENTRY AND WARWICKSHIRE HOSPITAL.—(1) R.H.S. (male). (2) C.O. FAREHAM: KNOWLE MENTAL HOSPITAL.—Second A.M.O. (male, unmarried).

FINCHLEY MEMORIAL HOSPITAL, Granville Road, N.—R.M.O.

GLASGOW ROYAL INFIRMARY.—Clinical Biochemist.

GREENOCK CORPORATION.—Locumtenens (female).

HARROW URBAN DISTRICT COUNCIL.—M.O.H.

HENRI HEMPSTEAD: WEST HERTS HOSPITAL.—Radiologist. HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Director of Radiological Department.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—S.

ILFORD: KING GEORGE HOSPITAL.—(1) Deputy R.M.O. (2) H.S. Males LEAMINGTON SPA: WARNEFORD GENERAL HOSPITAL.—H.P. (male, unmarried)

LEICESTER CITY.—J.A.R.M.O. (male) for City General Hospital.

LIVERPOOL MATERNITY HOSPITAL.—H.S.

LONDON JEWISH HOSPITAL.—(1) R.M.O. and H.P. (2) H.S. (3) C.O. (non-resident)

LONDON UNIVERSITY.—University Chair of Pharmacology tenable at University College. MANCHESTER ROYAL INFIRMARY.—(1) Four Chief Assistants to Surgical Units (non-resident). (2) Hon. Assistant S.

MARGATE: ROYAL SEA-BATHING HOSPITAL.—Resident Assistant Medical Superintendent (unmarried).

MARKET DRAYTON: CHESHIRE JOINT SANATORIUM.—H.P. (male). MERTHYR TYDFIL COUNTY BOROUGH.—Assistant M.O.H. and Assistant School M.O. (female, unmarried).

MIDDLESEX HOSPITAL, W.—Whole-time Assistant (male, non-resident) in Department of Radium Therapy.

MILMAY MISSION HOSPITAL, Austin Street, Bethnal Green, E.—(1) J.R.M.O. (male). (2) Assistant C.O. (female, non-resident).

MILLER GENERAL HOSPITAL, Greenwich Road, S.E.—(1) H.P. (2) H.S. (3) C.O. (4) Out-patient Officer. Males, unmarried.

NEWCASTLE-UPON-TYNE: ROYAL VICTORIA INFIRMARY.—Two Whole-time Junior Surgical Registrars.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.—Hon. S. to Ear, Nose, and Throat Department.

PORTSMOUTH CITY.—J.A.R.M.O. (male, unmarried) for St. Mary's Hospital. QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone Road, N.W.—Two Resident Anaesthetists.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—S. to Ear, Nose, and Throat Department.

READING: ROYAL BERKSHIRE HOSPITAL.—Resident Anaesthetist (male).

ROYAL CHEST HOSPITAL, City Road, E.C.—(1) R.M.O. (2) H.P.

ROYAL HOSPITAL AND HOME FOR INCURABLES, Putney Heath, S.W.—M.O. (non-resident).

ROYAL NORTHERN HOSPITAL, Holloway, N.—(1) H.P. (2) H.S. (male).

RUGBY: HOSPITAL OF ST. CROSS.—R.M.O. (male).

SALFORD ROYAL HOSPITAL.—H.S. (male) for Genito-urinary Department. SHEFFIELD CHILDREN'S HOSPITAL.—H.P. (male, unmarried).

SHEFFIELD: JESSOP HOSPITAL FOR WOMEN.—H.S. (male).

SOUTHERN-ON-SEA COUNTY BOROUGH.—(1) Senior A.M.O. at Municipal Hospital, Rochford. (2) Assistant M.O.H. (male).

WAKEFIELD: CLAYTON HOSPITAL.—Third H.S. (male).

WALSALL COUNTY BOROUGH.—Chief Assistant M.O.H. (male).

WEIR HOSPITAL, Grove Road, Balfham, S.W.—J.R.M.O. (male, unmarried).

WEST LONDON HOSPITAL, W.—(1) Hon. Dermatologist. (2) Hon. Aesthet. and Anaesthetist.

WOLVERHAMPTON: ROYAL HOSPITAL.—H.S. (unmarried).

CERTIFYING FACTORY SURGEONS.—The following vacant appointments are announced: Groomport (Yorks), Doncaster (Yorks). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by May 15th.

This list is compiled from our advertisement columns, where full particulars are given. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning. Further unclassified vacancies will be found in the advertising pages.

APPOINTMENTS

CAMPBELL, Dorothy R., M.B., B.S., D.O.M.S., Assistant Surgeon, Birmingham and Midland Eye Hospital.

McLAUGHLIN, A. I. G., M.B., Ch.M., Medical Inspector of Factories and Workshops.

MILLER, Arthur, F.R.C.S.Ed., D.L.O., Assistant Aurist, London County Council.

NIXON, William O. W., M.D., F.R.C.S., M.C.O.G., Assistant Obstetric Surgeon with Charge of Out-patients, St. Mary's Hospital, W.

LONDON COUNTY COUNCIL.—The following appointments have been made at the hospitals indicated in parentheses: Senior Assistant Medical Officer, Grade II: R. H. Fish, M.B., Ch.B. (High Wood Hospital for Children). Assistant Medical Officers, Grade I: N. D. Begg, M.D., D.P.H. (North-Eastern); A. A. Cunningham, M.B., B.Ch. N.U.I. (Joyce Green); Laura H. Macfarlane, M.D., D.P.H. (Northern); I. Taylor, M.B., B.S., D.P.H. (Grove). Assistant Medical Officers, Grade II: J. L. Scholes, M.D. (Queen Mary's, Sidcup); A. N. Jones, M.B., Ch.B. (St. Luke's, Chelsea); H. I. Turnbull, M.B., B.S. (Holborn and Finsbury Institution); K. R. Cussen, M.B., B.S. (Archway); J. A. Cardno, M.B., Ch.B. (St. Mary, Islington).

MANCHESTER ROYAL INFIRMARY.—Honorary Assistant Physician: N. Kletz, M.B., Ch.B. Honorary Assistant Surgeon: D. McK. Sutherland, M.D., F.R.C.S.

CERTIFYING FACTORY SURGEONS.—E. V. Beaumont, M.B., B.S., for the Brandon District (Suffolk); R. Grant, M.B., Ch.B.Ed., for the Falkirk District (Stirlingshire); A. Miller, M.B., Ch.B.Glas., F.R.C.S.Ed., F.R.F.P.S., for the Larkhall District (Lanarkshire); E. Savage, M.R.C.S., L.R.C.P., for the Caerphilly District (Glamorgan).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

MARRIAGES

ROSS—BAILEY ORTON.—On April 26th, at Huxton Parish Church, by the Rev. P. B. Mercier, M.A., assisted by the Rev. H. L. Gibbs, M.Sc., James Cosbie Ross, Ch.M., F.R.C.S., eldest son of Dr. and Mrs. Ross, Walton, to Marjorie, niece and ward of Colonel and Mrs. Leyland Orton, Fernhill, Huxton.

SIMPSON—SHUTTLEWORTH.—On April 7th (by licence), at the Parish Church, Scarborough, Guy Simpson, youngest son of the late John Simpson, to Doris Kathleen Shuttleworth, M.R.C.S., L.R.C.P., only daughter of the late Arthur Shuttleworth.

DEATH

STEVENSON.—Walter Lowther Stevenson, M.B.Ed., at his residence, Church Brae, Strabane, Co. Tyrone, N.I., on March 13th, 1934.

CHEMICAL TRANSMISSION OF THE EFFECTS OF NERVE IMPULSES*

BY

SIR HENRY DALE, M.D., F.R.C.P., F.R.S.

DIRECTOR OF THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH, HAMPSTEAD

INTRODUCTORY

The term "humoral transmission" was used by Otto Loewi (1921) in describing the first direct demonstration of the process which forms the subject of my lecture. There appears to have been some uncertainty as to whether the term "humoral" referred to the experimental transfer on which that demonstration was based, or to the natural process of release of a specific stimulant into the tissue fluids. In any case I shall have to consider some instances in which the chemical transmitter of nervous effects appears to be released in such immediate proximity to the receptive cells that the use of the term "humoral" would risk a misleading implication. For this reason I have chosen to employ the more general term "chemical transmission" for the process, and shall refer to the agents concerned as "chemical transmitters."

PHYSIOLOGY OF TRANSMISSION

The transmission of the effects of impulses in nerve fibres, to awaken or to modify the activity of cells in relation to which the nerve fibres end, is one of the classical problems of physiology; and the classical subject for its experimental study has been the familiar preparation of motor nerve and voluntary muscle.

Since the experiments of Claude Bernard it has been known that the point where the nerve fibre ends, on the end-plate of the muscle fibre, has special physiological properties. If the response of the muscle to a nerve impulse is paralysed by curare or by fatigue, it is here that the excitatory process is blocked, while nerve fibre and muscle fibre are still normally responsive, and still normally conduct. The fact that the transmission of excitation is peculiarly liable to interruption at this point would not by itself imply that a different process or mechanism of transmission here intervened. It might merely indicate that structures using the same process of conduction as nerve and muscle were here most readily accessible to certain poisons or to the depressant effect of fatigue. Lapique explains it as due to a change in the chronaxie of the muscle fibres. And I think that I am right in supposing that the prevalent conception of the excitation of a voluntary muscle fibre by a nervous impulse assumes that the wave of physio-chemical disturbance, propagated along the nerve fibre as the nervous impulse, passes directly to the muscle fibre, and there excites contraction as it is further propagated.

This conception of the unbroken physical transmission of the excitation wave from nerve to muscle might well seem to receive support from the analogy between the nerve-muscle junction and a synapse of the nervous system. In both cases we have the terminal branching of a nerve fibre, the axon process of a neurone, making contact with another cell—the cell body of another neurone or a muscle fibre. In the case of the synapse the response excited is a nerve impulse in the axon of the second neurone, essentially similar to that which is conducted to the synapse by the axon of the first. The suggestion of unbroken propagation is strong; and if such continuity of conduction occurs at a synapse there is no obvious reason why it should not occur at a nerve-muscle junction.

There can be no suggestion, however, that all the

events at a synapse can be described in terms of the simple conduction of an impulse. Whereas conduction is equal in either direction in nerve or muscle fibre, the excitation can pass a synapse or a nerve-muscle junction in only one direction. Sherrington and his pupils, in their great analysis of central reflex action, have considered such phenomena as recruitment, the subliminal excitatory state, after-discharge, and inhibition; and Sherrington (1925) has been led thereby to a clear recognition of something, whether a chemical substance or a state, persisting at a synapse well beyond the duration of the incident impulse. Further, with regard to the transmission of excitation from motor nerve to voluntary muscle, Adrian (1933), in a recent article, admits that it may not be so fundamentally different from that which we shall presently consider in the case of autonomic nerves, but that "an excitatory substance liberated at a nerve ending, but destroyed within a few thousandths of a second . . . would account well enough for the known properties of a nerve ending."

The direct evidence, however, for the intervention of such a chemical transmitter between nerve impulse and effector cell came, in the first instance, from studies of the nervous control of the activities of involuntary muscle and gland cells by nerves of the autonomic system. Since it is the theme of my lecture, I think it will be proper to attempt to trace the conception to its origin, and to pass in brief review the stages in the unfolding of the story. Naturally I cannot, in a lecture, attempt a comprehensive and detailed record of the evidence to which many have contributed, and I must select for mention, not necessarily those items which are more important than others, but those which seem to suit my purpose of telling a coherent story.

EARLY SUGGESTIONS OF CHEMICAL TRANSMISSION

The suggestion that nervous effects might be transmitted by the release of a specific chemical stimulant was first made in 1904 by T. R. Elliott, then working as George Henry Lewes student in the department of physiology at Cambridge. He had just worked out in detail the now familiar correspondence between the actions of adrenaline and those of true sympathetic nerves; and I myself had the pleasure of co-operating with him in a few experiments which showed that this correspondence extended to the selective action of ergotoxine, which paralysed the same group of effects in the actions of adrenaline and of sympathetic nerves.

Elliott advanced, in explanation, the daring idea that sympathetic nerve fibres liberate adrenaline at their endings, to act as the transmitter and immediate agent of their effects. The years have justified his courageous insight, but I think that the late W. E. Dixon was almost alone at that time in seizing the idea with eager conviction. Dixon (1906, 1907) went further, to argue that parasympathetic nerves must similarly release a chemical transmitter of their effects. There was nothing then known in the body to play this part, and Dixon could only think of the parasympathetic transmitter as muscarine. He did, however, make an experimental attempt to find evidence of its release in the mammalian heart when the vagus nerves were stimulated. Removing a dog's heart while it was under vagus inhibition, he made, concentrated, and partially purified an extract from it; and he found that

* The Lower Lecture of St. John's College, Cambridge, delivered on May 31, 1934, in the Department of Physiology, Cambridge.

this, when applied to the beating frog's heart, had an inhibitor effect which atropine annulled. I have a lantern slide from a record of this effect, which Professor Dixon gave to me.



FIG. 1.—Unpublished record from an experiment in 1906 by the late W. E. Dixon. Beat of the exposed heart of a frog. At the first mark extract from inhibited dog's heart applied; at the second mark atropine.

Nobody can say now what he had in his extract, though we may be pretty sure that it was not the labile substance now known to transmit vagus effects, and that its presence had little, if any, connexion with the inhibition of the heart from which it was extracted. Probably it was choline. It is beyond doubt, however, that Dixon, following Elliott's suggestion concerning adrenaline, had at that early date a conception of the general nature of the mechanism which later evidence has completely justified.

ACTIONS OF ACETYLCHOLINE

From 1906 to 1921 there is a gap in the record of direct contributions to the theory of chemical transmission. The idea was there, in the backs of many minds, but waiting for direct evidence to stimulate its further development. Mention should be made, however, of two investigations on the action of a substance which was to play a part of central importance in these developments when they came.

As long ago as 1900 Reid Hunt had begun experiments on depressor constituents of the suprarenal gland. He could not find enough choline to account for the depressor action of an extract, and he was led, in 1901, to suggest that the excess of activity might be due to an unstable and more active derivative of choline. Since the additional activity was not abolished by atropine, it now seems more probable that Hunt was dealing with histamine, the action of which was not known till much later; but he had the idea of a choline derivative, and it led him to try the action of a number of esters, which were made for him by Taveau (Hunt and Taveau, 1906). Among these was the acetic ester, acetylcholine, which Hunt found to have an action like that of choline, but about one thousand times as strong. This observation was published in the same year, and, indeed, at the same meeting of the British Medical Association as Dixon's first tentative mention of his heart-vagus experiment.

One other happening in 1906 should be noted in passing. It was then that Howell (1906, 1908) began to put forward the evidence which led him to suggest that vagus impulses inhibit the heart by mobilizing potassium ions. This is sometimes quoted as an early forecast of our present knowledge of chemical transmission, but its interest seems to me to lie in a different direction.

Some seven or eight years later, having come across acetylcholine accidentally, as a constituent of a particular sample of ergot and therefore as a product of nature, I was led to make a detailed study of its action (Dale, 1914). This, I think, gave the first hint that acetylcholine might have an interest for physiology. It was found to be a very unstable substance, even outside the body; but when it was injected into the circulation its effects, though immediate and intense, were so extraordinarily evanescent that I suggested, rightly as it now appears, that it was probably hydrolysed with great rapidity by an esterase in the blood, being split into acetic acid and the comparatively inactive choline. Then I was struck by the remarkable fidelity with which it reproduced the various effects of parasympathetic nerves, inhibitor on some organs and augmentor on others—a

fidelity which I compared to that with which adrenaline reproduces the effects of the other, true sympathetic, division of the autonomic system. Thus we now had knowledge of two substances, both with intense activities; both, by reason of their liability to the actions of different body ferments, having similarly evanescent effects; and each reproducing, with a similar fidelity, the effects of one of the two main anatomical divisions of the autonomic nervous system. There was this difference between the two cases, however, that adrenaline was already known as a natural substance, formed in and secreted from the cells of the suprarenal medulla into the blood, and thus, by its direct action from the blood stream, supplementing the effects of sympathetic nerves which it so accurately reproduces. This natural occurrence gave an added plausibility to Elliott's suggestion that adrenaline intervened in the direct effects of sympathetic nerve impulses; whereas in 1914, as I was bound to admit, we had no evidence at all that acetylcholine was a constituent of any part of the animal body, and many years, in fact, elapsed before we found it there.

There was yet another action of acetylcholine, which seemed at the time to have no relation to any physiological function. Its parasympathetic effects, produced by extremely minute doses, were all readily annulled by a small dose of atropine. Only when these had thus been suppressed was it recognized that larger, but still small, doses of acetylcholine had a stimulating action on ganglion cells, recalling that of nicotine. This is an action shown by many bases of the quaternary ammonium type, to which acetylcholine belongs. To the nicotine-like action of acetylcholine belong also its later-described stimulating effects on voluntary muscle—on normal muscles of some lower vertebrates and motor-denervated muscles of mammals (Riesser, 1921, Frank, Nothmann, and Hirsch-Kauffmann, 1922, 1923, Dale and Gasser, 1926). We shall see later that this action also has quite recently acquired a physiological significance of very great interest. For the time, however, it was only possible to recognize the fact that acetylcholine, in common with other choline esters indeed, but with a unique intensity and evanescence, exhibited these two types of action, which I referred to as its "muscarine" and "nicotine" actions.

THE EXPERIMENT OF OTTO LOEWI ON VAGUS INHIBITION

The observations recorded above were completed in the fateful year 1914, when the outbreak of war diverted all scientific energies from their normal applications. The next chapter in our story, accordingly, opened seven years later, in 1921; but it was one of outstanding importance. In that year (1921) Otto Loewi published his simple, elegant, and convincing demonstration that the vagus nerve produces its effect on the frog's heart by liberating an inhibitor substance. He showed that this substance, as obtained in the fluid filling the heart, can be transferred to another heart, and there reproduce the vagus effect.

The experiment demanded no special technique or apparatus; it might, one reflected, have been made at any time during the fifteen years or more since the idea of a specific chemical transmission of nervous effects first took shape. It needed only that touch of scientific courage which has led to the making of some of the most important discoveries by direct and simple means.

This classical experiment formed the starting-point for a series of others, in Loewi's laboratory and elsewhere, in which the liberation of a substance having properties similar to those of the vagus substance, and similarly transmitting parasympathetic effects, has been shown to accompany the reflex production of the autonomic actions of the third cranial nerve (Engelhart, 1931), and the production by artificial stimulation of the effects of the

chorda tympani on the salivary gland and the tongue (Babkin, Alley, and Stavratsky, 1932), Gibbs and Szelöczey, 1932, Bain, 1932, Henderson and Roepke, 1933, and Feldberg, 1933).

RESEMBLANCE OF THE "TRANSMITTER" TO ACETYLCHOLINE

Loewi not only demonstrated the liberation of an inhibitor substance transmitting the effect of the vagus to the frog's heart; he was able, even with the minute traces obtained, to examine the properties of the substance in several directions; and these properties were found to correspond, in every test, to those of acetylcholine. Atropine annulled the action of the transmitter, but did not prevent its liberation by the vagus. The transmitter was rapidly destroyed by an esterase present in the heart muscle, and its activity could be restored by acetylating the residue. Of special interest, and of great value for further progress, was the discovery that eserine (physostigmine) inhibited the action of the esterase; so that the actions of atropine and eserine, in paralysing and intensifying respectively the action of the vagus on the heart, were fully explained by the new knowledge that this action was transmitted by something indistinguishable from acetylcholine. This effect of eserine was given a more general application, when Engelhart (1930) in Loewi's laboratory, and Matthies (1930) in my own, showed that, even in very high dilutions, it blocked the destructive action of a blood esterase on acetylcholine. We thus came to regard eserine as an indicator for the action of an unstable choline ester, like acetylcholine. Whenever eserine was found to intensify or prolong a nervous effect there was now reason to suspect that this was transmitted by the release of an unstable choline ester. To use a terminology which I recently suggested, eserine became an indicator of "cholinergic" effects.

CHEMICAL TRANSMISSION OF SYMPATHETIC EFFECTS

Before we pass to later developments concerning acetylcholine it will be convenient to deal with those in another chapter of the story, which also began with Loewi's observations.

You will remember that the vagus of the frog contains fibres which join it from the sympathetic chain, and that the effect of these sometimes predominates, so that stimulation of the mixed nerve may cause acceleration and augmentation of the heart beat, instead of inhibition. Loewi found that in such cases the fluid in the heart would transmit an accelerator, adrenaline-like effect to another heart; so that Elliott's speculation, as to the meaning of the similarity of sympathetic effects to those of adrenaline, received at last a direct experimental justification.

Further progress in our knowledge of this chemical transmitter of the peripheral effects of true sympathetic nerves has come largely from Cannon's laboratory at Harvard, and from the researches of visitors from other countries who have worked there. Cannon's recent researches have been largely concerned with the demonstration that, when the lower end of the sympathetic chain is stimulated in a cat deprived of its suprarenal glands, something passes into the blood which produces, at a distance, effects of sympathetic stimulation on other organs (Cannon and Bacq, 1931). The substance seems to be liberated largely in connexion with the pilomotor action. To avoid a premature suggestion as to its chemical nature, Cannon refers to this transmitter of sympathetic effects as "sympathin." There is an obvious probability in favour of its being the substance, natural to the body, and reproducing sympathetic effects with such remarkable precision—adrenaline itself, as suggested long ago by Elliott.

Bacq of Liège, for a time a co-worker with Cannon, has shown that when the cervical sympathetic nerve is stimulated sympathin appears in the aqueous humour of the eye (1933); just as Engelhart had found that, when the pupil was caused to constrict by the incidence of light, something like acetylcholine appeared in the same fluid. Bacq has been able to apply to the sympathin so obtained certain chemical and spectrographic tests, the results of which seem to make it clear that it is, at least, a catechol derivative with an aminated side-chain—in other words, that it is either adrenaline itself or a very closely related substance. There is a complication, due to recent observations of Cannon and Rosenbluth (1933), which suggest that sympathin, as it passes into the blood from the site of its liberation, may produce on distant organs only the augmentor, or only the inhibitor, effects of sympathetic nerves. It would be possible, indeed, to name substances closely related to adrenaline, but producing in the one case mainly the motor, and in the other case mainly the inhibitor, actions of adrenaline and sympathetic nerves; but we have no kind of warrant for regarding these as substances likely to occur naturally in the body. Cannon supposes that the actual transmitter is a substance capable of producing either type of effect, as adrenaline does, according to the type of receptive substance which it finds, and combines with, in the effector cell. He imagines that two types of such combination may occur, producing what he calls "sympathin E" and "sympathin I," which have augmentor and inhibitor effects respectively; and it is these combinations, he believes, which escape to some extent into the blood stream. It should be said, I think, that the behaviour of the substance transmitting parasympathetic effects, concerning which more is known, provides no analogy for this conception. Whether liberated by an augmentor or an inhibitor nervous effect, it behaves like acetylcholine itself, and produces on all cells which are sensitive to that substance its characteristic effects, whether inhibitor or augmentor.

We may safely leave the details of the chemical transmission of peripheral sympathetic effects to the further investigations of Cannon* and his school, and return to the transmission of the peripheral effects of parasympathetic nerves. We shall find there a mechanism which is beginning to have a much wider application than could have been suspected, even a few months ago.

ACETYLCHOLINE, A NATURAL BODY CONSTITUENT

We have seen that Loewi's vagus substance, and that liberated in the transmission of other parasympathetic effects, showed all the properties of acetylcholine, so far as these could be examined. There was a proper reluctance at first to assume identity with that substance, in default of any chemical evidence of its occurrence in the animal body. That impediment, it seems to me, was largely removed when Dudley and I (1929), looking for another substance in extracts from the spleen of the ox and the horse, came by accident on an activity like that of acetylcholine, and succeeded in isolating that substance in a quantity sufficient for clear chemical recognition. Since then Kapfhammer and his colleagues in Freiburg (Kapfhammer and Bischoff, 1930; Bischoff, Grab, and Kapfhammer, 1931) claim to have found it in much larger quantities in almost every organ of the body; but my laboratory has failed to confirm their observations. In only one other tissue, the human placenta (Chang and Gaddum, 1933), have we found evidence of the presence of acetylcholine in amounts of the same order as those occurring in the spleens of the large ungulates. Neither

* Professor Cannon's own account of the full evidence concerning this function, and of his present interpretation of it, will shortly be published in his recently delivered Kober Lecture, of which he has kindly allowed me to see the manuscript.

in the spleen nor in the placenta does its occurrence in these large amounts have any obvious relation to the action of parasympathetic nerves, or to any other known physiological function. We may reasonably hope that the meaning of its presence in such organs will some day be revealed; and, meanwhile, we may be satisfied with the evidence that acetylcholine is a normal product of the animal body, and that there is no reason, on that account, for suspecting that the choline ester transmitting parasympathetic effects is any other than this one.

DIFFICULTIES CAUSED BY SOME ACTIONS OF ATROPINE

A difficulty which some have found in accepting this identification is connected with the effects of atropine. There are some parasympathetic effects, such as the action of the vagus on the intestine, and the vaso-dilator actions of parasympathetic nerves in general, which are resistant to atropine, though the otherwise similar actions of injecting or applying acetylcholine are readily abolished by it. But, as Gaddum and I (1930) have argued in dealing with cases of this kind, the fact that such nerve effects are potentiated by eserine gives good reason for believing that they are transmitted by a sensitive choline ester; and, since these muscarine actions of all choline esters are equally liable to annulment by atropine, the resistance of the nervous actions to that alkaloid must have some other explanation. We certainly do not avoid the difficulty by talking of the transmitter as an "acetylcholine-like substance." If the atropine anomaly were sufficient to exclude the identification of the transmitter as acetylcholine, it could not be a choline ester at all, as the action of eserine shows it to be. Gaddum and I suggested that in such cases the nerve impulses liberate acetylcholine so close to the reactive structures that atropine cannot intervene, whereas it can prevent its access to them when it is artificially applied from without.

PHYSIOLOGICAL RECOGNITION OF ACETYLCHOLINE

To settle the matter beyond discussion we should presumably need to collect a sufficient quantity of the substance transmitting the effects of nerve impulses to enable it to be chemically identified. Perhaps some day we may be able to do this, but there is no immediate prospect of its achievement.

In default of this possibility there are various tests we can apply, the cumulative effect of which is to make the identification practically certain. It can be shown that the transmitter is a very unstable choline ester, rapidly destroyed at a definitely alkaline reaction, even at room temperature; that it is rapidly destroyed by the esterase present in blood, which the Stedmans have shown to be an enzyme specific for esters of choline, but that it is protected from this enzyme by a small proportion of eserine. We can then determine its activity in terms of acetylcholine by a number of different physiological tests—by its vaso-dilator depressor action in the rabbit or cat, its inhibitor action on the isolated frog's heart or rabbit's auricle, its stimulation of contracture in the frog's voluntary muscle, or the body wall of the leech sensitized to it by eserine. This reaction of leech muscle, recently brought to my laboratory from Germany by Dr. Feldberg, is of amazing sensitiveness, and of special value for detecting and measuring acetylcholine in blood. And when it is found that, in all these different reactions, the activity of a solution containing the parasympathetic transmitter is matched by the same strength of acetylcholine, we can be practically certain that we are dealing with that substance and with no other choline ester. And since it is the only choline ester known to occur in the body at all there seems no reason to look further. Feldberg and I (Dale and Feldberg, 1933) have been able, for example, to collect the substance released in the wall

of the dog's stomach when the vagus nerves are stimulated, and have found it to correspond exactly with acetylcholine in all these different respects. We suggest that the mode of transmission of vagus impulses is not likely to change abruptly on passing from stomach to intestine. It seems to be very much more probable that the actions of the vagus on the small intestine, and of the pelvic nerve on the large intestine, are similarly transmitted by the release of acetylcholine, but in such proximity to the reactive structures that atropine interferes but little with its action. This, however, is a point on which direct evidence has yet to be obtained.

CLASSIFICATION BY CHEMICAL FUNCTION. CHOLINERGIC AND ADRENERGIC NERVES

In general, it holds good that acetylcholine, or some choline ester indistinguishable from it, is the chemical transmitter of peripheral parasympathetic effects, while that for the actions of true sympathetic nerves is either adrenaline or some closely related substance. To this broad correspondence, however, between chemical function and anatomical origin, there are exceptions. It seemed to me that we needed words to indicate the functions of nerve fibres as regards the chemical transmission of their activity, without reference to their anatomical connexions, and I have proposed the use of the adjectives "cholinergic" and "adrenergic" in this sense (Dale, 1933).

The most obvious exceptions to the general correspondence are those of nerve fibres which arise from sympathetic ganglion cells, but are cholinergic. Langley (1901) and Elliott (1905) found it impossible to detect a stimulation by adrenaline of sweat glands in the cat's foot or the human hand, corresponding to the effect on them of sympathetic nerve impulses. The sweat glands of the cat, indeed, have long presented a puzzle and an anomaly to the systematic pharmacologist; for they respond but little to adrenaline, but they are stimulated to profuse secretion by substances like pilocarpine and acetylcholine, and their activity is readily paralysed by atropine and unaffected by ergotoxine, though their nerves belong to the true sympathetic system. The anomaly would obviously be explained if these particular sympathetic fibres were cholinergic, and not adrenergic like most.

Quite recently Feldberg and I have obtained direct evidence that this is the case.

We perfused the foot of a cat, the hairless pads of which carry the sweat glands, with Locke's solution containing a little eserine. As soon as we stimulated the sympathetic nerve supply to the foot and caused sweating on the pads, acetylcholine appeared promptly in the venous fluid. It disappeared when the glands returned to rest and reappeared on renewing the stimulation; but it did not appear at all, though the stimulation was still effective on the blood vessels of the foot, if the hairless pads, with their sweat glands, were excluded from the perfusion.

We cannot perform an experiment of this kind on man, but the cholinergic nature of the nerve supply to the human sweat glands is clearly indicated by their failure to respond to adrenaline, their response to pilocarpine

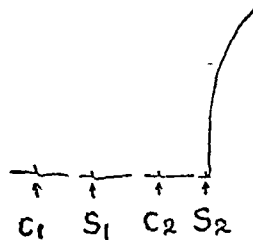


FIG. 2.—Isolated leech muscle treated with eserine, tested with effluents from perfused cat's foot. C_1 and C_2 = control fluids without stimulation. S_1 = fluid during sympathetic stimulation, from foot with sweat glands excluded from perfusion. S_2 = fluid during exactly similar stimulation, from foot with sweat glands included in perfusion.

with profuse secretion, and their paralysis by atropine. In some other animals, however, the nerve supply to the sweat glands appears to be adrenergic—for example, in the horse.

Another effect of sympathetic nerve stimulation which is not reproduced by adrenaline is the vaso-dilatation in the buccal mucosa in the dog, long ago described by Dastre and Morat (1880) as caused by stimulating the cervical sympathetic nerve in that animal. Rogowicz (1885) showed that when the voluntary muscles of the dog's cheek were denervated they responded with contraction when the cervical sympathetic nerve was stimulated. This was closely similar to the effects which we (Dale and Gaddum, 1930) elsewhere attributed to the leak on to the sensitized muscle fibres of acetylcholine, released to transmit a vaso-dilator effect; and Euler and Gaddum (1931), who reinvestigated this Rogowicz phenomenon, concluded that it was, indeed, due to the presence in the dog's cervical sympathetic nerve of fibres which were truly sympathetic, but acted by release of acetylcholine—being what we should now call cholinergic sympathetic fibres.

A study of the similar contracture of the muscles of the hind limb deprived of their motor nerves, originally described by Sherrington, led Gaddum and me (1930) to the conclusion that the antidromic vaso-dilatation, produced by impulses in side branches of sensory nerve fibres to the small arteries, was also cholinergic. More recent evidence by Hinsey and Cutting (1933) suggests that the Sherrington phenomenon is due to sympathetic cholinergic fibres joining the sciatic plexus through the grey rami, and not, as had been thought, to antidromic impulses in sensory fibres. The question, whether the axon-reflex or antidromic vaso-dilatation is cholinergic, is therefore once more open, and will require direct evidence for its decision.

NICOTINE ACTIONS OF ACETYLCHOLINE

Mention of the pseudomotor phenomena leads us to the other aspect of the action of acetylcholine—what I have termed its "nicotine" action—the physiological interest of which has only very recently begun to appear. This was a question which had puzzled me for many years. Why should Nature use, as the transmitter of parasympathetic effects to involuntary muscle and gland cells, such a substance as acetylcholine, having not only the action directly appropriate to this purpose, but, in addition, a "nicotine" action on ganglion cells and voluntary muscle which seemed entirely irrelevant to it?

The ruling conceptions of the mode of transmission of nerve impulses across synapses to ganglion cells, or from motor nerve endings to the end-plates of voluntary muscle fibres, made it difficult to speculate on any intervention of acetylcholine in such cases. Only in the past few months have the experimental facts demanded a serious consideration of such a possibility. Some years ago Witanowski (1925) detected the presence of something like acetylcholine in extracts of sympathetic ganglia, and Chang and Gaddum (1933) came across it again, using tests which gave clearer evidence of its identity. In both cases it was found also in the cell-free nerve, and the significance of the observations was not clear. Kibjakow (1933), however, published a description of experiments in which he had artificially perfused the superior cervical ganglion of a cat, and found that, when the preganglionic nerve was stimulated, something appeared in the venous fluid which acted as a stimulus to the ganglion cells on reinjection, as shown by the contraction of the nictitating membrane. He suggested that the impulses were transmitted across the synapse by the release of this substance, and Chang and Gaddum, in the light of their own observations, suggested that Kibjakow's substance might be acetylcholine.

TRANSMISSION OF NERVE IMPULSES TO THE ADRENAL MEDULLA

An encouragement to the further consideration of this possibility, and to its ultimate testing by experiment, was furnished by Feldberg and Minz's (1933) discovery that, when the splanchnic nerve supply to the suprarenal medulla is stimulated, acetylcholine appears in the blood of the suprarenal vein, if its destruction is prevented by eserine; so that acetylcholine here transmits, to the medullary cells, the nerve impulses which cause them to secrete adrenaline into the blood. Now the suprarenal medullary cells are morphologically equivalent to sympathetic ganglion cells, and at least some sympathetic preganglionic fibres appear to end in direct relationship to them. Further experiments, which Feldberg has now completed in my laboratory, have shown that, in harmony with this conception, it is chiefly the nicotine action of acetylcholine which is concerned in its action on these medullary cells, and in the transmission to them of the effects of splanchnic impulses.

TRANSMISSION OF IMPULSES AT GANGLIONIC SYNAPSES

With this analogy before them, Feldberg and Gaddum (1933) have proceeded to a direct test of the possibility that the transmission of a nerve impulse across the synapse in a ganglion is effected by the release of acetylcholine. They have used Kibjakow's technique for perfusing the superior cervical ganglion, recording contractions of the nictitating membrane as an index of the activity of the ganglion cells. They obtained no result when plain Locke's solution was used, but when a very low concentration of eserine was added to it an active substance appeared in the venous fluid whenever the preganglionic nerve was stimulated, but only then. And this substance, by all the tests with which we are now familiar, corresponds so exactly in its properties and actions to acetylcholine that there is no reason to doubt its identity.

The conception of the transmission of a nervous impulse across a synapse by the release of such a substance, and by the action of this substance as the direct stimulant of the ganglion cell, though it satisfies my own desire to bring the nicotine action of acetylcholine into the physiological picture, is not without its difficulties, and it will have to justify itself to win general acceptance. One thing is clear—namely, that when preganglionic impulses arrive in the ganglion acetylcholine is there released in such an amount that it not only may but *must* stimulate the ganglion cells to their only known form of activity, in the output of impulses in the post-ganglionic fibres, corresponding to those which arrive in the preganglionic fibres.

Several recent investigations (Bishop and Heinbecker, 1932, Brown, 1934, and Eccles, 1934) have shown that a single impulse in a preganglionic fibre produces a corresponding single impulse in post-ganglionic fibres, and that the delay at the synapse is very short. One can only suppose that each impulse must cause the release, in immediate proximity to the ganglion cell, of a minute charge of acetylcholine, which fires off a post-ganglionic impulse and then immediately disappears. At this early stage we must wait for the additional evidence, which is almost daily accumulating in my laboratory; and I can only say that it seems to be wholly in favour of some such conception.

TRANSMISSION OF NERVOUS EXCITATION TO VOLUNTARY MUSCLE

Finally we are led, by the analogy which I mentioned at the beginning of my lecture, to inquire whether acetylcholine may not intervene, also by virtue of its nicotine

action, in the transmission of the effect of a motor nerve impulse to a voluntary muscle fibre. For a good many years there have been indirect indications of such a possibility. If we extend our view to a wider range of animal types, the demarcation between the functions and the modes of innervation of striated muscle on the one hand, and of plain muscle on the other, is not everywhere so sharp as we are apt to regard it in dealing with the mammal. The intestine of the tench, a common fresh-



FIG. 3.—Isolated intestine of *Tinca vulgaris*. Acetylcholine (1 in 50,000) added at mark, producing quick contraction of striated muscle coat and slow contraction, with rhythm, of unstriated coat. (Reproduced from Mehcs and Wolsky, *Arch. d. Ungar. Biol. Forsch.*, vol. v, p. 150.)

The dual activities of acetylcholine, and the corresponding paralytic effects on them of atropine and curare, are similarly plain when we compare its actions on the unstriated sphincter of the mammalian pupil, and on that of the bird, which consists of striated fibres. The fact that acetylcholine stimulates certain normal voluntary skeletal muscles in lower vertebrates, and those of mammals after degeneration of their motor nerves, I have already mentioned.

There has been evidence, from several observers, of the appearance of something like acetylcholine in the venous effluent from a perfused voluntary muscle when its nerve is stimulated (Hess, 1923, Shimidzu, 1926, Brinkman, 1924, 1925, and Plattner, 1932). In all these cases, however, the nerve stimulated was a mixed nerve, containing sensory and sympathetic fibres as well as voluntary motor fibres, and the evidence did not clearly suggest, even to its authors, that the appearance of

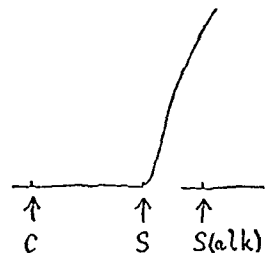


FIG. 4.—Isolated leech muscle (eserine) tested with fluids from perfused cat's tongue. C = without stimulation; S = during rhythmic stimulation of hypoglossal nerve; S (alk.) = same fluid as S, but made alkaline and kept at room temperature for an hour.

which seem to be so definitely favourable to such a conception as to justify reference to them even at this early stage.

The hypoglossal nerve carries purely motor fibres to the voluntary muscle of the tongue, mixed only with sympathetic fibres, which can be caused to degenerate by removing the superior cervical ganglion. If the tongue of a cat is perfused with Locke's solution containing a small amount of eserine, and is made to contract by stimulating this purely motor nerve supply, acetylcholine appears in the outflowing solution while the stimulation is continued, disappears during a follow-

ing period of rest, and reappears when effective stimulation is resumed.*

The observations are too new and too incomplete for detailed analysis of their meaning. We must bear in mind the fact that the responses of skeletal muscles, whether normal or denervated, to the artificial application of acetylcholine, either to the surface of the isolated muscle or through the circulation, take the form of relatively slow and weak contractions, and not of twitches. There is, indeed, no reason to expect that, when reaching successive muscle fibres by diffusion from the surface or from the blood vessels, acetylcholine would produce effects of the same type as those which might result from its sudden and simultaneous release in immediate proximity to the end-plates of all the fibres of the muscle, and its equally sudden removal, after the manner of the "excitatory substance" admitted by Adrian as a possibility. It might be suggested, however, that acetylcholine, even if thus liberated by motor nerve impulses, would probably be concerned with contractions rather than with normal twitches, and perhaps with the function of special, slow-contracting fibres. It must be admitted that these are still possibilities; but the apparent function of

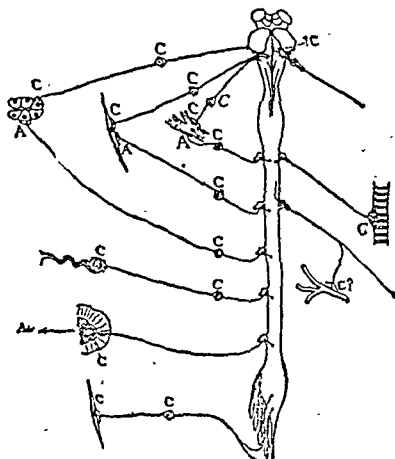


FIG. 5.—Diagram of peripheral nervous system. At points marked C there is evidence of a cholinergic transmission, at those marked A of an adrenergic transmission. Doubtful cases marked ?.

acetylcholine in transmitting the effects of impulses to nerve cells encourages one to expect a more general function for it in the transmission of motor nerve impulses to voluntary muscle. In any case, the evidence, even so far as it has been obtained, seems to give promise that we may soon be able to complete the picture of the transfer of excitation, at all cytoneural junctions in connexion with the peripheral nervous system, by the liberation of chemical transmitters.

One further question is almost inevitable. Is this conception to be limited to the peripheral nervous system, or are we to expect its extension to the synapses of the central grey matter itself? With no direct experience of central nervous physiology, I cannot properly allow myself merely to speculate. Sherrington, you will recall, with his unique authority, has envisaged the general possibility of a chemical mechanism at central synapses. And it should be mentioned that Dikshit (1934), an Indian pharmacologist working in Professor A. J. Clark's laboratory in Edinburgh, has very recently shown that minute quantities of acetylcholine, if injected into the fluid of the cerebral ventricles, reproduce with a striking fidelity the

* An entirely similar result has, even more recently, been obtained with the muscles of the leg, excited to contraction by stimulating the ventral spinal roots, after extirpation of the lumbar sympathetic chain.

effects of central stimulation of the vagus on respiratory activity; and he suggests liberation of this substance in the centres by sensory impulses in the vagus.

CONCLUSION

I can best summarize the account which I have given, of research on the chemical mechanisms for the transmission of nervous stimuli and of its most recent extensions, by putting before you a rough diagram of peripheral synapses and endings of efferent nerves. In each case, where the evidence seems fairly clear, I have indicated a cholinergic mechanism of transmission by the letter C, an adrenergic mechanism by the letter A. (Fig. 5.)

You will see at once that the C's greatly preponderate, just as the later section of my lecture has dealt exclusively with acetylcholine. We get an impression of the cholinergic mechanism as having the more general application in the functions of the nervous system, and probably an earlier origin in evolution, and of the adrenergic mechanism as a more specialized and probably a more recent development. I believe that such a conception would have been congenial to the thought of one of the greatest of British physiologists, and one of the founders of the Cambridge school, the late W. H. Gaskell. You will see that in some places the diagram has notes of interrogation, representing points at which further evidence is required to justify a definite statement. There might have been many more, for the whole field of inquiry is full of unknown details, asking for investigation, and attractive to scientific curiosity. I have tried to show you the main outlines of the map, as they are now beginning to emerge.

BIBLIOGRAPHY

- Adrian: *Ergebn. Physiol.*, 1933, xxxv, 744.
 Babbitt, Alley, and Stavratsky: *Trans. Roy. Soc. Can.*, 1932, Sec. V, p. 89.
 Bacq: *Arch. Int. Physiol.*, 1933, xxxvi, 167.
 Bain: *Quart. Journ. Exper. Physiol.*, 1932, xxiii, 381.
 Bischoff, Grab, and Kapfhammer: *Zeit. f. Physiol. Chem.*, 1931, cxvix, 135.
 Bishop and Heinbecker: *Amer. Journ. Physiol.*, 1932, c, 519.
 Brinkman and Rutter: *Pfuger's Arch.*, 1924, cciv, 766.
 Idem: *Ibid.*, 1925, ccviii, 53.
 Brown: *Journ. Physiol.*, 1934 (in the press).
 Cannon and Bacq: *Amer. Journ. Physiol.*, 1931, xcvi, 392.
 Cannon and Rosenbluth: *Ibid.*, 1933, civ, 557.
 Chang and Gaddum: *Journ. Physiol.*, 1933, lxxix, 255.
 Dale: *Journ. Pharmacol.*, 1914, vi, 147.
 Idem: *Journ. Physiol.*, 1933, lxxx, 107.
 Dale and Dudley: *Ibid.*, 1929, lxxviii, 97.
 Dale and Feldberg: *Ibid.*, 1933, lxxx, 16P.
 Dale and Gaddum: *Ibid.*, 1930, lxx, 109.
 Dale and Gasser: *Journ. Pharmacol.*, 1926, xxix, 53.
 Dastre and Morat: *C. R. Acad. Sci., Paris*, 1880, xci, 393.
 Dikshit: *Journ. Physiol.*, 1934, lxxx, 409.
 Dixon: *British Medical Journal*, 1906, ii, 1807.
 Idem: *Medical Magazine*, August, 1907.
 Eccles: *Journ. Physiol.*, 1934, lxxx, 23P.
 Elliott: *Ibid.*, 1904, xxxi, 20P.
 Idem: *Ibid.*, 1905, xxxii, 401.
 Engelhart: *Pfuger's Arch.*, 1931, ccxxvii, 220.
 Engelhart and Loewi: *Arch. Exp. Path. Pharmacol.*, 1930, cl, 1.
 Euler and Gaddum: *Journ. Physiol.*, 1931, lxxiii, 54.
 Feldberg: *Pfuger's Arch.*, 1933, ccxxxii, 75 and 88; *Arch. Exp. Path. Pharmacol.*, 1923, clxx, 560.
 Feldberg and Gaddum: *Journ. Physiol.*, 1933, lxxx, 12P.
 Feldberg and Mintz: *Pfuger's Arch.*, 1933, ccxxxiii, 657.
 Frank, Nothermann, and Hirsch-Kaufmann: *Ibid.*, 1922, cxcvii, 270.
 Idem: *Ibid.*, 1923, cxcviii, 391.
 Gibbs and Szoloczky: *Arch. Exp. Path. Pharmacol.*, 1932, clxxviii, 64.
 Henderson and Roepke: *Journ. Pharmacol.*, 1933, xlviii, 193.
 Hess: *Quart. Journ. Exper. Physiol. (Suppl.)*, 1923, p. 144.
 Hunsey and Cutting: *Amer. Journ. Physiol.*, 1933, cv, 525.
 Howell: *Ibid.*, 1906, xv, pp. xiv and 280.
 Howell and Duke: *Ibid.*, 1908, xxii, 51.
 Hunt: *Ibid.*, 1900, iii, p. xviii.
 Idem: *Ibid.*, 1901, v, p. vi.
 Hunt and Taveau: *British Medical Journal*, 1906, ii, 1788.
 Kapfhammer and Bischoff: *Zeit. f. Physiol. Chem.*, 1930, xcxi, 179.
 Kibjakow: *Pfuger's Arch.*, 1933, ccxxxii, 432.
 Langley: *Journ. Physiol.*, 1901, xxvii, 277.
 Loewi: *Pfuger's Arch.*, 1921, clxxxix, 239; and papers in following volumes.
 Matthes: *Journ. Physiol.*, 1930, lxx, 338.
 Mehes and Wolsky: *Arch. d. Ungar. Biol. Forsch.*, v, 139.
 Plattner: *Pfuger's Arch.*, 1932, ccxxx, 705.
 Riesser and Neuschloss: *Arch. Exp. Path. Pharmacol.*, 1921, xci, 342.
 Rozowicz: *Pfuger's Arch.*, 1885, xxxvi, 1.
 Sherrington: *Proc. Roy. Soc. B*, 1925, xlviii, 519.
 Shimidzu: *Pfuger's Arch.*, 1926, ccxi, 403.
 Witkowski: *Ibid.*, 1925, ccviii, 694.

DISEASE AT ITS ONSET

WITH SPECIAL REFERENCE TO OCULAR MANIFESTATIONS

BY

A. MAITLAND RAMSAY, M.D., LL.D.

FELLOW OF THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS,
 GLASGOW; CONSULTING OPHTHALMIC SURGEON, GLASGOW
 ROYAL INFIRMARY AND OPHTHALMIC INSTITUTION

Biophysics and biochemistry have taught us that the living body is an admirably equipped laboratory in which Nature is continually performing experiments.¹ These experiments resemble those conducted in every physiological laboratory in so far that some succeed while others fail. When Nature's experiments are successful we are not conscious that anything is happening: everything goes like clockwork, and we feel in good health. When, on the other hand, the experiments fail we become aware of unpleasant sensations, which we have learned to recognize as symptoms of disease. Health, therefore, must be regarded as a dynamic rather than as a passive state. We keep healthy as a result of a perpetual struggle to maintain physiological equilibrium in the reactions constantly taking place between the cells of the body and their nutrient capillaries. Physico-chemical changes, therefore, which originate in the capillary system are, in all probability, the first departure from health, and the cause of the earliest symptoms of disease.

The part played by the capillaries is quite distinct from that played by the heart and other blood vessels. All metabolic changes take place through their walls; consequently they form the most active, purposive, and dynamic part of the vascular system. Their contractility is controlled not only by vasomotor nerves but also by chemical stimuli, the former acting as a coarse and the latter as a fine adjustment. Krogh² has demonstrated that the capillaries are not simply tubes through which blood flows. They do not respond passively to the amplitude of the pulse wave in the arteries. They are really a constituent part of the tissues in which they lie, and their blood circulation is regulated and controlled by the requirements of the individual cells of the structures they supply. All the important business of life is transacted through the walls of the capillaries.

Bryson³ has suggested that in every part of the body the functioning unit and its associated capillaries constitute an organ in miniature. That is a simple, but it is also a most useful, conception. It implies that the health of every organ depends upon the quality and the quantity of the blood circulating in its capillary system. It is to be remembered, however, that in normal circumstances all the capillaries of an organ are not in action at the same time. They work in shifts: while some are open and active, others are closed down and idle. Herring⁴ calls this "the law of fluctuation," and points out that in all living structures the alternation of periods of activity with periods of rest is essential to health.

CIRCULATION IN THE EYE

In the eye, with the help of the ophthalmoscope, a complete circulation—arteries, veins, and capillaries—is exposed to view, and can be studied as an integrated whole, with a completeness quite impossible in any other part of the living body. Thanks to the transparency of the normal retina we can see the blood in the central artery, and can follow it into the finest arterioles and, if we make use of Friedenwald's⁵ yellow-green light, we can trace the capillary network in wonderful detail.

From the clinical standpoint the retina, although it is such a very complicated structure, can be conveniently

divided into (1) the conducting portion, and (2) the very highly specialized functioning unit. The former, comprising the ganglion cells and the nerve fibres, receives its capillary supply through the superficial and deep plexuses of the central artery, while the latter, although itself avascular, receives abundant nourishment by transfusion from the choriocapillaris. Both the central artery and the uveal blood vessels, therefore, contribute to supply the retina; and although the capillary supply of the conducting system and that of the functioning unit is distinct anatomically, yet it is strictly comparable physiologically.

In a general sense it may be said that the walls of the capillaries, although freely permeable to crystalloids, water, and gases, are relatively impermeable to colloids. The degree of permeability to colloids varies in different parts of the body, depending upon the special requirements of each particular organ. In every instance there is a biological adaptation of structure to function, and Duke-Elder⁸ has pointed out that in the eye perfect transparency is secured by almost complete impermeability of the intraocular capillaries to colloidal substances. By that means every structure peculiar to the organ of vision is kept optically homogeneous.

Visual function is wholly dependent upon the rate of the circulation of the blood in the capillaries of the retina and in the choriocapillaris; but the retinal circulation must always be considered in its relation to the general circulation. The same principles are observed in the circulation of the blood in the eye as in any other organ of the body; but the intraocular circulation is peculiar in so far as it is modified by the intraocular pressure. The capillary pressure in the eye is higher proportionately than in any other organ of the body in a state of rest, but it is neither a constant nor a measurable quantity. It varies not only in different individuals, but also in the same individual from time to time. It is, however, essential for the health of the eye that an accurate balance be maintained between the capillary pressure and the pressure of the intraocular fluids, because, as Duke-Elder has demonstrated, the intraocular fluids are a dialysate from the capillaries.

TRANSPARENCY OF THE RETINA: AN INDICATION OF HEALTH

The capillaries are very susceptible to every morbid influence, consequently they are peculiarly sensitive to the quality of the blood. Every form of toxæmia causes rapid dilatation, with increased permeability of their walls. It is easy to understand, therefore, how the transparency of the retina becomes impaired by congestion of its capillaries, together with its infiltration with colloidal substances. This abnormal condition of the retina is recognized clinically by a want of translucency in the ophthalmoscopic picture. Here, then, we have a sign of abnormality which is as nearly as possible on the borderland between health and disease. Mackenzie always insisted that the first symptom of disease is a complaint of an unusual sensation, and an additional interest is given to the study of such sensations whenever we can discover an objective cause capable of explaining their occurrence.

We have seen from what has been said (1) that the transparency of the normal retina is due to the impermeability of the walls of the capillaries to the passage of colloidal substances, and (2) that this normal transparency is interfered with by any form of toxæmia, which causes rapid dilatation of the capillaries with increased permeability of their walls. Translucency is the most delicate quality of the ophthalmoscopic picture, and it is reason-

able to assume that any deterioration or loss of this pristine brilliancy is one of the first signs of a departure from health.

In a group of cases I have in mind the only outstanding ocular objective feature is a deepening of the colour and a lack of the normal translucency of the ophthalmoscopic picture. These subtle changes in colour and translucency are somewhat difficult to describe, but they are easily recognized after attention has been directed to them. It is only through physiology that we can approach pathology successfully from the clinician's standpoint; consequently, in dealing with a structure so delicate and sensitive as the retina, its special physiological attributes must be kept in mind. When examining a patient, therefore, in addition to testing his form sense, attention must be given to his appreciation of light and colour.

As a rule, the patients under consideration have little difficulty in reading the test types, but they often say that the letters in the middle of a line are recognized with more conscious effort than those at either end. The symptoms are not relieved by correcting any error of refraction that may be present, for the patients still complain that the eyes feel hot and uncomfortable, and are easily tired. If they persist in reading after the onset of these symptoms they are prone to suffer from a dull neuralgic pain, which radiates from the eye to the forehead and the temple. The print becomes unsteady, and a flicker makes it difficult to read, and more especially to pass easily from one line to the next. Sometimes these symptoms are accompanied by black spots in front of the eyes, by minute flashing lights scintillating in the field of vision, and by occasional sudden attacks of obscuration of sight. The light sense is nearly always disturbed. The patients have difficulty in adapting themselves to changes in the surrounding illumination. They find that their eyes are either easily dazzled by a light, which formerly they could look at without discomfort, or that they now require a much brighter light to enable them to see to work with comfort. These differences in light perception may not be easily measured and charted, but an intelligent and observant patient, assisted by a few well-directed questions, can always give a convincing description of the symptoms.

Slight disorders of the colour sense are even more difficult to detect during an ordinary clinical examination, but careful attention to the patient's description of the difficulties he is having with his sight will usually give a clue to the direction further examination should follow. For example, if a woman is in the habit of working with colours, she is likely to complain of the difficulty she now has in differentiating between varying shades of the same colour. In the group of cases we are specially considering blue is the colour which causes most difficulty. The association of a disordered colour sense for blue with a diminished light minimum at once directs attention to the functioning unit of the retina and to its capillary supply as the sites of origin of the symptoms of which the patient is complaining.

In man the blood supply both to the eye and to the brain comes from the internal carotid artery, and the retinal circulation holds many analogies with the cerebral. As similar tissues behave alike in whatever part of the body they are found, it is reasonable to assume that what can be seen in the eye occurs also, though hidden from view, in the brain. It is not surprising, therefore, that many of the patients complain of nervous symptoms, which are strictly on a par with their visual troubles. Among these may be mentioned want of the power of concentration, and unusual difficulty in remembering what they have just been reading. Many complain that in conversation they are apt to lose the thread of an argu-

ment, and come to a dead stop by forgetting what they meant to say. They are nearly always restless, irritable, impatient, forgetful, depressed, and difficult to live with. The more thoughtful among them are very apt to exaggerate the importance of these symptoms, and to become neurasthenic and hypochondriacal. It is a great help to them when they can be made to understand that both their nervous symptoms and their visual troubles are due to a similar cause, and that both of them are curable.

CAPILLARY CONGESTION IN RETINA AND DISORDERED METABOLISM

Ever since the introduction of the ophthalmoscope there has been recognized to be a close clinical relation between the eye and the kidney. In the one organ as in the other congestion of the capillaries causes impairment of function—diminished light sense in the eye, diminished output of urine in the kidney. One of the characteristic clinical features of the group of cases we are considering is interference with the full activity of the kidney. There is usually not only a diminution in the quantity of urine excreted in twenty-four hours, but also a disturbance in the normal ratio between output and specific gravity. Although the quantity of urine passed in twenty-four hours is considerably reduced, the specific gravity is not increased and is often below normal. A further evidence of an error of metabolism is usually found when a specimen has stood in a urine glass overnight, inasmuch as microscopical examination of the sediment reveals urates, or crystals of uric acid or of oxalate of lime: most characteristic of all is when the field of the microscope shows a very large number of minute oxalate of lime crystals. The frequent clinical association of a defective colour sense for blue with persistent oxaluria strongly suggests that both symptoms are the result of disordered metabolism. In the absence of any complications there is no interference with the normal excretion of urea, and neither sugar nor albumin is likely to be present.

BACTERIAL INFECTION AND THE OPHTHALMOSCOPIC PICTURE

Duke-Elder, in writing of the relation of toxæmia to high blood pressure, says: "A raised blood pressure is an expression of the effect of toxic influences acting over the whole extent of the arterio-capillary bed." Pines¹ is right, therefore, when he insists on the use of the sphygmomanometer in association with the ophthalmoscope. In the group of cases we are now considering blood pressure is almost invariably above normal, but hæmorrhage from the retinal blood vessels is exceedingly rare. It is now generally admitted that high blood pressure *per se* will not cause rupture, unless there is fragility of the walls of the vessels as a result of previous disease. Persistent hypertension is, however, in all probability a decisive factor in differential diagnosis in its relation to aetiology, prognosis, and treatment. For example, it is well known that capillary congestion of the retina can arise as a result of bacterial infection, and that it is indistinguishable by the use of the ophthalmoscope alone from a similar condition due to metabolic disorder. For obvious reasons it is very important to be able to distinguish the one condition from the other; but any evidence in my possession only warrants me in offering the suggestion that in capillary congestion of the retina search should always be made for a hidden focus of microbic infection in every case in which blood pressure shows little deviation from normal, and when an examination of the urine reveals no evidence of metabolic disturbance. The following case is a good example.

In September, 1928, a man aged 53 began to complain of discomfort in his eyes after reading. He was almost emmetropic, and the spectacles he was using for close work were quite suitable. Nothing was revealed in the examination of the eyes except marked loss of translucency in the ophthalmoscopic picture. It was thought that an error of metabolism was the cause of the symptoms, but the patient did not respond to eliminant treatment. His family doctor reported that he had always found blood pressure and urine to be normal, and that repeated examination had failed to reveal any definite disease. Although the patient never felt well, he was able to attend to his business. No one thought there was anything seriously the matter with him until May 19th, 1930, when he was seized with acute appendicitis. The condition revealed at the operation showed that the local disease must have been present for a very considerable time. Peritonitis and paralysis of the bowel followed, and the patient died within three days after the acute appendicitis had been diagnosed.

Reconsidering this case in the light of the fatal termination I feel very strongly that more attention should have been paid to the fact that urine and blood pressure were persistently normal. Had the significance of that fact been fully appreciated, it is very probable that less attention would have been given to errors of metabolism, and a more diligent search would have been made for a hidden focus of bacterial infection. In medicine intelligent search very often leads to discovery.

In none of these cases is a cure possible until the error of metabolism has been corrected, or until the source of local sepsis has been removed. So long as the exciting cause continues to operate no form of treatment will be effective. When, however, the cause has been removed capillary congestion disappears from the retina, the fundus oculi regains its normal translucency, and the patient is relieved of his general, as well as of his ocular symptoms.

Garrod² has pointed out that injurious influences proceeding from the patient's environment may so disorder normal metabolism as to cause trouble. He also says that the external factor does not affect all alike, but that it discriminates between the different members of the same family. In his clinical investigations into the part played by the home surroundings upon the health of the children, Rowand³ has found evidence in support of Garrod's research work, and has drawn special attention to a group from 2 to 6 years, all the members of which suffered from slight albuminuria. In almost every one of these children the fundus oculi, owing to loss of translucency, resembled red velvet. The optic disk was well defined in outline, but was of a rose-pink colour as a result of capillary congestion, which was observed to vary in degree from time to time in the same patient. The retinal veins were prominent and somewhat rough in outline, and the light reflex from the walls of the arteries was unusually brilliant. Both eyes were affected equally, consequently the presumption is that capillary congestion was general rather than local, and that the albuminuria was due to dilatation of the capillaries of the kidney, with increased permeability of their walls to colloidal substances, rather than to any definite renal disease. The condition of the retina, therefore, was not due to the state of the kidney, but both in the retina and in the kidney the congested capillaries were the result of general toxæmia, due in all probability to disordered metabolism, and the onset of albuminuria may be regarded as a measure of its severity. In all the children included in this group the glow of health soon returned to the face after careful dieting accompanied, when necessary, with an ample supply of vitamins A and D, with suitable tonics containing iron, and by the free use of eliminants. As soon as the toxins were removed from the blood the muddy complexion cleared, the fundus oculi recovered its normal brilliancy, and the albumin disappeared from the urine. Rowand

has been able to follow up a considerable number of these children, and he reports that all those he has been able to examine have remained in good health.

In conclusion, let me repeat that in all probability the earliest sign of disease is distension and increased permeability of the walls of the capillaries; that this may be recognized clinically by lack of translucency of the ophthalmoscopic picture; that what can be seen in the eye is an index of what is occurring in other parts of the body where the phenomena are hidden from view; and that by means of the ophthalmoscope it is sometimes possible to recognize disease in its earliest stages—that is, at a time when in all likelihood it is easily curable.

REFERENCES

- ¹ Ramsay, Maitland: *The Eye in General Medicine*, 1929.
- ² Krogh, A.: *Anatomy and Physiology of the Capillaries*, 1924.
- ³ Bryson, L. H.: *Reports of the James Mackenzie Clinical Institute*, St. Andrews, vol. iii, p. 35.
- ⁴ Herring, P. T.: *Ibid.*, vol. ii, p. 133.
- ⁵ Friedenwald, J. S.: *Amer. Journ. Ophthalmol.*, 1924, 1925.
- ⁶ Duke-Elder, W. S.: *Recent Advances in Ophthalmology*, third edition.
- ⁷ *Idem*: *Text-book of Ophthalmology*, 1932, i.
- ⁸ Pines, N.: *Brit. Journ. Ophthalmol.*, 1927, 1929.
- ⁹ Garrod, A. E.: *The Inborn Factors in Disease*, 1931.
- ¹⁰ Rowand, A.: *Practitioner*, November, 1927.

AVERTIN NARCOSIS IN OPERATIONS FOR TOXIC GOITRE

BY

GEOFFREY KEYNES, M.D.CAMB., F.R.C.S.ENG.

ASSISTANT SURGEON, ST. BARTHOLOMEW'S HOSPITAL; CONSULTING
SURGEON, L.C.C. THYROID CLINIC, NEW END

The operation of partial, or "subtotal," thyroidectomy for toxic goitre is potentially a highly dangerous procedure, and the reasons for this element of danger are plain to see. Many of the patients submitted to operation are acutely ill, and removal of part of the thyroid gland is sometimes undertaken as an emergency or life-saving measure. Even when the patient is not so ill as this, she is often existing on the edge of a precipice, and any disturbance, even of moderate severity, may be enough to push her over, either by the production of "thyroid crisis" or by putting just too much strain on an already overburdened and damaged heart. The degree of strain produced by the operation is bound to be considerable if it is completed in one stage, since it entails a wide dissection of the neck and "dislocation" of the thyroid gland, a sinister-sounding term, which seems to imply some violence. But although the potential danger of the operation is great, the actual danger seems to have been reduced in some hands to an almost negligible amount if figures of operative mortality are to be taken as a reliable indication. It is the purpose of this article to examine briefly the factors responsible for this remarkable change brought about in what was formerly regarded as an exceedingly dangerous procedure, and to support my own belief that the choice of an anaesthetic has great importance. It will be illustrated from a consecutive series of 243 operations performed during the last four years on 220 patients.

FACTORS DIMINISHING OPERATIVE RISK

It would be platitudinous at the present time to enlarge upon the improvement wrought in recent years by the use of iodine in preoperative medication. It is well known that a large part of the reduction of the operative mortality has been due to this, and that iodine has its chief value in the preoperative stage, the initial improvement not being maintained if the use of iodine be prolonged. It would be difficult, also, to exaggerate the importance of improvement in the technical skill and in

the judgement of the operator. Thyroidectomy is technically one of the most exacting of operations; and one in which any failure in detail may cost the patient's life. Gentleness and precision, control of haemorrhage, and avoidance of unnecessary delay are all of importance to the patient's safety. It is notorious that the larger the number of thyroid operations in any one clinic the safer are the patients, since frequent practice makes for the establishment of an efficient routine on the part of the team and for the necessary familiarity with operative details on the part of the surgeon. This applies, in some degree, to the performance of all operations, but it is of superlative importance in the performance of partial thyroidectomy for toxic goitre.

Of great importance also is the judgement of the collaborating physician and surgeon as to when the right moment for operation has arrived, and which patients are actually so ill that any operation means certain death—nowadays a vanishing proportion of the whole. Important also is the judgement of the surgeon as to which patients should be treated by operation in two or more stages. Here, again, experience is an important factor, for which there can be no substitute.

It is clearly difficult to disentangle the relative importance of these different factors in the clinical and operative complex. One more remains, however, which I wish to consider in detail, and that is the choice of anaesthetic. A great variety of anaesthetic methods have been used, from the "thyroid-stealing" method of Crile under hypnotic suggestion to the somewhat complicated method presently to be described. Ten years ago ordinary ether anaesthesia was regarded as satisfactory for operations on toxic goitre, though it was found that the inevitable disturbance to the patient from post-anaesthetic coughing and vomiting was distressing, if not directly prejudicial to her prospects; and it may be taken as a rule in dealing with toxic goitre that all disturbance reacts unfavourably on the patient, and is therefore indirectly prejudicial. An effort was accordingly made to eliminate ether anaesthesia, and a phase followed in some clinics of using local analgesia aided only by a preliminary injection of morphine and hyoscine. It was thought necessary to reinforce the effect of the narcotics by elaborate precautions directed towards the removal of external stimuli, such as noise and light—and very difficult it was to do this effectively in a busy hospital ward. The efficacy of morphine and hyoscine, too, is very variable; sometimes these drugs fail to produce adequate narcosis, and occasionally the patient becomes actually excited, the drugs having only produced loss of control without depressing the main centres of consciousness. The use of local analgesia was found to give improved results compared with ether anaesthesia, and its use was continued for some years. The injection technique which I employed was that learnt from Sir Thomas Dunhill, and consisted of local infiltration of the field of operation with 0.5 per cent. novocain solution in normal saline with 1 in 500,000 adrenaline hypochloride. Usually only about 150 c.cm. were used, so that the total amount of novocain injected amounted to 0.75 gram. A field-block of the cervical nerves was added for a short series of patients, but the analgesia appeared to be equally good without it, and it was soon abandoned as superfluous. Considering that the toxic goitre patient would seem, by the nature of her disease, to be pre-eminently unsuited for any operation under local analgesia, the results were remarkably good. Many patients, however, left the operating table with high pulse rates, and the operation entailed a great strain on both patient and surgeon. Any thyroid operation is already sufficiently exacting for the surgeon without the necessity for watching closely the patient's mental reaction throughout the procedure, and for the

patient it could only be described as an ordeal. The elimination of these objectionable features had already been attempted by various operators with the use of a rectal anaesthetic or narcotic such as ether or paraldehyde. I had myself used the former, but rejected it as being unsafe and as upsetting the patient almost as much as an inhalation ether administration. I therefore welcomed the introduction of rectal avertin when I found that it was regarded by the anaesthetists, represented by my colleagues Dr. C. L. Hewer and Dr. Frankis Evans, as a safe and reliable form of narcotic for patients with toxic goitre.

EXPERIENCE WITH RECTAL AVERTIN

Our first experience of the use of avertin in toxic goitre was gained in treating a patient who was one of the most seriously ill that I have seen.

A boy aged 17 was under treatment by Dr. Langdon Brown in St. Bartholomew's Hospital. His physical and mental development were those of a boy of 12, and there were no signs of puberty. Exophthalmos was extreme, and all the other signs of toxic goitre were fully developed, with enlargement of the heart, frequent attacks of vomiting, and great nervous irritability. His metabolic rate was estimated to be only +34 per cent., but he was nevertheless obviously extremely ill, with a pulse rate of 100 to 130 in bed, rising occasionally to 160 or 170. After he had been under treatment for nearly four weeks his condition was worse rather than better. His general pulse level had risen to 130 to 150, and it was clear that he would soon die if nothing further were done. An operation was therefore undertaken on December 31st, 1929, for ligature of the superior thyroid arteries, the anaesthetic being local infiltration with 0.5 per cent. novocain followed by gas and oxygen. The patient was exceedingly apprehensive, and reacted violently to this interference. His pulse rate rose to 200 and remained in the neighbourhood of that figure for thirty-six hours, and he was restless and noisy. He barely survived, but his condition eventually returned to much the same level as before the operation. It could not be said that he was really any better than this when a second operation was undertaken three weeks after the first. On this occasion, however, he was given rectal avertin to the amount of 0.1 gram per kilo of body weight, and was soundly asleep when put on the operating table. After the neck had been infiltrated with novocain the right lobe of the thyroid was removed, no further anaesthetic being required. His pulse rate at the beginning of the operation was 172, and at the end 140. His pulse rate did not rise after this time above 160, and there was no further reaction. He steadily improved, and a month later the greater part of the second lobe was removed, again under avertin, though on this occasion narcosis was not so deep, and gas and oxygen had to be given in addition. The patient has since made a complete recovery, with rapid mental and physical development, though I received the impression that without the help of avertin he would not have survived the second operation.

We accordingly resolved to employ rectal avertin systematically for patients with toxic goitre, and this communication is based on experience of its use in patients operated upon since January 1st, 1930, at St. Bartholomew's Hospital, at the L.C.C. Thyroid Clinic, New End, or in nursing homes. We agreed from the start that no attempt should be made to obtain full anaesthesia with rectal avertin, but that it should be regarded only as a basal narcotic, and should be supplemented as a routine by a local infiltration of the neck with novocain and, whenever necessary, with gas-and-oxygen inhalation. It was also agreed that no risk of respiratory depression should be introduced by excessive premedication, though a small dose of morphine should precede the avertin as a general rule. We hoped by these means to achieve the blissful state of having the best of both worlds—that is to say, of totally eliminating mental disturbance in the patient while giving the surgeon the advantage of having an unconscious patient whose welfare was not

being endangered by the absorption of any drug in sufficient quantity to produce toxic effects.

Each patient has accordingly received morphine 1/8 grain two hours before operation and 1/12 grain one hour before, or, more frequently, a single injection of 1/8 grain one hour before operation. The danger of producing respiratory depression by giving larger doses than this has unfortunately been demonstrated more than once, in spite of warnings by Sir Francis Shipway and others. In our series no patient has ever given anxiety from this cause, so that morphine 1/8 grain appears to be a safe dose, though probably it is not essential to give any morphine at all.

Forty-five minutes before operation the patient is given avertin solution per rectum to the amount of 0.09 or 0.1 gram per kilo of body weight. In four patients of the present series the amount was increased to 0.11 gram, but in others, if the patient was heavy, less than the calculated amount was administered. The larger total is given to the more acutely toxic patients and the smaller to those that are less ill, for it is noticeable that individuals with a metabolic rate that is much above normal are less deeply narcotized by a given dose than are those with a lower metabolic rate. This constitutes an additional safeguard in using avertin for toxic goitre, and it seems to be clear that an upper limit of 0.1 gram per kilogram constitutes a safe dose, since no patient in our series has been unduly narcotized. All the patients have been unconscious when brought on to the operating table except one, who was suffering from diarrhoea and was unable to retain more than a fraction of the dose. On this occasion the operation was not performed, but was done on another day with the help of omnopon and hyoscine instead of avertin.

When the patient has been placed on the operating table the mask for gas-and-oxygen administration is fixed in position on the face, but as a rule no gas is given at this stage. The skin is cleaned, towels are put in position, and the operation area is then infiltrated with 0.5 per cent. novocain solution in normal saline containing 1 in 500,000 adrenaline hydrochloride. It is quite unnecessary to use a solution of greater concentration than this. With the help of a Dunn's self-filling syringe the infiltration is rapidly effected, and as the volume of solution used is usually in the neighbourhood of 100 c.cm. to 150 c.cm. the total amount of novocain given is about 0.5 gram to 0.75 gram, and no patient, so far as I know, has ever suffered any deleterious effect from it.

For some of the more mildly toxic patients this combination of basal narcosis and local infiltration with novocain is all that is needed, but in fewer than 10 per cent. is the operation completed without any gas and oxygen being given. Some of the more acutely toxic patients are disturbed by their removal from the trolley to the operating table; others are roused by the first prick of the local anaesthetic needle; and yet others remain quiescent until half-way through the operation. Once the patient has been roused she is, although still unconscious in the ordinary sense, always uncontrollably restless, so that gas and oxygen is begun at once whenever this occurs; but an expert administrator can, with this combination of drugs, maintain perfect anaesthesia with a minimal amount of gas, and can entirely avoid cyanosis. It is particularly important that the patient should not be allowed to become cyanosed, experience having taught me that there is no factor more potent in producing a rising pulse rate in a toxic patient.

When the patient is back in bed, after the completion of the operation, she usually remains quiescent for two or more hours, so that mental disturbance is eliminated at this stage as effectually as before, and this constitutes another important advantage in the use of avertin.

In the days of ether anaesthesia and of conscious patients with a novocain infiltration, I was accustomed to seeing the patients leave the operating table with a somewhat high pulse rate, which was an indication of an unfavourable reaction to the procedure. Under avertin narcosis the pulse rate may rise a little with the initial disturbance and the induction with gas and oxygen, but not infrequently the pulse rate is actually lower at the conclusion of the operation than at the beginning, which is a truly remarkable reversal of the usually accepted effect of operative intervention. Very seldom is there any alarming rise of pulse rate during the operation, and the post-operative reaction is correspondingly mild and transient. This appears to me to be one of the greatest of the benefits conferred by the use of avertin, since there is seldom any anxiety period for patient, nurse, or surgeon. In a few patients unusual events were noticed, and it is of interest to describe these in detail as perhaps throwing light on the question as to whether avertin in moderate dosage is ever really deleterious to toxic patients.

A patient, aged 25, with a resting pulse rate of 100 to 130, was given the usual dose of avertin (0.1 gram per kilo). She was restless from the start, and before the operation had begun the pulse rate had risen to 140. The operation was therefore limited to ligation of the right superior thyroid artery. The pulse fell to 80 to 90 within forty-eight hours, and seven days after the first operation the right lobe of the thyroid was removed, the pulse rate on this occasion rising to 130. Improvement again followed. A fortnight later avertin was again given, and on this occasion the pulse rate immediately rose to 160. Again, therefore, no more was done than to ligature the left superior thyroid artery. Ten days later avertin was given for the fourth time, and the operation was completed without causing the pulse rate to rise above 120.

At the third operation it might have been concluded that the extreme rise in pulse rate was due to the avertin, but that this conclusion would be erroneous seems to be shown by the following:

A patient, aged 22, with a severe degree of toxic goitre and a resting pulse rate of 100 to 140 was treated medically in hospital for over three weeks without any improvement at all. Her pulse remained exceedingly irritable, and her average pulse rate was higher after three weeks than when she was admitted. It was therefore decided to operate in stages without further delay. She was given the usual dose of avertin, and the right superior thyroid artery was ligatured under local anaesthesia and gas and oxygen. The pulse rose to 160, and remained for three days at 150 to 160, after which it fell to the same level as before. A week later the left superior thyroid artery was tied as before, the pulse rate on this occasion remaining for three days at 130 to 150, after which there was considerable improvement. A fortnight later the patient was given avertin for the third time, and the right lobe of the thyroid was removed. The reaction was relatively mild, the pulse not rising above 140. After another fortnight's interval avertin was given for the fourth time, and on this occasion the pulse rose to 180 before the operation had been begun, and the patient was immediately returned to the ward. This extreme rise in pulse rate was difficult to explain, but it was suggested that it might be in some way due to the repeated doses of avertin. It was therefore decided to perform the last stage of the operation without avertin, and to give only morphine 1/4 grain and scopolamine 1/100 grain, local anaesthesia and gas and oxygen being given on the operating table. The rise in pulse rate, however, was much as before, and for three days remained at 130 to 160. Within ten days after the operation had been completed the pulse rate was normal, and the patient has been virtually cured since that time.

It appears, therefore, that this patient had an unusually irritable heart, and that its rapid rate was to be attributed to its being sensitive to minor disturbances rather than to any specific effect of the avertin. It would appear, indeed, from the following case that if any specific effect

on the heart is produced by avertin it will be a sedative rather than an irritative effect.

A patient, aged 16, who was under treatment at the L.C.C. Thyroid Clinic at New End, had already had a.1 four thyroid arteries tied by Sir Thomas Dunhill. In spite of this she remained in a state of severe mental derangement, and showed a resting pulse rate for week after week of 140 to 180. No improvement was being obtained, and I therefore decided, in Sir Thomas Dunhill's absence, to operate in spite of the rapid pulse rate. She was given avertin, and immediately the rate fell to 120. It remained at about that level throughout the operation for removal of the right lobe of the thyroid, and rose again to 140 when she regained consciousness. Twelve weeks later she was again given avertin for the final stage of the operation, and again her pulse rate fell to a much lower level during the operation. Her later history was one of steady recovery, and she was discharged from hospital quite sane and with a pulse of 110.

The sedative effect of the avertin narcosis in this patient was most striking and reassuring.

SUMMARY AND CONCLUSIONS

The primary object of using the somewhat complicated anaesthesia technique that I have described was, of course, the reduction of operative mortality to as near zero as possible. That this object has been achieved is suggested by the fact that of the 220 patients who have been operated on under avertin narcosis only three have died soon afterwards. One of these was a woman of 24, who was clearly acutely ill and rapidly losing ground, so that operation was undertaken lest worse befall. The operation under avertin was successfully performed without any undue disturbances. On the day following, however, the pulse rate rose to 170, and remained about this level for over forty-eight hours. She then rapidly improved, and by the sixth day after operation all danger seemed to be over. On the seventh day, however, vomiting started, and the patient died twenty-four hours later in a condition resembling acute dilatation of the stomach. A critical review of the case afterwards suggested that the real cause of death was probably digitalis poisoning, the resident medical officer having given nine injections of digitalin 1/240 grain in the course of five days.

Of the other two patients who died one had gross auricular fibrillation and died from heart failure a few hours after the operation. The other was so ill that she developed an acute thyroid crisis a few hours after the ligation of one superior thyroid artery, and quickly died.

The immediate operative mortality among these patients has therefore been less than 1 per cent., and it can be claimed that this low figure has not been obtained by any selection of patients. Some of them have been mildly toxic, but a large proportion have been seriously ill, and operation has never been refused when asked for by a medical colleague, even when the reason for operation was the patient's desperate condition. In nineteen cases the patient was so ill that the operation was performed in two or more stages. Twenty-four patients were suffering from gross auricular fibrillation. Judged by ordinary standards the "operative risk" in most cases was considerable, and I cannot avoid the conclusion that the low mortality is to be attributed, to some extent, to the systematic use of rectal avertin.

My patients, therefore, owe a very great debt of gratitude to the skill of the nursing staff who have attended them and to the anaesthetists with whom I have collaborated. The majority of the anaesthetics were supervised or administered by Dr. C. Langton Hewer, Dr. Frankis Evans, and Mr. Brian Rait-Smith. The anaesthetics at New End were given by Dr. E. A. Seymour.

ELECTROCARDIOGRAPHIC CHANGES DURING BRIEF ATTACKS OF ANGINA PECTORIS

BY

MALCOLM K. GRAY, M.B.(N.Z.), M.R.C.P.LOND.

PHYSICIAN IN CHARGE OF THE CARDIOGRAPHIC DEPARTMENT,
CHRISTCHURCH HOSPITAL, NEW ZEALAND

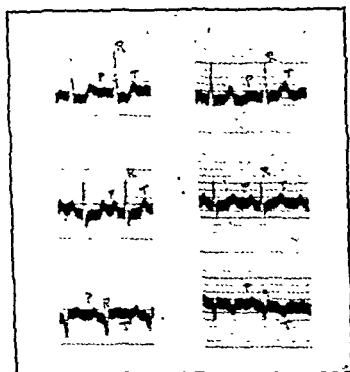
Large numbers of electrocardiograms of attacks of cardiac infarction have been published, but there are relatively few of the brief attacks of angina pectoris. This is due, no doubt, to the infrequent opportunities which arise, but the records are of importance in throwing light on the mechanism of production of the pain.

Levine, Ernstene, and Jacobson¹ published a series of electrocardiograms taken during attacks of angina produced by injections of epinephrine. They did not find any specific changes, the only modification being a differ-

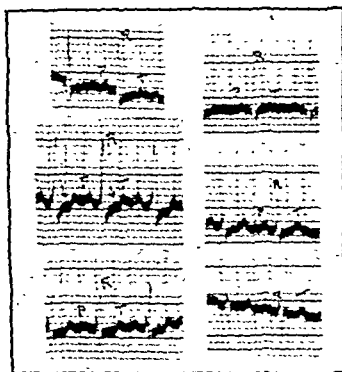
knowledge of the effect of the drug itself on the electrocardiograms during the attack.

CASE RECORDS

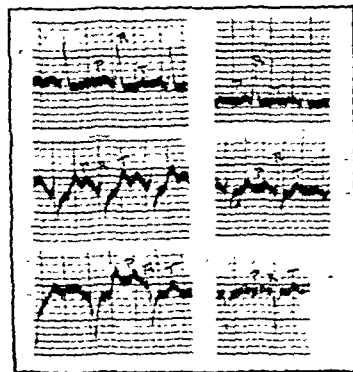
Case 1.—A female, aged 62, first seen in June, 1932, when she complained of precordial pain radiating to the left arm. She had had the pain for two years, but it had become worse recently. It was induced by exertion or excitement, and was always relieved by rest. The heart was not enlarged, and the sounds were normal. Blood pressure: 160/80. Prolonged rest benefited her, but in March, 1933, she became gradually worse, and during an examination of the heart she had an attack which she described as being quite typical. The pain was relieved by ten minutes' rest, and with adequate rest she has since remained fairly well. The electrocardiograms are reproduced in Fig. 1. (A) was taken immediately after the commencement of the attack, and (B) some time later, when the patient was free from pain. (A) shows a depression of the RT interval in Leads 1 and 2, and an elevation in Lead 3. The amplitude of QRS is slightly increased. (All electrocardiograms are standardized 0.2 sec. \times 0.2 cm.)



(A) FIG. 1. (B)



(A) FIG. 2. (B)



(A) FIG. 3. (B)

ence in size of the waves without any change of direction. These attacks were artificially produced, and it would be unwise to apply their conclusions to a "naturally" produced attack. Parkinson and Bedford² summarized the literature to date, and reported five cases of brief attacks of angina in which electrocardiograms had been taken during and after the paroxysm. There was a depression of the RT interval and a diminution or an inversion in T waves in one or more leads. They did not suggest that these changes were present in all cases. Wood and Wollerth³ reported thirty cases, fifteen of which showed changes in the T wave during the attack; seven of these were severe and eight were mild attacks. The changes consisted of an alteration in height of the T wave, or a change from positive to negative, and the appearance of a depression in the RT interval. In the electrocardiograms reproduced Charts 8 and 12 showed the depression of the RT interval. The authors mentioned this as occurring in five other cases, but no charts were given. Fifteen cases showed no change. They also completed a series of animal experiments, and their conclusions were that the majority of the attacks of angina were associated with a localized circulatory disturbance in the heart. The possibility of other mechanism was not definitely ruled out.

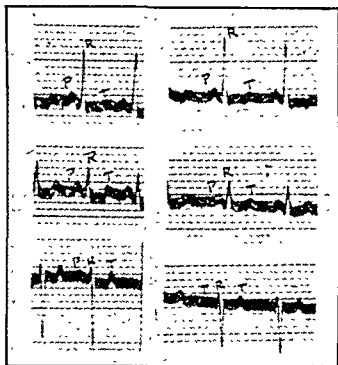
The records of four cases are given below; all the patients had an attack in the consulting room. The attacks were probably induced by excitement, as there was no preceding exertion, and were relieved by rest, the longest time for complete cessation of pain being twenty minutes. Amyl nitrite was not used, as there is no

Case 2.—A female, aged 72, first seen in October, 1931, when she complained of substernal pain radiating in both arms, but worse on the left side; duration four to five months. The pain was always induced by exertion or excitement, and relieved by rest. There was some dyspnoea at night, which was relieved by sitting up. The heart was slightly enlarged, and was half an inch beyond the mid-clavicular line. There were no murmurs; aortic second sound increased. Blood pressure: 250/140. While the examination was in progress the patient complained that the pain was beginning. It developed into a typical attack, which was relieved by ten minutes' rest. After rest she has since remained well.

The electrocardiograms are reproduced in Fig. 2. (A) was taken at the height of the attack, and (B) half an hour later, when the patient was free from pain. (A) shows a depression of the RT interval in Leads 2 and 3. The amplitude of QRS is increased. A further electrocardiogram taken in November, 1931, was identical with (B).

Case 3.—A female, aged 53, first seen in March, 1932, when she complained of a dull, aching precordial pain radiating to the left arm, induced by exertion and relieved by rest; duration eighteen months. Less exertion was required to produce the pain than a year previously. The left border of the heart was one inch beyond the mid-clavicular line; there were no murmurs. Blood pressure: 175/95. During the examination the patient had a typical attack, which was relieved by rest in a very short time (about five minutes). A prolonged rest has given her freedom from pain. The electrocardiograms are reproduced in Fig. 3. (A) was taken during the attack, and (B) following it. (A) shows a depression of the RT interval in Leads 1 and 2. The amplitude of QRS is slightly increased. (B) shows no depression in Lead 1, but a slight depression in Lead 2.

Case 4.—A man, aged 62, first seen in January, 1932; he complained of substernal pain radiating to both arms, of six years' duration. The pain was much more easily produced in the last year; moderate exercise, such as light digging, brought it on, and it lasted for two to three minutes. It was always relieved by rest. The left border of the heart was in the mid-clavicular line; there were no murmurs. Blood pressure: 180/90. During the examination the patient had an attack, which he described as being rather worse than usual. It was relieved by twenty minutes' rest. He now keeps well with adequate rest. The electrocardiograms are reproduced in Fig. 4. (A) was taken during the attack and (B) following it. (A) shows a depression of the RT interval in all leads, particularly in Leads 2 and 3.



(A) FIG. 4. (B)

DISCUSSION

In these four cases definite changes in the ventricular complexes of the electrocardiograms are demonstrated. These changes resemble those produced by coronary thrombosis. It is agreed that they are not always present, due no doubt to "silent areas" in the myocardium, changes in which do not affect the electrocardiogram. The positive evidence adduced in the above cases and in those previously published points very strongly towards the coronary origin of anginal pain.

REFERENCES

- ¹ Levine, Ernestine, and Jacobson: *Arch. Int. Med.*, February, 1930, p. 191.
- ² Parkinson and Bedford: *Lancet*, 1931, i, 15.
- ³ Wood and Wollerth: *Arch. Int. Med.*, March, 1931, p. 339.

The Italian Fascist National Federation Against Tuberculosis has again placed at the disposal of the International Union Against Tuberculosis six scholarships at the Benito Mussolini Institute in Rome. The conditions submitted are as follows: These competitive scholarships, of a value of 6,000 lire respectively, plus board and lodging, are intended to enable foreign medical practitioners to stay at the Benito Mussolini Institute in Rome for the purpose of following a course of studies. This stage of eight months will correspond with the academic year (from November 15th to July 15th), including the usual holiday periods. The scholarships will preferably be awarded to young physicians already familiar with tuberculosis problems who wish to improve their knowledge of this branch of medicine. The kind of work undertaken at the Institute will be subject to an agreement between the director and the candidate. The publication expenses resulting from this work may be defrayed partly or entirely by the Institute. The scholarships will be awarded at the summer session of the Executive Committee of the International Union, which meets this September. No candidature will be considered unless it has been forwarded by an association belonging to the International Union. The body representing Great Britain and Northern Ireland is the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1, to whom applications should be sent not later than July 1st, giving particulars as to age, qualifications, and professional experience.

MAGNESIUM DEFICIENCY IN THE RAT

BY

RONALD W. BROOKFIELD, M.D., Ph.D.
M.K.C.P., D.P.H.

HONORARY ASSISTANT PHYSICIAN, ROYAL SOUTHERN HOSPITAL,
LIVERPOOL; BRITISH MEDICAL ASSOCIATION RESEARCH
SCHOLAR, 1929-31

(From the Department of Biochemistry, University of Liverpool)

The intensive study of calcium metabolism, for which the investigations of rickets and tetany carried out in recent years have been chiefly responsible, has not stimulated significantly inquiry into the part played in the organism by magnesium, which so closely resembles calcium in its chemical properties. Whereas the concentration of magnesium in serum is of the order of 2 mg. per 100 c.cm. as compared with 10 mg. of calcium, its concentration in muscle, which accounts for so large a part of the body weight, is four times as great as that of calcium—that is, 20 mg. as compared with 5 mg. The distribution of the two constituents in the tissues suggests that magnesium plays a part in physiological processes not less important than that played by calcium. Nevertheless, it is only comparatively recently that magnesium has been shown to be necessary to life.

Leroy¹ found that when mice were fed on a diet containing 1.03 mg. of magnesium in 100 grams, death occurred in twenty-four to thirty-five days, and his work has been considerably amplified by Kruse, Orent, and McCollum,² who, using a diet which contained only 0.18 mg. of magnesium in 100 grams, have studied the symptoms and some of the biochemical changes which result when rats and puppies are deprived of magnesium. Cramer,³ by placing young rats on a diet in which the amount of magnesium was reduced to 0.632 mg. per 100 grams, showed that degenerative changes occur in the kidneys as a result of magnesium deficiency. I have been engaged on a biochemical and pathological study of magnesium deprivation, and have utilized for this purpose a small group of rats. The findings are of interest in that while the convulsive phenomena described by Kruse, Orent, and McCollum have been confirmed, the cutaneous manifestations, which are regarded by these workers as one of the distinctive features of magnesium deprivation, have been entirely absent. Moreover, histological examination of the organs has revealed marked pathological changes in the liver, as well as changes in the kidneys somewhat similar to those reported by Cramer.

EXPERIMENTAL

A diet composed of a mixture of casein, starch, butter-fat, vitamins, and salts, freed from magnesium by the methods employed by Kruse, Orent, and McCollum, was given to eight young black-and-white rats weighing from 65 to 107 grams. Four other rats, which served as controls, received the same diet with the addition of magnesium sulphate. The animals took the diet well and increased in weight for a short period. Later the weights of both test and control rats tended to remain stationary or to fall slightly. On the twenty-second day of the experiment Rat 1, which had been quiet for some days, was found dead in its cage, and two days later Rat 3 was found in a moribund condition. On the twenty-seventh day the first convulsions were observed in Rats 7 and 8, which had previously appeared entirely normal. After going round in circles for a short period Rat 8 dived under its feeding dish and went into generalized convulsions, a tonic being followed by a clonic stage. A second slighter convulsion occurred after the first. The convulsive attack of Rat 7 was milder, but otherwise similar. Both animals recovered completely

after an hour's quiescence. Later in the same day Rat 5 had a convulsion which appeared to be induced by the noise made by the setting in motion of a vacuum pump. Two seconds later Rat 7 again went into convulsions. In both these animals the spasms were of considerable severity, and were reminiscent of insulin convulsions in the rabbit. The animals were hurled with great violence from side to side of their cages during the tonic stage. In the clonic stage they attempted to climb up the walls of their cages, but appeared to be too weak to do so. A phase of champing of the jaws followed, and afterwards the animals lay on their flanks apparently unconscious. Rat 5 recovered quickly, but Rat 7 had a few further clonic spasms an hour later and died.

Rat 2 died on the thirty-first day after three successive attacks. The clonic stages were prolonged, the forepaws being continuously crossed, while the jaws showed champing movements with drooling of saliva. On the thirty-sixth day Rat 4 developed oedema of the paws, and had a mild convulsion; it died after a further slight seizure five days later. Rat 8 was found dead on the thirty-eighth day, while Rat 5 died rapidly after a very mild attack on the forty-first day. These two animals, therefore, survived eleven and fourteen days after their first observed convulsion. The sole surviving test animal, Rat 6, was killed on the fiftieth day; it was never seen in a convulsion. The control animals, which remained in good condition, were killed about the same time.

PATHOLOGICAL CHANGES

Rigor occurred very rapidly. Dissection of the rats failed to reveal any abnormality visible to the naked eye. The livers and kidneys of Rats 4, 5, and 6, and of a control rat were examined microscopically, and the writer is indebted to Dr. R. Howard Mole, pathologist to the Royal Southern Hospital, for the histological details which follow.

Livers.—In each of the test animals the cytoplasm of many of the liver cells gave the appearance of being partially disintegrated, and had taken on a honeycomb structure. This change was most widespread in Rat 6. In this animal, too, a few scattered cells showed nuclear karyorrhexis. In Rat 5 the cytoplasmic change was focal in distribution and intervening cells were normal. In Rat 4 only slight cellular change was evident.

Kidneys.—Rat 5 exhibited profound changes in both glomeruli and tubules. The capsular lumen contained a large amount of detritus, which had compressed and pushed to one side the capillary tuft. In glomeruli less severely affected the cells lining the capsule were found to be swollen and desquamated. No normal tubules were seen. The epithelium was necrotic, and nuclei were almost absent. There was no increase in connective tissue and no calcification. In Rat 6 there was a moderate amount of parenchymatous change in the tubule cells, and a similarly moderate change in the glomeruli. Rat 4 exhibited very slight glomerular and tubular change. It is noteworthy that this was the only animal which showed any evidence of oedema during life. The renal findings resemble those of Cramer, but the degeneration is more widespread than in the sections illustrated by him. The calcification which he found so marked a feature was absent.

DISCUSSION

The findings recorded above are in general agreement with those of Kruse, Orent, and McCollum. My own results differ, however, in one important respect. The American workers have described a state of intense hyperaemia of the skin, which preceded the onset of the convulsions by some days. Moreover, in those animals which survived for a longer period they noted thinning of the coat and other trophic changes. In the present investiga-

tion no vasomotor or trophic phenomena were observed, if the oedema noted in Rat 4 be excepted. The weights of the animals were about twice as great as those of the majority of animals employed by Kruse, Orent, and McCollum. This fact doubtless accounts for the longer period which elapsed (twenty-one days or more as against their average of eighteen days), before the motor symptoms of magnesium deprivation became manifest. The American workers found that only 14 per cent. of the younger animals survived the first attack of convulsions, but that in the case of older rats the number of survivors was greater. In harmony with this observation three out of seven of the animals in the present series lived for periods of from five to fourteen days after the first attack, and may possibly have had other attacks while not under observation before they finally succumbed.

A further interesting feature was that, as the experimental period became more prolonged, the convulsions were less severe, even though fatal results ensued. Rats 4 and 5, the last animals to succumb, each died after a very slight attack. In Rats 3 and 7 opacities were seen to form in the lens a few minutes before death, but though the eyes of all the surviving animals were examined by Mr. A. McKie Reid with the help of the slit-lamp, no pathological changes were detected, nor did any of the animals which died subsequently exhibit the premortal opacities.

The mechanism whereby the convulsions are induced naturally calls for some explanation. Kruse, Orent, and McCollum believe that they are a form of tetany. It is generally recognized that deficiency of calcium upsets the balance of ions in the tissue fluids and leads to increased irritability of the nervous system, and they contend that the effects of magnesium deficiency are of a similar character. Differences in detail between the symptomatology of calcium and magnesium tetany they ascribe to the different degrees of irritability of the various tissues. That there are considerable differences in the manifestations of the two deficiencies is evident. In low calcium tetany the peripheral nerves are most characteristically affected, with the production of carpopedal and laryngeal spasm. In magnesium deficiency the motor phenomena appear to result from central irritation. Thus in the present investigation the convulsions came on with great suddenness, were generalized, and, when severe, left the animal unconscious for a short period. They were, in fact, typically epileptiform. In this connexion it may be noted that Meltzer and Auer¹ have shown that the injection of magnesium salts causes narcosis, and if the brain is depressed by an excess of magnesium it seems not unreasonable to suppose that it will be rendered hyperexcitable by a deficiency of the same element.

Whether the lesions in the kidneys or liver have any direct relation to the convulsions cannot yet be stated with any certainty. It seems highly probable that these lesions are responsible for the changes in the blood fat and the terminal rise in the blood non-protein nitrogen which have been reported by Kruse, Orent, and McCollum. It may ultimately be found, therefore, that the convulsions are due, not to tetany, but to renal and hepatic dysfunction.

SUMMARY

1. Convulsive phenomena occurring in rats deprived of magnesium are described.
2. The cutaneous changes reported by other workers have not been observed.
3. Acute degenerative changes have been found in the liver and kidney.

REFERENCES

- ¹ Leroy, J.: *C. R. Soc. de Biol.*, 1928, xiv, 431.
- ² Kruse, H. D., Orent, E. R., and McCollum, E. V.: *Journ. Biol. Chem.*, 1932, xcvi, 519; 1933, c, 603.
- ³ Cramer, W.: *Lancet*, 1932, ii, 174.
- ⁴ Meltzer, S. J., and Auer, J.: *Amer. Journ. Physiol.*, 1905, xiv, 366.

Clinical Memoranda

THREE CASES OF CATARRHAL JAUNDICE DEMONSTRATING THE INCUBATION PERIOD

The clinical similarity of these three cases makes it obvious that the patients suffered from the same disease.

Case 1.—A boy, aged 12. On January 9th, 1934, had pharyngitis and definite tonsillar enlargement, but no pus issuing from the tonsillar fauces. The uvula and soft palate were oedematous. Temperature 101° F. Two days later the throat condition had begun to settle down, when bile appeared in the urine. Two days later the child became jaundiced. The liver at this time was enlarged and tender, but there was no enlargement of the spleen. The stools were pale.

Case 2.—A girl, aged 15. On January 29th had pharyngitis, but no tonsillar infection, since these structures had been removed. The uvula and palate were red and oedematous. Temperature 100° F. Two days later the urine contained bile, but not so much as in Case 1, nor was the jaundice, which followed on February 2nd, so severe.

Case 3.—A man, aged 24. Had enlarged and red tonsils on February 18th, with a temperature of 102° F. The pharyngeal appearance was interfered with here because the patient had had a repair for a cleft palate as a child. On February 20th the urine contained much bile, and two days later the patient became deeply jaundiced. His liver was enlarged and tender, but there was still no enlargement of the spleen.

These patients were in the same family, and they all started with an upper air-passage infection. The incubation period was twenty days, and the source of infection the throat. The appearance of the throat was similar, but it is noteworthy that the girl, who had had her tonsils removed, did not have such a severe infection as the others.

Birmingham. ARTHUR BEAUCHAMP, M.R.C.S., L.R.C.P.

TORSION OF FALLOPIAN TUBE DURING PREGNANCY

The following case of torsion of the Fallopian tube, an example of which was described by Mr. A. McEachern in the *British Medical Journal* of February 3rd, derives additional interest from the fact that the patient was well advanced in pregnancy.

A woman aged 30 was admitted to the Preston Infirmary on December 4th, 1933, complaining of severe pain on the right side of the abdomen. She was about six months pregnant, it being her first pregnancy. The pain had begun about forty-eight hours before admission, and there was said to have been a rigor at the commencement.

The tongue was dry, pulse 94, temperature 98.6° F. The abdomen, which was enlarged to about the usual size for six months' pregnancy, was held rigid, but not continuously so. There seemed to be some tenderness all over, but it was most marked and definite on the right side. Sugar and pus were reported in the urine. There did not seem to be any peritonitis at the site of the pain, as the abdominal wall relaxed and moved normally when the patient was not holding herself tight. An enema was given, with good result. Large doses of pot. cit. were prescribed.

The pain continued the next day. The urine on laboratory examination contained 0.5 per cent. of glucose and ketones, but no pus. Blood sugar was 85 mg. per 100 c.cm. The temperature was never above 98.8° after admission. On December 6th, as the pain continued, cystoscopy was performed, since there seemed a possibility that the pain was due to right renal colic. Nothing abnormal was found, however; a catheter passed readily up the right ureter, and both ureters discharged intravenous dye in normal time.

On palpating the abdomen with the patient anaesthetized, a kind of knob was felt on the right side of the uterus, but I did not associate this with the patient's illness. After the negative cystoscopy, however, I decided to open the abdomen, and did so in the region of the right semilunar line. A black

mass, the knob which I had felt, was seen attached to the enlarged uterus, being the swollen and congested Fallopian tube, the pedicle showing well-marked torsion anti-clockwise. The mass was about the size of an infant's fist. The coils of the twist nearest the uterus were pale, those more distal being black, like the rest of the tube. The tube was removed and the abdomen closed. The patient recovered, and was discharged on December 23rd. There was no glycosuria subsequent to the operation. She reported fit at an antenatal clinic at the end of January, and is expecting admission to the maternity department about March 20th.

The first report of pus in the urine after ward examination was probably in error, as none was found subsequently on repeated examination. According to the diagram accompanying Mr. McEachern's account of his case the whole length of the tube appears to have been twisted. In the case just described the twist was concentrated in the narrow pedicle.

W. MCKERROW, M.B., F.R.C.S.,
Surgeon, Royal Infirmary, Preston.

CIRRHOSIS OF THE LIVER IN A BABY

Cirrhosis of the liver is rare in childhood. Graham Forbes' records the occurrence of forty cases among 5,500 post-mortems carried out at Great Ormond Street over a period of forty-five years. The cases that have been recorded have mainly occurred in later childhood, and the youngest case that I have been able to find in the English literature in which the diagnosis was confirmed by post-mortem examination is the one recorded by Sir Thomas Barlow in 1834, in which the condition was seen in a baby of 18 months. In the following case the condition was found post mortem in a baby 1 year old, and therefore seems worthy of record.

The baby was born on January 15th, 1932, and was full-time and weighed 8 lb. The pregnancy and labour were normal. It was breast-fed, and progressed normally till the age of 8 months, when it weighed 17 lb. At that time, however, while still on the breast, it commenced to go downhill. It changed from being a happy and contented baby, and became fretful. There was no vomiting or diarrhoea, and it continued to take its food well. It was then admitted to another hospital without a definite diagnosis being made. On January 2nd, 1933, it was admitted to a fever hospital with a diagnosis of nasal diphtheria, and was discharged on January 21st.

On February 8th the child was admitted to Hammersmith Hospital. It was then extremely marasmic and restless. Temperature 100.6°, pulse 168, respirations 32. There was a small haemorrhage in the left cheek, and a swelling in the lower part of the left forearm, which x-ray examination showed to be due to callus from an old fracture. Two days later the child was very collapsed, and had head retraction and a haematemesis. On lumbar puncture clear fluid under pressure was obtained. The child died the same day.

On post-mortem examination the liver was found to be yellow, and contained several small haemorrhages. It presented the typical "hobnail" appearance found in adults in cases of multilobular cirrhosis. The microscopical report was as follows: "Fatty degeneration, and fine-fibred coarse-meshed fibrosis of liver. The cirrhosis is almost certainly due to toxic absorption." The spleen was large and congested, and the kidneys were fatty. Haemorrhages were present in the stomach. The intestines presented no abnormality, and there was no mesenteric lymphadenitis. The lungs showed bronchopneumonia.

The aetiology of this case presents an interesting problem. In most of the cases described in the literature there is a definite history of alcohol, usually in the form of spirits, having been given. In the case described by Sir Thomas Barlow gin had been taken over a prolonged period, and Ernest Jones' found that alcohol had been administered in every single one of seventy-two cases reported in

the literature. In the case described above no such history was obtained. Apart from the illnesses mentioned, there had apparently been no other aetiological factor, such as gastro-enteritis, in which a fatty liver is commonly found. There had been no previous jaundice. Unfortunately no Wassermann reaction was done, but there was no other evidence of syphilis. In the absence of further definite knowledge one can only explain the condition on the vague theory of "toxic absorption."

I am indebted to Sir Thomas Carey Evans for permission to publish this case, and to Dr. W. G. Barnard for the histological report.

REFERENCES

- ¹ Forbes, J. Graham: *Transactions of the Pathological Society of London*, 1906, lvii, 247.
- ² Barlow, Sir Thomas: *British Medical Journal*, 1884, ii, 359.
- ³ Jones, Ernest: *Brit. Journ. Child. Dis.*, 1907, iv, 1.

BRYAN WILLIAMS, M.B., F.R.C.S.Ed.

CYST OF THORAX OUTSIDE THE PARIETAL PLEURA*

The patient was a man aged 63, who died in November, 1933, with extensive carcinomatosis (possibly primary) of the liver. Radiographic examination of his thorax during life had shown two closely adjacent spherical bodies (one larger than the other), situated just above the diaphragm in the left outer part of the thoracic cavity. These had been likened to two billiard balls. The post-mortem examination showed, besides the carcinomatosis of the liver and of some lymphatic glands, that the spherical radioscopic shadows were due to a bilocular, serum-containing cyst. The cyst (see figure) was situated in the loose connective and fatty tissue above the extreme left part of the diaphragm (on which it rested); it was outside the parietal pleura, which covered it. The lung was indented by the cyst, but there was no adhesion of the two layers of the pleura over it.



Macroscopical Examination.—The wall of the cyst was fibrous, with an endothelial lining—a single layer of cells in some parts, stratified endothelium in others; outside was connective tissue, with some fat and many solitary lymph follicles containing well-marked Flemming's "germ centres." Some of these lymph follicles actually formed part of the cyst wall, reminding one of the intimate relation of lymphadenoid tissue to the cyst wall in many cases of so-called branchial cysts of the neck.

Remarks.—This bilocular cyst seems to have been due to a congenital abnormality of development—namely, the formation of two pleural pockets—which afterwards became completely cut off from the main pleural cavity. It was correct in this view, the cyst in this case may be likened to certain serous cysts of the peritoneum, which are lined with endothelium similar to that lining the peritoneum. We have not found any published description of similar pleural cysts.

F. PARKES WEBER, M.D.
E. SCHWARZ, M.D.

* The case was demonstrated at the pathological evening of the Medical Society of London, January 8th.

Reviews

ENDOCRINE SYNDROMES

Professor NOËL FIESSINGER's introductory remark to his *Physiopathologie des Syndromes Endocriniens*¹ that endocrinology is "rapidly becoming a science where imprecision is united to fantasy," prepares us for a certain Gallic crispness of style. But when the reader finds the statement that "pathology is in effect the kingdom of endocrine interdependence," he may take alarm and feel that here is an enthusiast indeed. We may hasten to reassure him, for the author extends the sphere of endocrinology so widely as to make it practically synonymous with internal metabolism, in which case we may be prepared to accept his statement. Thus he includes the spleen, the kidneys, and the reticulo-endothelial system in this category, in addition to all the functions of the liver. Perhaps where the subject is specifically that of syndromes, this may be justifiable, and it certainly widens the scope of the book.

We are interested to note that the syndrome usually known as Fröhlich's is labelled also with the name of Babinski. This is historically correct, for Professor Harvey Cushing has recently reminded us that while he and Fröhlich were working in Professor Sherrington's laboratory in Liverpool in 1900, Babinski, unknown to either of them, published the first case of this syndrome that was recognized. Fröhlich, returning to Vienna in the next year, reported a similar case more fully, which excited much attention, and so his name has generally been associated with it. Babinski, however, has undoubted priority. It is, in a way, unfortunate that both these authors reported cases of chromophobe adenomas as being responsible for the syndrome, because this led to a very sinister prognosis being attached to it, whilst we now realize that there are many cases of Fröhlich's syndrome which are due to a delayed differentiation of the chromophobe cells. A chromophobe adenoma will imperil the eyesight, but such a diagnosis should not be made in the absence of pressure symptoms and an enlarged pituitary fossa.

Another interesting point in nomenclature is the revived tendency to apply the name of von Recklinghausen to generalized osteitis fibrosa. His name has been so long associated with another syndrome that it is rather confusing to apply it to cases of hyperparathyroidism producing bony changes, for although he recognized these changes, he did not know of their association with the parathyroids.

Enough has been said to show the wide range covered in this book, which we can cordially recommend as an interesting presentation of the subject.

SURGICAL NEUROPATHOLOGY

We have received the first two volumes of *Chirurgische Neuropathologie*, by Professor L. PUUSERR, director of the University Nerve Clinic in Tartu (Dorpat). This important work is based on the author's thirty years' experience as neurologist and neurological surgeon not only in peace time, but also in the Russo-Japanese War and in the Great War.

The first volume, in two parts, deals with the peripheral nerves; it comprises 662 pages, and is divided into a general section and a special section. In the general section are described the most important anatomical and physiological details, and the general surgical pathology.

¹ *Physiopathologie des Syndromes Endocriniens*. Par Professeur Noël Fiessinger. Paris: Masson et Cie. 1933. (Pp. 318 + 42 tables, 49 figs.)

of the peripheral nervous system. The surgical approach to each peripheral nerve is then given in detail, with explanatory diagrams, followed by a description of the operative procedures which can be carried out on nerves. The various methods of nerve testing are described in detail. The special part is devoted to wounds of the peripheral nerves, with the results of operative treatment, tumours of the nerves and their treatment, operations on the peripheral nerves for certain reflex conditions, and various operations that can be carried out on the nerves for the diminution of pain, including the injection and operative treatments of the different forms of neuralgia of the various nerves. Volume ii comprises injuries and diseases of the spinal cord, and of the spinal column in so far as the latter affect the former. The general part, comprising 233 pages, is devoted to a description of the anatomy and physiology of the spinal cord, the cerebro-spinal fluid, modern methods of diagnosis, and the symptomatology of the surgical diseases and injuries of the spinal cord. The special part consists of nearly 400 pages, devoted to an exhaustive account of the injuries and diseases of the spinal cord, spinal column, and the spinal meninges, and their surgical treatment.

These two volumes are profusely illustrated with drawings and plates, many of them coloured, and the work as a whole embodies the author's immense experience in this branch of medicine. All neurologists and neurological surgeons will look forward with pleasure to the appearance of volume iii, "The Brain," and volume iv, "The Sympathetic Nervous System," which will complete Professor Puusepp's monumental contribution to the literature of surgical neuropathology. The publisher is J. G. Kruger, Rütli, 11, Tartu (Dorpat), Esthonia.

"ANNALS OF MEDICAL HISTORY"

The second number of this year's *Annals of Medical History*,² edited by Dr. FRANCIS PACKARD, opens with an article by Sir Humphry Rolleston, being a lecture given under the Chadwick Trust and the Association France-Grande-Bretagne on April 8th, 1932, entitled "The Progress and Pioneers of Preventive Medicine." The cover bears the portrait of W. T. G. Morton, the partner of Horace Wells, and the frontispiece is that of the less famous C. T. Jackson, who claimed to have invented both ether anaesthesia and the electric telegraph. The lives of these and of others, such as Crawford W. Long, who gave ether in 1842, four years before Morton, and S. F. B. Morse, who in 1832 invented the electric telegraph, are sketched by Dr. A. H. Miller in an article on the controversies connected with these inventions. Jackson, who had been a companion of Morse on a forty-days' voyage across the Atlantic, before the invention was published, and the teacher of Morton at the Harvard Medical School, was versatile but unsatisfactory, and spent the last seven years of his controversial life in a lunatic asylum. Captain F. L. Pleadwell, who in 1916 was stimulated by Sir William Osler to go into the activities of "that remarkable philosopher and physician Wells of Charleston," has supplied a life with much information and some previously unpublished letters of the author of the *Essay on Dew*, who, though born in Charleston, spent most of his life in London. In a glimpse of seventeenth century medicine, as gathered from *La medicina difesa* (1699) of A. F. Bertini, professor of medicine at Florence, Dr. Lynn Thorndike packs into less than two pages, supplemented by references and notes covering the same area, a maximum of condensed know-

ledge. What Shakespeare knew about medicine, and especially about mental disorder, is considered at length, with 179 references, the result of much literary research by Dr. Irving I. Edgar. An attractive analysis of the medical wisdom, as shown in his works, of Bret Harte, who became a clerk in a drug store when 19, is made by Dr. L. J. Bragman, and Dr. Jerome Head deals in a similar manner with the medical allusions in *Don Quixote*, which, he says, has contributed an adjective to every language, but is more known than it is read. Dr. Joseph Walsh continues his study of Galen's writings and the influences which inspired them.

PATHOGENESIS OF TUBERCULOSIS

Dr. AUGUSTE LUMIÈRE has written a book entitled *Tuberculosis: Infection—Heredity*³ to show that our current ideas on the pathogenesis and epidemiology of tuberculosis are quite wrong. His main thesis is that the chronic tuberculosis of adolescents and adults is due solely to infection occurring during foetal life with the tubercle bacillus in its acid-fast or in its filterable form. The arguments he brings forward to support this view are many and varied, and some of the weaknesses of our conventional ideas are fully exposed. To contest adequately each of the points he makes would require a book nearly as long as his own. We can merely suggest here that (1) the existence of a filterable, infective, and pathogenic stage in the life-history of the tubercle bacillus has never been satisfactorily demonstrated, and that the most reliable workers in this country, in Germany, and in the United States of America, who have taken the trouble to avoid the numerous technical errors surrounding its so-called demonstration, have failed to obtain evidence of its existence. (2) His attempt to discredit the tuberculin reaction as a specific index of infection is unconvincing: cattle statistics alone show the almost invariable existence of a macroscopically demonstrable tuberculous focus in positively reacting animals. (3) He has failed to account for, or so far as we can see even to mention, the peculiar distribution of the human and bovine types of tubercle bacilli in the cervical, tracheo-bronchial, and mesenteric glands at different ages, which is very difficult to explain on any hypothesis other than that of post-partum infection by the alimentary route with bovine and by the respiratory route with human type bacilli. (4) He affords no explanation of the abolition of tuberculosis of bovine origin in Toronto as the result of pasteurization of the milk supply.

The word "infection" is used very loosely throughout the book, and indeed it is often impossible to know whether Dr. Lumière is referring to the mere deposition of tubercle bacilli in the tissues, to their latent multiplication, or to their production of frank disease. Without such a definition many of his most arresting statements are meaningless. Great care is taken to call in the aid of statistics to disprove one of our current conceptions—namely, the frequency of conjugal tuberculosis, but the author has carefully avoided subjecting to statistical examination many of the points he wishes to prove himself, such as that tuberculosis occurs in the children of tuberculous parents who are not expectorating tubercle bacilli. The main value of the book lies in showing how very incomplete our knowledge still is of the epidemiology of tuberculosis: its main fault is in arguing logically from unproven and incomplete premisses. It should not be difficult, using the author's method, to prove that measles is inheritable. After all, adults exposed to it rarely contract the disease, and conjugal measles must be very uncommon.

² *Annals of Medical History*. New Series, vol. vi, No. 2, March, 1934. Edited by Francis R. Packard, M.D. New York. Paul B. Hoeber, Inc.; London: Baillière, Tindall and Cox. (Pp. 95-192; illustrated. Volume of six numbers, £2 15s.; single number, 12s. 6d.)

³ *Tuberculosis: Infection—Heredity*. By A. Lumière. Second edition. London: J. Bale, Sons and Danielsson, Ltd. 1933. (Pp. 261. 7s. 6d. net.)

FIRST LINES ON PHYSICAL THERAPY

*Nature, M.D.,** by Dr. RICHARD KOVACS, is exactly the type of popular book for which at present there is an acute need. One has only to watch modern sun-bathers at any holiday resort to be aware of the recent widespread recognition of the value of physical methods in the preservation of health. With the increasing application of physical methods in the treatment of disease has come the inevitable exploitation of apparatus by commercial firms. Almost every newspaper displays advertisements of apparatus for self-treatment by so-called "sun" lamps, etc., or has notices of the facilities provided by societies of well-intentioned extremists for all-the-year-round sun-bathing.

The intelligent layman who is anxious for guidance in these matters will welcome Dr. Kovacs's book, which gives an unbiased account, in non-technical language, of the remedial uses of light, heat and water, massage, exercise, and electricity. Emphasizing the fact that any physical measure which is powerful enough to do good is equally likely to be harmful if improperly used, the author issues a warning against the self-prescription of measures which may be dangerous, and describes conditions in which simpler applications are helpful, and may be justifiably self-applied. He gives sufficient emphasis to the fact that competent diagnosis must naturally precede any course of physical treatment.

On reading the chapter on water, those who have hoped for magical cures from medicated baths or spa waters will forgive the author for disillusioning them, because he tells them so honestly what can actually be expected from the different kinds of bath treatments. His discussion of natural and artificial sunlight is especially valuable, and his advice about sun-bathing most opportune—it should prevent much ill-advised and painful burning. The exposure times advocated for American sun-flooded beaches could advantageously be lengthened by bathers in this country. Dr. Kovacs's book should fulfil its purpose admirably in giving the public the information it needs in order to benefit most fully from the renewed interest in physical therapy.

BOOKS ON PAEDIATRICS

Dr. J. POUCEL of Marseilles has written an interesting monograph on Hypertrophic Pyloric Stenosis in Infants† which contains a strong plea for the priority of Frédet as the inventor of pyloroplasty. The general contents of the book are in agreement with the customary teaching in Great Britain, and the insistence upon operation as offering the only chance to severe cases is a good point well made. On one aspect of the subject the author must be criticized: he gives an excellent account of the risks of alkalosis in pyloric stenosis and then in a later section advocates sodium bicarbonate solution for gastric lavage when this is required. This book belongs to Masson's Practical Medicine and Surgery Series.

A recent member of another current French series (Monographs on Paediatrics) is called "Pneumococcal Pleurosy in Childhood,"‡ by Drs. M. PÉHU and A. Z. ROUGIER. This follows orthodox lines, and is a useful practical guide. The term "parapneumonic" is used for those cases where the empyema occurs simultaneously

with the pneumonia, and is the equivalent of what is now called "synpneumonic" in English-speaking countries.

Another addition to the literature on the diseases of children is *The 1933 Year-Book of Paediatrics*,§ edited by Drs. I. A. ABT and A. F. ABT. As in previous years this provides a useful summary of the year's literature, with a sprinkling only of references to work in this country. It is difficult to understand why the recent publications on anaemia by Professor Leonard Parsons and his colleagues, for example, have not been noticed, unless it is that the weekly medical journals are held to contain all the main contributions on paediatrics, there being far more references to these than to the special periodicals, of which the *Archives of Disease in Childhood* is not the least important.

The fourth edition of *Modern Methods of Feeding in Infancy and Childhood*,¶ by Drs. DONALD PATERSON and J. FOREST SMITH, has also recently been published, and in the preface it is claimed that the principles and practice have been simplified so as to make the book useful to the intelligent mother and "nannie." This being the author's intention we suggest that in the next edition they would do well to devote their first chapter to breast-feeding.

Notes on Books

A Handbook of Psychiatry,‡ by Dr. JOHN H. EWEN, is intended to present, in a synoptical form, those principles of psychiatry that are of importance at the present time, and to epitomize the more recent knowledge of this branch of medicine. The volume aims at giving as complete an account as possible in small compass of the salient features of the subject of mental disorder, and to this end sections on mental deficiency, the psychoneuroses, and the legal aspect of psychiatry have been included. The author observes that while a synopsis of this kind cannot replace a textbook it can provide a means of rapid revision and a methodical presentation of salient facts. This view would seem to be justified, and no doubt Dr. Ewen's synopsis will be found useful to those who are preparing for a diploma in psychological medicine.

STARCK'S *Volumetric Analysis*¶ is a textbook for students of pharmaceutical, medical, and general chemistry. It is chiefly remarkable for the number and variety of chemical reactions on which as principles are founded the methods described. The subject is treated more from an academical standpoint than from that of the practising analyst. Thus it would seem that an analyst may need to discover for himself in some cases points of detail not mentioned in the text, to which regard must be paid for obtaining trustworthy conclusions. This is not to say that the work is devoid of helpful comment. On the contrary, it contains much important information relating to conditions for which the methods are valid as well as warnings about the effect of disturbing factors. It provides amply for the needs of students, and it affords to those who practise volumetric operations, in work of definitive purpose, a useful and varied choice of principles for application to unusual problems. An appendix giving tabulated directions for qualitative analysis should render the book a useful students' companion.

In a volume entitled No. 4 *Canadian Hospital. The Letters of Professor J. J. Mackenzie from the Salonika Front; with a Memoir by his Wife*,‡ the early history

* *Nature, M.D.—Healing Forces of Heat, Water, Light, Electricity, and Exercise.* By Richard Kovacs, M.D. New York and London: D. Appleton-Century Company, Inc. 1934. (Pp. 181. 5s. net.)

† *La Sténose Hypertrophique du Pylore chez le Nourisson.* Par J. Poucel. Paris: Masson et Cie. 1934. (Pp. 108; illustrated. 20 fr.)

‡ *Les Pleurocystes à Pneumocoques dans l'Enfance.* Par Dr. M. Péhu et M. A. Z. Rougier. Paris: Gauthier-Villars. 1934. (Pp. 173. 30 fr.)

§ *Chicago: The Year Book Publishers Inc.; London: H. K. Lewis and Co. Ltd. 1934. (Pp. 548; 95 figures. 10s. 6d. postage 6d.)*

¶ *Modern Methods of Feeding in Infancy and Childhood.* By D. Paterson, B.A., M.D., and J. Forest Smith, F.R.C.P. Fourth edition. London: Constable and Co., Ltd. 1934. (Pp. xv + 214. 7s. 6d. net.)

‡ *A Handbook of Psychiatry.* By J. H. Ewen, M.R.C.P., D.P.H. London: Baillière Tindall and Co., 1933. (Pp. 267. 12s. 6d.)

¶ *Volumetric Analysis.* By H. P. Starck, M.A. London: Baillière Tindall and Co., 1934. (Pp. 228; 11 figures. 7s. 6d.)

‡ *Toronto: Macmillan Company of Canada, Ltd.; London: Macmillan and Co. 1933. (Pp. 247. 10s. net.)*

of the University of Toronto contingent, which went out to Salonika in 1915, is sketched in part, and from a personal point of view, in the letters written by the Professor of Pathology at Toronto to his wife. These letters cover the period up to July, 1916, when Mackenzie returned to England, and, after doing some work with the late Professor T. G. Brodie on the lungs during recovery from chest wounds, took up again his teaching for the winter session at Toronto. Unfortunately he had, while in the East, picked up an infection which eventually led to his death in 1922, at the age of 57, from endocarditis. His devoted wife gives an intimate and graphic account of a very interesting personality. Of pure and distinguished Scottish stock, he was originally a biologist, and while bacteriologist to the Provincial Board of Health proceeded to the degree of M.B. at Toronto in 1889, and in the following year was appointed professor of pathology and bacteriology in his own university. There is a resemblance between the early training of Mackenzie and of the late Professor J. G. Adami, whose life was also written by his wife in 1930, and who held the corresponding chair at McGill, Montreal, from 1892 until the outbreak of war took them both to Europe. They both took a very broad view of pathology as a branch of biology, and organized their departments at a time when their chairs became whole-time appointments. Mackenzie was devoted to research, but temperamentally was very cautious in publishing his results, and, like Adami, was versatile and had many outside interests, especially artistic.

*The Students' Pocket Prescriber*¹² has now reached its tenth edition, having been published first in 1882. The editor, Dr. D. M. MACDONALD, is to be congratulated on the long life of this little work. The present edition has been revised throughout in accordance with the changes introduced by the *British Pharmacopoeia*, 1932. The volume contains a large amount of varied information, the most important feature being a list of nearly 600 different prescriptions. On the whole these prescriptions follow the classical tradition rather than the modern movement towards simplicity.

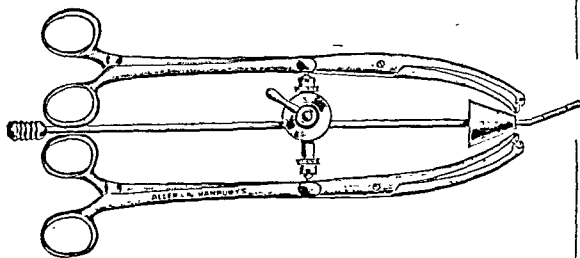
¹² Edinburgh: E. and S. Livingstone. 1934. (Pp. 263. 3s. net.)

Preparations and Appliances

CERVICAL FORCEPS AND CLAMP FOR TUBAL INSUFFLATION

Mr. F. NEON REYNOLDS, F.R.C.S.Ed. (London, W.), writes:

The instrument illustrated was devised to facilitate the operation of insufflating the Fallopian tubes. It consists of two pairs of vulsellum forceps connected by a telescopic cross-piece, carrying a quick-thread clamp for holding the uterine cannula. Each vulsellum is provided with a cup-and-ball mounting connecting it to the cross-piece, thus allowing



completely free and individual movement in any direction. By this means the cervix can be seized in any place or position which may be required to close the cervical canal tightly round the uterine tube.

The methods of use are as follows:

1. When using a Provis uterine cannula, or any other of similar pattern, the forceps are taken apart, and the one not carrying the clamp is fixed to the anterior lip, the other to the posterior lip. After this the forceps are reconnected. The uterine cannula is passed into the cervical canal, and its

stem placed between the disks of the clamp. The cannula is now pressed firmly into the cervix with sufficient pressure to block the canal, and, while pressure is still maintained, the clamp is tightened up. The complete unit of forceps and cannula can now be left fixed in position without being held. This leaves the hands of the surgeon free to manipulate the insufflator or auscultate the abdomen, should he so desire.

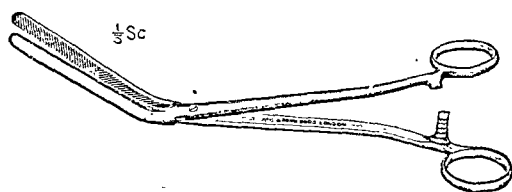
2. When using a uterine cannula of Forsdike's pattern, or in the case of a patulous or torn cervix, it is necessary to adjust the grip on the cervix in order to close the canal round the cannula before fixing the cannula in the clamp. In such cases each vulsellum can, if required, be turned over in order to obtain a side-to-side grip of the cervix to give a satisfactory closure of the canal.

The instrument was made for me by Messrs. Allen and Hanburys, Ltd.

A NEPHRECTOMY CLAMP

Mr. W. K. IRWIN, F.R.C.S. (London, W.), writes:

In the operation of nephrectomy I have sometimes found that the clamp slipped off the pedicle after the kidney had been removed. With a view to avoiding this accident, which may be serious, I have designed the instrument shown in the accompanying illustration. It is made somewhat on the



pattern of Thomson-Walker's renal pedicle forceps. The crushing surfaces of the instrument bear chevron-like serrations, which grip the part firmly, and at the same time tend to prevent transverse spreading of the pedicle. The jaws are three inches long and the shanks six and a half inches long.

The clamp has been made in accordance with my suggestions by Messrs. Down Bros., St. Thomas's Street, S.E.1.

AMERTAN

Amertan (Eli Lilly and Co., 2, Dean Street, W.1) is a jelly for the treatment of burns. It contains 5 per cent. tannic acid and one part in 5,000 of mercuriolate. The latter is a new organic mercurial germicide. The value of the tannic acid treatment of burns is now fully established, but various writers have pointed out the desirability of combining antiseptic treatment with the tannic acid treatment, and this preparation provides the combined action. The manufacturers supply a useful brochure which gives a short and clear account of the principles of tannic acid treatment of burns and full details regarding the proper method of employing amertan.

AMYTAL

Amytal (Eli Lilly and Co.) is the proprietary name for isoamylethyl barbituric acid, a compound that has been synthesized and investigated in the Lilly Research Laboratories. The sodium salt of this compound has been extensively used as an intravenous anaesthetic in animals and also for human surgical anaesthesia. The experience thus obtained has shown that the drug has a relatively wide margin of safety and has little tendency to produce toxic side-effects. The manufacturers recommend it as a hypnotic in insomnia and as a soporific and sedative. The hypnotic dose recommended is from 1½ to 6 grains.

EXTRALIN

Pulvules extralin (Eli Lilly and Co.) contain a liver-stomach concentrate for use in pernicious anaemia. The discovery of the value of liver feeding in pernicious anaemia led to an extensive search for potent liver concentrates. It was next discovered that human gastric juice acting on meat produced a substance which has a similar action to liver or liver concentrates. Investigations in the Lilly Research Laboratories showed that the potency of liver or liver extracts could be greatly increased by digestion with stomach tissue. Extralin has been prepared by the last-mentioned method, and has a potency per unit weight about three times that of potent liver extracts. The preparation is standardized by clinical tests on cases of pernicious anaemia. The daily dose recommended is 6 grams (twelve pulvules), and this has an action equivalent to 250 grams of raw liver.

British Medical Journal

SATURDAY, MAY 12th, 1934

CHEMICAL TRANSMISSION OF NERVE IMPULSE

In his Linacre Lecture, which we print in the current issue of the *Journal* (p. 835), on the chemical transmission of the effects of nerve impulses, Sir Henry Dale has given a concise history of certain new conceptions that are changing our ideas on some of the most fundamental subjects in physiology and pharmacology. The behaviour of the nerve-muscle preparation of the frog and that of the specific nerve endings of the autonomic nervous system have been worked out exhaustively, and these studies have themselves led to great and important developments in both physiology and pharmacology. The theories held as to the mode of activity of these two systems would seem to stand on a most solid basis; yet they are now being ruthlessly attacked, with no respect for their antiquity or for the fact that upon them so much has been built.

The change of electric potential in nerves and muscles that accompanies excitation was one of the first physiological problems to be subjected to accurate quantitative analysis, and the results thus obtained suggested that the transmission of the excitation from nerve to muscle was a purely physical process. During the present century, however, evidence has accumulated which indicates that nerve stimulation liberates minute quantities of chemical substances around the nerve endings, and that this causes excitation or inhibition of the structures which the nerves supply. This hypothesis was first advanced in 1904 to account for the mode of action of the sympathetic system, but it was not until 1921 that definite experimental evidence for the theory was brought forward by Loewi. He first showed that the effects on the frog's heart of vagal stimulation were due to liberation of acetylcholine, and those of sympathetic stimulation to the liberation of adrenaline. Subsequent research established these facts in regard to the action of autonomic nerves on a wide variety of glands and muscles. All this work dealt with the endings of non-medullated, post-ganglionic nerves, but during the last few years further evidence has gone to show that the medullated motor nerve endings function in a similar manner and also set free acetylcholine: it also appears probable that an identical change takes place at the central endings of sensory nerves.

The general trend of this work, some of which is only a few months old, is summarized by Sir Henry Dale in the following sentences: "In any case, the evidence, even so far as it has been obtained, seems to give promise that we may soon be able to complete

the picture of the transfer of excitation, at all cyto-neural junctions in connexion with the peripheral nervous system, by the liberation of chemical transmitters"; and "We get an impression of the cholinergic mechanism as having the more general application in the functions of the nervous system, and probably an earlier origin in evolution, and of the adrenergic mechanism as a more specialized and probably a more recent development." These conclusions are of the greater interest because the lecturer himself is responsible for no small part of the work on which the new theories are based. The whole subject is at present in the course of extremely rapid development, and hence many of the conclusions must be regarded as provisional. The new conceptions, as we have said, imply a drastic revision of ideas about many of the fundamentals of physiology and pharmacology. At present they do not appear to have any immediate clinical application, but past experience teaches that any important advance in basic theories leads sooner or later to an amplification of our powers to combat disease.

THE COMPOSITION OF FOOD

The grave abuses in the adulteration of food which were brought to the light of day by a Select Committee in 1855 prompted remedial legislation which was largely ineffective until the passing of the comprehensive Sale of Food and Drugs Act in 1875. The Public Health (Regulations as to Food) Act of 1907 empowered the central health department to condescend upon more detailed protective measures, and finally in 1928 the Food and Drugs (Adulteration) Act consolidated the previous legislation. At the present time a limited number of foods are defined by statute or regulation, the legitimate sources and composition of certain others are laid down, and the addition to foods in general of preservative substances and colouring matters is precisely controlled. Now the Departmental Committee on the Composition and Description of Food, in its report just issued,¹ expresses the view that it is desirable that the law should be altered so as to enable definitions or standards to be prescribed, or declarations of composition to be required, for articles of food other than liquid milk.

Enactments along these lines are in operation in foreign countries and in some of the British Dominions. In the South African Union fifty articles of food, and in Canada 150, are defined and standardized. The witnesses whom the committee called were in general favourable to changes in the law of England, though they revealed diversity of opinion as to the scope of any new measures. Strong evidence was led in opposition to the use of misleading descriptions, and in support of the declaration of the composition of infant and

¹ Report of the Departmental Committee on the Composition and Description of Food, 1934. Cmd. 4504. H.M. Stationery Office. (31. net.)

diabetic foods. The members of the Departmental Committee themselves, while answering as above the question put to them in their terms of reference, consider that the case for the extension of standards to all articles of food is not made out. They think that in a large number of cases the housewife, when she makes her purchase, does now get an article which, in terms of the Food and Drugs (Adulteration) Act, is of the nature, substance, and quality she asked for, and that she would not be a scrap better off for a multitude of standards or declarations of composition. In other instances, standards and declarations are necessary for the protection of the consumer. Nevertheless, while it is right that the public, when buying, should know what they are getting, elasticity must be allowed in the preparation of many articles, and in any event it is obviously useless to prescribe requirements conformity to which cannot be checked by chemical analysis or other accurate means. Flavour, for example, cannot be standardized, and of the merit of some commodities the purchaser himself is probably the best judge.

The committee thinks it important, as various witnesses maintained, that people buying infant and invalid foods should know what these contain. For sweetmeats as a group declarations of composition are not essential. Though toffee now, as it seems, is no longer usually made from butter, the purchasers of it appear still to be getting what they want as in days gone by. The committee takes a serious view of the misleading nature of some food advertisements and food labels. It agrees with the strong opinions expressed on the point by some of the witnesses, and it adopts a recommendation advanced by the Food Manufacturers' Federation that claims made in advertisements should be deemed to be part of the package label. It thinks, too, that in the retailing of pre-packed articles the law should afford the retailer more protection against the risk of prosecution than it does at present. While the committee does not suggest the formation of a Standing Advisory Committee having for its sole concern the administration of the Food and Drugs Acts, as had been suggested by the Society of Public Analysts in the event of all articles of food being made subject to regulation, it entirely agrees that no new standards should be laid down without giving to manufacturers and all others concerned the fullest opportunity of submitting their views on any proposal, and it thinks that where there is wide divergence between the parties interested the matter should be referred to a committee of three independent persons, who would hear evidence and report their findings to the Minister of Health.

The whole report of the Departmental Committee is moderate in tone, and its suggestions are reasonable alike in scope and substance. The recommendations put forward, if given effect to, should add to the efficiency of food control with a minimum of disturbance to current arrangements, which, it is generally admitted, have hitherto usefully served the public interest.

MENTALLY ABNORMAL DELINQUENTS

The problem of the prisoner with a slight degree of mental disorder or deficiency is one of the most troublesome with which the prison medical officer is confronted. Dr. W. Norwood East, one of H.M. Commissioners of Prisons, writes in their report for 1932¹ that magistrates do not always deal as they should with mentally abnormal prisoners. The general practice, as he says, is that when the Bench suspects that an accused person's mental condition is not normal he is remanded for inquiry, and a medical report is submitted to the court at the second hearing. Certain courts, however, says Dr. East, sentence an offender to imprisonment even when they have reason to believe that he is defective or insane. For example, a man was sentenced to three months' hard labour for indecent exposure, and the magistrates expressed a wish that the prison medical officer should keep him under observation with a view to his certification as a mental defective. However beneficial such a sentence might have been for the protection of the community, a short remand while arrangements were being made to admit him to an institution would have been no less protective to the public and fairer to the prisoner. This particular man, says Dr. East, was not defective; he would therefore have been sentenced in the ordinary way on the second hearing.

Although in certain cases a prison may be the only place in which to detain a defective who is a public danger, it is not usually necessary to sentence to imprisonment a defective charged with a minor offence. Dr. East quotes a case in which the Bench sentenced an old man to seven days' imprisonment for begging, in spite of the report from an experienced medical officer that he was insane; the man was certified from prison. Moreover, magistrates sometimes sentence an offender to imprisonment asking that he may be kept under observation during the currency of the sentence so that the court may be informed of his mental condition before he is released. Although, legally speaking, a prisoner is amenable to trial and conviction whatever his mental state, provided he is fit to plead and knew what he was doing when he committed the crime, Dr. East rightly points out that informed opinion to-day expects a court to consider the mental condition of the offender before it sentences him. The court cannot do this unless it knows the mental condition of the prisoner before it passes sentence. There are, he says, three groups of convicted prisoners: those whose mental condition is (a) normal, (b) abnormal but un-certifiable, and (c) certifiable. Obviously the placing of members of the first group under mental observation should be avoided whenever possible. In the second group, although the medical officer may not be able to help the court, the court should none the less be informed of relevant medical facts. Offenders in the third group should only be imprisoned if their safety

¹ Cmd. 4553. Report of the Commissioners of Prisons and the Directors of Convict Prisons for the Year 1932. London: H.M. Stationery Office. 1934. (1s. 6d. net.)

or that of society demands it. Some courts, when asking that a prisoner be kept under observation, furnish no information to help the medical officer. Naturally, the more the doctor knows about the case the better, and Dr. East commends the practice of one important court of sending the prison medical officer information on the printed request form. The difficulties on both sides are very great. Magistrates are busy, and a treatment which is desirable from the medical point of view may be impracticable or wrong from the point of view of the law. On the other hand, the prison medical officer is always up against the problem of deciding whether the mental inefficiency of a given prisoner is due to mental deficiency in the sense of the statute, which requires that the condition shall have existed before the age of 18 years.

The question of how far inefficiency is due to mental defect is a very difficult one, and part of the even wider question of the whole relation between mental abnormality and crime. A better treatment of delinquents will only be achieved as magistrates come to appreciate more clearly the medical implications of their task, and as psychiatrists become more familiar with the legal system which the courts have to administer. This approach from both sides is being assisted to a large extent by the *Medico-Legal Society*, but this country is exceptionally backward in its appreciation of the essential partnership of the doctor and the lawyer. Only when a medico-legal institute is established in London will this problem and other similar ones be on the way to solution.

OXYGEN THERAPY FOR INFANTS

The respiratory difficulties of the newborn, and especially of the premature infant, present a problem in therapeutics which has not yet been satisfactorily solved. A recent report¹ suggests that oxygen therapy is of value, and Dr. W. M. Boothby of the Mayo Clinic has described a modification of the Hess incubator, using it as a miniature oxygen chamber. He points out the three fundamental principles on which modern investigations on the structure of oxygen tents and the like have been based: continuous administration of a constant concentration of oxygen within narrow limits of variation, accurate knowledge of such concentration, and reasonable cost as regards both the structure and its operation. The standard Hess incubator, according to the present plan, is converted into a miniature oxygen chamber mainly by arranging an airtight top, fitting into a trough to make a water seal. Oxygen is supplied from a large cylinder through a flow-meter, and the aim is to keep this gas at a concentration of 50 per cent. In the present apparatus this is achieved by a flow of about 12 litres per minute for two and a half to three and a half minutes, and thereafter at a rate of 1 to 2 litres per minute. For very small infants this rate of flow suffices to prevent undue accumulation of carbon dioxide and keeps the humidity from rising too high. The temperature of the incubator is kept at the desired level by the same

electrical mechanism as when ordinarily used. The running expenses are estimated at four dollars a day, and the initial cost of conversion is not high. A simple form of gas analysis apparatus is an essential feature of the converted incubator, and it is claimed that an intelligent nurse can learn to use this in two afternoons. Dr. Samuel Amberg, in commenting² upon the new apparatus, points out the vulnerability of premature infants to disturbances causing anoxaemia; and, because such respiratory difficulties may come on at any time, infants below a certain weight in the paediatric section of the Mayo Clinic are now placed immediately in the oxygen incubator, where they remain for two weeks to a month. He considers that, although the number of infants so far treated has been small, the results have justified the title of "life-saving" for the apparatus. It has also proved of value when, for one reason or another, infants who were not premature needed oxygen. An example of this is quoted by this author in a further communication,³ where he describes the use of oxygen therapy for a 7-weeks-old infant who was having severe attacks of whooping-cough and cyanosis, really to aid the latter. To his surprise this stopped the attacks of coughing and moderated the course of the disease. For older children, given through a suitable mask, oxygen was found to be effective in stopping a given paroxysm or set of paroxysms, though not, of course, curing the disease. Oxygen alone appears to be much more effective than carbon dioxide alone, and is apparently the beneficial element of carbon dioxide and oxygen mixtures when used for whooping-cough.

THE FATHER OF BRITISH DERMATOLOGY

Dr. H. Haldin-Davis has contributed an interesting article on Robert Willan to the *British Journal of Dermatology and Syphilis*.⁴ Dr. Willan was a Quaker physician born near Sedburgh, in Yorkshire, in 1757. He settled for a time at Darlington and moved afterwards to London, where he gained a large practice in Bloomsbury Square. Phthisis and tabes mesenterica led him to Madeira, where he died in 1812, after living in the island for two years. Willan was the first in this country to make a satisfactory nomenclature of diseases of the skin, and for it he was awarded the Fothergillian gold medal of the Medical Society of London in 1790. He is remembered as a physician, but little was known of him as an individual. Good fortune led Dr. Haldin-Davis to make the acquaintance of Miss Mary E. C. Howell, the last surviving descendant of Dr. Willan. From her he has obtained eleven letters, some written by Willan himself, some by the hand of his wife, and one by his son. She has also drawn his attention to three portraits of Willan: one she gave to the school at Sedburgh, one to the Royal College of Physicians of London, and one to the Medical Society. Dr. Haldin-Davis has also secured a copy of Willan's bookplate, his medicine chest, and a rubbing from his tombstone in the British cemetery at Madeira. For the last he thanks the Rev. W. Graham, the English chaplain, and the veteran Dr. Michael Grabham, to whom Madeira owes much. The memorial has long since been removed from the actual grave, the exact position of which is

¹ *Lancet*, Oct. 7, 1932.

² *Lancet*, Oct. 7, 1933.

³ 1933, *ibid.* 496.

⁴ *Proceedings Staff Meetings Mayo Clinic*, February 28th, 1934, p. 129.

unknown, and it now stands one of a row of similarly displaced tombstones. Dr. Haldin-Davis entitles his communication "Some Personal Relics of Robert Willan." He deserves thanks for the collection and preservation of these relics of a physician about whom comparatively little was known in spite of the good work he accomplished.

INCOME TAX AND WHOLE-TIME APPOINTMENTS

A member has called attention to the hardship arising out of the fact that though the subscriptions payable to the British Medical Association, and to medical defence societies can be treated as allowable deductions for tax purposes by members in general practice, such deductions are refused in the case of individuals assessed for salaries received from hospitals, public authorities, etc. The equity of the claim is nearly, if not quite, the same in each case, and the difference lies in the application of the statutory rules. The leading case on the point was decided in 1925, and is quoted as *Simpson v. Tate*.¹ The facts were that Dr. Tate, a county medical officer, claimed to deduct his subscriptions to certain professional societies, and it was admitted that it was not a condition of his employment that he should be a member of those societies, though such membership was customary for county medical officers. Mr. Justice Rowlatt pointed out that to be allowable the payments must be brought within the rule of Schedule E, which restricts the deductions to expenses wholly, necessarily, and exclusively incurred in the performance of the duties of the office, and gave a very decided opinion against granting the allowance. He said: "This gentleman . . . is continually keeping himself qualified very properly and rightly by keeping himself abreast of all the highest developments and knowledge of the day. But when one looks at it closely one sees that that is not in the performance of duties. . . . I think that all subscriptions to professional societies and all taking in of professional literature and all that sort of expense . . . are things which can none of them be allowed." The case was fully argued: Mr. Justice Rowlatt was a judge of special eminence on income tax questions, and it may be assumed that his decision could not be upset by further action in the courts; in any event, a case would have to be taken to the Court of Appeal, because the *Simpson v. Tate* decision would almost certainly be regarded as binding in the Divisional Court. As a result we are left with the difference between the greater leniency of the Schedule D rule applied to a general practitioner and the greater strictness of the Schedule E rule as judicially interpreted. Of course, if appointing bodies would make it a condition that their medical officers should belong to the B.M.A., then those officers could legally deduct the amount of their subscriptions, but it may be doubted whether many bodies could be induced to pass the necessary resolutions. Coming to appointments more subject to medical control it may be assumed that while most mental hospital boards would desire their medical officers to be members of the Royal Medico-Psychological Association, they might nevertheless feel some hesitation in making such membership a necessary condition of employment. The case of lecturers and

teachers is perhaps not clearly covered by the *Simpson v. Tate* judgement, but is in some respects similar to that of M.O.'s, and a test decision would, we fear, prove unfavourable, even if the initial difficulty of raising the legal costs could be overcome. Many years ago this distinction between the Schedule D and the Schedule E rules was more irritating because it was of wider application; but the acceptance by the Board of Inland Revenue of the convenient practice of including the income from minor medical appointments with the general earnings has enabled most practitioners to escape from the application of the narrow and restrictive Schedule E rules. For the whole-time medical officer, or official, however, there is no escape, and there seems no available means at present of avoiding the hardship, unless the appointing authority chooses to pass a resolution requiring membership on the part of its officers. We must admit that it is difficult to frame rules for a tax of such widespread incidence as the income tax which shall avoid creating a justified sense of inequity; yet the indirect value of the work of professional societies to those for whose well-being the medical officer is responsible needs no emphasis, and though the amount of the subscriptions paid by any one individual may not be large, the high rate of tax makes the hardship distinctly perceptible.

A LOCAL GOVERNMENT ENCYCLOPAEDIA

The *Municipal Year Book*¹ has now become an amazing compilation. From a modest volume of less than four hundred pages it has grown until in the current edition it contains 1,527. There can scarcely be a volume of its kind which gives more complete and accurate information concerning the field it covers. The claim that it is "an authoritative survey and a permanent record of the principal events in connexion with local government during a memorable year" is entirely justified. It is up to date in every respect, except that, as it was not possible to delay publication in order to include the results of the triennial elections of county councils in March last, these have been printed as a special Supplement, and will be sent gratis to every purchaser of the *Year Book* who asks for it. Not only does the volume contain a large amount of information about every local authority in England and Wales, Scotland, Northern Ireland, and the Irish Free State, but in almost all cases it gives a complete list of members and officials of these authorities, whether counties, municipalities, urban or rural districts, or joint authorities of various kinds, such as those for hospitals, for port sanitation, and for sewerage and water. Its interest and usefulness are by no means confined to its function as a work of reference for names and statistics, indispensable as this is. There are equally valuable surveys and articles dealing with many aspects of education, of health work of all sorts, of housing and slum clearance, of libraries, museums, and art galleries, of public assistance, and indeed of every department of local government activity. There is a legal section reviewing the relevant law cases of the year, and one dealing with recent Acts of Parliament, Statutory Orders, and Regulations. There is even a summary of the report and findings of the Departmental

¹ *The Municipal Year Book, 1934*. Edited by James Forbes. London: The Municipal Journal Ltd. (30s. net.)

Committee on Sterilization. To all those who are interested in local administration, whether in the sphere of health, education, public assistance, or other work, and whether actively engaged in such administration or no, possession of this book, or at least ready access to it for consultation, would seem almost essential. To have produced it is a wonderful achievement.

THE COST OF HOSPITAL BUILDING

The Royal Institute of British Architects has just published a report on the cost of hospital building which was prepared by a special committee appointed by the institute to submit evidence to the Ministry of Health Departmental Committee on the Cost of Hospitals and Public Buildings. The R.I.B.A. committee was composed of five members of the architectural profession, each of whom has had long and wide experience in the design of hospitals, and of one Fellow of the Chartered Surveyors' Institution. The report, a pamphlet of thirty-one pages, is concerned primarily with non-teaching general hospitals, but it will be found that many of the incidental recommendations made by the committee apply equally well to teaching, mental, and specialist hospitals. After a general discussion of standardization in hospital design the committee formulates a basis on which a true comparison of costs can be made, and then deals briefly with special forms of construction. A large part of the middle of the report is given to a consideration of the most economical disposition of buildings on a site and of departments within a building scheme. The whole document will prove of interest and value to everyone concerned with the planning and construction of hospitals. It can be obtained from the R.I.B.A., 9, Conduit Street, W.1, for 1s. 6d. (post free).

THE ACADEMIC ASSISTANCE COUNCIL

We print elsewhere a summary of the first annual report of the Academic Assistance Council, formed a year ago to help those university teachers and investigators "who, on grounds of religion, political opinion, or race were unable to carry on their work in their own country." The record of work done is creditable. From the funds raised by the council itself, forty-nine scholars and men of science have been provided with means to continue their work for a year, and, through other agencies, maintenance grants for ninety more displaced university teachers have been found. Extracts from reports made on the work of some of these men and women show that the scientific work being done by them is of the highest quality. Unfortunately, the need which led to the formation of the council is not less than a year ago; it may be greater, and, unless further financial assistance is available, even those now being helped cannot be helped further. The council has construed its obligations strictly: those whom it has helped have been scholars and scientific workers whose labours were of benefit to the whole world. There may be—indeed, there must be—differences of opinion as to the desirability or practicability of encouraging medical or other professional men to settle in countries where the supply of qualified persons is adequate. There can be no difference of opinion as to the folly of letting exceptional ability in the field of

research run to waste. The Academic Assistance Council should therefore command the support of all who value learning and research, and view with dismay the waning of intellectual freedom in so many parts of the world.

CONFERENCE OF VOLUNTARY HOSPITALS

A conference of the voluntary hospitals of Great Britain and Ireland, organized jointly by the British Hospitals Association and the Incorporated Association of Hospital Officers, will be held in London from June 13th to 16th. The formal opening on Wednesday, June 13th, at 10 a.m. by the Prince of Wales in the Council Chamber of the Guildhall will be followed by discussions on voluntary hospitals, past, present, and future, and on out-patient departments. On the morning of June 14th, in the Goldsmiths' Hall, the functions of the cottage hospital, and the hospital and its architect will be discussed; and on June 15th, in the Merchant Taylors' Hall, hospital administration on the Continent, and co-operation between voluntary and municipal hospital services. On the last morning the annual meeting of the British Hospitals Association will be held in the Clothworkers' Hall, followed by a discussion on some aspects of almoners' work. The Duke of York will preside at the annual dinner in the Guildhall on June 14th, and each afternoon will be devoted to visits to hospitals and other institutions.

A CLINICAL RESEARCH UNIT

The Middlesex Hospital has just received from Mr. S. A. Courtauld a gift of £15,000 to found a clinical research unit, under direction of the medical school council, for the intensive and exclusive investigation of such diseases as may from time to time be selected. The unit will consist of small wards of one to three beds—in all, fifteen to twenty beds—a clinical lecture theatre, test rooms, and other offices, under the control of the heads of the Institute of Pathology, the Courtauld Institute of Biochemistry, and the Department of Physiology, in collaboration with members of the medical staff particularly interested in the diseases or conditions upon which it may be decided to concentrate the scientific resources of the hospital, medical school, and research laboratories. Mr. Courtauld's gift of £15,000 to found a clinical research unit adds one more to his large benefactions to the Middlesex Hospital Medical School. It is without precedent in this country for a medical school to be given direct access to, and (under the ultimate responsibility of the Board of Management for its patients) a large measure of control over, beds in the associated hospital. By this means the professorial staff will have more immediate contact with patients and their illnesses, and it is hoped that the fruits of laboratory work will be carried even more quickly into the wards. Patients, too, in this unit will have the advantage of a stay prolonged, when advisable, far beyond what is possible in the general wards.

The annual oration before the Medical Society of London will be delivered by Professor George E. Gask, on "Clean Wounds, Ancient and Modern," at 11, Chandos Street, W., on Monday, May 14th, at 8.30 p.m.

CERTAIN MEDICO-LEGAL DIFFICULTIES CONCERNING OCCUPATIONAL DERMATITIS

BY

P. B. MUMFORD, M.D., F.R.C.P.

HONORARY DERMATOLOGIST, MANCHESTER ROYAL INFIRMARY;
HONORARY ASSISTANT PHYSICIAN, MANCHESTER AND
SULFORD SKIN HOSPITAL

The following points are put forward, at the suggestion of a medical referee, in the hope that they express fairly some of the difficulties and anomalies regarding occupational dermatitis, its diagnosis, and certification. Such difficulties are equally realized by the general practitioner, the employer and his insurance company, by the employee and his union, by the dermatologist who investigates and reports, and finally by the medical referee who is called in to the disputed cases.

THE WORD "DERMATITIS"

To one who has been concerned in many types of dermatological problems in connexion with the Workmen's Compensation Act it appears a deplorable fact that the name "occupational dermatitis" has by usage and familiarity frequently been replaced by the name "dermatitis." One frequently hears of, and reads, certificates to the effect that the sufferer is affected with dermatitis. The writer has even been asked by a county court judge, "Will you please tell me whether this man has, or has not, dermatitis." The employment of the unqualified noun causes much confusion in the lay mind and in the unspecialized medical mind. The exact interpretation of the word "dermatitis" is not clear even to dermatologists, who have a varied conception as to its limitations. In "compensation" circles the word has acquired an almost unholy significance, and often implies, without comment, that a sufferer from dermatitis is one who has a skin inflamed as a direct result of, or accelerated and/or aggravated by, occupation (the all-inclusive "dust or liquid"). Attempts to prove in the witness-box that "dermatitis" is an extremely loose word, of no water-tight definition, and a word which might rationally be applied to every disease of the skin would only lead to worse confusion. It must be agreed that the etymologically correct interpretation of the word is "an inflammation of the skin." Such inflammation may be internal or external in origin: it may be brought about equally by the toxins of scarlet fever as by exposure to chemical irritants.

Further, to define exactly as to what should be included in the phrase "occupational dermatitis" is no easy matter. There can be no question as to the correct inclusion of such conditions as "dye-workers' dermatitis" in which synthetic dyes cause direct irritation of the epithelium. But an opinion as to the share of blame to be allocated to a recognized irritant in an individual case is but rarely easy.

INTERPRETATION IN CERTAIN CASES

As a concrete example one may consider a mackintosh worker of 60 years of age and thirty years of uninterrupted employment, who has been accustomed to apply rubber solution with his fingers in the making up of garments without skin injury. For no apparent reason he develops an eruption on his fingers, which proves easy to cure by simple protectives as long as the man remains away from work. The rash reappears within a few days of his resuming his previously innocuous occupation. One can place three interpretations at least upon these facts: (1) The individual has developed a chemical substance in his skin which reacts with explosive force to a primary external irritant with which he comes into contact—that is, a specific sensitization has occurred. (2) Many years of exposure may have brought about some change in the physical character of the cells of the skin or in the activity or nature of the local skin secretions. Such

change or changes have resulted in an impaired resistance to many different and non-specific external agents. These agents were not irritants prior to the local changes. (3) The changes mentioned in this last interpretation may have resulted from inherent metabolic, endocrine, or senile changes in the individual, apart from previous exposure. They have brought about, however, an exactly analogous lack of skin resistance.

The first interpretation on any given case should rightly permit compensation, but not always the latter two. It would, however, be a capable witness who could differentiate conclusively between the three concepts to the satisfaction of either lay or medical jurisdiction. Distinction between the first two groups is of importance, since the degree of compensation is involved. In Group 1 specific sensitization results in the man relinquishing one particular occupation. In Group 2 non-specific irritability precludes the worker from a very large number of different occupations, since there are very few, if any, occupations of manual type which do not involve the use of substances reported as having acted as irritants.

To exemplify these different groups. A confectioner called upon to mix pastry by hand may develop an unusual superficial response to flour proteins—such an individual could be safely employed later in any trade other than baking and confectionery. If, however, the dermatitis from which he has suffered has been due to prolonged exposure to water, to soap, and to friction, and his skin has become locally unstable, the individual would be precluded equally from work as a car cleaner, as a dye-worker, a coach painter, or a cement-worker. This local instability of skin implies development in the skin of some single antigen which is produced with equal facility by widely varying mechanical and chemical irritants. Such antigen, blood-borne, may act as an irritant to the skin of other areas of the body.

INDIVIDUAL SKIN REACTIONS

A further anomaly in the interpretation of "occupational dermatitis" lies in the varying types of skin to be found in the apparently healthy. Not only does the human skin vary from individual to individual in its physical characteristics, but it varies widely in its response to chemical irritants. Certain concentrations of simple substances, such as picric acid and perchloride of mercury, act injuriously on every skin—lesser concentrations irritate fewer, and some affect only a very small percentage. These groups are clearly more likely to develop skin trouble. Certain skins are unable to withstand excessive washing after work in which dust or oil is encountered. The writer calls to mind a case of recurrent "occupational dermatitis" cured by marriage. The naïve explanation given by the sufferer was that he did not need to wash so vigorously now that he had "finished courting." Employers are at present called upon to accept full responsibility for a departure from the normal which is an inherent and not an acquired change. A reversal of this opinion is unlikely, since the law reads that acceleration or aggravation by work of a disease entitles the workman to compensation.

Considerable difficulty and liability for divergence of medical evidence results from (1) cases of general out breaks which occur after exposure to local irritant; (2) cases in which relapses occur in the absence of exposure to the original supposed irritant. A working, but admittedly hypothetical, theory as to aetiology lies in the conception above mentioned that a non-specific antigen may be developed by the skin in response to various primary irritants. An example of this conception would be found in the case of a gardener who develops acute dermatitis of the hands from sensitization to primula. Such dermatitis may be followed in a varying period by a morphologically similar general outbreak on the trunk and limbs, areas not directly exposed to the primary antigen. This would appear to be the result of the production of some substance derived from damaged skin on the hands. Improper treatment of the original areas will almost invariably produce an exacerbation of the distant areas of inflammation. As a natural sequence to

this the sufferer may develop a similar widespread eruption to other locally applied irritants, even soap and water at later dates. The cutis as a whole is sensitized to products of damaged epithelium on the hands. Are such cases to be regarded as "occupational" in all subsequent outbreaks, or is the individual suffering from a condition of unknown aetiology which was provoked on the first occasion by a substance encountered at work, but which might equally well have been produced by a dietetic indiscretion or a severe infection of the scalp? Is the original spark responsible for every subsequent conflagration on the grounds that it has rendered a hitherto non-inflammable substance explosive, or was that substance explosive previously?

LEGAL ASPECTS OF DERMATITIS

Some criticism may perhaps be made regarding the methods by which cases come under notice, and the legal processes therein concerned. A simple example of possible injustice would be the following.

A baker develops an outbreak of dermatitis. The dermatitis may affect his hands and face, and may be of almost any aetiology. The man hears of a workmate who had "occupational dermatitis" and sees the factory surgeon. If he does not do so his panel practitioner, on stopping the man from work, gives a certificate stating non-committally—"dermatitis or eczema." The man's union, noting his occupation, naturally fails to differentiate between *post hoc* and *propter hoc*, and refers him to the factory surgeon. The latter, grossly underpaid for a detailed examination and investigation, may fail to realize the wide difference between "eczema in a baker" and "baker's eczema," and grants a certificate. Yet the eruption may equally be due to a week-end in the man's potting shed handling primula or fertilizer. After a case is reported the insurance company usually refers the man for an opinion to a dermatologist. He will often first see the case many weeks after onset, and is discouraged from approaching the man's own medical attendant, and still more from questioning the factory surgeon. The form of certification contains no detail of any help, and usually consists of names, addresses, and initials placed against the phrase "dust or liquids."

Should the dermatological opinion differ from that of the factory surgeon the case is referred to a medical referee. This list is usually a widely experienced and conscientious general medical consultant, who is asked to adjudicate in a large number of different types of cases, varying from miners' nystagmus to silicosis. He can hardly be expected to have an intimate knowledge of the many rarities and difficulties over which the dermatologist himself is often puzzled, and yet his opinion is final, even in the absence of the documentary detailed reports which the two opposite opinions have made. There does not appear to be any method by which he can openly discuss the case and its problems with the other medical men involved.

The after results of acceptance of liability are again often confusing. As a matter of practice it is almost impossible to deal fairly towards an individual who has had an accepted "occupational dermatitis," but who continues to develop further attacks of skin inflammation years after the original attack, and frequently years after exposure to the supposed cause.

THE REMEDY: A DERMATOLOGIST PANEL

The remedy for some of the above anomalies is perhaps Utopian. It is suggested that a case of suspected "occupational dermatitis" is referred by the certifying factory surgeon without definite decision to one of a panel of dermatologists. The latter should be asked to decide by means of "patch" and other tests as to whether the eruption in question is a specific eruption associated with work, or is a constitutional eczematous manifestation. The Workmen's Compensation Act makes no direct reference to the important question of idiosyncrasy nor to the question of constitutional eruptions provoked by work. Re-wording the phrase "long and continued exposure"

with definition as to time might be helpful. The point at issue would appear to be: "Would this man have developed a skin eruption whatever his occupation, or is the long and continued exposure the causative factor?"

Decisions of this nature can only be attempted by a dermatologist, and perhaps the above suggestions of a "dermatologist panel" for each circuit would be helpful. As an alternative procedure, an adequately remunerated certifying factory surgeon should be provided with a form on which he could set out in detail the full history and the exact distribution of the rash, and his grounds for opinion should be submitted and the blame-worthy substance named. The form should pass through the hands of the employer, who must describe in detail the occupation of the claimant and the procedure adopted at work. Mention should be made of probable chemical irritants. These documents might then be submitted to the medical referee, who, in consultation with a dermatologist, could give a decision. These latter two should have the power to compel in-patient observation for the testing of reagents on that particular skin, and simultaneous treatment could be given. Their report would enable a county court judge to arrive at an equitable opinion. Failing this, it would appear possible in county court cases for the "opposing" dermatologists to forward a joint report to the judge.

The writer, after considerable experience of this type of work, has yet to be concerned in a case where there was real divergence of dermatological opinion, however wide the breach may appear to become after skilled examination and cross-examination by experienced barristers.

DOROTHY TEMPLE CROSS RESEARCH FELLOWSHIPS IN TUBERCULOSIS

The Dorothy Temple Cross Research Fellowships in Tuberculosis for 1934-5 will shortly be awarded by the Medical Research Council, and applications should be lodged with the Council not later than June 1st.

The object of these Fellowships, as defined in the trust deed, is to give special opportunities for study and research to persons "intending to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis in all or any of its forms." Candidates must be British subjects, and must possess suitable medical, veterinary, or scientific qualifications. They must also be able to produce satisfactory evidence of their ability to make good use of the opportunities offered by the Fellowships.

The Fellowships will preferably be awarded to candidates who wish to make their studies or inquiries outside the borders of Great Britain. They will be awarded for one year as a rule, but in special cases may be renewed. The value of the Fellowships awarded will depend in each case upon the standing and qualifications of the candidate, but will not be less than £350 per annum, payable monthly in advance. Travelling and some incidental expenses will be paid in addition.

It may also be possible to award a Senior Fellowship of considerably greater value to a specially well qualified candidate wishing to undertake an intensive study of some particular problem of tuberculosis at a chosen centre of work in another country.

Further particulars and forms of application are obtainable from the Secretary, Medical Research Council, 38, Old Queen Street, Westminster, S.W.1.

The council of Epsom College will shortly award a pension of £30 a year to a duly qualified medical man of not less than 55 years of age. If the candidate is a single man or a widower his income, independent of any allowance from the College or from the Royal Medical Benevolent Fund, must not exceed £100 per annum. Forms of application should be obtained forthwith from the Secretary, Epsom College, 49, Bedford Square, W.C.1, and must be returned completed to him not later than May 30th.

INSTITUTE OF MEDICAL PSYCHOLOGY

A YEAR'S WORK IN NEW QUARTERS

The annual meeting and luncheon of the Institute of Medical Psychology, London, was held at the Wharncliffe Rooms on May 7th.

At a preliminary business meeting Sir HENRY BRACKENBURY, the chairman of the council, said that 1933 had been a year of importance and change in the history of the Institute. It was the first complete year of work in the new building in Malet Place. It had been also marked, to everyone's great regret, by the resignation of Dr. Crichton-Miller from the position of honorary director, owing to the pressure of other work. The Institute itself and the work which centred in it were in large measure the outcome of his vision and of his practical mind. The foundation of the Tavistock Clinic in 1920 was an inevitable step in medicine and sociology, but that inevitableness did not detract at all from the gratitude which workers in this subject felt to Dr. Crichton-Miller. Fortunately he remained as honorary senior physician and a member of the council. In succession to the directorate they welcomed Dr. J. R. Rees, who also, by his vision and his practical mind, was more than any other man responsible for the achievement of the intermediate step in the Institute's history represented by the present admirable premises. Some of them were already looking forward to still larger and more suitable premises in which the Institute of Medical Psychology would take its proper place in the life of London and of the country.

Sir Henry Brackenbury added that the work of the Institute was both healing and preventive. In any problem of medicine healing was not to be achieved without at the same time accomplishing prevention. Every one of the cases treated at the Institute had potential tragedy behind it, which was often averted. He stressed also the educational achievements of the Institute, which he hoped would have its place in the British Post-Graduate School now in process of establishment under the auspices of the University of London and the London County Council. The main hospital in Hammersmith would certainly not be able to cater for all the different specialties in medicine which would be required for teaching purposes, and there might have to be certain outlying institutions associated with particular specialties, so that it was hoped that the Institute in due course might become a constituent part of the Post-Graduate Medical School. But the educational work of the Institute was not confined to the medical profession. It included classes and courses for social workers such as clergy and others, and the achievement of co-operation and co-ordination in this respect was not the least of the services which the Institute was rendering. It was mentioned at the meeting that the Institute had been able nearly to balance its budget, and that its volume of permanent support seemed to be increasing slightly. The relatively happy financial position, however, was due only to the fact that the majority of the workers were entirely honorary, while many of the others gave valuable service for quite inadequate remuneration. The number of new cases dealt with in 1933 was 893, and the hours of treatment reached the record figure of 14,500.

The Stage as a Psychotherapeutic Medium

The company then adjourned to luncheon, where the principal speaker was Dame SYBIL THORNDIKE, who gave a vivacious account of her experiences as an actress in relation to psychology. She said that it was natural to suppose that one's own particular job or special concern offered a panacea for various ills, but if the purpose of psychology was to enter understandingly into other people's lives, motives, and deepest feelings, then she thought the dramatic profession out of its experience had something useful to contribute to this subject. It was the actor's business to get "inside the skin" of somebody else and to see things through that other person's eyes. Nothing must be hidden or repressed or "kept dark"

when one was impersonating. Every quality, good or bad, must be known to the player. In ordinary life men and women succeeded fairly well in wearing a mask whatever their inward torments or ecstasies; such a mask would be fatal to the stage. She had found great advantage to herself in impersonating others. For two years she had experience of a theatre where plays were produced the theme of which was fear and terror, and although she had suffered previously from nightmare, she had no such visitation while acting in such drama. She got it "out of herself" by means of those shapes and forms of fear which she had to represent, and she learned that that was also the experience of some of those who witnessed the play; they were released from obsessions. The hidden thing being brought to light on the stage, those participating, on either side of the footlights, were able to "throw it off." Nothing was better for a difficult child than to get it to pretend to be somebody else. Dame Sybil also said that, once having played a character, it was impossible to dislike the character, however loathsome it might appear. For the understanding of other humans there was nothing like impersonating them.

Mr. GEOFFREY SHAKESPEARE, M.P., added a few words. As a junior Minister associated with the Ministry of Health he paid a tribute to the work done by the Institute. He was glad that the work was increasingly recognized, and he hoped that presently the larger local authorities would have clinics where skilled doctors were available to treat anxieties and worries in their commencing stages.

The closing address was given by Dr. J. R. REES, medical director of the Institute. He described the Institute as a place where people with complex frightening illnesses came, always by individual appointment, to work quietly with their doctors in environment which avoided the institutional atmosphere. The Institute was eclectic. Its workers included followers of Freud, to whom so much was owing; others saw in Jung the more helpful approach; while others, again, were influenced by Adler of Vienna (who was present at the luncheon and was given a cordial welcome). But actually most of them tended to be influenced by all three, and to use methods best adapted to individual needs. The annual "follow-up" results showed that from 31 to 36 per cent. of the patients reported themselves as permanently cured, but a further 30 to 41 per cent. reported material improvement, which had been maintained. The first day on which he made any serious contact with psychological medicine—in the room of the founder of the Institute—he saw a motto which had always struck him as particularly apt: *Guerir quelquefois, soulager souvent, consoler toujours*. Dr. Rees mentioned that, although not a clinic for delinquency, the Institute had had referred to it from the courts some 400 cases during the last five years, and had treated about two-thirds of them. Progress was also being made in fields of research. An anonymous donor had given £300 for an investigation in the after-results of sexual assaults on children, and this was but one of many possible fields in which research might be made.

It was announced that Prince George had consented to preside over a subscription dinner to be held on behalf of the Institute on June 26th.

According to M. Chendler (*Thèse de Paris*, 1934, No. 150), as the result of a recommendation made by the Académie de Médecine, the Director of Public Assistance in Paris in 1922 decided to create two centres for the collection and distribution of the serum of convalescents from measles, scarlet fever, mumps, whooping-cough, and poliomyelitis at the Hôpital Claude Bernard, the hospital for acute infectious diseases in adults, under the direction of Professor Teissier, and the Hôpital des Enfants Malades, under the direction of Dr. R. Debré. During the past ten years the results of serum prophylaxis of measles at the last-named hospital have been as follows: absolute prevention in 75 per cent., attenuation in 20 per cent., failure in 5 per cent.

THE CANCER HOSPITAL

OPENING OF NEW BUILDINGS BY THE QUEEN

The new wing of the Cancer Hospital (Free), in Fulham Road, London, was opened by Her Majesty the Queen on Wednesday, May 9th. The completion of this handsome building of six floors, named Granard House after the president of the hospital, the Earl of Granard, is an outstanding event in the history of this institution. It contains accommodation to the number of about thirty beds for patients of limited means, who can contribute towards the cost of their maintenance and treatment, and it also houses a new out-patient department and a new radiological department, the latter equipped with the most modern types of apparatus.

RADIOLOGICAL DEPARTMENT

The radiological department of the Cancer Hospital attained world-wide renown even as long as a quarter of a century ago, under the direction of the late Robert Knox, a portrait of whom, with an appropriate inscription, we are glad to see in a prominent place in the new building. The need for considerable expansion and development of this department has become more and more apparent. In order to further the closest possible co-operation between clinical work and scientific laboratory investigations well-equipped physical laboratories and diagnostic and therapeutic departments, fitted with the most modern types of apparatus, have been constructed, and occupy the upper three floors of the building.

These three floors are devoted respectively to physical investigations and the teaching of students, to x-ray diagnostic work and radium treatment, and to high-voltage x-ray therapy and artificial sunlight and electrical treatments. The whole department is under the direction of Professor J. M. Woodburn Morison, and the physics section is in charge of Mr. W. V. Mayneord, D.Sc. The Cancer Hospital is a school of the University of London, and in association both with the University and with the Royal College of Physicians post-graduate medical students are taught the clinical and scientific aspects of radiology, a lecture theatre and experimental laboratories being set aside for this purpose. Facilities are also afforded for the instruction of radiographers.

The radiographic section on the fourth floor is complete with the most modern provision, with special screening and radiography rooms, and large dark rooms, the walls and ceiling of which, by the way, are coloured deep orange. The screening stands are beautiful pieces of engineering, the position of the patient and of the tube apparatus to be adjusted at a touch. A feature of the radiography rooms is the timing switches. Radium therapy is also carried out on the same floor. The hospital possesses 14 grams of radium, and has had a further gram placed at its disposal by the National Radium Commission, so that it has been possible to develop radium beam treatment with considerable success.

The fifth floor is the chief pride of the radiological department, for it contains the high-voltage x-ray apparatus with which very high electrical pressures are used in order to obtain penetrating x-rays. The equipment

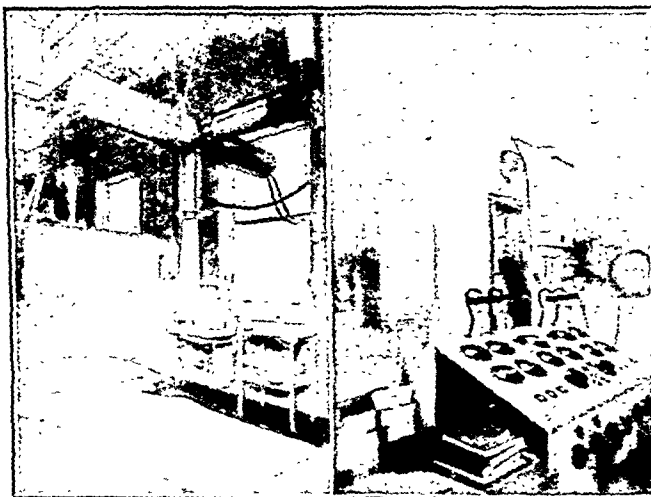
was constructed specially for the hospital by Ferranti, Ltd., of Hollinwood, near Manchester, and is the first of its kind in any hospital in this country. Its general appearance suggests a small power station. The design of much of the apparatus in this department and the conditions under which irradiation is carried out are the result of the work of the hospital's own experimental laboratories. One new device of some interest is the use of wireless apparatus to enable the patient in the cubicle to speak to the operator, who is some distance away in a separate room.

The total cost of the new wing of the hospital was approximately £150,000. The research of the radiological department is financed chiefly by the hospital itself, but valuable help is given by such bodies as the British Empire Cancer Campaign and the Medical Research Council, while the International Cancer Research Foundation of Philadelphia also assists in certain investigations.

THE OPENING CEREMONY

The opening ceremony took place in a large marquee in the grounds of the hospital. The Queen was received by the Earl of Granard, president of the hospital, who presented the Mayor of Chelsea, in which borough the hospital is situated.

At the entrance there were presented to Her Majesty Professor Filon (Vice-Chancellor of the University), Mr. P. J. Neate (chairman of the House Committee), Mr. Ronald Malcolm (treasurer), Mr. Jocelyn Swan (senior surgeon), Lieut.-Colonel Cobbold (secretary), and Miss Jacomb (matron). The Queen having been conducted to her place on the dais, Lord Granard made a speech of welcome, and Her Majesty then declared the buildings open. A number of further presentations then took place, including those of Mr. S. L. Loney (chairman of University Convocation), Sir E. Graham-



HIGH-VOLTAGE X-RAY TREATMENT PLANT

Little, M.P., Dr. E. Deller (principal officer of the University), Mr. L. Gwynne Jones (member of the General and House Committees of the hospital), Lord Horder (consulting physician), Mr. W. Ernest Miles (consulting surgeon), Dr. Stanley Wyard (physician), Mr. Cecil Rowntree, Mr. Percival Cole, and Mr. Cecil Joll (surgeons), Professor E. L. Kennaway (director of the Research Institute), Professor Woodburn Morison (director of the radiological department), and Mr. T. A. Pole (architect).

The Queen then left the dais and inspected various parts of the new building, and also of the older building, including the operating theatre floor and the pathological research departments. After Her Majesty had signed the visitors' book and departed, the whole hospital was thrown open for inspection. The Research Institute illustrated for the benefit of visitors the work carried on in recent years in connexion with the causation of cancer and the chemical and biological characters of malignant tumours. The investigations carried out on the origin of cancer have been concerned chiefly with chemical factors, and now show a record of definite achievement in the experimental production of cancer in animals. Attempts are now being made to determine whether the alteration in metabolism from that of healthy tissue to that of malignant tissue is brought about by the chemical agents which produce tumours in animals.

In addition to those presented, the guests at the ceremony, most of whom were wearing academic gowns,

included the Presidents of the Royal Colleges of Physicians and of Surgeons and of the British College of Obstetricians and Gynaecologists, the Master of the Society of Apothecaries, the President of the Royal Society of Medicine, the teachers of the University of London on the staff of the Cancer Hospital, the members of the medical and surgical staff and the staff of the Research Institute and Radiological Department, and of the General Committee and House Committee.

ACADEMIC REFUGEES

REVIEW OF A YEAR'S ASSISTANCE

A year ago the Academic Assistance Council was formed under the presidency of Lord Rutherford, with its seat at the rooms of the Royal Society, Burlington House, to assist university teachers and investigators who, on grounds of religion, political opinion, or race, were unable to carry on their work in their own country. The problem in its immediate form was created by the events in Germany, but assistance has not been confined to scholars and research workers of one nation, and several applications have been received from Russian, Austrian, Armenian, and Italian university teachers. Nor is the issue raised entirely a Jewish one, for many who have suffered or are threatened have no Jewish connexion.

A report of the council just issued states that it has received £13,223 in subscriptions, which, with £1,025 in the form of grants from Cambridge colleges, has enabled it to make maintenance grants at the rate of £250 a year for a married person and £182 for a single person, to forty-nine scholars to enable them to continue their research in universities in this country. Other agencies or local committees in England, co-operating with the council, have raised funds to provide maintenance grants for a further ninety displaced university teachers. Thirty-nine others are working in universities supporting themselves from their own resources, and industrial or commercial posts abroad have been found for several scientists who have been assisted by small loans for travelling expenses. A valuable information service has been built up and constant communication established with academic committees in the free countries of Europe and the American Emergency Committee in aid of displaced German scholars.

The funds of the council are now almost exhausted, but the Academic Assistance Council feels that it would be deplorable if the grants already made cannot be extended for a second year. If this is not possible the scholars and scientists will have no means of support, and the possibilities of help, or even of refuge in other European countries, have contracted since they were compelled to leave their fatherland. The council is very anxious not to betray into exile and destitution the wandering scholars for whom it has made itself responsible. The work of the council has a wider bearing than the meeting of a temporary emergency or a response to the promptings of compassion, strong as these considerations are. It states its purpose as the protection of academic freedom in which our culture has developed, and the preservation of universities as communities of free learning, not subject to temporary political dictations.

Some idea is to be gathered from the report as to the dimensions of the need. The number of those displaced from academic positions in universities or institutions of university rank is, so far as can be ascertained, 1,202, of whom 389 have been placed—178 in the British Isles and 211 abroad. In medicine the number displaced was 311, of whom forty-one have found positions in the British Isles and forty-two abroad, but it is agreed that the number placed is probably an understatement. Of the

178 placed in the British Isles, mostly in temporary research posts, Cambridge has taken thirty-one, Oxford seventeen, Manchester sixteen, Edinburgh six, and London sixty-seven. The medical schools and institutions in London have made accommodations as follows: Guy's, three; Lister Institute, two; London Hospital, one; London School of Hygiene and Tropical Medicine, one; Maudsley Hospital, three; Middlesex Hospital, four; National Institute for Medical Research, three; St. Mary's Hospital, two; University College Hospital, four; Westminster Hospital, two. Of those placed abroad fifty-eight have gone, to the United States, forty-one to France, and twenty-six to Holland, while the reorganization of the University of Istanbul has created posts for thirty displaced German teachers. Extracts are given from reports on the work being conducted by German scholars in England; several researches in physiology are noted.

The council is appealing for £25,000 a year for the next two years to enable it to continue and consolidate the work already begun. "There is a great body of scholarship and technical experience which must be saved."

ST. BARTHOLOMEW'S NEW MEDICAL BLOCK

The second stage in the great rebuilding scheme of St. Bartholomew's Hospital is to be started at once with the erection of a block of buildings to house the whole of the medical wards. This will follow the new surgical block and operating theatres opened in 1930. The present buildings on the south side of the quadrangle, which date back to the middle of the eighteenth century, are to be demolished, and in place of their eight wards with twenty-five beds each, the new building on the site will consist of ten wards, each planned for twenty-three beds, thereby increasing the number of medical beds by about thirty, and bringing the total bed accommodation to well over seven hundred. The new building will be constructed generally on the lines of the recently erected surgical block, with which it will be in communication on all its six floors. The Portland stone which faces the existing building will be retained to keep the architectural harmony of the square, but otherwise construction will be of brick. The cost of the building and equipment is estimated at £150,000. This sum is to be raised from capital by the realization of securities, and to be replaced by means of a sinking fund extending over sixty years. This will mean a loss of income on investments of about £5,000 a year, and it is anticipated that the expenditure of the hospital when the new block is available will be an additional £4,000 a year, so that St. Bartholomew's will be faced with the necessity of largely supplementing its present income. There is understood to be a great demand for a paying patient's block at Bart's, but under the existing charter the hospital funds cannot be used for any purpose other than the treatment of the sick poor. No doubt a supplemental charter could be obtained, but the hospital will find itself fully committed financially by its new building operations, and it looks as though a paying patients' block must await some specific benefaction.

We have received from Messrs. H. K. Lewis and Co., Ltd. (136, Gower Street, W.C.), the second supplement (1931-3) to the Catalogue of Lewis's Medical and Scientific Lending Library, including a classified index of subjects and authors. The main catalogue, revised to the end of 1927, with supplements 1928-30 and 1931-3, is supplied to subscribers at 8s. and to non-subscribers at 16s. The individual supplements may be had for 2s. each (to subscribers 1s.).

Ireland

Exclusion of Medical Officials from the Local Economies Bill

During the committee stage of the Local Services Economies (No. 2) Bill in the Senate, Sir Edward Coey Bigger moved the exclusion of medical officials from the operation of the Bill, which was supported by Senator Dr. W. O'Sullivan, and carried by a substantial majority. This amendment was accepted by the Minister for Local Government and Public Health in the report stage, and Sir Edward Coey Bigger said that the medical officers concerned would highly appreciate the action of the Minister, Mr. S. T. O'Kelly, and his sense of justice in excluding from the Bill an underpaid and hard-worked body of officials. Senator Surgeon Barniville and Senator Surgeon Oliver Gogarty by their attendance and support also contributed to the passage and acceptance of the amendment moved by Sir Edward Coey Bigger.

Treatment of Tuberculosis

Dr. Alice Barry, medical superintendent of the Peamount Sanatorium, reported that although increasing provision had been made in the various counties for advanced cases of pulmonary tuberculosis, yet the number sent for treatment at Peamount continued to be very high, and as the majority of these cases were chronic they clogged the beds and lengthened the waiting list, with the result that probable early hopeful cases were delayed admission and treatment. Surgical cases had been received during the year, and as many more refused. As there seemed no prospect of proper provision for these patients the possibility of a special department at Peamount might be considered. The delay in building a surgical unit had caused considerable inconvenience in carrying out the operations so essential in the treatment of tuberculosis. Every modern treatment was employed at Peamount as far as possible, but at present patients requiring major chest operations had to be sent to city hospitals, and that necessarily limited the work. The children's pavilion continued, said Dr. Barry, to hold a bright and happy place in their midst. During the year 142 children had passed through it, carrying away very happy recollections of their stay. Statistics showed that, of the 339 adult patients discharged, sixty-one came from Kerry, thirty-five from Kildare, Dublin sent thirty-one, Roscommon twenty-nine, Tipperary twenty-seven, Donegal nineteen, Wicklow eighteen, Galway thirteen. Among the male patients, the largest number, eighty-seven, had been engaged in agriculture, and of the women 100 had been employed in domestic or personal service. The maximum number of male cases treated fell between the ages of 20 and 25 years. Among females the ages were 15 and 20 and 25 and 30 years. In the course of an interesting talk on tuberculosis and its treatment Sir Pendrill C. Varrier-Jones of Papworth Village Settlement said that at Peamount they took these cases of men living in ordinary environments and treated them in both directions. The old regime was becoming out of date, and in many countries it had already gone. It would have to disappear. If they were going to put a man at rest, they should put him at rest. They were going to put him at rest by new surgical methods which were revolutionizing the treatment of tuberculosis. Putting a man at rest, if they did not make it possible for him to earn his living in the future, was doing only half their job. The longer they put a man at rest the greater the danger of making him morally incapable of returning to earn his own living. They had got to build up a training system, not only training his muscles back to earning capacity, but training his mind away from the

period of moral collapse to enable him to take up work once more. Once a man suffered from tuberculosis of the lungs he would suffer from it always. Therefore, they had to build up an environment in which such a man could work and earn his living without detriment to himself or his neighbours. This was their problem in a village settlement.

Women's National Health Association

The Dowager Marchioness of Aberdeen and Temair presided at the annual meeting of the Women's National Health Association. She expressed her thanks and the thanks of her family for the messages of sympathy on the death of Lord Aberdeen. The association, she said, had reason to believe that it had contributed something to the campaign against tuberculosis, which had resulted in a decrease in the death rate from the disease. It was now engaged in establishing an industrial settlement at Peamount, which opened up fresh hopes for ex-patients. Dr. W. S. C. Copeman, honorary physician to the Red Cross Clinic, delivered a lecture on "Rheumatism and Modern Medicine," and in the course of his address stated that if rheumatism were going to be tackled in the widest sense on a national scale, the whole thing had got to be part of a co-ordinated scheme. The present moment was an opportune one. He understood that in June of this year all approved societies were to be amalgamated into one whole. The position would then be comparable to that on the other side, and the societies would have surplus funds to devote to the question. He would deal with the disease under the head of chronic rheumatism. In County Dublin they were extremely fortunate in having an enlightened medical officer. Arthritis could be cured if taken in the early stages. Taken as a whole, rheumatism affected women three times as often as it affected men. Specialization was as necessary in this field, from the medical point of view and from the point of view of the laity interesting themselves, as in the field of tuberculosis. It was a whole-time job. The field of rheumatism to-day was in practically the same state as that of tuberculosis fifty years ago. If rheumatism killed people it would have had the attention of the public focused upon it many years ago. Tuberculosis was much less expensive to the country than rheumatism, which cost England and Wales £17,000,000 per year. Other countries had recognized the drain of this disease on their funds. Sweden had an extremely good scheme of treatment, as had Germany. Dr. T. G. Moorhead, President of the British Medical Association, said he agreed that it was necessary to tackle vigorously the group of rheumatic diseases. Although no statistics were available, he was certain that a thorough investigation would prove that, in proportion to the population, rheumatic diseases were as prevalent as in Great Britain, or probably more so. Ireland had been unfortunately notorious in the amount of chronic rheumatism existing among its inhabitants. He felt that there was just as much need for the systematic development of clinics in this country for children as for adults. Rheumatic fever was in all its manifestations a disease of childhood, and many of the disabilities in major life were due to the neglect of rheumatism in childhood. They could not avoid cold and damp in this country, but the care of school children should be improved. Some means should be provided in the schools for the drying of wet clothes and the changing of boots and stockings. Provision should be made for playgrounds, to prevent the children from playing on the damp streets. He was an advocate of throwing open the public parks of the city to the poor children. Dr. J. J. Harbison, county medical officer of health, said that just as tuberculosis was a matter of housing, so was rheumatism; and dietetics was another very important factor. It might be said of chronic

rheumatism: "It is more of a life to be lived than a disease to be treated." It was the duty of the State to encourage voluntary and other organizations to take up problems of this kind. Voluntary helpers might take the problem to the stage where the State would take it over.

Scotland

Aberdeen Medical Faculty

At a meeting of the Senatus of Aberdeen University on May 1st, with Principal Sir George Adam Smith presiding, it was agreed, in view of the large number of students who have been seeking entrance to the Faculty of Medicine, to limit the number accepted for the first year of medicine on October 1st, 1934, to 100. It was further decided that all applications for admission to medical study should be lodged before June 15th.

Tuberculin Test for School Children

A discussion took place at a meeting of the Fife County Public Health Committee, held at Cupar on May 3rd, regarding a periodic tuberculin test for school children. The test had been proposed by Dr. Munro, medical superintendent of Glen Lomond Sanatorium. Dr. G. Pratt Yule, medical officer of health for Fife County, said that if tuberculin tests were introduced it would be possible to know which children were infected and might later develop tuberculosis. The test aimed at the prevention of disease. The principle of the test was applicable to diphtheria, scarlet fever, and other diseases. A steady campaign for the immunization of children against diphtheria and scarlet fever would probably produce notable results, and was possibly more worthy of practical consideration than a similar procedure in regard to tuberculosis. It was true that the general improvement in sanitation and the keener hygienic outlook of the average citizen which had done much to combat tuberculosis in the past seventy years had done little for the common infectious diseases of childhood. The work proposed in regard to a tuberculin test could not be carried out, however, by the present staff of area medical officers. Several members of the committee spoke in favour of the procedure, and the report was adopted, but it was agreed to delay consideration of the introduction of the tuberculin test. At the same meeting it was resolved to instruct the medical officer of health to prepare a scheme for the provision of midwifery services for necessitous cases in Fife County.

Mental Hygiene

In an address on May 1st to the Soroptimist Club of Edinburgh, Professor D. K. Henderson, professor of psychiatry at Edinburgh University, said that the subject of mental hygiene needed much more publicity than it at present received, and that it was of equal importance with the treatment and prevention of physical disease. Positive work in the field of mental hygiene in Scotland had resulted largely from the activity of three individuals—two women and one man. The first was Miss Dorothea Lynde Dix, who came from the United States on a visit to Edinburgh in 1855. She was so much disturbed by what she saw in the smaller mental homes that she reported to the Home Secretary, with the result that a Royal Commission was set up to investigate the conditions under which persons suffering from mental diseases were treated; the result was the passing of the Lunacy Act (Scotland) in 1857. The second was Clifford Beers, another American, who had himself been a mental patient, and gave his experiences to the world in a book entitled *A Mind that Found Itself*. This led to the

setting up in Connecticut in 1908 of the first Mental Hygiene Society. The movement then instituted had grown to such proportions that representatives of fifty-three mental hygiene societies from many parts of the world had recently held a conference. The third was Miss Mary Russell, whose work resulted in the formation of the Scottish Association for Mental Welfare. Through the efforts of these and other pioneers the treatment of mental disorder was no longer regarded as taking place, of necessity, behind the walls of an institution; early treatment while the patient was still in his own home was now emphasized. Psychiatry was of great importance in industrial work, where nerve strain might be due more to mental than to physical causes. Mental experts were also necessary in law courts to examine persons guilty of repeated offences. The aims of those interested in mental hygiene should be the education of the public, the promotion of preventive measures, and the development of research.

England and Wales

Sir William Hodgson

While still in active practice, and holding office as chairman of the County Palatine of Chester Local Medical and Panel Committee and of the county council, Sir William Hodgson celebrates his eightieth birthday on May 13th. In honour of the occasion a presentation volume entitled *Fasciculus Cestriensis in Honour of Sir William Hodgson* has been prepared by his fellow practitioners in the county. The volume extends to 300 pages, and contains, in addition to a brief biographical note of Sir William, a collection of clinical memoranda written by some fifty-five Cheshire doctors, and a statement of the clinical facilities offered by the county's local health authorities. The copy to be presented to Sir William is printed on large paper and specially bound. Each member of the Cheshire Panel will receive a copy, and a certain number will be available for sale. Sir William has ever been a protagonist of the general practitioner, and it is hoped that this volume will be a fitting dedication to one of the most distinguished general practitioners of the day.

Compensation of Medical Officers by L.C.C.

Some compensation claims under the Local Government Act, 1929, have lately been considered by the Hospitals and Medical Services Committee of the London County Council. An ophthalmic surgeon who entered the service of the guardians as a part-time officer in 1923 and served until his appointment was determined in 1933 owing to the reorganization of the consultant and specialist service, and whose average annual salary during the last five years was £86, is recommended for compensation at rather more than £15 a year. The apportionment to which such an officer is entitled, including the appropriate addition under the Treasury scale, would be fourteen-sixtieths of his salary—that is, £20, but this is subject to the deduction of 25 per cent. usually made in the case of a part-time appointment. A pathologist who was appointed to a hospital in 1926, and whose appointment was terminated in 1933, received during the last five years of his service, with emoluments, £525, and the apportionment of ten-sixtieths of this amount, with the deduction of 25 per cent. as his office was a part-time one, brings the compensation to which he is entitled to £65 a year. This officer included in the emoluments for which he claimed compensation "use of laboratory, assistance of technicians, media, and materials," which is assessed at £200 a year. The committee, however, has found no evidence that he was entitled to make use of the staff and materials at

the hospital for private work, but in any case any benefit which he might have secured in that way could hardly be regarded as part of the remuneration of his position as pathologist to the hospital. He also claimed in respect of an increase of his emoluments which, he stated, would have been granted by the guardians had they remained in office; but the council has previously declined to take prospective increases into account in assessing compensation. The compensation recommended in his case is therefore the minimum annual sum of £65. A visiting pathologist whose service ranking for compensation is eight years is to receive eleven-sixths of his salary, subject to a deduction of 25 per cent. A tuberculosis consultant who entered the service of the guardians in 1924 and served until his appointment was terminated in 1933 received during his last five years a salary of £50, which would entitle him to compensation at the rate of £10 a year. Immediately after the determination of his appointment, however, he accepted a temporary position as medical officer of an open-air school at a salary of £66 a year, and is still serving in that capacity. The committee considers that the council is entitled to take the fact of this appointment into account, and as the salary now received is greater than that paid to him previously, the payment of the proposed allowance is to be suspended so long as he continues to receive a salary greater than £50 a year from the Council.

Overcrowding in "Shared" Houses

Speaking at a recent dinner of the Metropolitan Boroughs Standing Joint Committee, Sir Hilton Young, Minister of Health, said that he was closely occupied in working out, in consultation with local authorities, the Government's proposals for dealing with overcrowding. In London one of the worst aspects of the problem was the overcrowding in middle-class houses, which had been converted into working-class accommodation, and were used for lodgings or shared between several families. Only additional accommodation would cure this evil, and action for that purpose would be undertaken. Borough councils, however, should see that the conversion of middle-class houses into working-class accommodation was accompanied by proper precautions. Under existing by-laws, houses let in lodgings or occupied by members of more than one family required to be registered, and on the basis of the census there should be something like 130,000 such houses under the London County Council. Actually, the borough registers showed only about 21,000; it would not appear, therefore, that the borough councils were doing all they could to control these bad housing conditions in so far as they were covered by the by-laws. A permanent remedy for the evil of overcrowding depended in the long run upon the active and energetic enforcement of by-laws. As regards slum clearance, the Minister said that the biggest responsibility in London rested with the County Council, with whom it was essential there should be active co-operation on the part of the borough councils. There were some boroughs in which they would all be glad to see a greater spirit of energy, both in ascertaining slums and in taking the necessary steps for their clearance.

A Medical Buying Centre

British Industries House, a very large building in Oxford Street, close to the Marble Arch, which is being established as a centre for the use of wholesale buyers of Empire goods of all kinds—a sort of permanent British Industries Fair—is to have a medical section aiming to display all the equipment and material required by hospitals, public health institutions, doctors, and pharmacists. One large floor, comprising 8,000 square feet, has

been set aside for this purpose, and here it is expected to accommodate the showcases and display chambers of 150 British firms, with facilities for business discussions. Instead of having to travel round from one showroom to another, the prospective buyer will have a central depot where he can see all that the various manufacturers have to show him. It is estimated that hospitals and similar institutions alone in this country spend some sixty millions a year on equipment, and it is felt that a central clearing house would lead to more convenient and economical purchase and would stimulate British industry, for the house is reserved exclusively for goods from the home country or from the Dominions and Colonies. In the medical section, although this is not to be actually opened until the middle of July, half the space has already been allocated. An advisory council has been formed, of which Dr. Alfred Cox is chairman, and the other members are Sir Crisp English, Dr. E. P. Poulton, and Mr. A. R. Melhuish, past president of the Pharmaceutical Society, and the venture has the benediction of the British Hospitals Association, whose council is of opinion that a centre where samples of goods and equipment used in hospitals can be seen under one roof will be a great convenience to those interested in the management of voluntary hospitals and a useful stimulus to home industries. There are five other floors in which various industries, including textiles, leather, rubber, printing, metal, and furniture, are to show their samples and patterns. It is not to be an exhibition, and the general public will not be admitted.

History of the Sunderland Royal Infirmary

Dr. William Robinson, consulting surgeon, late chairman of the medical board, and a vice-president of the hospital, has told *The Story of the Royal Infirmary, Sunderland*, in its social and historical setting, and has incorporated an outline of the growth and evolution of hospitals since their first appearance. Into this detailed but arresting narrative there enters the formation (by a committee of medical practitioners) of the Sunderland Humane Society in 1791, followed three years later by the emergence from it of the Sunderland Dispensary. This grew in size, and the title of Infirmary was added in 1810. Still further extension ensued, and in 1879 the Provident Dispensary had to be established as a separate institution to stop the abuse of charity by those who could afford to pay towards the cost of treatment. In 1864 land for a new hospital was bought, and three years later this was opened. Additions followed in due course, and in 1911 the prefix "Royal" was added by command of the King. Dr. Robinson has woven these and the many other events in the institution's history into a most informative and attractive discourse on the changing manners and customs and the emergence of scientific medicine throughout the world. A considerable part of the book is devoted to short notes from the hospital records, which throw a vivid light on the social evolution of the nation during the last 140 years. In addition to these there are chapters on pre-Reformation hospitals, the social condition of Sunderland from 1790 to 1832, the Tottenham Deaconesses, the Poor Law institutions, and other related subjects, in which the author combines a remarkable gift for vivid description with the interpolation of many comments, both critical and humorous, if at times a little partizan—a fact that adds some Attic salt to an already appetizing meal. The book will have a popularity far outside Sunderland, for it reveals the underlying reasons for many of the existing hospital traditions and principles which seem meaningless to those unacquainted with the history of the art of healing in this country.

Reports of Societies

THE CAUSATIVE FACTOR IN OTOSCLEROSIS

At the meeting of the Section of Otolology of the Royal Society of Medicine on May 4th, the Dalby Lecture was delivered by Dr. ALBERT A. GRAY, who took as his subject "The Otosclerosis Problem."

Dr. Gray began by describing two cases of women who had suffered from deafness for many years, and in whom it had been possible after death to make a pathological examination of the ear structures.

In one case typical porous bone of otosclerosis was found in front of and behind the oval window, and on one side a very thin bridge of bone caused ankylosis at the posterior extremity of the stapedio-vestibular joint. Both crura of the stapes were almost completely absorbed by newly formed fibrous tissue in the muco-periosteum, and degenerative changes were found in the medullary sheath of the cochlear nerve on both sides, and to a lesser extent in the neurilemma. Membranes were both normal, and no fluid or adhesions were present in either ear.

The other case presented a similar picture, with some thickening of the muco-periosteum over the external surface of the footplate of the stapes, the otosclerotic bone lying below undergoing absorption. An area of otosclerotic bone extended from 2 to 3 mm. in front of the oval window backwards along the footplate of the stapes to about 1 mm. behind the oval window, thus fixing the stapes in front and behind. Here again the tympanic membranes were both normal, as were the organ of Corti and ganglion spirale and other structures within the cochlea.

Using these cases as an illustration, Dr. Gray proceeded to defend his thesis that the essential causative factor in otosclerosis is, a slowly progressing failure in the function of the vasomotor reflex of the organ of hearing as a whole. In attempting to solve, even partially, the otosclerosis problem, the disease must be regarded in all its aspects—clinical, pathological, and general. The clinical facts included diminished secretion of wax, sluggishness or loss of the tympanic vasomotor reflex, deafness, tinnitus, raising of lower tone limit, and other symptoms. The pathological changes were to be found in the bone in the neighbourhood of the oval window along with the thickening of the muco-periosteum which sometimes accompanied it in the same region, and the changes in the medullary sheath and neurilemma of the cochlear nerve; the important fact that the nerves to the vestibule and canals remained healthy must also be considered. The general facts related to the conditions as to age, sex, and heredity, as well as the strange but very definite association of changes in the temporal bone with fragilitas ossium, osteitis deformans, and acusticus tumour. He pointed out that the change of bone in otosclerosis did not go on indefinitely, and it was also necessary to bear in mind that clinically the severity of the symptoms bore very little relationship to the change in the bone. The deafness might be extreme, and yet the ankylosis at the stapedio-vestibular joint might be quite small. In fragilitas ossium there were similar changes in bone and similar symptoms, but the changes were distributed in a different way. Otosclerosis was a disease of the organ of hearing, while fragilitas ossium was a disease of the bone generally. The same explanation held for the relationship of osteitis deformans to otosclerosis; in osteitis deformans the temporal bone was involved in the general condition. The relationship to acusticus tumour was in a different category. Here the lesion was actually in the acoustic nerve, and the vasomotor reflex interfered with was that of which sound was the stimulus. Consequently the change in the bone was found in those parts closely associated with the function of hearing; in texture, position, and other characters the bony change in acusticus tumour was identical with that found in otosclerosis.

The view he held with regard to otosclerosis was that the vasomotor system which governed the supply to the organ of hearing as a whole, right from the external meatus to the cerebral cortex, began to fail before its time; consequently all the tissues concerned in the function of hearing lost their blood supply to a certain

extent. It was not that the structures of the organ died, but that they were not sufficiently nourished to function adequately. The first of the pathological phenomena to be explained on this hypothesis was fibrous tissue in the region of the oval window. This was a degenerative process, with no inflammatory activity, and was due to the deprivation of the extra blood supply to the bone when it was subjected to stress by the movements of the stapes in response to sound vibrations. Every time the stapes moved, lines of stress occurred along the end of the ligament and spread out on to the walls of the oval window. As these passed round the cochlea they were rapidly dispersed into the large mass of bone which covered it, so that the chief stress on the walls of the window was nearest to where the movements of the stapes occurred. As long as the blood supply was good there was an extra flow of blood on the occurrence of the reflex, but if this were not forthcoming the blood stagnated in the veins, and the osteoblasts being deprived of proper nourishment, bone absorption occurred. The symmetry of the bone change was explained by the symmetrical distribution of the vasomotor nerves. The degenerative changes in the medullary sheath and neurilemma were similarly explained by the failure of the vasomotor reflex which normally afforded the extra supply of blood when the nerve functioned. On the other hand, the vestibular nerve remained healthy because it did not depend for its blood supply upon the vasomotor reflex arc of which sound was the stimulus.

Clinically, the loss or sluggishness of the tympanic vasomotor reflex, the loss of low notes, the negative Rinne's test, and continuous tinnitus, all suggested that some defect in the vasomotor system of the organ of hearing was the fundamental factor in the causation of otosclerosis. Continuous tinnitus could never result from the change in bone, and in cases in which the tinnitus was worst the change in bone was not extensive. The striking temporary improvement in hearing resulting from the inhalation of amyl nitrite and the occurrence of otosclerosis paradoxa showed that in many cases the deafness of otosclerosis was in large part the result of a functional, not a structural, defect in the organ of hearing. The rapidity with which this improvement occurred and then disappeared indicated that it was brought about by a sudden increase in the supply of fresh blood to the nerve structures of the organ of hearing.

Dr. Gray read a letter from a former patient who was a strict teetotaler. She had suffered from deafness for many years. On one social occasion she inadvertently partook of some alcoholic beverage. She experienced a distended feeling in the head for about half an hour, and for the rest of the evening she was able to hear every sound in the room. The restoration, however, did not persist until the next day.

The occurrence was only to be explained by an increased supply of oxygenated blood to nerve cells which had not been properly supplied for years. Turning, finally, to general considerations, Dr. Gray deprecated attempts to explain otosclerosis on the theory of some derangement of endocrine function or changes in bone metabolism. Otosclerotics were usually normal persons, differing only from other individuals by reason of their deafness. The increased frequency of the condition in women was not due to the direct effect of ovarian or other hormones upon the organ of hearing, but to the fact that at every menstrual epoch, and still more during pregnancy, the whole vasomotor system was disturbed, and if there was an innate weakness in any one part of that system, such as the organ of hearing, that part would be prone to damage. Women were therefore, on the whole, more liable to otosclerosis than men, and the relative failure of the functioning of the vasomotor reflex was more transmissible by women. On the basis of an experience of thirty years, and the assembly of the pathological and clinical facts, he urged that a case had been made out for explaining otosclerosis by a failure of the vasomotor reflex function of the organ of hearing.

Dr. W. J. HARRISON thanked Dr. Gray for his very clear presentation, and said that otologists would have no further excuse for using "otosclerosis" loosely to denominate all cases of a doubtful or irresponsive nature.

CORRESPONDENCE

Quinine versus Atebrin and Plasmoquine

SIR,—I was interested to read the articles on the treatment of malaria by atebrin in your issue of March 17th, by Drs. P. D. Johnson of Perak (p. 473) and E. J. R. MacMahon of Trinidad (p. 477). The treatment of malaria by atebrin and plasmoquine constitutes a distinct advance in malarial therapy, but Dr. Johnson's conclusion that atebrin is definitely superior to quinine in all types of malaria, and that it destroys the malarial parasites more rapidly than quinine, is perhaps too optimistic as a general statement, although no doubt true in his own experience of the disease acquired under natural conditions.

There is at least one type of malaria in which quinine is sometimes more certain in its action than either atebrin or plasmoquine, and that is the malaria induced in the treatment of neurosyphilis. The observation that quinine is more certain and rapid than plasmoquine or atebrin in stopping the course of the paroxysms of a malaria induced for therapeutic purposes cannot be peculiar to this hospital, but at the moment of writing I am not in a position to quote other observers in support. My colleague, Dr. H. S. Hensman, superintendent of the Government Mental Hospital, Madras, informs me that he always uses quinine in cutting short the malarial attack in the treatment of his induced cases, and finds it most satisfactory; he has not had any reason to try atebrin. I personally favour the intravenous injection of 5 grains of the hydrobromide of quinine for terminating the fever in induced malaria.—I am, etc.,

ROBERT E. WRIGHT, C.I.E.,
Lieutenant-Colonel I.M.S.

Superintendent, Government Ophthalmic Hospital,
and Professor of Ophthalmology, Medical
College, Madras.

Madras, April 12th.

Jejunostomy in Hyperemesis Gravidarum

SIR,—In a discussion on hyperemesis gravidarum at the Royal Academy of Medicine in Ireland, reported in the *British Medical Journal* of April 21st (p. 723), my name is mentioned by Dr. Bethel Solomons as suggesting the operation of jejunostomy for the relief of this condition. A word of explanation is needed, as the subject is outside the territory of the general surgeon.

Three years ago a case was admitted under my care to the surgical wards of Mercer's Hospital before a diagnosis had been made by the attendant practitioner. Some days elapsed before a transfer could be arranged. During this period there was incessant vomiting and symptoms of toxæmia combined with nervous phenomena, which were akin to those seen in the acute phases of hyperthyroidism. The patient was critically ill. All commonplace remedies were ineffectual in relieving the symptoms. Repeated aspirations of the mucous contents of the stomach through a Jutte tube were without avail. The rectum refused to retain any adequate quantity of fluid; interrupted attempts at intravenous medication were such an ordeal to the patient that they were discontinued. On general principles the operation of jejunostomy was recommended, but it was declined.

Subsequently I raised the question at a meeting of the Section of Pathology of the Academy.¹ The general opinion after the meeting appeared to be that there was a place for the operation in selected cases. It was, however, insufficiently realized by those not engaged in intestinal surgery that the operation of jejunostomy could be performed in a few minutes under local anaesthesia,

and that the catheter introduced could be kept in position without leakage for an indefinite period of time. Solutions of glucose, all forms of fluid nourishment, and aperients, when necessary, could be administered without hindrance. The stomach was put out of action and gastric reflexes disappeared. Carbohydrates given in plentiful supply restored liver function, acidosis was prevented, and cardiac function improved.

From the therapeutic standpoint some cases of hyperemesis gravidarum appear analogous to those with renal and hepatic insufficiency from other causes, and to the well-known toxæmias which so often respond dramatically to a liberal supply of carbohydrates and fluids. Had time permitted in the case in question "venoclysis"—that is, the continuous administration of glucose by the drip method into the veins—might have been effective. I have referred to the excellent results obtained by this means in cases of hyperemesis gravidarum in the *Medical Annual* of 1931 (p. 377), and also to its efficacy in intestinal conditions (*British Medical Journal*, 1932, ii, 540). Since then the method has received more attention, and should be tried, I think, before recommending jejunostomy in the cases under review. Dr. O'Donel Browne, late assistant master to the Rotunda Hospital, has now reported a case of jejunostomy for the relief of severe hyperemesis gravidarum; the operation was successfully performed by my colleague Mr. Owens.

I hope that obstetricians will consider the operation worthy of an extended trial, so that evidence may be obtained from the results of a series of cases. Specialists alone can select the suitable cases and decide the time in each instance when the more orthodox methods of treatment should be reinforced.—I am, etc.,

London, W.1, May 7th.

W. I. DE C. WHEELER.

Treatment of Anaphylaxis by Adrenaline

SIR,—Dr. H. R. R. Mavor is to be congratulated on the success of his treatment of the case of severe anaphylaxis described by him in your issue of May 5th. His conclusion that "the dramatic effects of the administration of adrenaline on the milder symptoms suggest that much larger quantities of the substance could have been given in the first instance and repeated more frequently" prompts me to describe again the method of treatment by continuous injection of adrenaline, which I have used for status asthmaticus for several years and which I have also found very effective in a number of cases of anaphylaxis, two of which were as severe as those described by Dr. Mavor.

A syringe is filled with adrenaline chloride (1 in 1,000) and the needle introduced hypodermically. An initial injection of two or three minims is given, and then one minim is injected every thirty, forty-five, or sixty seconds, according to the reaction of the patient. In asthma the initial dose should be the largest one which the patient knows from experience gives rise to no unpleasant symptoms, and the rate of the subsequent injections is such as to cause no change in the pulse and no other effect except relief of the asthma. In anaphylaxis the dosage is a matter of guesswork: it is best to begin with three minims and then to give one minim every half-minute for five minutes, after which one minim is injected every minute until complete recovery takes place. In one case of exceptional severity it was necessary to continue the treatment for an hour and a half. I believe that death from anaphylaxis would never occur if the continuous adrenaline treatment was always promptly instituted.—I am, etc.,

New Lodge Clinic, Windsor
Forest, May 7th.

ARTHUR F. HURST.

¹ *Med. Press and Circ.*, December 16th, 1931, p. 480.

Hereditry and Mental Deficiency

SIR,—My paper on this subject has received attention from Dr. J. S. Manson, Dr. C. P. Lapage, and Dr. F. Grundy in letters which appeared in the *Journal* of April 7th (p. 641) and April 21st (p. 727). Your correspondents write from extensive experience and study of the subject; and I appreciate their comments and criticism. Will you allow me to reply briefly?—

Criticism by correspondence, on so large and complicated a subject, can only be made and met in a broad way. My critics bring several objections against the claim that Dr. Thomson's cases are a fair sample of all types and grades of mental deficiency: they say that many slighter cases cannot be recognized under 5 years of age, and that his cases consisted largely of the more severe ones. I cannot take up your space by a full discussion of these objections. I assisted Dr. Thomson in his hospital clinic for ten years, and I can testify that there were large numbers of slight cases among the total. Also, since his death, my own case records in this clinic now number about 400; they also include a large number of less severe cases, and the great majority of these were submitted to me before 5 years of age. My opinion, based on clinical experience, is that one can obtain the best sample of all types and grades of mental deficiency in early childhood; and at this age one can obtain a fuller history, both of the individual and of the family, and can conduct a more searching clinical examination of the child. Dr. Thomson's limitation of age must have excluded cases of syphilitic dementia, encephalitis, and epilepsy, and no doubt of some slight cases of primary amentia. But the total number of these must have been small, and, in my view, unable to disturb seriously the proportions of ante-natal, natal, and post-natal types which his figures show.

Dr. Manson suggests, and correctly, that Dr. Thomson did not go deeply into heredity in the group, simple primary amentia (292 cases). That would have been a task beyond the powers of any man. And let it be granted that heredity plays a part in this group: but the extent of the part, and the manner of its working, remain at present unknown: and the group forms only a third of the aggregate of cases. What do we know of primary amentia? All we know about mongols is that we can recognize them by their external marks, and we have given them a name: and we know even less than that about simple primary amentia. This kind of knowledge is only "the ignorance of foolish men." The theory of a hereditary neuropathic constitution is a gallant attempt to fill a part of this great void that we call primary amentia. But it will be seen that the action of heredity in such a constitution is what the logicians call *permissive*; and that to produce mental deficiency some other hereditary factor, non-hereditary in character, is required.

Let me state some main issues. Are Dr. Thomson's thousand cases a fair sample of all types and grades of mental deficiency as it occurs in all classes of the population? If they are, their analysis shows a clear majority of non-hereditary cases. This conclusion is flatly opposed to the teaching of many authorities on the subject. But such reversals of established opinion have happened before. Fifty years ago most of the authorities were agreed that tuberculous disease was hereditary: and we know now that they were wrong. It also puts a different complexion on the eugenics propaganda upon mental deficiency that goes on. In public lectures, in sermons, in letters to the Press, our people are led to believe that mental deficiency is one disease, and is hereditary, that it is a kind of race poison that has crept into our human stocks, that it is spreading underground like the musk rat, and that ruthless methods of extermination, more akin to veterinary surgery than to medicine,

are needed to stamp it out. The analysis of Dr. Thomson's cases seems to me to knock away the prop that supports all this scaremongering propaganda.

There still hangs over the mentally deficient that cloud of ignorance, fear, loathing, and not a little cruelty, which has now been lifted to a great extent from the insane. It will be gradually dispelled when we know more of the ante-natal causes of the condition. To attain that fuller knowledge further clinical study is required. But enough is known at present to justify the statement that heredity is a minor and not a major factor in the production of mental deficiency.—I am, etc.,

Edinburgh, May 2nd.

CHARLES MCNEIL.

The Cancer Problem

SIR,—I gather from the notice in your issue of May 5th of Mr. Lockhart-Mummery's book, *The Origin of Cancer*, that the author assumes civilized man not to have "been subject to the law of natural selection for some thousands of years." Is this a legitimate assumption? Some years ago I made the suggestion that all deaths occurring before the termination of reproductive life, not due to violent causes, are instances of natural selection: they constitute, in large measure, eliminations of the unfit—those who are unable to adapt themselves to their environment.

It is well known that under natural conditions elimination takes place to a stupendous extent. It is most rigorous in the case of those species which maintain much the same population from year to year. When a species increases year by year, the process of elimination becomes less, but on the whole only slightly less, until sooner or later the increase reaches a limit.

At the introduction of agriculture (which initiated the era of civilization) the total human population did not, perhaps, exceed 10 millions. Such a meagre population shows how rigorous the process of elimination must have been during the long period of man's evolution from the anthropoid to the agricultural phase (some seven thousand years ago). Since that date the human population has increased by 1,500 millions or more. This has, of course, involved a slackening in the process of elimination. Nevertheless, elimination has been proceeding briskly. Consider how greatly the human population would have increased since the introduction of agriculture if all humans had been permitted to survive the reproductive period and there had been no hindrance to procreation. Allowing four generations for each century, and four children to each couple, the population would double itself four times each century, and $4 \times 70 = 280$ times in seventy centuries. At this rate it would, in less than a thousand years, have exceeded a million million, a figure by the side of which our present population pales into insignificance indeed, being in the proportion of a million million to fifteen hundred million! After seven thousand years the increase would have reached a figure inconceivably greater.

We must conclude that, since the advent of agriculture and civilization, a vast number in successive populations have been prevented from leaving progeny, and thus have been racially eliminated; and, further, that the elimination has in large measure been an elimination of the least fit, of those least capable of coping with their environment: to that extent natural selection has been in operation.

I am not suggesting that the process of natural selection has not slackened—undoubtedly it has, notably in this country during the past half-century, and this, no doubt, is leading to racial deterioration. Cancer, occurring as it usually does in later life, comes, in only a minor degree, under the beneficent action of natural selection. Victims to cancer have generally been afforded abundant opportunity to leave offspring.—I am, etc.,

London, W.1, May 5th.

HARRY CAMPBELL.

SIR,—The review entitled "The Cancer Problem," in your issue of May 5th (p. 803), begins with the statement: "The fact that cancer is much more frequent among civilized than savage races, and is increasing in frequency, is one of the outstanding features of the disease." This statement contains two hoary fallacies which have been exposed over and over again, and which should not be allowed to be perpetuated in one of our leading medical journals without a protest. Any comparison of the incidence of cancer between any two populations presupposes as an essential condition, first, an efficient medical service which ensures a reasonably accurate diagnosis and certification of the cause of death, and, secondly, an efficient system of recording the births, deaths, and ages of the population as a whole. Since these two conditions do not exist in the savage races, nobody can possibly know whether cancer is more or less frequent in them than in civilized races. For native races in which these conditions are fulfilled it has been shown repeatedly that they are affected by cancer about as frequently as civilized races, although the organ incidence may be different.

The statement that cancer increases in frequency in civilized races is true only if one takes the crude figures; but these are misleading, since they neglect such essential factors as alterations in the age constitution of the population, improved methods of diagnosis, and improvements of the certification of the causes of death.

This subject is too big to be discussed within the scope of a letter to the Editor. It must be sufficient to state that when these factors are taken into consideration the increase shown by the crude figures becomes greatly diminished, and that according to a recent paper by Dr. S. Peller (*Zeit. f. Krebs.*, 1934, xl, 465) there is actually a diminution in the incidence of cancer in the age groups up to 60 years, and only the age groups over 60 years show an increase. Since the alleged "fact" quoted above is partly an error and partly doubtful it can hardly be described as an outstanding feature of the disease.—I am, etc.,

London, May 5th.

W. CRAMER.

SIR,—I am in agreement with much of what "M.D." has expressed (*Journal*, April 28th, p. 777) and consider that he is emphasizing an important point of view. Without wishing to be controversial, I find it difficult to agree that the recovery of enzymic activity in the blood serum of cases, after the removal of cancer, necessarily proves that the previous deficiency was the effect rather than an associated cause of malignancy.

During the past two and a half years I have had the opportunity of carrying out systematic serum tests upon a large number of cases and have increasing evidence that the earliest manifestation of cancer, as well as of recurrence or metastases in known cases, is preceded by abnormalities in the serum collateral with enzyme deficiency, frequently recognizable many months, and in some cases approximately a year, before the clinical condition was apparent. Further, in some cases an improvement in the serum findings had commenced before the cancer had been removed, and this apparently natural immunizing response appears to be of good prognosis. The further improvement in the serum findings which may follow the removal of the primary growth is probably associated with serum changes and improved resistance, which have been shown experimentally to follow particularly lysis of malignant cells *in situ*. In cases in which no such return towards normal of the serum reactions follows surgical or radiological treatment, the prognosis is relatively serious. These consecutive observations suggest that cases of cancer whose clinical condition and serum shows a reasonable response should be consistently followed up by post-

operative treatment with the object of maintaining and restoring a normal serum reaction, and with this the re-establishment of an effective cytolytic defence against recurrence. Of the blood tests employed for the purpose of such observations, the modified Bendien reaction I find is one which so far gives most satisfactory information.

It would be interesting to know if others can confirm "M.D.'s" experience of tuberculous cases being immune to cancer. My own rather limited observations have not found this so, and a late physician of considerable clinical experience used to state that the healed tuberculous patient was subject to cancer.—I am, etc.,

Liverpool, May 2nd.

E. CRONIN LOWE.

The Cancer Campaign

SIR,—Your readers will remember that in July last the Duke of York suggested that an appeal should be instituted on Empire Day (May 24th) in aid of the funds of the British Empire Cancer Campaign. In accordance with this so graciously expressed wish, the Appeal Committee of the Campaign has been able to organize this day in over 1,000 centres throughout the British Isles, and in different parts of the Empire other activities are taking place. In the metropolitan area and the City of London a flag day will also be held on Empire Day. I recently received a letter from His Royal Highness, of which the following is an extract:

"It is with great satisfaction that I have learned that the scheme suggested by me at the annual general meeting of the British Empire Cancer Campaign at the House of Lords in July is about to be carried into practical operation on Empire Day, May 24th. . . . I shall be grateful for any help that can be given to this Empire Day effort."

May I through your columns appeal for helpers for these "Empire Day" flag days? We have already been successful in recruiting a large number of depot helpers and sellers, but, if the day is to be the success so necessary to obtain adequate funds to fight the cancer scourge, it is essential that we should recruit very many more sellers and helpers. I earnestly appeal to all who are interested in this great cause to rally to this call for help, and to send their names to me at 12, Grosvenor Crescent, Hyde Park Corner, S.W.1, stating where they would be willing to help, and I will see that they are put in touch with the appropriate depot organizer.—I am, etc.,

READING,

London, S.W., May 6th. Chairman, British Empire Cancer Campaign.

Vaccine for Acute Gonorrhoea

SIR,—I have read the paper by Dr. Orpwood Price and Dr. Ambrose King (*April 28th*, p. 748) with interest, and also with some satisfaction at the thought that a useful method of treatment is being more widely employed. But the vaccine which the authors describe as new does not appear to differ in its preparation from the earlier type of detoxicated vaccine described by Thomson, and which was incorporated in my method of preparing residual vaccines (*British Medical Journal*, 1921). The apparent passage into solution of the organisms is due to swelling and change of refractive index in the presence of weak alkali. Some of the cocci disintegrate, but a large proportion are still recognizable in stained preparations. During the process of acid precipitation certain toxic factors remain in solution while the body proteins and exotoxin flocculate: the method is widely used to-day for the concentration of exotoxins. In residual vaccines the exotoxins are probably present in the form of toxoids, produced by the action of hydrogen peroxide and heat used in the preparation.

In the original paper on residual vaccines the results of treatment with the simple acid-alkali vaccine were compared with those obtained by the full technique for the preparation of residual vaccines, and it was clear that the latter gave superior results. The violent local reaction described as "good" by Dr. Price and Dr. King is due to incomplete removal or destruction of the toxic agent remaining in solution.

McCrea (*British Medical Journal*, May 5th, 1928) published the results of treating 134 consecutive acute cases with residual gonococcal vaccine and compared them with 140 controls. He found indisputable evidence of the efficiency of the vaccine, and his views on that point were supported by Burke, who had obtained similar results at Warrington.

The standard of cure adopted by Dr. Price and Dr. King includes two instrumental investigations which many urologists would regard as barbarous, if not definitely harmful, when not dealing with chronic infections. Furthermore, the two-glass test as used by us rarely allows disease of the genital or lower urinary tract to escape detection. The criterion of cure by the two-glass test adopted by McCrea seems to be more stringent than that used by Dr. Price and Dr. King. In the former case not more than three cells per field, using 1/6 objective, from the centrifugalized deposit from the second glass after prostatic massage, is required. Examination of the prostatic bead with an oil-immersion objective has rarely been used by me as a criterion of cure, but I certainly would not pass five cells to a field as satisfactory.—I am, etc.,

Manchester, May 1st.

C. E. JENKINS.

Poisoning by Ground Ivy

SIR,—Now that spring is upon us once again I would like to draw the attention of amateur gardeners to the danger of handling the common ground ivy plant. It is so common that it finds its way into nearly every garden, and consequently it is almost certain that it will be handled either by the doctor turned gardener or by some of his patients.

For long I did not recognize that the merest touch of the leaves or stem of this plant could give rise to a most violent irritation of the skin of the hands and arms. The first attacks were diagnosed as scabies, cheiropompholyx, etc., and appropriate remedies were prescribed, but without much, or indeed any, benefit. It was only after several separate attacks that I recognized that the actual cause was due to contact with the "rare old plant." The merest touch of the leaves or stalks gives rise after an interval of a few hours to the most intense itching. Soon afterwards redness with swelling of the skin on the back of the fingers develops. This goes on to papular and vesicular formation: the latter is so constantly present in the webs of the fingers as to simulate scabies, but only in a very few instances do pustules form. Small bullae often run in a circinate form, and are probably the result of irritation at the points of contact. The eruption is, however, so widespread over the skin of the hands that it cannot be caused by direct contact all over the surface, but must be due to a spreading of the toxin through the lymphatics. The affection persists for several days, and then gradually fades, with slight desquamation.

It is well known that the ordinary climbing ivy is an irritant to the skin, but usually it acts only as such when roughly handled, and when the leaves are broken so as to allow escape of the juice. I do not think, however, that the exceedingly irritant properties of the creeping variety are so well recognized.

The only treatment which relieves the irritation and allows of sleep is bathing the hands in very hot water, with the subsequent application of oxide of zinc ointment.—I am, etc.,

W. G. AITCHISON ROBERTSON,
M.D., F.R.C.P.E.D.

Bournemouth, May 6th.

Bee Venom for Rheumatism

SIR,—I used bee venom for rheumatism in the summer of 1911, and looking through the notes of some thirty cases which I had at that time, the results obtained appear to have been so satisfactory that it is difficult to understand why I gave it up. I made my own solution, but I remember there was much of the Isle of Wight disease about that year, and bee keepers were very jealous of their stock. As the winter came on it became impossible to get them, added to which the remedy seemed to lose its value, even when I did manage to get enough bees for the purpose.

During this last winter a doctor's wife and a former patient of mine was so enthusiastic about the value of the bee sting venom that I had given her in 1911 that I promised to make her some more. This was last Christmas-time, and just then I had as one of my asthmatical patients a very experienced and scientifically knowledgeable bee keeper: she informed me that bees sting her many hundreds of times a year, and by their stings she would be able to tell which month of the year it is. The stings vary enormously, and are most potent at the end of summer, when the honey is being guarded before the winter starts: during the winter the potency sinks very rapidly; hence, no doubt, my failure with treatment during the winter months.

As I now have sufficient bee venom for my own use, and some to spare, I shall be pleased to supply Dr. Shipton and Dr. Barnes in order that they may try its efficacy. One of my most remarkable cases was a child with acute rheumatic fever, high temperature, swollen joints, the usual sweating, and other symptoms: after five daily injections the child was perfectly well. It would be interesting to know if it has been tried at Buxton in this acute type of case.—I am, etc.,

London, W.I, May 1st.

FRANK COKE.

The Milk Question

SIR,—In reply to Dr. Hawthorne's letter, I submit that anyone reading the report issued by the People's League of Health could only come to the conclusion which I stated.

In regard to the question as to whether "clean" milk infected with tubercle bacilli is less infective than dirty milk containing the same number of tubercle bacilli, the statement I made was that "an all-round clean milk means fewer cases of tuberculosis despite the presence of tubercle bacilli." Clean milk will, of course, contain fewer bacilli than dirty milk. Tuberculosis is recognized as a disease which more readily develops and becomes clinically evident in the presence of a lowered local or general resistance. It is agreed that dirty milk may give rise to septic throats and gastro-enteritis, for instance, and it is surely a reasonable assumption from the point of view of the ordinary medical man that in these cases the bacillus will find a more ready entrance, and subsequently a more suitable nidus for growth, than in cases where there are no other adverse factors. The tuberculous diseases I had in mind at the moment were tuberculous meningitis, glands in the neck, and tuberculous peritonitis. There is no definite evidence either way, but I contend that the weight of evidence is in my favour.—I am, etc.,

Hounslow, May 7th.

W. S. FORBES.

Cataract and Vitamin Deficiency

SIR,—Dr. F. P. Fischer's letter in your issue of April 28th (p. 776) would have been more valuable had he been able to state that in cataract patients he had, in the other tissues of the body, detected a vitamin B₂ deficiency corresponding to that found in the lens.—I am, etc.,

London, May 6th.

J. BARCROFT ANDERSON.

Practical Therapeutics

SIR,—I am very grateful for the kindly and appreciative opinions expressed by the reviewer of my *Handbook of Therapeutics* in your issue of April 28th. But the review contains two rather serious misstatements of fact.

1. I am alleged to state in my book that for free haematemesis "operation is the only treatment, and is best performed at the earliest possible moment." If your reviewer will look again at page 314, he will see that the quotation he gives refers to the treatment of *perforation*—quite a different matter.

2. I am alleged to have little faith in blood-letting—mainly, it would appear, on the ground that the word "venesection" does not appear in the index. Yet I describe the method of puncturing a vein—the usual method employed at the present time for blood-letting—and on pages 238, 271, 283, and 373, when discussing respectively the treatment of certain types of cardiac disease, oedema of the lung, uraemia, and polycythaemia, I express the opinion that the removal of blood from a vein is a useful, and in some cases an excellent, therapeutic measure.—I am, etc.,

University of Aberdeen, April 29th.

DAVID CAMPBELL.

* The reviewer writes: I owe Professor Campbell an apology. I overlooked, as I ought not to have done, the heading of a new paragraph which indicated that, the proposal of immediate operation referred not to haematemesis but to perforation of the stomach. On his second point, I must still maintain that to describe the method of intravenous medication does not compensate for the absence of directions for withdrawal of blood from a vein, and that the index of his book might have been improved on the points I suggested; his present reference, indeed, illustrates this claim.

A Fund for Exiled Jewish Doctors

SIR,—May I beg the hospitality of your columns for an appeal to Jewish practitioners to contribute to the fund which the Jewish Medical and Dental Emergency Association has instituted for the settlement of displaced Jewish medical scientists? It is common knowledge that a great amount of scientific work of the highest importance has been disturbed and threatened with extinction by the present policy of racial exclusion in Germany; and it is its recognition of its special duty to preserve for humanity what it can of this valuable work which has caused the association to devote its fund to this purpose.

It is proposed to use the bulk of the money collected to settling Jewish medical scientists in Palestinian institutions (the Hebrew University, the Hadassah Hospitals, etc.), where the association has already been instrumental in establishing several such workers, and it is hoped, by the collection of a substantial sum, to enlarge these possibilities. I would therefore desire to draw the attention to the fund of such practitioners who have not been apprised of the work of the Association, and to solicit their co-operation. Donations should be sent to

the treasurer, Jewish Medical and Dental Emergency Association, Woburn House, Upper Woburn Place, W.C.1.—I am, etc.,

L. PHILLIPS, M.B., B.Ch.

London, W.C.1, April 26th.

Honorary Secretary.

Humane Destruction of Animals

SIR,—In reference to your annotation on this subject (*Journal*, April 28th, p. 764) I think it will be of interest to your readers to know that every aspect of small-animal destruction is undergoing detailed scientific investigation by veterinary experts at the instance of the National Veterinary Medical Association. In the course of this work, which was initiated about a year ago, every phase of the subject will have been thoroughly investigated, and it is confidently anticipated that, as a result, this association will eventually be in a position to make an authoritative pronouncement on the relative merits of all forms of euthanasia.—I am, etc.,

F. KNIGHT,

General Secretary, National Veterinary Medical Association of Great Britain and Ireland.

London, W.C.1, April 28th.

The Services

DEATHS IN THE SERVICES

Colonel Thomas Stodart, C.I.E., Madras Medical Service (ret.), died at North Berwick on April 15th, aged 66. He was born on March 13th, 1868, the son of William Stodart of Winton Hill, Penciland, East Lothian, and was educated at the Royal High School, Edinburgh, and at Edinburgh University, where he graduated M.B. and C.M. in 1891. In 1893 he joined the Indian Medical Service, and after serving in the Sudan in 1896, for which he received the Egyptian and the Khedive's medals, and on the North-West Frontier of India in the Tirah campaign of 1897-8, he entered the Burma Civil Medical Department in 1898. He was recalled to military duty in 1914, and posted as A.D.M.S. of the Banna brigade; for his part in the Afghan War of 1919 and the Waziristan campaign of 1920 he was mentioned in dispatches. Retiring shortly afterwards, he returned to North Berwick, where he took a great interest in public affairs. He was a member of the East Lothian County Council, of the Joint Sanatorium Board for the South-Western Counties, and of the Public Assistance Committee. At the time of his death he had been president of the North Berwick branch of the British Legion for five years. He was a keen golfer and also engaged actively in curling and shooting. He is survived by a widow, two sons, and two married daughters.

Colonel Christopher William Carr-Calthrop, C.B.E., Bengal Medical Service (ret.), died at Ealing on April 17th, aged 89. Born on July 28th, 1844, the eldest son of William Charles Calthrop of Withern, Lincolnshire, he was educated at Merchant Taylors' School, Charing Cross Hospital, and Heidelberg University, where he graduated M.D. in 1869, after taking the M.R.C.S. in 1867 and the L.R.C.P. Lond. and L.S.A. in 1868. He entered the Indian Medical Service as assistant surgeon on April 1st, 1869, passing first into Netley, where he won the Herbert prize as first man of his term. He attained the rank of full colonel in April, 1899, and retired in April, 1904. In the Afghan War of 1879-80 he took part in the action at Ali Khel, and in the operations in and around Kabul, was wounded, and gained the Afghan medal with a clasp; and for his services in the Sudan, as principal medical officer in the Dongola campaign of 1897, he received the Egyptian medal and the Khedive's bronze star. When the Great War began he was appointed recruiting officer for Ealing and district, and later, in 1917, was engaged in making ivory insulators for the Admiralty, ivory turning having been one of his hobbies. For some years, during his service in India, he held a professorship in the Punjab University, at Lahore. In the administrative grade he served first as principal medical officer of the Presidency District, Calcutta, and afterwards as inspector-general of civil hospitals in Assam. He was made C.B.E. for his services in the war. He was the author of the *Assam Pharmacopoeia* (1900), and of *History of the Families of Calthrop and Calthorpe* (1905).

Obituary

WILLIAM HENRY WELCH, M.D., LL.D.

Formerly Professor of Pathology and of the History of Medicine,
Johns Hopkins University

The death, on April 30th, in the Johns Hopkins Hospital, Baltimore, some months after a severe operation, of Professor W. H. Welch removes a great figure in scientific medicine.

The descendant in the direct line of other medical men, he was born on April 8th, 1850, at Norfolk, Connecticut, in a house which eighty years later was distinguished by a plaque inscribed: "To Dr. William Henry Welch: Dean of American Medicine." Graduating with classical honours at Yale in 1870, he entered the medical school of the College of Physicians and Surgeons, Columbia University, in 1871, and became M.D. in 1875, serving



William H. Welch.

After the dry-point engraving
by Alfred Hutton

as an intern at the Bellevue Hospital, before he went, in 1876, to work at Strasbourg under von Recklinghausen, at Leipzig with Ludwig, at Breslau with Cohnheim, and at Vienna under Chiari and Hebra. On his return to New York in 1879 he was made professor of pathological anatomy and general pathology at the Bellevue Medical College, and held the chair until 1884, when he was appointed the first whole-time professor of pathology at the Johns Hopkins University, Baltimore, where he remained in one capacity or another for

the next fifty years of his long life. Johns Hopkins, a Baltimore merchant and Quaker millionaire, who died on Christmas Eve, 1873, endowed "a university, for there will always be youth to teach; and a hospital, for there will always be suffering to relieve." In 1884 a provisional medical faculty was established, and Welch's chair was one of the first. He at once went to Germany to gain a thorough mastery of the rapidly developing science of bacteriology under Koch, whom he had previously met at Breslau, at Berlin, and elsewhere. In the autumn of 1885 he began research and graduate teaching in his laboratory at Baltimore, where among his co-workers and pupils were G. M. Sternberg, Walter Reed of yellow fever fame, W. S. Halsted, W. G. Councilman, and Simon Flexner. Financial difficulties, however, delayed the opening of the Johns Hopkins Hospital until 1889, and of the undergraduate medical school till 1893. Welch had much say, together with J. S. Billings, the medical adviser, in the selection of the clinical professors—William Osler, W. S. Halsted, and Howard A. Kelly—who, like Welch, were all under the age of 40, and later appeared in J. S. Sargent's portrait of "The Four Doctors" (1905), which now adorns the W. H. Welch Medical Library. Welch became pathologist-in-chief to the hospital, and was the first dean of the medical school for five years (1893-8).

As a pathologist he had the broadest possible outlook, and covered the whole field of this biological science. Thus, to give a few examples only of his enormous output—his Bibliography in 1917 contained 335 items—he worked on haemorrhagic infarction, embolism and thromboses, discovered the *Staphylococcus epidermidis albus* and the *Bacillus aerogenes capsulatus*, both in 1892, and carried

out experimental work on pulmonary oedema (1878) and on glomerulonephritis (1886). His pupils filled pathological chairs in many American universities; and not only in the New World, for the Emeritus Quick professor of biology at Cambridge, G. H. F. Nuttall, worked in his laboratory forty-four years ago. His pupils have often arisen to call him blessed and express their deep debt of admiration and lasting affection—for example, on the more or less public occasions of the twenty-fifth anniversary in 1900 of his doctorate, when he was presented with a *Festschrift*, and on his seventieth and eightieth birthdays.

As an able administrator and shrewd judge of men and their capacities, so that his recommendations for appointments were eminently successful, he was much in demand by scientific bodies connected with medical research, and freely did he give his services and sacrifice his scanty leisure. Thus he had been president of the Board of Scientific Directors of the Rockefeller Institute for Medical Research since 1901, and Carnegie trustee from 1906. On several occasions during the last decade of the last century he came to the rescue by successfully preventing legislation against animal experiments. In preventive medicine he long took a leading part; in 1897 he became president of the Maryland Public Health Association, at a time when action was sorely needed, and remained in office for a quarter of a century; in 1903 he was a member of the subcommittee of the Committee of Fifty to investigate the liquor problem, and wrote the report on the pathological effects of alcohol; and in 1916 he resigned the chair of pathology at Johns Hopkins University to become director of the important School of Hygiene and Public Health at Baltimore.

Welch was a man of wide sympathies and culture, and years ago was described by Osler as "extraordinarily well versed in the history of medicine, and, apart from technical knowledge, having a fund of information on all conceivable topics—from bridge to baseball, from Horace to Herrick." He was a bibliophile who also knew the contents of books with extreme accuracy, and his interest in medical history was not the hobby of an old man, for he was in 1889 the first president of the Johns Hopkins Medical Historical Club. In 1926 he was elected to the new chair of medical history in the Johns Hopkins University, and at once set out to journey over Europe in order to buy books. Six years later he resigned, and was succeeded by Professor Henry Sigerist. The W. H. Welch Medical Library, in charge of Lieut.-Colonel F. H. Garrison, and the Osler Library at McGill University, Montreal, presided over by Dr. W. W. Francis, were by a happy coincidence dedicated in the same year (1930).

The revolution in medicine that has taken place in North America in the last half-century should be mainly ascribed, as is most justly due, to the two great leaders and friends of the Johns Hopkins School—Osler and Welch—who in so many ways resembled each other, especially in their humanity, genius for friendship, wide vision, and entire unselfishness. Welch was a bachelor, a clubbable soul much given to hospitality, and a charming companion. Honours, entirely unsought, crowded upon him: he was an original member in 1886 of the Association of American Physicians, then limited to a hundred, its president in 1901, and was elected an honorary member in 1913; there is now one original member living. He was President of the American Medical Association in 1910, and of other societies too numerous to mention. He was elected Foreign Corresponding Member of the British Medical Association in 1932, was an honorary Fellow of many scientific bodies in Europe, and was the recipient of a number of foreign decorations.

HUMPHRY ROLLESTON.

JAMES HAIG FERGUSON, M.D., LL.D.,
F.R.C.P.Ed., F.R.C.S.Ed.

The death took place on May 2nd, at his residence in Coates Crescent, Edinburgh, of Dr. James Haig Ferguson, one of the best-known gynaecologists in this country. He had been in failing health for a considerable time.

He was born in Edinburgh in 1862, his father being the minister of Fossoway Parish Church, Perthshire. After a preliminary education at the Collegiate School, Edinburgh, Haig Ferguson entered upon a medical course at Edinburgh University, where he graduated M.B., C.M. in 1884. In the same year he became a Member of the Royal College of Surgeons of England. After a period spent as resident physician with the late Dr. Claude Muirhead in the Royal Infirmary, Edinburgh, he also acted as resident physician in the Royal Hospital for Sick Children, and then took up gynaecology as a specialty and was appointed clinical tutor in the department for diseases of women. He joined the Royal College of Physicians of Edinburgh as a Member in 1887, proceeding to its Fellowship in 1889, and he also joined the Royal College of Surgeons of Edinburgh as a Fellow in 1902. In 1890 he obtained with honours the M.D. degree of Edinburgh University. In April, 1896, he was appointed assistant gynaecologist on the staff of the Royal Infirmary of Edinburgh, and in 1921 he was promoted to the charge of a gynaecological ward. Retiring under the age limit in 1927, he was appointed consulting gynaecologist to this institution. In the following year



his great services to the University and Medical School of Edinburgh were recognized by the University, which conferred upon him the honorary degree of LL.D.

For many years Dr. Haig Ferguson had conducted a large family practice in addition to his specialty, but on taking charge of wards he limited himself to work as a consulting and operating gynaecologist and obstetrician. His post in the Royal Infirmary carried with it that of lecturer in clinical gynaecology in the University of Edinburgh, and he also lectured on midwifery and diseases of women in the School of Medicine of the Royal Colleges. For a long period he was also gynaecologist to Leith Hospital and physician to the Royal Maternity Hospital, Edinburgh. He had acted as examiner in midwifery both in the University of Edinburgh and in that of Aberdeen. Immediately after graduation Dr. Haig Ferguson had been elected one of the annual presidents of the Royal Medical Society of Edinburgh, and he later served a term as president of the Edinburgh Obstetrical Society. At the time of his death he had been a member of the British Medical Association for forty-eight years, and his long connexion with the Association, as well as his eminence in his chosen specialty, was recognized by his election as president of the Section of Obstetrics and Gynaecology at the annual meeting of the Association held at Edinburgh in 1927. He filled the office of president of the Royal College of Surgeons of Edinburgh in 1929-31. His outstanding position among Scottish obstetricians and his judicious powers in the conduct of business were recognized by his appointment as chairman of the Central Midwives Board for Scotland, a post which he held at the time of his death. He was also vice-president of the Scottish branch of the Queen Victoria Jubilee Institute of District Nursing, and, as chairman of the Governing Board of the School of Medicine of the Royal Edinburgh

Colleges, he took a deep interest in the education of medical students.

Dr. Haig Ferguson had written several textbooks, which enjoyed a great measure of success. In 1889, along with the late Dr. F. W. N. Haultain, he published a *Handbook of Obstetric Nursing*, which had gone into a fifth edition in 1906. In 1923, along with Drs. Munro Kerr, James Young, and Hendry, he published *A Combined Text-book of Obstetrics and Gynaecology*, which went into a second edition ten years later. He also contributed numerous articles dealing with obstetrics and gynaecology to medical literature, such as the article on "Puerperal Affections of Breasts and Nipples," in the *Encyclopaedia Medica*, and one on "Abdominal Hysterectomy for Acute Puerperal Metritis," in the *Transactions of the Obstetrical Society of Edinburgh*, 1906.

As a practitioner Dr. Haig Ferguson was distinguished for his never-failing kindness, courtesy, and sympathy. These qualities had endeared him greatly both to his numerous patients and to his colleagues. He was a hard and consistent worker in the practice of his profession, sometimes even to the detriment of his own health. In his specialty he was recognized as the final authority in Edinburgh, and it was a matter of great regret to his many friends and admirers that he never occupied the professorial chair of midwifery in Edinburgh University. He was recognized as a skilful operator in gynaecology, and his influence on the practice of obstetrics was extensive, through both his writings and his teaching. For obstetric nursing in Scotland he had done a great deal during his long tenure of the chair of the Central Midwives Board for Scotland, and much of the success which attended the work of this Board was due to his wise foresight and judicious counsel.

Although constantly engaged in the cares of practice Dr. Haig Ferguson was a member of the King's Bodyguard of Scottish Archers, and took a great interest in the archery competitions of that body. He was also a keen fisher and hill climber when occasion offered during his holidays. In 1889 he married a daughter of the late Sir Patrick Heron-Watson, a noted figure in Edinburgh medicine. He is survived by his widow and by one son and three daughters.

A funeral service was held in St. George's Parish Church on May 4th, which was attended by a large congregation, including many members of the medical profession, and by representatives from the Royal Colleges of Physicians and Surgeons, Edinburgh, the School of Medicine of the Royal Colleges, Edinburgh, the Royal Edinburgh Hospital for Sick Children, the Central Midwives Board for Scotland, and a detachment of nurses from the Queen's Institute of District Nursing. The interment took place in the Dean Cemetery, where the ceremony was private.

Dr. JAMES YOUNG writes:

Dr. Haig Ferguson's death has removed from our midst the doyen of Edinburgh obstetrics and a very gracious personality. Great as were his gifts and his service, to his friends he will remain rather as a presence which was precious in its possession of those qualities of heart and mind that are above the ordinary world's measurement. His handsome figure, his gentle and courteous manner to rich and poor alike, and his kindly humour are among those things that to his patients, students, and friends scattered over the world fill in the memory of a great doctor and of a character of singular charm. His presence warmed because it was itself suffused with those rich warm springs that flowed from a nature peculiarly sensitive in its sympathy and understanding.

Naturally retiring and almost timid in temperament, Haig Ferguson was hesitating and sometimes ineffective as a speaker, and this handicapped him when he was

called upon to engage in public affairs. He so controlled these defects of temperament, however, that in his later years he occupied, with success and acceptance, public posts of high responsibility. He was chairman of the Central Midwives Board for Scotland and president of the Royal College of Surgeons, besides holding managerial positions in the Royal Infirmary, the Royal Hospital for Sick Children, and Donaldson's Hospital School.

Haig Ferguson had a large obstetric and gynaecological practice, and this, with his hospital appointments, so engrossed his time that he left himself little leisure. He was an indefatigable worker, and his precision in regard to such accompaniments of an active professional life as correspondence and punctuality were at once an example and a disciplinary test to his assistants and hospital staff. Throughout the active years of his life he was fortunate in the possession of a vigorous constitution, which withstood the many strains imposed upon it by the exigencies of an active obstetric practice.

[The photograph reproduced is by Jas. Bacon and Sons, Edinburgh.]

J. CAMPBELL MCCLURE, M.D.

Senior Physician to the French Hospital, London

By the death of Dr. J. Campbell McClure, which occurred with tragic suddenness on May 2nd, four days after the wedding of one of his sons, the French Hospital and colony in London have been deprived of a notable personality.

James Campbell McClure was born in February, 1873. A graduate of the University of Glasgow, he remained in that city for ten years as physician to out-patients in the Western Infirmary and Sick Children's Hospital, and as assistant to the professor of medicine. He also held an appointment at the Belvidere Fever Hospital. Migrating to London, he became in course of time physician to the French Hospital and to Margaret Street Hospital for Consumption. In addition he held several other minor appointments.

The author of many publications, his most valuable contribution to medical literature was probably a handbook on the infectious fevers, the fruit of his early experience at Belvidere, the readable and practical nature of which rendered it, in its time, a favourite with students. A good knowledge of fevers is an excellent foundation for general medicine; but McClure's interest widened to include also balneology and climatology, his active attention to which gained him the office of president of that section of the Royal Society of Medicine. With this wide and varied grounding, McClure developed into a general physician possessed of unusual skill in diagnosis. Shrewd, downright, and practical by nature, he was little liable to follow any will-o'-the-wisp in tracking symptoms to their origin, and yet little escaped his keen observation. In later life this acumen grew to that point of skill when knowledge and experience combine to form a flair or intuition as nearly faultless in its conclusions and decisions as any human judgement can be. But McClure's firm grasp on actuality would have left him dissatisfied with the merely diagnostic side of medicine. His knowledge of therapeutics was deep. Again, however, his strong common sense and balance enabled him to form a therapeutic repertory that was reliable as well as varied.

Any account of Campbell McClure's professional life, however brief, would be culpably incomplete if no reference were made to his devoted services to the French Hospital. In his twenty-one years as physician he has seen the reputation of the hospital grow until, at the present day, it has come to be the trusted resort in time of sickness not only of French and Belgians, but of the entire foreign population of London. In this great development McClure played a conspicuous part. His

services in this respect were recognized when he received the coveted award of the Legion of Honour, of which he was Chevalier, and of the Palmes en Or of the Order of the Crown of Belgium. But these official decorations were merely the outward sign of his high reputation as a hard-working and successful physician in the foreign world of the metropolis, where his loss will be long and deeply felt.

Much sympathy is expressed for his widow, a daughter of the Taylorian Reader in French in the University of Oxford, and for his family.

T. R. LLEWELLYN, M.R.C.S., L.R.C.P.

We regret to announce the death on April 20th, at his home in Penarth, of Dr. Thomas Richard Llewellyn, regional medical officer under the Welsh Board of Health. Dr. Llewellyn, who was born in 1868 in Penygraig, the son of a well-known colliery manager, studied medicine at University College, London, and qualified M.R.C.S., L.R.C.P. in 1894. He started practice in his native town of Penygraig, where he remained for thirty years. During this time he took a prominent part in colliery rescue work, and identified himself with local public affairs; for three years he served as a member of the Glamorgan County Council. In 1920 he relinquished private practice to take up an appointment as regional medical officer of the Welsh Board of Health. Dr. Llewellyn was predeceased by his wife a few months ago, and is survived by one son and two daughters.

Dr. D. LLEWELLYN WILLIAMS writes: The death of Dr. T. R. Llewellyn on April 20th, just as he was about to retire, is a sad loss to the insurance medical service in South Wales. He relinquished an extensive medical practice in the Rhondda Valley to join the regional medical service on its inception in 1920; he acted as regional medical officer for East Glamorgan and Monmouthshire. Dr. Llewellyn was a man of strong personality, and his high ideals of medical service called for the best from insurance practitioners in his region. He was always frank and straightforward, and had a somewhat courtly manner; no one could take liberties with him, but those who tried to do their best found in him a good friend. His wide clinical experience in a large colliery practice before and after the passing of the National Insurance Act enabled him to perform his duties as medical referee with great satisfaction, both to approved societies and to insurance medical practitioners. Much of the improvement in the clinical aspect of insurance practice is due to his efforts. The Welsh Board of Health has lost a loyal and efficient officer, and his medical colleagues a true and faithful friend.

The death of FRANK A. SPREAT, F.R.C.S., which occurred on April 24th, came as a great shock to his medical colleagues and many friends. Although it was known that he had not been in good health for some time, his death occurred very suddenly. Frank Arthur Spreat, who was 72 years of age, was educated at the Aldenham School and St. Bartholomew's Hospital. Qualifying in 1884, he settled in practice in Friern Barnet very shortly afterwards, and for a good many years was one of the best-known practitioners in North London. Dr. Spreat was a man of most unbounded energy, and performed the somewhat remarkable feat of passing his first and final Fellowship examinations of the Royal College of Surgeons after the age of 40, and also taking his D.P.H. whilst in general practice. During the greater part of his professional life he made a point of attending one of the teaching hospitals one day a week, and even when he was nearly 60 years of age he still continued to take special courses in clinical work. Dr. Spreat held many public appointments. He was medical officer and public vaccinator for the Friern Barnet district, medical officer for the maternity and child welfare centres under the Middlesex County Council, and he was also medical officer to the

Post Office. For many years he was medical officer of health to the Friern Barnet district, during which time he kept himself thoroughly conversant with the ever-increasing public health problems, and was the means of instituting many admirable reforms. For over forty years he was a member of the British Medical Association, in which he had always taken the greatest interest, and had been chairman of the Finchley Division. Dr. Spreat was greatly respected by all the medical men with whom he came into contact, and his loss will be much felt by his fellow practitioners. He married Miss Edith Hulke, daughter of the late Dr. Hulke of Deal, and she survives him with a son and a daughter. His younger son he lost in the war.

Those who knew Dr. IDRIS DAVID EVANS will greatly regret to hear of his sudden death, on May 3rd, at his home in Prebend Mansions, Chiswick. He had recently undergone a successful operation and was apparently in perfect health. Dr. Evans, who was 43 years of age, qualified in 1914, and took his M.D. (Durham) in 1917, having received his medical education at Newcastle-upon-Tyne. He served as major in the R.A.M.C. during the war. He had lived for a considerable time at Cardiff, and served as medical assessor to the Pensions Appeal Tribunal. Called to the Bar at Gray's Inn, he had recently become interested in coroners' work, obtaining the appointment of deputy coroner for Central London last October. During his tenure of this office he held the inquest upon the body of a cabaret artist who died as a result of taking drugs for slimming. It was on this occasion that he called attention to the fact that drugs of the nitrophenol group are accessible to the general public, and legislation has since been introduced limiting the sale of these drugs. Dr. Evans leaves a widow and one son.

Universities and Colleges

UNIVERSITY OF OXFORD

The Board of the Faculty of Medicine has elected R. E. Havard, D.M., Queen's College, to the Schorstein Research Fellowship for 1934.

UNIVERSITY OF CAMBRIDGE

Two public lectures will be given on Monday and Tuesday, May 14th and 15th, at 5 p.m., in the new lecture theatre of the Department of Physiology, by Dr. Alfred Adler of Vienna. The subject of the first lecture is the *principles of individual psychology*; of the second, active and passive personalities.

The titles of the degrees of M.B., B.Chir., have been conferred on A. H. Field (Newnham College).

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—L. R. B. Burt, E. W. H. Shawcross, B. W. Windeyer.

UNIVERSITY OF LONDON

The Court, at its meeting on May 2nd, learnt with gratification of grants from two more of the city companies—namely, the Fletchers and Pewsters. These benefactions will be applied towards meeting the cost of the Ceremonial Hall, to be built on the University site in Bloomsbury. A very cordial vote of thanks was passed to the Essex Education Committee and County Council for increasing their grant to the University for 1934-5 from £1,000 to £1,500.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

D.P.H. Course: Fishmongers' Studentship

The 1934-5 course of study, which qualifies students to sit for the University of London Diploma in Public Health, covers a period of nine calendar months' whole-time work, commencing on October 1st, 1934. The fee (54 guineas) covers the cost of the ordinary lectures and demonstrations, visits to centres of public health interest, the necessary practical work with the medical officer of health, and instruction in infectious diseases.

One place will be allotted, without fees, after open competition on June 28th and 29th, the successful candidate being awarded the Fishmongers' Company Studentship. Applications to compete for this studentship must be sent in by June 18th. Inquiries in regard to this course or the courses of study in bacteriology, epidemiology and vital statistics,

industrial psychology, tropical medicine and hygiene, etc., should be addressed to the Secretary, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1.

Langley Memorial Prize

This prize, of the approximate value of £21, is open to competition among officers of the West African Medical Staff, whether on the active list or retired list. The award will be made in respect of the best paper on one of the following subjects (special consideration to be given to original work): (a) Tropical Medicine or Surgery. (b) Tropical Hygiene and Sanitation. (c) Tropical Entomology and Parasitology. Papers must be delivered to the Secretary, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, before October 1st, 1934, from whom further particulars can be obtained on application.

UNIVERSITY COLLEGE, LONDON

The Fellows of University College, London, held their annual dinner at the College on April 30th, on which date the first stone of University College was laid by H.R.H. the Duke of Sussex in 1827. Sir John Rose Bradford, Bart., M.D., F.R.S., Chairman of the College Committee, presided. Before dinner those who had been recently elected were admitted to the Honorary Fellowship or Fellowship by the chairman. The new Honorary Fellows are: Emeritus Professor Karl Pearson, who occupied the Chair of Applied Mathematics and Mechanics from 1884 to 1911 and the Galton Chair of Eugenics from 1911 to 1933; and Emeritus Professor Sir Flinders Petrie, who was Edwards Professor of Egyptology from 1893 to 1933—admitted *in absentia*. The new Fellows are Miss Edith C. Batho, Professor B. Ifor Evans, Dr. Edward Mallett, Mr. Harold James Page, and Dr. Alan Sterling Parkes.

UNIVERSITY OF BIRMINGHAM

Dr. Stuart McDonald has been appointed lecturer in pathology in place of Dr. F. W. M. Lamb, resigned.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the Royal College of Physicians of Edinburgh, held on May 1st, with the president, Dr. Edwin Bramwell in the chair, Dr. Francis William Murray Cunningham, D.S.O. (Hove), took his seat as a Fellow, and Dr. William Lindsay Kinnear (Dundee), Major James Henry Barrett, I.M.S., and Dr. David Rhys Lewis (Swansea) were elected Fellows.

Dr. Robert Thinn was re-elected a representative of the College on the Conjoint Committee of Management of the Triple Qualification.

It was announced that the Cullen Prize had been awarded equally between Sir Frederick Kay Menzies, K.B.E., and Lieut.-Colonel A. G. McKendrick.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Lords this week discussed a Parliamentary (Reform) Bill introduced by Lord Salisbury. Lord Hailsham said reform of the House of Lords would have to be a Government measure, but that the Government had not decided to propose it.

The House of Commons took the Unemployment Bill on report. Earlier a new clause was proposed by Mr. J. J. Lawson to extend unemployment insurance to non-manual workers with salaries of less than £500 a year. Sir Henry Betterton promised to ask the Unemployment Statutory Committee to consider the proposal. The new clause was defeated.

The Workmen's Compensation (Coal Mines) Bill and Water Supplies (Exceptional Shortage) Bill were read a second time, and the Firearms Act Amendment Bill a third time by the House of Lords on May 2nd. The Protection of Animals Bill was read a second time by the Lords on May 3rd.

In the House of Commons, on May 4th, the Cotton Manufacturing Industry (Temporary Provisions) Bill was read a first time.

The Hotels and Restaurants Bill was withdrawn on May 2nd. The Licensing (Standardization of Hours) Bill was set down for report in the Commons on May 4th, but was not reached, and no further progress with it is expected this session.

On May 7th the Water Supplies (Exceptional Shortage) Bill passed through committee.

In the House of Lords on May 7th the Registration of Births, Deaths, and Marriages (Scotland) (Amendment) Bill was read a second time.

Sir FRANCIS FREMANTLE moved the second reading of the Contraceptives Bill in the House of Commons on May 7th. Objection was taken to the motion, and the Bill was set down again for that day week.

Warren Fisher Report and Dental Services

On May 8th Captain ELLISTON asked if the recommendations of the Warren Fisher report could be extended to include dental officers as submitted in a memorandum by the British Dental Association. Mr. HORE-BELISHA said that the committee on the medical branches of the Defence Services suggested that some of their proposals in regard to the medical services might with advantage be applied to the dental services. He understood representations had been made by the British Dental Association to the Defence Departments, and that this question was now under consideration.

Milk-borne Diseases Report

On May 8th Brigadier-General Brown asked the Prime Minister if he would publish the report of the scientific committee appointed by the Economic Advisory Council to consider the incidence of milk-borne diseases, and if steps would be taken to submit its findings to agricultural interests, as well as to medical authorities, before any legislative action on it was taken. Mr. RAMSAY MACDONALD replied that the committee's report had just been received, and it had not yet been possible to consider the question of its publication. The interests of every section of the population would be carefully borne in mind by the Government when it reviewed the conclusions of the committee. Mr. LAMBERT asked if Mr. MacDonald would, if possible, publish the report. Mr. MacDonald said that as soon as he had had an opportunity of reading it he would decide whether the report should be published or not. All the bias was in favour of publication. Lieut.-Colonel TROYTE asked if the Council considered that diseases were brought in by butter from foreign countries. Mr. MacDonald said he would imagine not, but he did not know, as he had not had time to read the report.

Slum Clearance in Scotland.—Mr. SKELTON, replying on May 1st to Mr. Neil Maclean, said that information as to the total number of unfit houses to be cleared in Scotland was not available, but according to the programmes for the five years 1934-8, submitted by 208 out of 228 housing authorities in Scotland, it was estimated that 59,774 houses were required to replace unfit ones, and that 42,948 new houses, or 72 per cent. of the estimated requirements, would be erected for this purpose. Neither of these figures was final.

Small-pox at Blackburn: Error in Diagnosis.—On May 1st Sir HILTON YOUNG told Mr. Groves that the first case of small-pox in the recent outbreak at Blackburn, which proved fatal the day after admission to hospital, had been wrongly diagnosed. On the death certificate the death was attributed to (a) heart failure, (b) acute toxæmia, (c) varicella. The death had been classed to small-pox.

Unemployed and Old Age Pensions.—On May 1st Mr. SHAKESPEARE informed Mr. Batey that nothing had arisen to reopen the question of legislation to amend the National Health Insurance Act, 1932, so as to restore medical benefit and old age pension benefit at 65 years of age to unemployed workmen. The position under the Contributory Pensions Acts of the insured person who had suffered from prolonged unemployment was fully safeguarded up to the end of 1935.

Disablement Due to Silicosis.—Sir JOHN GILMOUR told Mr. Rhys Davies, on May 2nd, that since June 1st, 1931, when the medical board was appointed, up to April 30th, 1934, there had been 437 coal miners certified by the board as disabled through silicosis; 129 of these were certified as partially disabled. Earlier comparable figures were not available. From February 1st, 1929, when the Various Industries (Silicosis) Scheme came into operation, up to the end of 1932, compensation was paid in 143 cases of disablement. There were

a large number of cases in 1933, but the precise figure was not yet available. The number of deaths certified since January 1st, 1934, was fourteen.

Explosions of Firedamp.—Colonel COLVILLE told Mr. Grundy, on May 3rd, that the number of fatal accidents caused by explosions of firedamp or coal dust in mines in 1932 was thirteen, resulting in sixty-nine deaths. In 1933 there were eight accidents and eight deaths. In one of these cases proceedings were taken against the owners, agent, manager, and under-manager, who were charged with contraventions of Section 29 and Section 34 of the Coal Mines Act, 1911. He could not undertake to bring in legislation to make it a criminal offence against the management, directors, and owners where an explosion took place in any pit with which they were connected. Every explosion was investigated.

Infant Mortality in Kensington.—Sir HILTON YOUNG told Mr. West, on May 5th, that the infant mortality rates in South Kensington, North Kensington, and the Norland Ward of Kensington would be published in the annual report of the medical officer of health for 1933. Mr. West asserted that the death rate in the Norland Ward of Kensington was 140 per 1,000, or twice as high as that of Poplar.

House Erection in England and Wales.—Mr. SHAKESPEARE informed Mr. Mitcheson on May 8th that the total number of houses built in England and Wales (excluding houses of a rateable value exceeding £78, or £105 in Greater London) during the half-year ended March 31st, 1934, was 153,299, of which 120,781 were built by private enterprise without State assistance. The highest corresponding total during any previous half-year ending March 31st was 111,066 for the half-year ended March 31st, 1927.

Medical Treatment of School Children.—Mr. RAMSBOTHAM states that the amount recovered from parents in respect of the medical treatment of children attending public elementary schools during the financial year 1931-2, the latest period for which complete audited accounts of local education authorities are yet available, was £69,370.

Imported Milk Products.—Mr. SHAKESPEARE stated recently that most imported milk products were made from pasteurized milk or cream. If the product was in liquid form the Ministry had complete powers and regulations with regard to bacteriological examination. As regards non-liquid products, the Minister of Health was informed that there was no danger to health.

Milk Supplied to Prisons, etc.—Colonel HENEAGE asked Sir JOHN GILMOUR, on April 26th, whether the contracts of the institutions under his control required the purchase of Certified, Grade A, or ordinary standard milk. Sir JOHN GILMOUR answered that, as regards schools approved under the Children and Young Persons Act, 1933, some provided themselves with milk from their own farms; the others purchased ordinary standard milk. Milk contracts for prisons and Borstal institutions required the supply of fresh genuine whole milk, the conditions being substantially the same as those laid down by the Milk Marketing Board. Certified milk and Grade A milk were not used.

Physical Training among Prisoners.—Sir JOHN GILMOUR states that men who are physically fit receive in the larger prisons physical training daily under the supervision of qualified officers, unless they are employed on outdoor work of a kind which makes such exercises less necessary. Gymnastic classes under qualified instructors are held in the evenings at practically all establishments, except those where the age or the physical condition of the prisoners makes it undesirable. In women's establishments the numbers suitable for physical training are small, but classes are held where possible, and there is a physical-training instructress at Aylesbury Borstal Institution.

Notes in Brief

At the end of June, 1933, 2,398,000 persons between the ages of 16 and 64 were registered for unemployment insurance in the London division, which corresponds approximately with the Greater London area.

At March 31st, 1933, 2,213,000 persons in the United Kingdom were in receipt of old age pensions.

Sir JOHN GILMOUR is not prepared to propose legislation giving magistrates the power to order flogging as a penalty in cases of cruelty to animals.

Medical News

The eighth annual Macalister Lecture will be delivered by Dr. Robert Hutchison on "Praise and Dispraise of Doctors" at the National Temperance Hospital, Hampstead Road, N.W., on Thursday, June 21st, at 9 p.m. All medical practitioners and their friends are invited.

The fifteenth Maudsley Lecture before the Royal Medico-Psychological Association will be delivered by Lord Macmillan, on "The Professional Mind," at 26, Portland Place, W., on Thursday, May 17th, at 3 p.m. Admission without ticket.

Dr. J. B. Orr will deliver a Chadwick Public Lecture at the Royal United Service Institution, Whitehall, S.W., on Tuesday, May 29th, at 5.30 p.m. His subject will be "The National Food Supply and Public Health." Admission free, without ticket.

The next meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, May 16th, at 5.30 p.m., when the curator, Mr. W. E. Watson Baker, will exhibit and describe the Nachet binocular microscope recently acquired, and papers will be read by Dr. E. S. Horning and Professor C. Leonard Huskins.

Dr. Alfred Adler will address a special meeting of the Medical Society of Individual Psychology at 11, Chandos Street, W., on Thursday, May 17th, at 8.30 p.m.

At the annual general meeting of the Chelsea Clinical Society to be held at the Hotel Rembrandt, Thurlow Place, S.W., on Tuesday, May 15th, at 8.30 p.m., Squadron Leader P. C. Livingstone will open a discussion with a paper entitled "Ophthalmic Notes on the Air Force Pilot Over-seas." The meeting will be preceded by dinner at 7.30 p.m.

The subject of Sir Henry Lyons's presidential address before the Institute of Physics is "Physics and Science Museums." It will be given at the Royal Institution, 21, Albemarle Street, on Tuesday, May 15th, at 5.15 p.m., and tickets may be had from the secretary, Institute of Physics, 1, Lowther Gardens, Exhibition Road, S.W.7.

The next monthly clinical meeting for medical practitioners will be held at the Hospital for Epilepsy and Paralysis, Maida Vale, W., on Thursday, May 24th, at 3 p.m., when Dr. W. G. Wyllie will demonstrate. Tea will be provided. Those intending to be present are asked to send a card to the secretary.

The Glasgow University Club, London, will dine at the Trocadero Restaurant, Piccadilly, on Friday, May 25th, at 7.15 for 7.30 p.m. Professor Sir Robert Muir, F.R.S., is to be in the chair. Any Glasgow University men who, though not members of the club, desire to attend are requested to communicate with the honorary secretaries, 62, Harley House, N.W.1.

The House of the Royal Society of Medicine (1, Wimpole Street, W.) will be closed from Saturday, May 19th, to Monday, May 21st, both days inclusive.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that Dr. Clark-Kennedy will give a lecture-demonstration on anginal pain on May 15th at 2.30 p.m. The lecture on May 29th will deal with functional heart-disease. Forthcoming arrangements include a week-end course in diseases of the chest at the Brompton Hospital, all-day, May 26th and 27th; a week's course in chest diseases at the City of London Hospital, Victoria Park, from May 28th to June 2nd; a fortnight's course in gynaecology at the Chelsea Hospital, May 28th to June 9th; and a month's course in venereal disease at the London Lock Hospital, May 28th to June 23rd. A week-end course in medicine and surgery has been arranged for June 2nd and 3rd at St. Mary's Hospital, Plaistow. A panel of teachers provides daily individual clinics in various branches of medicine and surgery.

A conference of the British Health Resorts Association is being held this week-end at Harrogate concurrently

with the annual general meeting of the Physical Medicine Section of the Royal Society of Medicine. On Saturday morning Professor Langdon Brown opens a discussion on the use of spas in diseases of the liver, and in the afternoon Dr. S. E. Dore opens a discussion on the spa treatment of skin diseases.

The thirteenth annual conference of the Federation of Cremation Authorities in Great Britain will be held in conjunction with the annual conference of the National Association of Cemetery and Crematorium Superintendents at Birmingham from June 23th to 28th. Papers on various subjects connected with the disposition of the dead will be presented, including contributions from Sir John Robertson and Sir Gilbert Barling, and will be followed by discussion. The meetings of the conference will be held in the Council House, Birmingham, with the exception of the Wednesday meeting, which will be held in the Town Hall, Sutton Coldfield. The Lord Mayor, Alderman H. E. Goodby, J.P., will preside at the opening session.

We are asked to announce that the Savill Prize, value £15, which is offered biennially by the West End Hospital for Nervous Diseases, will be awarded this year. Candidates, who should be post-graduate students, are required to write a thesis on a neurological subject of their choice, which subject must be submitted for approval not later than May 31st; they must also have attended the practice of the hospital on at least ten occasions. Theses must be received not later than November 30th, and are accepted only on the condition that they shall not be published except with the written consent of the examiners. Further particulars may be obtained from the secretary of the hospital, 73, Welbeck Street, W.1.

The issue of the *Wiener medizinische Wochenschrift* for April 21st is dedicated to Professor Adolf Lorenz, the well-known orthopaedic surgeon of Vienna, who celebrated his 80th birthday on that date.

The issue of *Paris Médical* for April 28th contains a French translation, by Dr. A. Baudoin, of Argyll Robertson's paper in the *Edinburgh Medical Journal* of December, 1869, describing the ocular changes to which his name has been attached.

The May issue of *The Practitioner* includes five articles on diseases of the eye, by Dr. W. J. Adie, Mr. N. Bishop Harman, Mr. P. G. Doyne, Mr. J. Cole Marshall, and Mr. H. B. Stallard.

The Spanish Academy of Dermatology and Syphiligraphy will celebrate the twenty-fifth anniversary of its foundation on May 17th and 18th.

On April 21st Mr. John Lionel Stretton of Kidderminster, who recently completed his fiftieth year as a member of the honorary staff of the Kidderminster and District General Hospital, celebrated, with his wife, his golden wedding. He has been president of the hospital staff for the last ten years, and has served as chairman of the County of Worcester Local Medical and Panel Committee for twenty years.

May 14th is the 200th anniversary of the death of the physician and chemist Georg Ernst Stahl, the founder of the theory of phlogiston and animism.

The Pathological Museum in connexion with the Annual Meeting of the British Medical Association at Bournemouth next July will comprise (a) exhibits bearing on discussions and papers in the Sections; (b) specimens and illustrations bearing upon recent research work; (c) instruments relating to clinical diagnosis and pathological investigation; (d) individual specimens of special interest, or a series illustrating some particular subject. It is also hoped to have exhibits relating to neurology and to heredity and mental and physical deterioration, and a series of x-ray and other photographs. The committee is anxious for the co-operation of pathologists and others in securing specimens of medical interest on the lines indicated above. Offers of assistance may be sent to the honorary secretary of the Museum Committee, Dr. C. G. H. Morse, Room 30, Town Hall, Bournemouth, to whom specimens should be forwarded by July 9th.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring **REPRINTS** of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is **EUSTON 2111** (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, *Aithology Westcent, London.*

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MEDICAL SECRETARY, *Medisera Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Thickened Skin after X Rays

"SUBURBAN G.P." writes: A young lady had several x-ray applications to the palm of her right hand, some twelve years ago, for "skin trouble." The skin exposed to this treatment has now become thickened and hardened (? hyperkeratosis) and roughened. Can any reader suggest a suitable application or treatment likely to counteract the condition?

Movement of Needles in the Tissues

"SCEPTIC" (Northampton) writes: Until quite recently I have believed that needles, unless actually deposited within a hollow viscus, such as a blood vessel, tendon sheath, or the gut, remain practically stationary. I have in the past ridiculed the anxiety of patients who present themselves with a needle in the hand, or foot, and a tourniquet placed proximally. I would be glad to know if needles so placed are able to "travel," and, if so, to what extent.

Artificial Menopause

"G. E. B." writes: The symptoms, subjective and objective, arising from the artificial menopause are, it is well known, very difficult to be dealt with by the doctor in charge of a patient after a hysterectomy and oophorectomy. My case is that of a woman aged 49, who had, previous to this operation, performed in August, 1933, menstruated regularly—it was done as a last resource to clear up a prolonged psychoneurosis with anxiety state. Pathologically it proved to be most justifiable and necessary. Can any of your readers give me assistance in clearing up the outstanding physical symptoms—that is, profuse and regular night sweats, which drench the patient and wake her three or four times every night? She has had a long course of the various brands of ovarian extracts, given orally and intramuscularly up to 1,000 mouse units on alternate days. Also full doses of atropine and zinc oxide at bedtime. Any other possible cause of the sweating has been carefully excluded.

Disinfection of Room used by Cancer Patient

"A. W." writes: A lady who has had two operations for cancer of the breast, and has been apparently successfully treated for a third appearance, visits friends from time to time. Is it safe, after her departure, for others to occupy the room without disinfection, or should the mattress, at any rate, be fumigated? There are such conflicting opinions on the subject.

Income Tax

Retirement from Partnership—Cash Basis

"M.B." writes: The basis of our partnership income tax has been on the cash receipts each year up to the end of our financial year. If I retire at the end, say, of next September, what income tax would I be liable for in January and July, 1935?

* * If £x is "M.B.'s" share of the partnership assessment for 1934-5, then if he retires as from September 30th,

1934, he will be liable to assessment on 1/2 of £x only, and he will not be liable to tax on the cash receipts which have not entered into the calculation of the assessments—that is, to those subsequent to September 30th, 1933. The "cash receipts" merely supply a convenient means of calculating the gross income of the practice, and tax payable for the year 1934-5 is in respect of the income of that year. The individuals concerned, including the incoming partner (if any), can, on a unanimous election, claim to have the practice regarded as ceasing and restarting at September 30th, 1934, but that seldom operates to the benefit of the outgoing partner.

LETTERS, NOTES, ETC.

Maternal Mortality Among Primitive People

Dr. KATHLEEN VAUGHAN writes: Both Dr. T. L. Paget (*Journal*, April 7th, p. 644), and Dr. R. B. Michener (*Journal*, November 18th, 1933, p. 944) tell us of native races in New Zealand and in Africa who have great trouble in childbirth. The Maoris are more or less civilized, and their teeth, as Dr. Paget tells us, are defective. The Africans live in a reserve; therefore they are presumably not under natural conditions, and one would like to know more about their teeth. If one reads the Carnegie Trust Report on Maternal Mortality, 1917, one notes that easy childbirth and perfect teeth seem to go together. Does not this mean absence of rickets, and, therefore, that the brim of the pelvis is round—not only fitting the child's sub-occipito bregmatic (which engages with it in full flexion), but also containing the largest area possible to the circumference. A pelvis with a brim whose circumference is 36 cm. loses a definite percentage of its area when bent into an oval, and this loss of area is progressive as the conjugate shortens. One has only to read the report of the Director-General of Health, New Zealand, for 1930 to see the state of present-day Maori health—tuberculosis, cancer, goitre, trachoma, dysentery, influenza, and carious teeth are common. The one "civilized disease" they do not seem to suffer from is appendicitis—doubtless because they still squat. Granted that the Maoris are deteriorated by civilization, one understands that those of them who do not adopt European obstetric methods would be liable to have a higher maternal mortality than Europeans who do. Surely our modern obstetric methods are rendered necessary by our civilization, which deforms the pelvis, converting the round brim into an oval, with the consequent loss of area. Eldon Best described the Maori of former days as having good teeth and no difficulty in childbirth. I think life indoors has more influence on teeth, and, later on, on difficult childbirth, than we give it credit for. In other words, the school is more to blame than the tuckshop. Open-air races, such as Maoris, Africans, Indians, and, nearer home, our own people in the Islands and Highlands of Scotland, are affected at once by the indoor life necessitated by going to school, and it shows first in the teeth and later in the pelvis, with consequent trouble in childbirth. Surely it would be impossible to find with a rickety pelvis a perfect set of teeth. We are told that in Czechoslovakia an essential in a bride is perfect teeth. Experience has taught that she will make a good mother.

A Refreshing Drink

Dr. W. H. ROWTHORN (Sheffield) writes: The following will be found useful in many cases of illness, or, in fact, at any other time. Place one pound of black-currant, damson, or any other jam in a quart jug. Slice a lemon and add it to the jam. Crush well and fill up with boiling water. When cold pass the quantity required through a tea-strainer into a glass, and add soda water. It will be found very good for quenching thirst, and also makes a fine drink in hot weather.

Disclaimer

Mr. LOUIS CARNAC RIVETT, F.R.C.S., writes: In view of the publicity given in the Press to my informal talk to the Ladies' Association of Queen Charlotte's Hospital, I should like to make it quite clear that I did not know that there were reporters present, nor did I know that the proceedings were to be published.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, 44, 45, and 48, of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 46 and 47. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 252.

A Lecture

ON

CANCER: WITH SPECIAL REFERENCE TO EARLY DIAGNOSIS*

BY

ROY WARD, M.B., B.S.

MEDICAL DIRECTOR AND SURGEON TO THE RADIUM INSTITUTE, LONDON

The more complicated the problem the easier it is to confuse the issues involved, and to give false values to the various factors concerned. The age-long attempt to solve the problem of cancer has resulted in the collection of a vast number of facts concerning it and in a voluminous literature, and with such a mass of information it is not difficult to make either of these mistakes. In this connexion, and before going on to discuss the general problem, I should like to stress the fact that much of this literature is concerned with the results of animal experiment, and I think that this is a field where one is likely to be misled by the reports and statements of specialized workers who pursue their efforts in a direction which is sometimes only distantly related to the problems with which we clinicians have to deal. I do not want to be *misunderstood*: much of the experimental work done has an importance which cannot be overestimated, and has contributed most valuably to our knowledge. That the cure of cancer may be found before its cause is a consideration that is sometimes overlooked, and, while acknowledging the debt which the clinician owes to the experimental worker, it must be remembered that the clinical interpretation of the results obtained is often difficult, and sometimes even misleading. We will confine ourselves on this occasion, therefore, mainly to what, after all, is our particular province—the problem of cancer as we see it in our work as medical men.

If one attempts to assess the position of the cancer problem to-day, one can thread one's way, without serious mishap or much discomfort, through a maze of statistics and figures. Some stages of that journey may be encouraging, others depressing, but one may emerge with a general feeling that more is being done for cancer than ever before; that the medical profession is more alive to the importance of early diagnosis; and that the public

TABLE I

	1912	1922	1932
Population	36,539,636	38,158,000	40,201,000
Deaths, all causes ... {	M., 253,232 F., 236,707	247,221 239,559	245,715 238,414
Total	489,939	486,780	484,129
Deaths from cancer ... {	M., 16,183 F., 21,115	21,256 25,637	28,879 31,857
Total	37,323	46,903	60,716
Deaths, breast cancer ... {	M., 50 F., 3,736	42 4,825	47 6,355
Total	3,786	4,868	6,435

seeks advice earlier: facts which suggest that the problem is on the way to being solved. This conclusion is a comfortable one, and one for which there is at any rate some foundation, but it would be more justified if it were not for one or two important and very pertinent facts. Cancer is regarded with horror because it kills; so that the number of people who die from it, whether that number is increasing or decreasing, is some sort of touchstone by which we can judge of our efforts to deal with it.

* Given at Hull under the auspices of the British Empire Cancer Campaign.

I will recall two features, which have a bearing on the problem: first, the number of deaths from breast cancer in 1932 (Table I); and secondly, the figures showing the type of case presented to a general hospital for treatment (Table II). In the year 1932 there were 6,435 deaths from breast cancer, compared with 4,868 in 1922 and only 3,786 in 1912. Although the figures showing the type of case vary, the evidence is that cases presenting themselves at a time when there is a movable lump in the breast and no glandular involvement amount to less than 15 per cent. of the total.

These two facts in themselves are surely enough to justify further investigation, and I think it is not amiss to examine the Registrar-General's returns in greater detail. The total number of deaths from all causes has decreased slightly during the past twenty years; but if we consider the figure for cancer as a whole we find that there has been a marked increase. In the year 1932 there were 60,716 deaths from cancer. This represents a 30 per cent. increase on the figure given ten years previously, and an increase of over 60 per cent. on the figure for 1912. I have chosen breast cancer for the figure I first quoted because it may be argued that the increase in the reported deaths from the disease as a whole may be due to better methods of diagnosis, which reveal more cases of internal cancer. This consideration applies particularly to cancers affecting the alimentary tract and the respiratory system, but hardly affects the diagnosis of breast cancer, which, though it may be difficult in the early stages, becomes only too obvious as the disease progresses.

We are confronted, then, with the facts that deaths from cancer of the breast have increased alarmingly in the last twenty years, and that all too small a number of cases were presented for treatment at a stage when

TABLE II

	1922	1932
Digestive organs and peritoneum ... {	M., 13,196 F., 12,348	17,703 15,435
Total	25,544	33,196
Respiratory organs {	M., 1,430 F., 518	2,688 920
Total	1,948	3,608
Male genito-urinary	2,051	3,229
Skin {	M., 515 F., 439	630 527
Total	954	1,157
Buccal cavity and pharynx ... {	M., 2,685 F., 432	3,040 536
Total	3,118	3,576

there was a reasonable chance of cure. These things are true not only in breast cancer, but also in cancer of the buccal cavity, the digestive tract, the respiratory system, the male genito-urinary system, and the skin.

Having agreed that the problem is a difficult one and in more urgent need of solution now than ever before, how can we be constructive about it?

SURGERY AND RADIUM AND X-RAY THERAPY
REVIEWED

Our present methods of treatment are admittedly inadequate; let us first briefly review their results, and then inquire how far we are using them to the best advantage, and in what ways we can increase their efficacy. An accurate knowledge of the value of our present methods of treatment is not easily obtained in this country, owing to the difficulty of securing comparable statistics on a reasonably large scale. In November last, at the Royal Society of Medicine, Professor Gask stated that a general survey of figures led him to conclude that the best we can expect either from surgery or from radium is a five-year survival rate of 20 to 25 per cent. for tongue cancer, 35 to 40 per cent. for breast cancer, and 40 per cent. for uterine cancer. Hintze reported a five-year survival rate of 34 per cent. following the treatment of 5,500 cases of carcinomata of all kinds at the Surgical Clinic at Berlin. This group included 836 skin cases, in which the results of treatment are extremely good; without these skin cases the percentage would be considerably lower.

It is probable that surgery has reached the pinnacle of accomplishment, and that little more can be expected of surgical technique. Surgery will always be the method of choice in certain types of cancer, and indications for such operations are well known. In the case of radium and x-ray therapy the position is different. As a result of experience obtained over a period of thirty years, it is possible to assume that much more will be done by the use of these two methods of treatment, and that progress is slowly but surely being made. It must be urged at once that it is essential that surgery and radiation should not be divorced. They resemble each other in that their effects are local, and that they are used to combat a disease which frequently becomes general. During the past ten years a great deal of work has been done in relation to the physics, the action, and the dosage of radium, and although both over-enthusiasm and undue pessimism have characterized the development of radium therapy at times, advance has been steady even if it has been slow. The use of deep x-ray therapy has increased markedly in the last few years; better results have been due to improvement in technique, more accurate and standardized dosage, and the use of higher-voltage apparatus.

HOW TO USE THESE METHODS TO BEST ADVANTAGE

With these three main methods of treatment at our disposal it is essential that they be used in the right way, and that the results of such methods, either singly or in combination, should be carefully controlled. To get the most out of them certain things are essential.

First.—Every hospital at which cancer cases are treated should decide its own cancer policy. Members of the medical staff should agree as to the method of treatment to be adopted in various malignant growths.

Secondly.—Every cancer case should be followed up systematically by a department specially devoted to this purpose. The necessity of tracing the subsequent history of all cancer patients is too obvious to be stressed, but there are many hospitals where such a scheme would be impossible owing to the cost of the organization. In such case I suggest that the research activities of the particular hospital should be confined to one group of cases. Other groups would be treated, but the follow-up scheme would be limited to one disease. Everyone will agree that it is useless to treat cancer unless there are facilities for finding out the value of the methods adopted, and each hospital should have the necessary facilities.

Thirdly.—Records of cancer cases should be kept on a uniform basis. In order to obtain comparable cases from different hospitals notes should be as uniform as possible, and details should be given of special points in particular groups of cases. Forms such as those compiled by the National Radium Commission might be used with advantage for all cases of cancer, however treated. In this way mass statistics could be compiled; but it must be pointed out that statistics are valueless unless records are accurate and complete. By adhering to the common plan of note-taking a truer value of various methods would be obtained, and in addition much other useful information.

Fourthly.—Statistics must be compiled so that figures obtained in treatment by various methods are comparable. The difficulty of interpreting statistics which differ in form, however slightly, is well known. This is multiplied when dealing with the results of more than one method of treatment, so that the necessity of strictly comparable figures is essential.

Lastly.—There must be more co-operation between institutions and centres engaged in the treatment of cancer. In larger hospitals clinicians must be guided in their work by physicists and pathologists, and this is particularly important in carrying out radiological research. Co-operation must start in the individual hospitals, to be followed by co-operation in various counties and districts. Another point I would like to stress is the importance of a friendly liaison between the voluntary and the State hospitals. As a general rule the State hospitals receive a high percentage of advanced cases of cancer, many of which are beyond the help of even palliative relief. Finally, there should be some form of national pooling of results and methods, perhaps under the Ministry of Health or under the British Empire Cancer Campaign, which already controls the research activities of all those hospitals to which it extends a helping hand.

This need for co-operation has been much talked of lately; so much so that the word is apt to bring a smile to the lips of people who believe that it is a theory not easy to put into practice. I suppose there are few groups of men among the members of which co-operation is more difficult than among the members of the medical profession, who are, after all, engaged in a study which demands originality and independence of thought. It has even been whispered that they not only cannot get together, but they will not; this I, for one, refuse to believe. Nevertheless rapid progress will not be made until there is more liaison between workers in this field, and in view of the gravity of the problem it should be possible to secure co-operation by some or all the means I have suggested.

THE SIGNIFICANCE OF EARLY TREATMENT

Having attempted to outline the ways in which I think we can use to the best advantage the methods of treatment known to us, let us consider for a moment whether there is room for effort to increase the efficacy of such methods.

The significance of early diagnosis and treatment is too well known to need further emphasis. In fact, at the present time success depends directly on the stage of the disease at the time of treatment. I have little doubt that most of you will agree that early diagnosis is the most important single factor in the fight against malignant disease, and will remain so, even if other methods—serological or biochemical—are discovered which are capable of eradicating the disease when it is beyond the power of surgery and radiation. This is apt to be lost sight of by many, but if you were constantly confronted, as I am, with cancer cases in the advanced stage, where treatment starts with a severe handicap, you would be

left in little doubt as to its importance. Moreover, this importance is confirmed by actual figures—if not in all forms of cancer, then, at least, in some of the larger groups. For instance, the Ministry of Health reports on carcinoma of the breast—I refer to the valuable statistical work undertaken by Dr. Lane-Claypon and published in 1926 and 1928—show that when the growth is still local there is a five-year survival rate of 78.5 per cent., but when the axillary glands are involved this survival rate drops to 24.7 per cent.

Now it is reasonable to suppose that, although cancer becomes a general disease early, there is in most cases an initial stage at which the disease is entirely local. It is no less true that the failures of treatment are largely in those cases in which dissemination has already taken place, and that the best results are obtained when the disease is still local—that is, at the curable stage, curable because our present methods of treatment, whether surgical or radiological, are localized in their effects.

Figures published by the Ministry of Health show that when patients present themselves on account of carcinoma of the breast the average duration of symptoms has been nine months. This is confirmed by our figures at the Radium Institute. In a recent series the average duration of symptoms before treatment was 10.1 months in breast cases, 7.4 months in carcinoma of the cervix uteri, and 9.4 months in carcinoma of the rectum. Such figures seem to me to suggest that fear and ignorance play a most important part. The length of time is greater in breast cases than in the other two. In carcinoma of the rectum and cervix, "piles" and "the change of life" may easily confuse the issue.

The blame for delay, therefore, rests largely on the patient, who waits too long, either through sheer ignorance of what the signs and symptoms may mean, or because the patient suspects cancer and does not want to be told the truth. When we ask why the patient did not seek advice before how often does he reply that he thought it might be something serious? An illogical attitude, of course, but it must be remembered that cancer is still regarded by the public—and with some reason—as quite incurable. Doctors and nurses must be placed in this group. The frequency with which one sees advanced cases of cancer in medical men and women has often led me to doubt the value of educating the public, and in the educated sections of the lay public delay in seeking advice appears to be just as long as in the hospital class of patient.

EDUCATION OF THE PUBLIC TO SEEK EARLY ADVICE

Can the public be educated sufficiently to seek medical advice earlier? I think this should be possible, but it is important that a sense of proportion should be maintained. The widespread dissemination of warnings, in somewhat dramatic form, is certainly a grave danger, and is only likely to encourage cancerphobia. The publication of booklets, such as those prepared by the British Empire Cancer Campaign, is a step in the right direction, and should help a great deal. It seems to me, however, that despite a natural aversion to airing medical subjects in the lay press it should be possible to give advice without frightening people to death or offending the public taste. I am told on good authority that what is called the "news page" of the London daily newspapers is devoured greedily every day by hundreds of thousands of families. The advice given by the "Home Doctor" or "Our Medical Man" is treasured, and often cut out and preserved for future reference. Surely this is a medium which has been neglected. The daily press is, for better or for worse, the poor man's educator, and it seems illogical to ignore such a medium on the ground that information about cancer is likely to offend.

There are, of course, other ways in which the public interests might be served in this matter. Periodic free examinations might be offered to patients, and by this means a certain number of early cancers would be discovered. In the United States insurance companies give free examinations bi-annually to all life policy holders over 40. Such examinations are obviously in the interests both of the insured and of the company, and it would be a good thing if such a system could be instituted in other countries. This would apply to a large number of people, and would have the advantage of being a routine method connected with an important factor in the life of the individual—his life assurance; but this is a method open to very much the same objections as the routine bi-annual examination mentioned just now. A reliable serological test for malignant disease would be invaluable. It would probably be easier to persuade the public to have a periodic blood test than to submit to an extensive examination twice a year.

The heavy responsibility resting on the medical profession in the matter of early diagnosis is evident. The profession shoulders it very well indeed, but there is still room for improvement. If some of the apparently trivial signs and symptoms were investigated more frequently a larger number of cancer cases would be recognized in an early stage. This applies more particularly to growths of the alimentary canal, bladder, breast, uterus, lung, larynx, and hypopharynx. With our present methods of treatment a higher percentage of cures would certainly be obtained in the case of cancers of the breast, colon, uterus, and larynx. The practitioner must be constantly on the "look out" in order to recognize early symptoms of cancer, such as dyspepsia in a patient who has not previously suffered from indigestion, a husky voice, which may lead to the recognition of a laryngeal growth, and haematuria, which may be due to a bladder growth. Use should be made of all the accessory methods of diagnosis. For instance, all cases of haematuria, unless the cause is obvious, should be cystoscoped, and early resort should be had to radiological diagnosis of obscure but suggestive symptoms connected with the alimentary tract. No woman with post-menopausal bleeding should be allowed to go unexamined, and piles should never be diagnosed as the cause of rectal bleeding until after carcinoma has been excluded.

Although I have mentioned one or two ways in which the medical profession could improve its chances of getting early cases of cancer, I still believe that it is chiefly to the patient to whom we have to look for this. The patient does not help, largely because he is ignorant, and until his ignorance is removed, and he is at the same time convinced that he can be cured of his cancer if it is early enough; the greatest obstacle to progress will remain.

PALLIATIVE TREATMENT FOR ADVANCED CASES

To urge means whereby cancer cases may be treated at an early stage, and to visualize the time when patients will present themselves in a curable stage, does not absolve us from the responsibility of those patients who are beyond hope of cure. Such cases are lamentably numerous, and they do provide a serious part of the problem of cancer. The tendency is sometimes to decree that nothing can be done for the patient, and to feel that since no curative treatment is indicated that is the end of the case. It may be the end of the case, but it is by no means the end of the patient, who often has a long and arduous journey to take before he reaches the end. He is too often allowed to bear his burden alone, and without the help of many methods of treatment which we could use to alleviate his suffering. Many, and

perhaps the majority, of these patients are those in whom surgery has failed, and for whom further surgery is out of the question.

Radiation has a wide field of usefulness in many of these cases. I have not so far mentioned radium in connexion with the cancer problem because my subject is too general and my time too short to admit of consideration in any detail of special forms of treatment. As you will realize, however, it is difficult for me to consider radium and cancer as other than closely connected, and I make no apology for introducing the subject of radium therapy here, because its palliative use is perhaps its greatest contribution to the cancer problem. Inoperable cases of cancer of the mouth and fauces can, if care is taken, be treated so that foul ulcers heal and dysphagia is relieved, the patient dying from secondary deposits and being saved the miserable death which must otherwise be his lot. The offensive discharge and profuse bleeding in advanced cases of carcinoma of the cervix uteri can be stopped or diminished, and the patient's general condition is almost always improved. Fungating carcinoma of the breast can often be healed; the pain and foul discharge cease, and the patient dies a more comfortable death from secondary deposits at a later date. As a palliative measure in cases of carcinoma of the rectum radium is valuable, particularly in the lower ampullary growths; haemorrhage and discharge often cease, and the progress of the disease may become arrested for months, or even years, so that patients are kept comfortable, and colostomy is avoided in many cases. Enough work has been done on carcinoma of the bladder to say that many patients are given relief from pain and haemorrhage, sometimes for prolonged periods, by radium therapy.

X-ray therapy in expert hands is proving of more and more use in the palliative treatment of such conditions as pelvic tumours, bone sarcoma, and deep metastases affecting the spine and thorax. In addition to these methods, the general management of cases of incurable malignant disease is important. A great deal can be done by drugs, fresh air, and diet to make the end of the patient's life less intolerable than it would be in the absence of such measures.

RESEARCH AT THE RADIUM INSTITUTE

Whatever the direction of research in other spheres, clinical research is proceeding on definite lines, and is being justified even now by results. I refer to research in radiation therapy, both deep x-ray and radium therapy, and I believe that in another ten years these methods will have gone far to solve this problem for us, even in the absence of some startling biochemical or serological discovery which would revolutionize our conception of cancer treatment.

While radium and deep x rays have established themselves as the treatment of choice in certain malignant diseases, developments are taking place with regard to therapy by telerradium and by the use of x rays of increasingly higher voltages. Radium beam therapy, employing from 3 to 5 grams of radium, has already given encouraging results in other countries. There is no doubt that the work done by this mass irradiation has given, in certain cases, results which are not attainable by any other method of treatment. It appears to be the most effective of all forms of radium therapy, and is not associated with any special danger either to the patient or to the workers.

Due to the initiative of Professor J. C. McLennan a radium unit of the Stockholm pattern has been installed at the Radium Institute under the control of a governing body. The Union Minière de Haut Katanga has generously lent 5 grams of radium element for this research,

and later, if necessary, will increase the quantity to 10 grams. Most of the cases treated have been growths of the upper air passages, and the method has already shown signs of great promise. Recently a gift of £5,000 for purposes of cancer research was made to the Radium Institute, working in co-operation with another hospital. Part of this money is being used to set up a plant at the Mount Vernon Hospital capable of supplying very high voltage x rays. This research will also be directed by the committee which controls the radium beam unit. These parallel experiments are being carried out scientifically and on a large scale under the direction of the committee, and are an illustration of the importance of such co-operation in the treatment of cancer.

In this type of research particularly there must be frank exchange of ideas, so that experience can be pooled. I would like to see a number of centres established throughout the country devoted to deep x-ray and the radium beam treatment. Each centre would have a definite policy, which should be known to the other centres in order to prevent overlapping. To carry out such a research it must be on a large scale, and a sufficient number of cases of the type required should be available. It is here that help from medical men outside the centre is so essential. Every effort should be made to supply the units with the type of case required, and later to assist in following up the patients. Not only is this necessary in the interests of patients, but without such co-operation it is impossible for the centre to achieve good results. It is only by organized research that we can attempt to standardize methods of treatment.

There are many other aspects of this great problem which deserve attention, but my time is ended, and there remains only to define briefly the present position. Despite our gradual progress towards the goal, variously defined as the discovery of the cure or of the cause of cancer, it is still impossible to tell how near that goal is, or how long it will be before we reach it. When it is reached it may be that all our present methods will be proved wrong, and that they will have to be discarded. One often hears it said that those methods are obviously wrong, mainly because they are local weapons against a general disease. Nevertheless, they are the best we have, and the goal being an unknown distance away we must meanwhile make every effort to use them as efficiently as possible. The problem of cancer treatment is the problem of getting the most out of unsatisfactory methods, and I have attempted in this short lecture to tell you what, in my opinion, are the ways in which improvements could be made. Early diagnosis, in which the patient's help can and should be secured, and close co-operation, which is a matter for the medical profession, are certainly possible. There are obstacles in the way of both these things, but I feel as certain that those obstacles are not insuperable as I am that advance will be held up while they are allowed to remain.

The annual meeting of the University of London Medical Graduates Society was held at the Langham Hotel on May 8th, when reference was made to the fact that this society contains within its membership all three of the medical peers—Lord Dawson, Lord Moynihan, and Lord Horder—and also Dr. Helen Mackay, the first medical woman to be elected to the Fellowship of the Royal College of Physicians of London. Mr. W. McAdam Eccles was elected president of the society, Sir Charlton Briscoe honorary treasurer, and Mr. W. E. Tanner joint honorary secretary. At the dinner which followed, Sir Henry Brackenbury was the guest of the evening, and the president paid tribute to him as an outstanding member of the profession, as general practitioner, member of the General Medical Council, and Chairman of Council of the British Medical Association. The retiring president, Lady Barrett, replied to the toast of "The Society."

COMPARATIVE ASPECTS OF LOUPING-ILL IN SHEEP AND POLIOMYELITIS OF MAN*

BY

W. S. GORDON

ANIMAL DISEASES RESEARCH ASSOCIATION, MOREDUN INSTITUTE,
GILBERTON, MIDLOTHIAN

By louping-ill in sheep is currently understood a disease characterized by cerebellar ataxia and disorder of brain and spinal cord functions, lasting about a day in acute infections to some weeks in chronic cases. In the latter type paralysis of one or more limbs is generally present. The mortality in definite clinical cases is high, but animals which recover do not usually develop another attack. The association of the disease with particular pastures is well established, and a large proportion of sheep brought from a locality in which louping-ill does not occur into a louping-ill district are liable to develop the disease.

The first conclusive contribution on the causation of this disease was made by Pool, Brownlee, and Wilson¹ in 1930, and the earlier literature on louping-ill has already been reviewed by Pool.^{2,3} These authors recorded the successful transmission of louping-ill in series from sheep to sheep by intracerebral inoculation with material obtained from the central nervous system of affected animals. The pig was also shown to be susceptible.

FEATURES OF LOUPING-ILL

In continuation of the work of Pool, Brownlee, and Wilson, investigations^{4,5,6,7} at the laboratories of the Animal Diseases Research Association established that:

1. The infective agent is a filterable virus which is communicable to mice as well as to sheep.
2. The pathological changes in the disease are essentially those of an encephalomyelitis.
3. The virus may be present in an infected sheep without producing typical louping-ill, but blood drawn at an early stage of the febrile reaction, which is a prodromal symptom of this infection, contains the virus.
4. Atypical manifestations may comprise merely a febrile reaction, or the sheep may die without lesions in the brain and spinal cord.
5. Under natural conditions louping-ill is tick-borne, the vector being *Ixodes ricinus* L., which is habitually present on louping-ill pastures.
6. Recovery from infection, either naturally or experimentally produced, results in immunity.
7. The investigation of louping-ill has revealed the presence of another tick-borne infection of sheep. This disease, which has been named "tick-borne fever," is clinically, pathologically, immunologically, and aetiological distinguishable from louping-ill, but it probably aggravates the harmful effects of the latter.

That the causal organism of louping-ill is a filterable virus is now generally accepted (Alston and Gibson,⁸ and Czarkowska-Gladney and Hurst¹¹). Hurst¹² infected monkeys, and Findlay and Elton¹³ transmitted the disease to field voles. We possess unpublished evidence that cattle are also susceptible, and may develop the disease naturally. Rivers and Schwentker¹⁴ record that human beings who have come into close contact with the virus of louping-ill may develop in their serum neutralizing antibodies against the active agent, and illness suggestive of louping-ill infection is reported in three such individuals.

Our investigations into the pathogenesis of the disease in sheep and methods of prevention will soon be published in detail, but it may be stated here that there is a prodromal period in the naturally occurring disease, characterized by a diphasic fever. Virus can invariably be detected in the blood during the early part of the first febrile phase. The second febrile phase usually marks the commencement of symptoms indicative of invasion of the central nervous system, and then virus is generally absent from the blood. Many natural cases of louping-ill, however, are abortive. In some of these symptoms of central nervous system infection appear and pass off, whilst in others the only indication is dullness accompanying the characteristic febrile reaction. Abortive attacks can be diagnosed definitely by detection of virus in the blood during the first febrile phase. This diagnosis is made by intracerebral inoculation of mice with citrated blood. There is also evidence that subcutaneous inoculation with formalinized vaccine, prepared from the brain and spinal cord of infected sheep, produces antibodies capable of neutralizing virus introduced into the general circulation, thus preventing the active agent from invading the brain and spinal cord. This vaccine does not immunize the central nervous system, but extensive field trials show that it affords a considerable degree of protection against the natural infection. These observations suggest that the primary multiplication of this so-called neurotropic virus occurs outside the brain and spinal cord.

COMPARISON WITH POLIOMYELITIS

Since this is a discussion in comparative medicine, it seems appropriate to direct attention to the somewhat similar syndrome of naturally occurring louping-ill in sheep and the course of poliomyelitis infection in man. Of course it is not suggested that the two diseases are identical, but, since the pathogenesis and epidemiology of poliomyelitis are subjects of considerable controversy, the study of louping-ill in sheep may present some noteworthy features to those interested in poliomyelitis. At the outset I would mention that, having no personal knowledge of poliomyelitis, I am greatly indebted to the Report by the International Committee on Poliomyelitis,¹⁵ organized by Jeremiah Millbank of New York City.

The medical pathologist, whose material is man, is drastically handicapped by the limited extent to which experiment on the natural material is open to him. He must take his problems as he finds them, and deny himself the help of almost all the preliminary simplifications which are the essence of the veterinary pathologist's advantage. When one's patient can be used as one's experimental animal, circuitous methods of investigation in determining the pathogenesis of a disease do not require to be adopted. Thus the investigation of louping-ill has been greatly facilitated by the fact that sheep, which are naturally susceptible to the disease, are also suitable experimental animals. Such facilities permit a study of the propagation of the infective agent in its natural host, and enable one to place greater reliance on the conclusions drawn regarding the natural route of infection and the epizootiology of the disease than can be placed on similar studies with an infective agent which has been adapted by artificial methods to an experimental animal. In the case of louping-ill the mouse is a susceptible experimental animal, which we have used mainly for detecting the presence or absence of virus in a given tissue. Fortunately, sheep have been available in which to study the pathogenesis of the disease. It has not been necessary to make these studies on the mouse and to argue from the analogous disease in that animal as to the nature of the infection in sheep.

* Opening paper in a discussion in the Section of Comparative Medicine, Royal Society of Medicine, November 22nd, 1933. Published by permission of the Society (*Proc. Roy. Soc. Med.*, 1934, vol. XXVII, Sect. Comparative Medicine, p. III).

AETIOLOGY AND SYMPTOMATOLOGY

Each disease is caused by a filterable virus which possesses neurotropic characters. Schwentker, Rivers, and Finkelstein¹⁶ showed that immunologically louping-ill and poliomyelitis are not closely related. Incidentally, it might be noted that the poliomyelitis virus used in their experiments was the "mixed strain" virus highly adapted to the monkey. Now it appears from the work of Burnet and Macnamara,¹⁷ Weyer,¹⁸ and others, that repeated passage of poliomyelitis virus through monkeys causes it to change immunologically, and the recent work of Paul and Trask¹⁹ shows that there is a qualitative immunological difference between a freshly isolated strain from a human source and a monkey-adapted strain. Accordingly, the question of immunological relationship between louping-ill virus and a freshly isolated "human" strain of poliomyelitis virus still remains open. The incubation period of naturally occurring louping-ill is rarely less than six, or more than eighteen, days from the time of infection until the appearance of clinical symptoms. This corresponds with the incubation period of poliomyelitis infection. In the prodromal period of louping-ill infection there is usually a diphasic temperature reaction, and the second febrile phase is accompanied by the appearance of the first symptoms of nervous derangement, if these develop. This corresponds with the so-called "dromedary" type of prodromal symptom described by Draper²⁰ for poliomyelitis.

Virus in the Blood

The virus of louping-ill has been detected in the blood of infected sheep concurrently with the initial rise in temperature, and in most instances a fall in temperature is followed by the disappearance of much or all virus from the blood. The virus of poliomyelitis has not been detected in human blood, but I am not aware of systematic daily examination of blood having been made during the prodromal stage. Arguing from the analogy of louping-ill, it is highly improbable that virus would be present in the blood when the symptoms of paralysis had developed. Flexner and Lewis²¹ were able to show the presence of virus in monkey's blood if large quantities were drawn at the height of the disease. If the monkeys showed symptoms of nervous system involvement at the time the blood was taken these workers were probably fortunate in detecting virus. Leiner and von Wiesner²² also reported success in one out of five tests with blood drawn from monkeys at different stages of the disease. Clark, Fraser, and Amoss²³ were successful in finding virus in the blood of monkeys in one out of ten instances; the important point about this positive result, however, is the fact that blood was removed at a fairly early stage of infection—namely, at the beginning of paralysis on the seventh day following intracerebral inoculation.

In poliomyelitis it may yet be found that, as in louping-ill, virus is invariably present in the blood during the early stage of the febrile reaction, and generally absent from the blood when paralysis has developed. In clinically obvious cases of poliomyelitis paralysis of one or more limbs usually occurs. During epidemics the so-called abortive (Wickman type) and non-paralytic types of the disease have been recorded. The most convincing evidence of the occurrence of abortive cases has been furnished by Paul and Trask,²⁴ who isolated poliomyelitis virus from the throats of two patients during a characteristic minor illness which was not followed by paralysis.

In chronic cases of louping-ill, paralysis of one or more limbs usually develops, and on farms where the disease is prevalent sheep with various types of deformity are

usually encountered. As already stated, the existence of abortive cases of louping-ill has been definitely established by the detection of virus in the blood during a febrile reaction, which was the only clinical manifestation of infection other than dullness and loss of condition; such atypical infections are followed by immunity.

RESISTANCE AND IMMUNITY

It is stated that the low case incidence of epidemic poliomyelitis has generally been taken to indicate that many persons are exposed to the virus without developing the typical paralytic disease. This inference, however, is only an indirect one, and not based on any direct experimental evidence. The analogous evidence in the case of louping-ill is direct, since the specific virus has been detected in the blood of sheep during a minor illness accompanied by a febrile reaction which was not followed by paralysis. Further, in one of our experiments, forty-nine susceptible sheep were exposed to the risk of natural infection for two months: 53 per cent. of the animals died from all causes, and 60.9 per cent. of the survivors had acquired immunity to louping-ill.

As in poliomyelitis one attack of louping-ill usually confers immunity, and in both diseases neutralizing substances develop in the blood of infected individuals. The only reliable method of producing a typical case of louping-ill in sheep is by introducing the virus directly into the central nervous system. Subcutaneous or intravenous inoculation with virus is often followed by an abortive attack, or only a febrile reaction. In some instances, however, the typical disease, with involvement of the central nervous system, is produced. Intranasal insufflation with virus is an unreliable method of producing infection; admittedly, infection can be produced by this route, but if it occurs under natural circumstances it must be very rare. We have now had over 2,000 sheep under experiment without observing any precautions to prevent spread by contact, and we have no evidence to suggest that infection may spread by this means. The evidence on this point in regard to poliomyelitis in man is rather conflicting.

Active Immunity by Vaccine

In considering methods of prophylactic vaccination for the control of louping-ill it was found that the central nervous system is a difficult tissue to immunize. Thus formalinized vaccine inoculated subcutaneously does not protect sheep from virus injected into the brain, whereas it does protect against virus introduced subcutaneously. Subcutaneous injection of living virus, when followed by a febrile reaction in the inoculated animal, produces immunity of the central nervous system, but this method of immunization is attended with the risk of setting up the disease. Since, under natural circumstances, the disease is transmitted by a blood-sucking arachnid, and the primary multiplication of virus occurs in the blood, it was considered that the immunity afforded by the formalinized vaccine might be sufficient to prevent the natural infection. As already stated, although this vaccine does not produce immunity of the central nervous system, it is proving to be efficacious in the control of the natural disease.

Monkeys can be immunized against poliomyelitis by the subcutaneous inoculation of living virus. As in louping-ill the method is attended by the danger of setting up the disease. To quote one example, Leiner and von Wiesner²² inoculated four monkeys; one died of typical poliomyelitis after four injections, one developed the marantic type of the disease, and two died of an intercurrent infection. Success has not attended the efforts to produce immunity by means of dead virus

vaccines. From the analogy of louping-ill this is not surprising, since the immunized animals were tested by intracerebral inoculation.

PATHOLOGY

The essential pathological changes in the two diseases are closely similar, and are mainly confined to the central nervous system, where inflammatory changes occur with destruction of nerve cells, mainly the anterior horn cells of the cord in poliomyelitis, and the Purkinje cells of the cerebellum in louping-ill. From the comparative point of view it is essential to draw attention to the fact that, although the sheep, mouse, and pig are all susceptible to louping-ill, the nature of the reaction in the central nervous system of these animals varies. Thus in the case of the sheep, as the lesions suggest, cerebellar ataxia is the main symptom. In the mouse the nerve cells of the cord are mainly affected, and paralysis of one or more limbs usually occurs; whilst in the pig, which generally does not develop a fatal disease, the interstitial reaction predominates. Even in animals of the same species variation in the extent and location of lesions in the central nervous system may occur, with consequent deviation in the symptoms from those generally accepted as typical.

EPIZOOTIOLOGY

In forming an opinion on the epizootiology of louping-ill it is probably well to bear in mind the insulatory mechanism which guards the central nervous system from injurious substances of haematogenous origin. Wilfred Trotter²³ gives a very clear conception of this mechanism. After reviewing evidence, he states:

"We have a group of well-defined facts established by countless observations and capable of confirmation any time. They bring evidence from different parts of the nervous system, disclosing, even to superficial consideration, a clear, common tendency. The conclusion to which all point is that breaches of normal coverings of the nervous tissues, allowing contact between the latter and other tissues of the body, result of necessity in energetic local reactions. The obvious function of such reactive processes is to re-establish the normal discontinuity between neural and somatic tissues, and to break the contact that has caused the disturbance."

McIntosh and Fildes²⁴ showed that after intravenous injection of salvarsan and neosalvarsan in man and animals no arsenic could be found in the brain, although its presence could be detected in tissues outside the central nervous system. This phenomenon is not due to a lack of affinity between the brain and the drugs, but to an inability on the part of the drugs to penetrate into the substance of the brain.

After subcutaneous inoculation of massive doses of potent antitoxin in sheep we have found that although the antitoxin can be detected in the blood its presence cannot be detected in the cerebro-spinal fluid. Whilst it cannot be argued that these substances are comparable to a living virus, the evidence suggests that injurious materials present in the blood have very definite barriers to overcome in gaining access to the central nervous system. It would appear that the epizootiology of louping-ill is closely linked with this fact, and the perpetuation of the disease in enzootic form is dependent on a high case incidence of the so-called abortive form, with a relatively low incidence of clinical cases—that is, cases in which virus has invaded the central nervous system.

This aspect of the problem may also have some bearing on the explanation of the epizootiology and epidemiology of other diseases caused by so-called neurotropic viruses. It is a practical observation that a large proportion of

the old sheep on a "diseased" farm possess immunity to louping-ill, although they have no history of a clinical attack of the disease. Even in a group of yearling sheep received from diseased farms, Pool, Brownlee, and Wilson found that 20 per cent. were immune, and in our own experiments it was found that after exposure of susceptible sheep to the risk of natural infection for two months as many as 60.9 per cent. of the survivors had acquired immunity.

Endemic poliomyelitis occurs in its greatest incidence in children up to 5 years of age. It has an inexplicable seasonal incidence, and is generally regarded as a summer disease. Enzootic louping-ill is generally confined to lambs and yearling sheep; it also has a seasonal incidence, occurring in the spring, and, to a lesser extent, in the autumn. The seasonal incidence of louping-ill corresponds with the season of maximum activity of ticks, which are the vectors of the disease. When an epizootic of louping-ill occurs in a sheep stock in which the disease has not been previously recognized, animals of all ages are liable to become affected. Similarly, epidemics of poliomyelitis in virgin soil have the same tendency. In the International Committee's Report three virgin soil outbreaks are described—one upon the island of Guam in 1899, reported by Grunwell; one upon the island of Nauru in 1910, reported by Müller, and one in New Guinea in 1929, reported by Macnamara. Each outbreak was characterized by a high mortality, mainly confined to young adults. An extraordinary feature common to each outbreak was the apparent immunity enjoyed by the children. This is a peculiar phenomenon, and might suggest that the incidence of subclinical cases in children is greatly in excess of frank cases, with definite involvement of the central nervous system, whereas the same may not apply to non-immune young adults.

Among the many opinions on the epidemiology of poliomyelitis the one expressed by Lavinder, Freeman, and Frost²⁵ is of particular interest. They state that

"while the incidence among a population affected by poliomyelitis even in its severest epidemic form is usually not high, yet this disease possesses not infrequently the power to spread widely—in fact, to become pandemic in a country. It has been suggested that an epidemic of infectious disease may be viewed as the resultant of two excursions, a vertical one representing the heaping-up of cases in any locality, as usually shown plotted on a chart, and a lateral one, representing the extent of territory covered—the geographic distribution. Epidemic diseases not infrequently show decided variation in these two movements. Certain of them, like dengue, for example, show a most striking vertical movement along with a very limited lateral movement. Poliomyelitis has exhibited a significant power of lateral movement, and, up to the present time, in much greater degree than its power of vertical excursion."

This "creeping tendency," as Dale²⁶ calls it, is suggestive of a limiting factor of host resistance, a sparse but widely spread population at risk, and a widespread virus. This opinion on the epidemiology is compatible with the view that poliomyelitis may be a systemic infection with the specific virus which, under favourable conditions, successfully invades the central nervous system, and is responsible for the symptom-complex of poliomyelitis. Such a definite view would materially assist in solving many of the baffling problems in the epidemiology of poliomyelitis.

In view of the modern trend of opinion (Walshe, Annual Meeting of the British Medical Association, 1933) that poliomyelitis is probably from the outset and exclusively an infection of the nervous system, it may be of comparative interest to draw attention to the fact that in an analogous disease of sheep—namely, louping-

ill—there is a high infection incidence of the young population, a large proportion of the cases being sub-clinical infections which can only be diagnosed by detection of virus in the blood, and a small proportion of frank cases with symptoms indicative of central nervous system infection. Thus, in the perpetuation and spread of this disease systemic infections probably have a more important role than actual clinical cases.

SUMMARY

Louping-ill, an encephalomyelitis of sheep, is caused by a filterable virus possessing neurotropic characters. Under natural conditions of infection the disease is tick-borne, the vector being *Ixodes ricinus* L. At first it would seem a curious anomaly that a blood-sucking arachnid has the role of transmitting a neurotropic virus, but the apparent anomaly is explained by the fact that multiplication of this so-called neurotropic virus occurs primarily in the blood. Invasion of the central nervous system by the virus occurs at a late stage in the infection, and is responsible for the characteristic symptoms of the disease. In the naturally occurring disease, invasion of the central nervous system is not a constant feature. Cases occur in which virus does not gain access to the central nervous system. Such abortive types of the disease can be diagnosed by the detection of virus in blood drawn at an early stage of the febrile reaction which accompanies the infection. It seems highly probable that the incidence of abortive types of the disease is greatly in excess of the number of frank cases with central nervous system involvement.

From a comparative point of view the study of louping-ill in sheep would suggest the possibility that in the early stage of poliomyelitis in man, before obvious clinical symptoms have developed, the specific virus may be present in the blood. If such early blood infection were demonstrated present views regarding the nature of poliomyelitis infection, its prevention, and treatment would require revision.

REFERENCES

- ¹ Pool, W. A., Brownlee, A., and Wilson, D. R.: *Journ. Comp. Path. and Therap.*, 1930, xliii, 253.
- ² Pool, W. A.: *Vet. Journ.*, 1931, lxxxvii, 177.
- ³ Idein: *Ibid.*, 1931, lxxxvii, 222.
- ⁴ Greig, J. R., Brownlee, A., Wilson, D. R., and Gordon, W. S.: *Vet. Record*, 1931, xi, 325.
- ⁵ Brownlee, A., and Wilson, D. R.: *Journ. Comp. Path. and Therap.*, 1932, xlv, 67.
- ⁶ Gordon, W. S., Brownlee, A., Wilson, D. R., and MacLeod, J.: *Ibid.*, 1932, xlv, 106.
- ⁷ MacLeod, J., and Gordon, W. S.: *Ibid.*, 1932, xlv, 240.
- ⁸ Gordon, W. S., Brownlee, A., Wilson, D. R., and MacLeod, J.: *Ibid.*, 1932, xlv, 301.
- ⁹ MacLeod, J., and Gordon, W. S.: *Parasitology*, 1933, xxv, 273.
- ¹⁰ Alston, J. M., and Gibson, H. J.: *Brit. Journ. Exper. Path.*, 1931, xii, 82.
- ¹¹ Czarkowska-Gladney, J., and Hurst, E. Weston: *Ibid.*, 1931, xii, 426.
- ¹² Hurst, E. Weston: *Journ. Comp. Path. and Therap.*, 1931, xlv, 231.
- ¹³ Findlay, G. M., and Elton, C.: *Ibid.*, 1933, xlvii, 126.
- ¹⁴ Rivers, T. M., and Schwentker, F. F.: *Proc. Soc. Exper. Biol. and Med.*, 1933, xxx, 1302.
- ¹⁵ Report of International Committee on Poliomyelitis. Baltimore, Williams and Wilkins Company, 1932.
- ¹⁶ Schwentker, F. F., Rivers, T. N., and Finkelstein, M. H.: *Journ. Exper. Med.*, 1933, lviii, 955.
- ¹⁷ Burnet, F. M., and Macnamara, Jean: *Brit. Journ. Exper. Path.*, 1931, xii, 57.
- ¹⁸ Weyer, E. R.: *Proc. Soc. Exper. Biol. and Med.*, 1931, xxix, 289.
- ¹⁹ Paul, J. R., and Trask, J. D.: *Journ. Exper. Med.*, 1933, lviii, 513.
- ²⁰ Draper, G.: *Acute Poliomyelitis*. Philadelphia, P. Blakiston's Son and Co., 1917.
- ²¹ Flexner, S., and Lewis, P. A.: *Journ. Amer. Med. Assoc.*, 1911, lvii, 1685.
- ²² Zappert, J., von Wiesner, R., and Lerner, K.: Leipzig, Deuticke, 1911.
- ²³ Clark, P. F., Fraser, F. R., and Amoss, H. L.: *Journ. Exper. Med.*, 1914, xix, 223.
- ²⁴ Paul, J. R., and Trask, J. D.: *Ibid.*, 1932, lvi, 319.
- ²⁵ Trotter, W.: *British Medical Journal*, 1926, ii, 103.
- ²⁶ McIntosh, J., and Fildes, P.: *Proc. Roy. Soc., B*, 1914, lxxxviii, 320.
- ²⁷ Lavinder, C. H., Freeman, A. W., and Frost, W. H.: *U.S. Public Health Bull.*, 1918, No. 91.
- ²⁸ Dale, J.: *Med. Journ. Australia*, 1928, clii, 258.

URINARY EXCRETION OF OESTRIN ADMINISTERED UNDER EXPERIMENTAL CONDITIONS AND AFTER THE MENOPAUSE

BY

J. M. ROBSON, M.D., B.Sc.

(Beit Memorial Research Fellow)

T. N. MacGREGOR, M.B., Ch.B., F.R.C.S.Ed.

R. E. ILLINGWORTH, B.Sc., Ph.D.

AND

N. STEERE, M.B., Ch.B.

(From the Institute of Animal Genetics, University of Edinburgh, and Dr. James Young's Gynaecological Clinic, Royal Infirmary, Edinburgh)

That oestrin is excreted by the human female in the urine and faeces at various stages during active sexual life is now definitely established. The quantities excreted show regular alterations during the menstrual cycle, these variations applying to the amounts found in both the urine and the faeces, and being greatly increased during pregnancy. A less marked increase in the oestrin excretion is also noted during the early stages of the menopause. The fluctuations in the elimination of oestrin correspond in general to changes in the hormone content of the blood. When, however, we come to consider the question as to how much oestrin is actually produced in the body at these different stages, and whether the hormone produced is quantitatively excreted without undergoing any changes, there are few experimental data on which any conclusions can be based. A similar paucity of information exists with regard to the function of the renal and intestinal barriers, and the problem of whether these play any part in determining the excretion of the sex hormone.

Zondek (1931) has, indeed, reported one case in which the elimination of oestrin was studied. The patient was oophorectomized for ovarian tumour, and subsequently the parenteral administration of 10,000 mouse units of oestrin was followed by excretion of 60 per cent. of the hormone in the urine within thirty-six hours. As some of the hormone was presumably also excreted in the faeces, the figures suggest that only a small percentage of the oestrin introduced in the body was retained and not excreted. On the other hand, both Siebke (1930) and Siebke and Schuschania (1930) also investigated the hormone excretion in the urine and faeces following the repeated administration of known doses both parenterally and hypodermically, and concluded that a large proportion of the hormone is not excreted, and must therefore, in some way, be used up or metabolized in the body.

OBJECT OF INVESTIGATION

Now knowledge as to the fate of the oestrous hormone is important for a number of reasons—namely:

1. It may help us to understand more perfectly the nature of the sex cycle and its relation to hormonal activity.
2. It will allow of a more exact interpretation of the diagnostic significance of data on the presence of the hormone in the excretions—in relation to the hormone production and activity.
3. It may help in the evaluation of the doses necessary to bring about certain desired therapeutic effects.
4. In view of the great variety of active oestrous-producing compounds now isolated, it may afford information as to which of these may be the most suitable in relation to the normal metabolic processes.

It was therefore decided to attempt to determine the fate of known quantities of a definite form of oestrin administered under strict experimental conditions. For the preliminary experiments it was deemed advisable to use subjects in which the normal oestrin production had presumably already ceased; and for this reason the experiments were all performed on patients in whom both ovaries had been surgically removed, or in whom the onset of the menopause had led to a cessation of the normal ovarian activity.

TECHNIQUE

The preparation used in these experiments was ketohydroxy-oestrin (obtained from B.D.H.). Samples were standardized by injecting four doses in oil over thirty-six hours into ovariectomized mice, and showed by this method a potency of about 5,000 mouse units per mg. The hormone was dissolved in absolute alcohol (1 mg. per c.c.m.), and immediately previous to injection was diluted with four parts of water. Injections were in all cases given intramuscularly. The urine was collected for definite periods before and after injection. In the first experiment it was injected without treatment into the mice; this, however, proved rather toxic, and did not allow of a satisfactory estimation of the oestrin content.

RESULTS

As it was expected that the injection of the large doses of oestrin would be followed by the excretion of at least a substantial part of it, it appeared likely that standardization would be possible by means of the injection of the untreated urine. This expectation was not, however, realized. The procedure was adopted in the first case given in the table, but the whole of the urine passed during the first twelve hours following the injection contained less than 145 mouse units of the hormone (when standardization was performed by administration of four doses over thirty-six hours). Smaller amounts could not be detected, as the urine proved toxic when injected in the larger doses. Thus in this case, of the 5,000 mouse units of oestrin injected, less than 145 mouse units were excreted in the urine during the first twelve hours immediately following the administration.

In the next two cases the urine was not itself injected but extracted with ether, as described above under the heading "Technique." In both cases the ovaries had been previously removed, so that there could presumably be no question of any oestrin production by the patients.

Case No.	Age	Condition	Oestrin Content of Urine in 12 Hours Pre-injection Period	Amount of Oestrin Injected	Amount of Oestrin in Urine Following Injection								Material Assayed	Blood Assay	
					First 12 hours	Second 12 hrs.	Third 12 hrs.	Fourth 12 hrs.	Fifth 12 hrs.	Sixth 12 hrs.	Seventh 12 hrs.	Eighth 12 hrs.		Time After Oestrin Injection	Oestrin Content M.U. per Litre
I	57	Post-menopausal (15 years)	—	mg. 1.0	M.U. <145	M.U. <140	M.U.	M.U.	M.U.	M.U.	M.U.	M.U.	Urine		
II	46	Bilateral ovariectomy	—	1.0	<30	24-72	>15						Ether extract of urine		
III	39	Bilateral ovariectomy	—	2.0	65	24-95						<10	Ether extract of urine		
IV	54	Post-menopausal (10 years)	5-10	2.0	500-1,250	100-350				<20			Ether extract of hydrolysed urine	11½ hrs.	<25
V	52	Post-menopausal (4-5 years)	>10	2.0	100				50				Ether extract of hydrolysed urine	4 hrs.	<25
					<30								Ether extract of urine		
VI	51	Post-menopausal (7 years)	<9	2.0	10-100		<60						Ether extract of hydrolysed urine		

In later experiments the oestrin was therefore extracted by the following methods:

1 Portions of 270 c.c.m. urine were acidified by the addition of 30 c.c.m. 10 per cent. H_2SO_4 and extracted with ether continuously for not less than eight hours in a continuous extractor. The ether extract was evaporated to dryness, and the residue dehydrated by several evaporations from solution in absolute alcohol. The dry residue was then dissolved in a mixture of ether and alcohol, and the requisite amount of maize oil added. The volatile solvents were removed by gentle heat, and the urine extract in the oily medium standardized.

2 In most instances the urine was boiled in acid solution for a number of hours before extraction with ether. Portions of 270 c.c.m. urine were acidified with H_2SO_4 , as above, and the urine subjected to boiling under a reflux condenser for periods of about eight to twelve hours. The hydrolysate was then transferred to the continuous extraction apparatus and extracted with ether. The ether extract was treated as already described. Blood was also collected in two cases. The treatment of the blood samples was similar in every respect to the second process, described above for urine, except that the residue obtained on evaporation of the ether extract was dissolved in absolute alcohol and administered to the test animals in that form.

In all cases standardization was performed by the injection of four doses over thirty-six hours, the unit being taken as that amount which would produce cornification in 50 per cent of the animals. In some cases, instead of attempting to obtain an exact figure, the amount of oestrin present in the sample was only determined within certain limits (see Table).

In the first of these cases 5,000 mouse units of oestrin (1 mg.) were given, and the second case received twice that amount. The amounts of oestrin excreted are shown in the table. It was found that the excretion of the hormone appeared again very small. Thus in Case III, which received about 10,000 mouse units (2 mg.), the extract made from the total urine collected during the twelve hours following the injection contained only about 65 mouse units of oestrin, while during the next twelve hours the urine contained (as determined by ether extraction) more than 24 mouse units and less than 96 mouse units (probably about 50 mouse units). Four days after the injection no more oestrin was detectable in the urine by this method.

The very small amounts of oestrin found in the urine in these two cases raised doubts as to whether all the hormone was being excreted in a form which could be extracted by ether. Dr. Marrian, from whom we inquired in regard to this question, kindly informed us that oestrin may be excreted in a form (probably a sulphate-ester) which is insoluble in ether, but which becomes soluble after hydrolysis. We thereupon performed the following experiment:

Two hundred and seventy c.c.m. of urine obtained from a pregnant woman was extracted with ether for several hours. This ether extract was then dissolved in oil and standardized in the usual way, and was shown to contain definitely less than 120 mouse units of oestrin per litre of urine. The extracted urine was then hydrolysed for several hours with

H₂SO₄ and again extracted with ether. This extract was dissolved in oil and standardized. It contained more than 120 mouse units per litre but less than 600 mouse units per litre, the results showing that the actual amount was nearer the latter figure.

Hence, of the total amount of oestrin in this sample of urine only a small proportion (probably less than a quarter) was extractable by ether, the remainder becoming so only after hydrolysis.

In the next three cases, therefore, the urine was hydrolysed before extraction with ether. The excretion was, as in the previous cases, determined at various stages after injection, the dose administered being in all cases 2 mg. of oestrin—that is, about 10,000 mouse units. It will be noticed in the table that by this method the figures obtained are rather larger; yet only in one of these cases (Case IV) was the amount excreted at all large; for in the first twelve hours after the injection the urine contained about 1,000 mouse units of oestrin, but in the following twelve-hour period the urine contained a much smaller quantity of the hormone (more than 100 and less than 350 mouse units). By the third day after the injection the oestrin administered appeared to have been completely eliminated, as the urine contained only small amounts of the hormone. In the other two cases the proportion of injected oestrin which was excreted in the urine was even smaller, the total amount in the twelve hours following the injection being less than 100 mouse units.

In one of these cases (Case V) the proportions of oestrin excreted in ether-soluble and insoluble forms were investigated. A portion of the urine excreted during the first twelve hours following the injection was extracted with ether (without previous hydrolysis) and the extract standardized. It contained definitely less than 30 mouse units of oestrin per litre of the original urine. Another portion of the urine was first hydrolysed for several hours and then extracted with ether. This extract contained about 100 mouse units of oestrin per litre of the original urine. The residue of this extraction was further hydrolysed for a number of hours, and then again extracted with ether, but no oestrin could be detected in this extract. Hence, according to this experiment, less than one-third of the oestrin excreted in the urine was in an ether-soluble form (though the original material injected is ether-soluble).

Another interesting fact which emerged in the course of this investigation was that oestrin may be excreted in the urine several years after the onset of the menopause and cessation of menstruation, and in quantities apparently substantially similar to those present in the urine during the normal menstrual cycle. This was observed in two out of the three cases investigated. In Case V, a patient 52 years old, and investigated four to five years after the complete cessation of menstruation, the twelve-hourly sample collected before the injection of oestrin contained more than 10 mouse units of oestrin, corresponding to an excretion of the hormone of more than 20 mouse units per day. In Case IV, aged 54, and investigated ten years after the menopause, the excretion was about 10 to 20 mouse units per day. On the other hand, no appreciable amount of oestrin was detected in the urine of Case VI, aged 51, and investigated seven years after the menopause. In all these cases the urine was hydrolysed before extraction with ether.

An attempt was also made to detect oestrin in the blood after the administration, but in both cases investigated the extract obtained from 40 c.cm. of hydrolysed blood contained less than 1 mouse unit of the hormone. In the first case the blood was collected eleven and a half hours after the intramuscular injection of the hormone,

and this long interval might account for the small amounts of oestrin in the blood; but no such explanation can be offered in Case V, where the blood sample was taken four hours after administration of the oestrin.

Discussion

The experiments reported clearly demonstrate that when ketohydroxyoestrin is injected into the human female subject only a small proportion of the hormone can be recovered in an active form from the urine by the methods used, which included not only thorough extractions with ether, but a similar extraction following prolonged hydrolysis. Moreover, the result is confirmed by the one experiment in which the urine was injected into ovariectomized mice without any previous treatment; for, although the toxicity of the urine rendered an accurate assay impossible, yet it could be definitely established that the quantities were comparatively small.

In view of the results of Siebke and Schuschania (1930), it is likely that some of the hormone was also excreted in the faeces, but, even allowing for this, only a portion of the amount injected can be accounted for. The proportion of the hormone excreted was not the same in all the subjects investigated. Assuming that the amount eliminated in the faeces is similar to that found in the urine, then the total amount of oestrin recoverable might, in Case IV, be equal to nearly one-quarter to one-third of the dose injected. In the other cases, however, and on a similar basis, it can be computed that less than one-twentieth of the hormone injected appears in the excreta. These results are, generally speaking, in agreement with those reported by Siebke (1930) and by Frank, Goldberger, and Spielman (1932) in the menstruating woman. They show, moreover, that even after cessation of menstruation—after the menopause or after the removal of the ovaries—the conditions are still substantially the same.

In view of these results it is difficult to escape from the conclusion that the human body can rapidly destroy, or at any rate render inactive, the oestrous hormone, and this view is supported by the finding that, four hours after the injection of 10,000 mouse units, the blood contained less than 25 mouse units of the hormone per litre (Case V). It may be mentioned that the evidence obtained by Fee, Marrian, and Parkes (1929) on the isolated heart-lung preparation also suggested that oestrin could be rapidly destroyed.

Further, the finding that a large amount of the hormone which appears in the urine is in a form not extractable by ether raises the question as to whether this portion represents an intermediate product in the inactivation of oestrin. In this connexion the results recently described by Silberstein, Engel, and Molnar (1933) are of great interest. These observers incubated oestrin with blood or liver tissue and found that by this method the hormone became rapidly destroyed or inactivated. Moreover, at one stage of this process they were still able to demonstrate the presence of a large proportion of the oestrin by the injection of the material into the ovariectomized animals; yet if this same material was extracted by means of an alcohol-acetone method a much smaller amount of oestrin was obtained. Later on, neither the material itself nor the alcohol-acetone extract contained any active oestrin. These results thus appear to show that *in vitro*, too, oestrin rapidly becomes inactivated, and that one of the intermediate products in the process of this inactivation is a form of the hormone not extractable by lipid solvents.

The finding that substantial amounts of oestrin may be excreted in the urine several years after the cessation

of menstruation appears highly interesting in relation to the genesis of the menstrual cycle. It is unlikely that the hormone found in the urine was ingested with the food, as comparatively large quantities of oestrin would need to be administered through the alimentary canal to give the rate of excretion observed. It must, however, be emphasized that in those post-menopausal cases in which oestrin excretion was found the urine was hydrolysed previous to the ether extraction, so that it is impossible to say whether any of the hormone originally present in the urine was in an ether-extractable form. This problem requires further investigation.

Lastly, the question arises as to the significance of the data so far obtained by a number of observers on the oestrin content of various body fluids and excretions. Where the material is directly injected into the ovariectomized mice (or rats), an assay of the total oestrous hormone content is presumably obtained. In those cases, however, where extraction of the material has been undertaken previous to the assay, results relating only to the hormone soluble in that particular solvent will be obtained, unless hydrolysis has also been performed. It may be urged that data relating to a definite form of oestrin (in so far as the solubility is concerned) are of more significance than the total quantity of oestrin-inducing hormone—that is, active in ovariectomized animals—present in a particular body fluid or excretion, and this may well be. On the other hand, the possibility that the rate of inactivation of the hormone may vary in different circumstances, physiological or pathological, and that the activity of the hormone in the body under normal or abnormal conditions may in part be determined by the rate of its inactivation, cannot be ignored, and further exploration of this aspect of the question appears to be necessary.

SUMMARY

Known doses of ketohydroxyoestrin have been injected intramuscularly into subjects, ovariectomized, or subsequent to the onset of the menopause, and the excretion of the hormone in the urine subsequently determined. It was found:

1. That only a small proportion of the oestrin administered could be recovered from the urine.
2. That a proportion of the hormone excreted was not extractable by ether. (This also applies to the oestrin excreted in normal pregnancy.)
3. That the blood of injected subjects contained less than one mouse unit of oestrin in 40 c.c.m.

Incidentally it was also established that substantial amounts of oestrin may be excreted in the urine even eighteen years after the menopause.

The expenses of this investigation were in part defrayed by a grant from the Medical Research Council to one of us (J. M. R.).

BIBLIOGRAPHY

- Fee, A. R., Marnan, G. F., and Parkes, A. S.: *Journ. Physiol.*, 1929, lxxvii, 377.
 Frank, R. T., Goldberger, M. A., and Spielman, F.: *Proc. Soc. Exp. Biol. and Med.*, 1932, xxix, 1229.
 Siebke, H.: *Zentralbl. f. Gynak.*, 1930, liv, 1601.
 Siebke, H., and Schuschania, P.: *Ibid.*, 1930, liv, 1734.
 Silberstein, F., Engel, P., and Molnar, K.: *Klin. Wochn.*, 1933, xii, 1693.
 Zondek, B.: *Die Hormone des Ovariums und des Hypophysen-vorderlappens*. 1931. Julius Springer, Berlin.

The text of Professor Johan Hjort's Huxley Memorial Lecture on the restrictive law of population, which he delivered on May 4th at the Imperial College of Science and Technology, has been published by Macmillan and Co., as a pamphlet, price 1s.

A CRITICISM OF ANTE-NATAL WORK*

BY

A. J. WRIGLEY, M.D., F.R.C.S.

SURGEON IN CHARGE OF OUT-PATIENTS, GYNAECOLOGICAL DEPARTMENT,
ST. THOMAS'S HOSPITAL

The genesis of ante-natal supervision as a recognized branch of preventive medicine appears to be associated with the name of the late J. W. Ballantyne, and to date from about the year 1902. Its value, however, can only be assessed with any pretence at accuracy over the last ten years, and, indeed, many competent judges question whether it has as yet received a fair trial. Be this as it may, it might with reason be expected that ante-natal supervision has been carried on to such an extent over this period of years that some results might by now be apparent in the figures of the national maternal mortality. Up to the present, however, no impression has been made on these figures, and if any change has occurred in the last few years the mortality has shown a slight rise. This fact has been a great disappointment, and has been the incentive for the production of papers of criticism and committees of inquiry. The published articles are not numerous, and, with one notable exception, devote themselves almost entirely to a debate upon the advantages and disadvantages to the community of the clinic system of ante-natal supervision.

SCOPE OF PRESENT REVIEW

In this criticism of ante-natal care an attempt will be made to review the actual work as it is being done to-day. If pre-natal supervision is unsatisfactory, or is actually wrong in its conception and execution, it matters not one jot or tittle whether it be performed by midwife, general practitioner, obstetric specialist, or by the medical men and women in charge of the twelve hundred or more ante-natal clinics that have appeared in the last few years. It is assumed that all are in agreement that medical supervision of the woman in pregnancy is a most admirable thing, and constitutes a definite advance in medical science. Ballantyne in 1923, in a lecture at Nottingham, expressed his opinion that ante-natal care might be expected to result in the removal of the fear and dread of the confinement and of much anxiety and suffering, and also in the early and more satisfactory treatment of toxæmia, syphilis, and cardiac diseases associated with pregnancy, etc.

The aims and objects of this branch of preventive work are well expressed by Fairbairn in his textbook *Gynaecology with Obstetrics*, and read as follows:

- "(1) To maintain the pregnant woman in health of body and mind.
- (2) To preserve the pregnancy to its full time.
- (3) To foresee and avert preventable difficulties and complications in labour and afterwards.
- (4) To secure the best provision possible for the labour, prepare the woman for the nursing and care of her child, and educate her in the care of her own health and that of her family."

Fairbairn continues with the warning that "some enthusiasts have run the new thing to death, and their examinations have tended to make the patient think her condition pathological rather than physiological."

A consideration of the subject will be made upon the above lines. It is impossible to discuss all the illnesses that can complicate, or be complicated by, pregnancy, and therefore a selection has been made.

THE TOXÆMIAS

Toxic albuminuria occurs in about 5 per cent. of all cases. Apart from the immediate possibility of pre-eclampsia and eclampsia, it is only in recent years that the added danger of permanent renal damage following this condition has been demonstrated by Young,¹ Gibbard,² and others. While the death rate from toxic

* The substance of a British Medical Association Lecture given to the Norfolk Branch on April 18th, 1934.

albuminuria and eclampsia shows an apparent slight fall during the last few years, the adjustment that is necessitated by a falling birth rate denies any real improvement. The conclusion must be reached that, taking the country as a whole, ante-natal supervision has failed to reduce the maternal death rate from eclampsia and allied conditions.

A consideration of the incidence of, and death rate from, eclampsia among the booked cases of certain obstetric hospitals shows another side to the picture. Thus there were only six cases of eclampsia in the last 7,000 women whose pregnancy was supervised at the General Lying-In Hospital, York Road, and, similarly, only three cases out of the last 3,500 women under the care of the Clapham Maternity hospital. This represents six years' work at both institutions. Every case, with one exception, was of a mild character, and in this series not a single patient died. These results owe something, at any rate, to a thorough, conscientious ante-natal supervision. That eclampsia is certainly not a preventable disease, however, is suggested by a recent case at St. Thomas's Hospital. A primigravida was examined at 10 o'clock in the morning. She felt perfectly well, and urine and blood pressure examinations showed no abnormality. Eight hours later she had an eclamptic fit.

Gibberd has shown that the incidence of "occult nephritis," which follows prolonged, untreated, perhaps symptomless toxic albuminuria of pregnancy, would show an even more striking decrease under similar conditions. There seems to be no doubt that the investigation and treatment of these cases of toxic albuminuria, whether they be of a chronic or of an acute type, is not adequate. The conscientious doctor not only examines the urine and blood pressure at regular and frequent intervals, but he instructs the patient, and makes certain that she understands the instructions, in the warning symptoms of this condition. In addition, he remembers those patients who neglect their routine visits, and does not excuse this negligence on the assumption that "no news is good news." The conscientious clinic behaves in exactly the same manner.

That our supervision in this direction is utterly inadequate is demonstrated in the findings of the Departmental Committee on Maternal Mortality. Out of 544 women who had died from eclampsia there had been no examination of the urine in 277, and in a further 120 who had been examined there had been no treatment. Results worse than these would be forthcoming if the figures were available for the less dramatic, and therefore apparently milder and less dangerous, toxic albuminuria of pregnancy.

Therefore we may certainly conclude that, taking the country as a whole, in the detection, supervision, and treatment of the condition of toxic albuminuria of pregnancy there is no question that this supervision is excessive, and considerable evidence that it is quite inadequate, and, as a general rule, is performed in so perfunctory a manner as to be useless.

HEART DISEASE AND PULMONARY TUBERCULOSIS

Good work is being done by ante-natal supervision in the detection and treatment of various conditions that have been complicated by the pregnancy—for example, chronic heart disease. The same remarks apply to the detection of the case of chronic nephritis, in which the renal function has broken down early in the pregnancy and has been treated successfully by an immediate induction of abortion.

Expert opinion is divided as to the best course to take in pregnant women who suffer from pulmonary tuberculosis. The detection of syphilis is difficult. It is usually discovered in the routine examination of a woman who is suspected to be suffering from a gonococcal infection, or whose past obstetric history warrants the examination of the blood. One might mention here the unwarrantable enthusiasm of the medical officers in charge of clinics in which every woman has the Wassermann reaction performed and the cervical secretion examined for gonococci.

THE WOMAN'S "HEALTH OF MIND"

Until a comparatively recent date a woman's attitude to her first pregnancy might be summed up, probably with

considerable accuracy, as follows. She realized, perhaps with pride, that she was doing what was expected of her, and that her forthcoming ordeal had been the lot of countless women before her. She was philosophical about it, and received some good and bad advice from her mother, her doctor, and one or two friends. There would doubtless be considerable discomfort, but with average luck she would survive. Lately the situation has changed. Long before she is even pregnant the woman has been educated up to the horrors of childbirth.

Thus, few of our novels to-day, with perhaps the exception of detective stories, acquire a good sales record unless they contain at least one detailed description of a labour, and this is usually a complicated labour. The daily papers and weekly periodicals—especially those for women—have frequent reference to the same subject. Some, with the most worthy object in view, and claiming that they only supply what the public demands, regularly devote a page to the mysteries of pregnancy and labour. Enough is written only to produce an element of doubt as to the safety of the process, and to leave no doubt as to the many dangers. The stage and screen do their part thoroughly in a like manner. The anxious husband, the nurses and doctors, the closed doors, all successfully portray the tense atmosphere of impending disaster. How does our ante-natal supervision react to this? The answer is, in the vast majority of cases, "Not at all." Perhaps an occasional question is asked as to whether our patients have any worries, and at that the question is dropped. If sensible inquiries were made on these matters an untold amount of fear and anxiety could then be avoided. Possibly the picture has been somewhat exaggerated, and applies only to a proportion of our patients, but the faith in the hospital and the better education of women at the opposite end of the social scale goes a long way to negative any harm that may be done in the manner suggested.

DISPROPORTION: THE PROBLEM OF INDUCTION

In pregnancy the detection of the major degrees of pelvic contraction can only be of the greatest benefit to the patient. The management of the minor degrees of disproportion as a result of ante-natal observations presents a sad picture. Even the teaching upon this subject is in a state of the utmost confusion. There are some schools which advocate the induction of premature labour at any time after the thirty-second week of pregnancy, others which say that this treatment results in such a high foetal mortality that, in the long run, Caesarean section is the best, and still others which, stating that the majority of inductions done for this condition are unnecessary, advocate a trial labour. The relative merits of these various methods do not concern us in this discussion.

At the present time, however, in the vast majority of cases, the treatment of minor degrees of disproportion between the foetal head and the pelvic inlet resolves itself into "Induce if there is any doubt." This assumes two things: first, that failure to induce will result in disaster, probably to the mother and certainly to the child, and, secondly, that induction is for practical purposes free from all risk.

This aspect of ante-natal work was most ably debated by Professor Browne³ in a recent paper. He analysed the causes of maternal death in the booked cases of several obstetric hospitals, and showed that no fewer than one in twenty of these deaths occurred as a result of induction of labour. He states that "It is no help to anyone who is rescued from the hypothetical consequences of an abnormality and is killed in the rescue..." and points out that this simply means that ante-natal supervision transfers the mortality from one column to another.

There has been no mention as yet of the complications of induction of labour other than the death of the mother. In the case of the mother the insertion of bougies is followed by such complications as rupture of the membranes, which is a serious matter in a possible case of dystocia, or by separation of the placenta, or by puerperal infection, or—and this is probably the most serious of all—by failure to induce the labour. To the child the results are even more disastrous.

HOSPITAL STATISTICS OF INDUCTION

The following information has been collected from the obstetric departments of five hospitals. The infant mortality in some 1,600 cases in which labour was induced for minor degrees of disproportion was just under 10 per cent. This figure is probably fairly accurate, as it varies but little in the different hospitals.

Thus, Hospital A	8.2 per cent.	infant mortality.
" B	12.0 "	" " "
" C	8.1 "	" " "
" D	10.3 "	" " "
" E	8.9 "	" " "

It may be argued that without the ante-natal supervision and consequent detection of the "minor degree of disproportion" these figures would be greatly increased. This apparently obvious conclusion is probably erroneous. In how many of these cases did there exist that "minor degree of disproportion" that necessitated a premature termination of pregnancy?

The presence or absence of moulding of the foetal skull, when examined after delivery, can be regarded as an accurate index of the existence of any disproportion. An analysis of the incidence of this moulding could only be found in the records of two hospitals, but the figures obtained can be accepted, in all probability, as a fair average. Out of nearly 200 consecutive recorded cases the moulding of the foetal skull was noted to be excessive in 9 per cent., marked in 38 per cent., slight in 42 per cent., and absent in 11 per cent.

This means that in over 50 per cent. of cases the induction of labour was performed unnecessarily. This figure is almost certainly extremely generous to the country as a whole, for the medical staff attached to the hospitals concerned are most conservative, and induction, like all other intervention, is kept at a much lower level than was to be found when comparison was made with the figures obtained from the obstetric departments of other institutions.

The next point to appreciate is that the 10 per cent. of foetal deaths were by no means due to excessive compression of the foetal skull and intracranial haemorrhage. In only about one in three of the infants that were stillborn or died shortly after birth had intracranial haemorrhage occurred, and in nearly 50 per cent. of cases the prematurity or atelectasis appeared to be the cause of death. Further, the mortality was actually greater in those infants where the moulding was noted to be slight or absent than in those where the moulding was marked or excessive. These figures were obtained from the records of only one of the institutions included in the list quoted above.

Lastly, a consideration must be made in the enormous variation in the apparent necessity for any interference with the pregnancy. This would no doubt be found to be most noticeable were a comparison to be made of the practices of individuals, but these figures are difficult to obtain. A comparison of the practices of different hospitals is equally instructive. All the following results are taken from the booked cases of the institutions concerned. Thus it is found that the percentage of all booked cases requiring treatment for minor degrees of disproportion:

	By Induction	By Caesarean Section
Hospital F	1.6 per cent.	0.8 per cent.
" G	3.6 "	0.3 "
" H	1.6 "	0.1 "
" I	0.25 "	No cases

It will be seen that in Hospital G fourteen times as many cases are thought to require induction of labour as in Hospital I, and that in this last hospital no case was treated by Caesarean section, whereas in Hospital F this operation appeared to be necessary in nearly one in every hundred cases seen. All these institutions are in London, they are all staffed by men and women who can be classed as obstetric specialists, and it may be assumed that there is no great variation in the size of the babies or in the skeletal structure of the mothers.

IS IT PERFORMED UNNECESSARILY?

The facts that have just been recorded can lead only to the following conclusions. Ante-natal supervision has resulted in the erroneous diagnosis of a minor degree of disproportion in an enormous number of women in whom it did not exist. As a result, unnecessary treatment by induction of labour with bougies or by Caesarean section was performed. This treatment, which is designed to save mother and child from what has been demonstrated as only a problematically difficult labour, is in itself not without danger to the mother. Further, it results in a 10 per cent. mortality to the infants, and this mortality is due not so much to the tight fit of the head as to the inability of a premature child to keep a hold on life after delivery. The facts do not of necessity signify that our treatment of this condition is wrong in its conception. It is suggested that they indicate rather that ante-natal supervision, in its anxiety to find a possible abnormality, has tended to overlook the extreme difficulty of its diagnosis and to underrate the consequences of treatment. We must ask ourselves the question "Need we induce?" not "Can we induce?"

EXTERNAL CEPHALIC VERSION

Consideration will now be given to another preventable difficulty and complication. The external cephalic version of a breech presentation is usually accepted as an undisputed triumph for pre-natal care. By this manipulation the mother can be saved from what may turn out to be a long and difficult labour, in which delivery has to be completed by manipulations which may be prolonged and dangerous. To the baby the birth as a breech presentation has added dangers in that it may die of asphyxia resulting from compression of the umbilical cord, or premature inspiration, or that the too rapid delivery of the foetal head may cause intracranial haemorrhage. Surely, then, external cephalic version cannot do anything but good?

The present teaching on the subject is, put shortly, as follows. If a breech presentation is discovered, look for a possible cause for the malpresentation. Should none be found, perform a cephalic version at any time during the last four weeks of pregnancy. If the external version cannot be done without an anaesthetic it is certainly justifiable, if not advisable, to give an anaesthetic.

This advice and teaching is followed only half-way in one direction and with too great an enthusiasm in another. It is practically never that anything but good results from a gentle version. When the patient is anaesthetized our anxiety to correct the malposition may be such that, no longer restrained by any discomfort to the patient, we may do actual harm.

During the last two years at two London obstetric hospitals some seventy-six patients were anaesthetized in pregnancy for the purpose of correcting a breech presentation. The version was successful in forty-five instances, in so far as a vertex presentation was obtained. *Only thirty-five of the babies were born alive.* The remaining ten were stillborn, usually macerated. Movements had been felt and the foetal heart heard prior to the version. In some instances the efforts to turn the baby had caused rupture of the membranes, in one woman the cord prolapsed, and on three occasions there was a brisk ante-partum haemorrhage. The foetal deaths were caused by asphyxia of the baby owing to detachment of the placenta or constriction of the umbilical cord, as a direct result of somewhat violent efforts to turn the baby. It is an ironical fact that at one of the hospitals version failed in nineteen cases, and all of these women subsequently were delivered of a healthy living child, as a vertex presentation in eight instances. Thus when external cephalic version is performed under anaesthesia there seems to be an infant mortality in the region of 13 per cent.

Gibberd* showed that the foetal death rate in uncomplicated* breech deliveries was about 28 per cent. in

* That is, not complicated by contracted pelvis, placenta praevia, pelvic tumours, etc., but including those cases in which the baby has extended legs and arms.

primiparae and 15 per cent. in multiparae, but the same institution whose ante-natal work practised the version under anaesthesia of breech presentations with an accompanying stillbirth rate of 13 per cent. delivered successfully in the last five years some seventy breech cases, with an infant mortality of only 10 per cent. In the above series about 50 per cent. of the patients were primiparae as regards both version and delivery. It is apparent, therefore, that external cephalic version under anaesthesia must be regarded as a manipulation that is not free from danger and that must not be performed with the use of any force.

The other aspect of the pre-natal care of this malposition is in the opposite direction. The two phrases "breech presentation" and "cephalic version" appear to be so intimately related in the minds of the majority of those who practise obstetrics that the real significance of the condition is generally overlooked. When the malposition is found it should first be regarded as a probable warning sign of such serious complications as a flat pelvis, placenta praevia, a pelvic tumour, etc. Instead, these possibilities are too often forgotten and overshadowed by the importance of correction. This state of affairs does not exist, for some reason or other, in the case of the transverse lie. When the child is found to lie thus it is widely appreciated that a careful search should be made for a cause, and that the correction is of minor importance.

The face presentation is hardly ever diagnosed before the onset of labour, and the pre-natal treatment of the occipito-posterior position has gone out of fashion. It may be remarked that the incidence of this position of the foetus at the commencement of labour was exactly the same at the General Lying-In Hospital, York Road, in the days when the Buist binder was carefully and regularly applied, as it has been these last few years, when the treatment has been discarded.

- ANTE-PARTUM HAEMORRHAGE

Pre-natal care can only influence the "accidental" variety of ante-partum haemorrhage in those cases that appear to be caused by a toxæmic condition. Much good work has been done in the detection of placenta praevia. In pregnancy a woman would always report to her doctor the occurrence of haemorrhage, however slight it might be, and instruction to do so is almost superfluous. Not infrequently cases of central or marginal placenta praevia are diagnosed in consequence of the discovery during a routine examination of some abnormality. The presence of a persistent malpresentation—for instance, an oblique lie of the child that resists all efforts at correction—or a breech presentation, or, again, a foetal head that will not engage, although it is known that the pelvis is normal and the baby's head not too large, all suggest the possibility of this serious complication. A final diagnosis is arrived at when a pelvic examination reveals a mass of tissue between the fingers in the vagina and the presenting part of the foetus. Radiographic methods have lately been demonstrated to be of practical assistance in establishing the site of placental implantation. Ante-natal care is doing good work in this direction, and but little criticism can be made.

CARE OF THE BREASTS

Space will not allow of more than a few passing remarks upon the last section, where pre-natal care is charged with the duty of preparing the woman for the care of her child. Like some branches of this work, the preparations for breast-feeding are either completely neglected or grossly exaggerated. Of these two evils the former is much to be preferred, as it does no actual harm. This variation in practice is largely the result of variation in teaching. The discovery and treatment of retracted nipples before the birth of the child makes all the difference between the probability and impossibility of breast-feeding. Most of the patients understand the reason that the treatment is necessary, and co-operate willingly. Excessively enthusiastic pre-natal care in this direction orders the sponging of a supposedly inactive breast alternately with hot and cold water two or three times a day, and probably, in addition, the application of some ointment or spirit to the skin of the nipple, or even the use of a nailbrush is advised. This latter practice is to be condemned, as definite physical harm can be done. In ordering such treatment no consideration can have been given to the way in which the patient's mental attitude can influence

the success or failure of breast-feeding. Excessive and unnecessary attention to the breasts in pregnancy will, in an appreciable proportion of women, produce a real antipathy to the prospect of breast-feeding. This criticism of ante-natal supervision is unnecessary to those of us who have the care of our patients throughout the whole of pregnancy, labour, and the puerperium, but is intended rather for those in charge of ante-natal clinics and who are unfortunate in that they are not given the opportunity to judge the results of their handiwork.

ATTITUDE OF DOCTOR, MIDWIFE, AND PUBLIC HEALTH AUTHORITY

Lastly, let us spend a few moments in consideration of the attitude of those who participate in this work. The patient comes first. The great majority of women realize that the supervision of pregnancy is necessary and likely to be of benefit to themselves and to their babies. The others, a small minority now, do not think about it at all, and agree to the repeated examination as a necessary evil. Midwives, like doctors, are good, bad, or indifferent. The good midwife is extremely efficient and balanced in the care of her patients in pregnancy. The indifferent or bad midwives either neglect this side of their work or load it on to the neighbouring municipal ante-natal clinic. As the success or failure of the work of these clinics is largely gauged by the numbers that attend, this too frequently is overlooked. The medical practitioner realizes that ante-natal supervision is an excellent thing. He, and the, plod along, doing the best they can in the circumstances, somewhat bewildered by the great variation in treatment of abnormalities prescribed by the obstetric experts, and greatly discouraged by the almost invariable condemnation of their efforts. As has been said before, there are good doctors and bad doctors, but it seems that too often all are assumed to be bad. The medical student usually takes an intelligent interest in the work, but, as in the other branches of his medical curriculum, he is seldom made to realize that there is such a person as a patient, who is a woman with the cares of husband and home upon her shoulders. He learns about the early diagnosis and management of toxæmia of pregnancy, and his successful diagnosis of twins or a breech presentation gives him great satisfaction. His sense of proportion becomes more balanced when he starts his practice.

The public health authorities, in their extremely worthy efforts to educate the prospective mothers of the country, have undoubtedly exaggerated—in some instances grossly—the benefits that can accrue from ante-natal supervision. Instead of stating the facts somewhat as follows: "Attend the ante-natal clinic, and you may thereby hope to prevent some of the abnormalities that may occur in your confinement," the propaganda has rather been upon the lines, "Attend the ante-natal clinic, and you will thereby ensure for yourself a normal pregnancy, labour, and puerperium." The clinic is tending to become inviolable. Should something untoward happen in the labour, or puerperium, or even in the pregnancy for that matter, and the family doctor is called in, he too often receives, entirely undeservedly, any censure that is meted out by the family for the subsequent illness or death of the mother or child.

CONCLUSION

Those who practise the art of midwifery have seen that ante-natal supervision as it is being done to-day cannot accomplish all, nor yet half, what has been claimed for it. The pendulum has swung too far. The search for the abnormal has masked the preservation of the normal, and the pregnant woman receives a mixed blessing. There is probably more significance than was intended in the words of the Final Report of the Departmental Committee on Maternal Mortality: "It is essential that ante-natal care should reach the highest possible standard of excellence."

REFERENCES

- ¹ Young, J.: *Proc. Roy. Soc. Med. (Sec. Obst. and Gynaec.)* 1929, xxii, 27, and 1932, xxv, 39.
- ² Gibberd, G. F.: *Lancet*, 1931, ii, 520, and ii, 576.
- ³ Browne, F. J.: *Ibid.*, 1932, ii, 1.
- ⁴ Gibberd, G. F.: *British Medical Journal*, 1931, ii, 369.

Clinical Memoranda

A CASE OF MIXED LEUKAEMIA

Cases of "mixed" leukaemia are rare, and although there may be some doubt as to the correctness of the terminology, they are of considerable clinical and haematological interest.

The patient, a woman aged 28, gave a history of having had an attack of "influenza" in March, 1928, from which she never fully recovered; weakness and lassitude persisted, and in December, 1928, pallor was noticed by her relatives. On June 14th, 1929, she had an attack of tonsillitis, followed by right basal pneumonia, jaundice, and albuminuria. The temperature became normal in seven days, and no further rise occurred. A short time afterwards she developed a laryngeal cough and dyspnoea, and the cervical lymph glands became enlarged.

On August 1st, 1929, anaemia was marked, and there was general enlargement of all the superficial lymph glands. The liver was palpable two inches below the costal margin, and the spleen three inches below the costal margin. There was no jaundice or petechiae. The blood count was: haemoglobin, 20 per cent.; red cells, 1,800,000 per c.mm.; white cells, 494,000 per c.mm.; colour index, 0.5. In stained films normoblasts and polychromatic and punctate basophilic red cells were frequently encountered, with an occasional red cell containing Howell-Jolly bodies. Many macrocytes were present. A differential count of 8,000 leucocytes was:

Small lymphocytes	...	372,723 per c.mm.	75.45 per cent.
Large lymphocytes	...	55,575	" " 11.25 " "
Polymorphs	...	21,489	" " 4.35 " "
Eosinophils	...	494	" " 0.1 " "
Basophils	...	247	" " 0.05 " "
Monocytes	...	494	" " 0.1 " "

Myelocytes (including pro- and meta-myelocytes):

Neutrophil	...	23,465 per c.mm.	4.75 per cent.
Eosinophil	...	1,482	" " 0.3 " "
Basophil	...	741	" " 0.15 " "
Myeloblasts	...	14,326	" " 2.9 " "
Normoblasts	...	2,964	" " 0.6 " "
		494,000	100.00 " "

The percentage of oxidase negative cells corresponded closely to the lymphocyte count.

The patient died on August 22nd, 1929. Necropsy was not allowed.

The criteria of a diagnosis of "mixed" leukaemia were laid down by Browning¹ and Von Domarus.² They considered that such a diagnosis could only be justified if, in the organs, hyperplasia of both myeloid and lymphoid tissue occurred side by side, and that this hyperplasia occurred simultaneously. These standards could not be satisfied, but this does not detract from the clinical interest of the case. The history does not correspond to the blood findings. The short history of glandular enlargement—ten weeks before death—suggested an acute leukaemia, but the basic blood picture was that of a chronic lymphatic leukaemia. There was no evidence of sepsis on August 1st to account for the marrow reaction, nor is it recorded that such a degree of myelocythaemia with the large number of myeloblasts and normoblasts seen in this case occurs in sepsis.

That cases of true mixed leukaemia do occur is undoubted. Logeſeil,³ reviewing the cases published up to 1924, states that:

"Although myelocytes may be found in the blood when any great demand is put on the bone marrow, promyelocytes and myeloblasts never appear unless there is a definite specific stimulation of the bone marrow or extramedullary organs, such as is found in myeloid leukaemia. The same can be

said in reference to the lymphocytes in myeloid leukaemia, for although lymphocytes are found in the blood the immature forms are not found unless there is stimulation of the lymphatic tissue similar to that producing the activity of the myeloid tissue."

Generally speaking, I think these statements true, and it is a matter of surprise and speculation that the various leukaemias, acute and chronic, should be so sharply defined in their blood pictures and histology. Whatever the cause of leukaemia, the abnormal state appears to be specific for each type of haemopoietic tissue in the vast majority of cases, and it is reasonable to suppose that in cases of mixed leukaemia two such states are present, as they appear to have been in this case.

Pathological Department,
Wigan Infirmary.

W. E. COOKE, M.D.,
M.R.C.P.

EXTENSIVE DIPHTHERITIC PARALYSIS WITH COMPLETE RECOVERY

The following record of an unusually severe case of diphtheria may interest some members of the profession, as it indicates to what extremes a patient may develop diphtheritic paralysis and yet recover completely. At the same time I set forth the medicinal treatment which was given, and would particularly draw attention to the dose of diphtheria antitoxin which was administered when the patient was in *extremis*. I do not claim that at such a very late stage of diphtheria credit can be given to this dose, but certainly there was a very rapid clearing up of the various types of paralysis within a few days of the injection.

The patient, a girl of 13, was admitted to Clifton Hospital, Brighouse, on November 15th, 1933, as a severe case of faucial diphtheria in her fifth day of illness. Her previous history of infectious diseases was that she had had scarlet fever, measles, chicken-pox, and whooping-cough. The present illness dated from November 11th, when she had sore throat and nasal discharge: enlarged neck glands were also noted at this time. On admission she was found to be of good muscular development and well nourished. Her skin was free from rash. The neck was considerably enlarged on both sides, with tissue infiltration of the "bull-neck" type. The tongue was coated, the fauces very inflamed, and the tonsils enlarged and practically meeting in the middle line, pushing forward the uvula. Membrane covered the front of the tonsils and uvula, and one surmised that there was a considerable amount on the posterior aspect of the swollen tonsils. The heart sounds were good, but there were occasional missed beats. The lungs showed nothing abnormal. The temperature was 97.6° F., pulse 80, and respirations 22. The family practitioner mentioned the very rapid extension of membrane, and at the earliest opportunity had injected 32,000 units of diphtheria antitoxin. In hospital, on admission, I gave 18,000 units of antitoxin intravenously, and 30,000 units intramuscularly. The total dose of serum by the fifth day was therefore 62,000 units intramuscularly, and 18,000 intravenously.

From this time her illness took the following course.

Sixth Day.—Slight rise of temperature to 99° F.; pulse 110; respirations 28. One drachm of brandy given four-hourly.

Seventh Day.—Slight vomiting of light-brown-coloured fluid. Maximum temperature 99.6° F.; pulse 120; respirations 28. Peptonized milk given. Taking fluids well. Brandy discontinued; camphor in oil, 1 c.cm. (1½ grains in 1 c.cm.) substituted eight-hourly.

Eighth to Twelfth Days.—Temperature subnormal to normal; pulse rates diminishing from 110 to normal; respiration rates diminishing from 32 to normal. Vomiting gradually ceased. Taking fluids well. Camphor in oil discontinued on tenth day.

Thirteenth Day.—Extrasystoles detected after every eighth or tenth beat. Temperature normal; pulse 80; respirations 20. Taking a little bread-and-butter, chicken tea, and chicken jelly.

¹ Browning, C.: *Lancet*, 1905, i, 507.

² Von Domarus: *Folia Haematol.*, 1908, vi, 357.

³ Logeſeil, R. C.: *Arch. Int. Med.*, 1924, xxxiii, 684.

Fourteenth Day.—Extrasystoles less marked. Pulse rate still 80.

Fifteenth Day.—Cardiac beats regular. Pulse rate 80.

Sixteenth Day.—Fairly satisfactory. Eating more.

Seventeenth Day.—Pain in left shoulder extending down back of left arm; nothing definite to detect; ung. iodox applied.

Eighteenth Day.—Temperature slightly subnormal; pulse 100; respirations 22. Nasal intonation, and defective movement of soft palate.

Nineteenth to Twenty-First Days.—Fairly satisfactory apart from palatal paralysis.

Twenty-Second Day.—Temperature slightly subnormal; pulse 98; respirations 22. Duplication of first sound at apex, and occasional hurried beats. Liq. strych. hydrochlor. prescribed—1 minim three times a day.

Twenty-Second to Twenty-Sixth Days.—Cardiac beats at first very irregular, but later more regular. Liq. strych. increased to $1\frac{1}{2}$ minims three times a day.

Twenty-Seventh Day.—Cardiac beats still more regular. Liq. strych. increased to 2 minims three times a day. Pulse rate during last few days about 100.

Twenty-Seventh to Thirty-Second Days.—Cardiac beats steadier. Pulse rate still about 100.

Thirty-Third Day.—Cardiac beats regular, but marked pulmonary systolic murmur. Pulse 94.

Thirty-Fourth to Forty-Second Days.—Pulse rate varying from 92 to 100, but quite regular. Liq. strych. discontinued.

Forty-Second Day.—Paresis of lower limbs; absence of knee-jerks; defective sensation; complained of "pins-and-needles" in hands; partial loss of co-ordination in upper limbs. Abdominal reflexes +. Still very nasal. Liq. strych. recommenced with $1\frac{1}{2}$ minims three times a day.

Forty-Second to Forty-Fifth Days.—Condition remained as above.

Forty-Sixth Day.—Complained of double vision; no evidence of squint. Coughing after food, with tendency to regurgitation, indicating paralytic involvement of pharynx.

Forty-Seventh to Forty-Ninth Days.—Coughing more pronounced after food.

Fiftieth Day.—A few moist rales in chest. Ordered frequent changes of position. Liq. strych. increased to 3 minims three times a day.

Fifty-First Day.—Difficulty in breathing; numerous adventitious sounds in chest. Later in day diaphragmatic paralysis with considerable difficulty in breathing. Extraordinary muscles of respiration brought into play, with a tendency for these to fail at times. Heart sounds at first regular and good, but later very feeble. Patient in *extremis*. Frequent vomiting. Liq. strych. discontinued, as patient unable to swallow. Camphor in oil substituted, 1 c.cm. every four hours. Kataplasma kaolin applied to chest.

Fifty-Second Day.—Condition as above, with cessation of breathing at times. Frequent vomiting. Glucose enemata administered. Incontinence of bladder and bowels; 12,000 units of diphtheria antitoxin injected intramuscularly, patient first desensitized with 0.5 c.cm. dose, and remainder given after four hours.

Fifty-Third Day.—Condition remaining the same.

Fifty-Fourth Day.—Paralysis of right external rectus muscle of the eye; defective reaction of both pupils to light and on accommodation. Paralysis of neck muscles. Vomiting ceased. No difficulty in swallowing. Taking a little fluid. Camphor in oil discontinued.

Fifty-Fifth Day.—Soft palate showing movement. Nasal intonation somewhat improved. Power of respiratory muscles regained; breathing quietly and normally. No difficulty in swallowing. Taking more fluid. Control over bladder and bowels. Heart sounds good.

Fifty-Fifth to Sixty-Sixth Days.—All forms of paralysis gradually cleared up, and from this time until her discharge from hospital on March 10th, 1934, in her one hundred and twentieth day of illness she did well, apart from a slight follicular tonsillitis on her ninety-third day.

To sum up, in this case there was definite evidence of paralysis of the palate, lower limbs, pharyngeal muscles, muscles of respiration, external muscle of the right eye, and neck muscles, with partial paralysis of the cardiac muscle, muscles of the upper extremities, and ciliary muscles of the eyes, or iris, and, possibly, although one cannot be definite, paralysis of the oesophagus and sphincters of the bladder and bowel. On discharge she had completely recovered, and all that could be detected was a faint pulmonary systolic murmur, possibly of a haemic nature.

JAMES B. SAMSON, M.D., D.P.H.,
M.O.H. Brighouse, and Medical Superintendent,
Brighouse Joint Hospital Board.

Reviews

DISEASE AND HEREDITY

Last year the Buckston Browne prize was awarded to Dr. L. S. PENROSE; and his prize essay, slightly amplified, has now been published under the title of *The Influence of Heredity on Disease*.¹ It is an important and valuable study on a subject a knowledge of which becomes more and more indispensable to the medical practitioner. It cannot be described as exactly simple and elementary, but to those who have a fair acquaintance with biological principles and some knowledge of medicine and of genetics it forms as good an introduction to a further understanding of the relations between these last two spheres as could be obtained. It is arranged in four sections. The first deals historically with the development of genetical concepts, tracing them through Lamarck and Darwin, Mendel and Galton, to Haldane and Hogben. This survey is brief yet clear; and we find in it an illuminating illustration of the havoc played by scientific discovery on Sedgwick's statement that "leprosy is a thoroughly hereditary disease," and a well-timed destructive criticism of the popular beliefs that types of inheritance other than the Mendelian play an important part in human genetics, and that nature eliminates tainted stocks by increasing the severity of the taint in succeeding generations.

In the second section modern methods of research in human genetics are discussed, with special reference to disease, and in the third section examples of genetical analysis by such methods are detailed. Readers without knowledge of mathematical methods and reasoning may not be able, except by considerable effort, to follow this analysis, but the intelligent reader can scarcely fail, in any case, to realize the main points illustrated, the complicated nature of the relevant data, the pitfalls into which the unwary may so easily stumble, and the great practical importance, both negative and positive, of the results which may, with due care, be regarded as reasonably established. These results and conclusions are summarized in a final section. As the author says: "Few members of the medical profession have, at the present time, appreciated their full implications." We are reminded how extremely tempting it is to assume, when no cure for a disease is known, that its origin is hereditary, but that "it is not sufficient to establish the fact of the occurrence of a disease in various members of a family group in order to prove that the disease in question is hereditary," and that "statements ascribing indefinite hereditary causes to pathological conditions before a proper analysis has been made are misleading and liable to retard the progress of serious research." The relative influence of environment and heredity must be continually borne in mind. Even though the results of recent research in this field have been brilliantly successful, and even though there is every prospect that reliable data will become more and more available, "generally speaking, it is unwise to be unduly optimistic about the results of eugenic measures in medicine. There is no short cut to the control of the common scourges of humanity: . . . even though heredity may be an important aetiological influence in all of them." It is only in a few conditions in which the method of transmission is definitely known—and particularly in respect of dominant autosomal and all sex-linked characters causing severe disease—that "it may reasonably be held that prevention of offspring is a sound prophylactic measure."

¹ *The Influence of Heredity on Disease* By L. S. Penrose, M.A., M.D. London: H. K. Lewis and Co., Ltd. 1934. (Pp. vii + 80; illustrated. 5s. net.)

REMEDIES FOR SYPHILIS

The excellent little book entitled "Anti-syphilitic Remedies" was written for the Belgian Scientific Library, evidently as one of a series of short works on medical subjects. Originally, Dr. R. WAUCOMONT was to have written the articles on arsenobenzol and bismuth, whilst Professor F. HENRIJEAN undertook that on mercury. Unfortunately, however, the latter died before the work was complete, but his collaborator obtained the original manuscript on the mercurials, annotated it, and so produced the full work.

The whole subject has been condensed into 184 pages, so that no complete study was possible, but the authors have concentrated mainly on the action of these remedies on spirochaetes and on the tissues, the normal and pathological reactions they produce, and the methods of dealing with the latter. The book falls into three sections—on arsenobenzol, bismuth, and mercury respectively. That on arsenic is the best. The pros and cons of the various preparations are well set out, some preference being shown for silver salvarsan as on the whole the most efficient. The question of such subjects as arseno-resistance and accidents due to salvarsan are most aptly discussed, while the cause of neuro-recurrences is definitely ascribed to too little arsenobenzol and not to too much. Bismuth and mercury are both more than adequately dealt with, and a leaning is shown towards the view that in recent times the latter has been rather overshadowed by the former, to the detriment of the patient. Not everyone will agree that the combination of arsenic and mercury is generally preferable to arsenic and bismuth, but that is a matter of opinion: the author does not favour concurrent treatment, but prefers to give a course of one drug followed by a course of another. The action of the three drugs, their absorption, elimination, indications, and contraindications, and the complications which they may cause, are all very clearly put in a fashion intelligible to tyro and expert alike. No section on iodides is included.

All who have to do with the treatment of syphilis, and consequently with the use of arsenobenzol, bismuth, and mercury, should make a point of reading this very valuable work. Nowhere else can be found so much reliable information on the subject condensed into such a small space. Those who cannot read French will be the poorer till an English translation appears—a consummation much to be desired. The work is well documented, references being given at the foot of the page.

HYPERTENSION AND NEPHRITIS

The third edition of Dr. A. M. FISHBURG's work on *Hypertension and Nephritis*² follows with but little delay the previous edition in 1931, and, being essentially a wide review of recent advances, has been much and well revised. As is natural from the author's close association with the Mount Sinai Hospital, New York, the influence of Dr. Emanuel Libman and his other colleagues is obvious, and is gracefully acknowledged. The earlier chapters deal with more general aspects, such as disordered renal function and tests for its estimation, albuminuria, oedema, and normal blood pressure, before going on to the consideration of the nephritides and the nephroses. Among the additions is a discussion of the part played by the pituitary, and especially by Cushing's basophilism, in the causation of essential hypertension, and here the cautious decision of "as yet unproven" is

adopted. With regard to the normal limits of blood pressure, the author considers systolic pressures above 150 and diastolic pressures of 100 and more millimetres to be pathological, and concludes that the typical blood pressure in healthy adults does not change with advancing years, but that in the older age groups there are more individuals with blood pressures approaching the upper limit of the normal, and that this elevates the average blood pressure; this carefully italicized dictum may at first sight appear to be rather a fine distinction, but it is probably sound. The structural change characteristic of the malignant phase of essential hypertension is stated to be the addition of necrosis and endarteritis of the renal arterioles; this is based on the examination of twelve cases by Dr. Klemperer at the Mount Sinai Hospital. The treatment of essential hypertension, which is admitted to be "one of the many unsatisfactory chapters in therapeutics," is considered in detail, and the volume closes with a section on renal and hypertensive disease in pregnancy.

YEAR BOOKS OF PRACTICAL MEDICINE

We have received the complete Practical Medicine Series of the 1933 Year Books, issued by the Year Book Publishers, Inc. (304, South Dearborn Street, Chicago), and obtainable in this country from H. K. Lewis and Co., Ltd. (Gower Street, W.C.1). This series, now in its thirty-third year, consists of ten volumes, devoted respectively to: general medicine; general surgery; urology; eye, ear, nose and throat; paediatrics; obstetrics and gynaecology; general therapeutics; neurology and psychiatry; dermatology and syphilis; and radiology. The material comprises a series of abstracts from current literature dealing with various aspects of each subject, and should prove useful for reference purposes. The volume entitled *Obstetrics and Gynaecology*, edited by Drs. Joseph B. DeLee and J. P. Greenhill, is some 600 pages in length, and includes a brief but good selection from the literature on pregnancy diagnosis by biological tests. There are frequent editorial annotations throughout the remainder of the text, the expression "Rah! Rah!" being at one point wrung from one editor as a favourable comment on the low cervical method of Caesarean section. *Urology* has a short editorial introduction by Dr. J. H. Cunningham, in which the need is emphasized for correlating genito-urinary disease with that in other parts of the body: reference is also made to the increased employment of caudal and regional anaesthesia. This volume is 430 pages in length. In *Eye, Ear, Nose and Throat* (600 pages), edited by Drs. Brown, Bothman, Shambaugh, and Hagens, all subjects are well covered, and occasional commentary is made in the text. Dr. Evarts A. Graham, who is responsible for *General Surgery*, remarks in his preface upon the increasing attention which is being paid to thoracic surgery in America. Other subjects singled out for mention are the use of mercurochrome, biopsy in suspected cancer of the breast, gastrostomy by the Janeway method, and the results of surgery in adenoma of the islet tissue of the pancreas. *Dermatology and Syphilology*, edited by Drs. Fred Wisé and Marion B. Sulzberger, is pre-eminently practical, special attention being devoted to such subjects as acne vulgaris, allergic manifestations, eczema, etc. A considerable amount of current foreign literature has been covered, and the supplementary bibliography provides opportunities for further exploration. Drs. P. Bassoe and F. G. Ebaugh are responsible for *Neurology and Psychiatry*. Among other things, they call attention to recent work on the Argyll Robertson pupil; to the continued disagreement on the treatment of head injuries in respect of lumbar puncture, hypertonic solutions, and indications for operation; to fever therapy; and to investigations on the endocrine

² Les Médicaments Antisyphilitiques. Par F. Henrijean et R. Waucumont. Paris: Masson et Cie. 1933. (P. 186. 20 fr.)
¹ Hypertension and Nephritis. By A. M. Fishberg, M.D. London: Baillière, Tindall and Cox. 1934. (Pp. 668; 40 figures. 52s. 6d.)

glands in relation to nervous disease. This volume is well illustrated, and runs into 433 pages. In the preface to *General Therapeutics* the editor, Dr. B. Fantus, mentions the recent change in views regarding the intimate mode of action of nerve-muscle poisons, and the use of acetyl- β -methylcholine as a parasympathetic nerve stimulant. Other aspects of therapeutics include bacteriophage; convalescent serum in poliomyelitis and septic scarlet fever; mercurial diuretics and calcium in thrombophlebitic oedema; glycocholl in myasthenia; dinitrophenol (with a warning); duodenal tube siphonage in acute intestinal obstruction; and, finally, the use of injection treatment in hernia and pruritus ani. This volume consists of 439 pages and includes a section on physical therapy.

EVERYDAY MEDICINE

General practitioners will welcome Professor BARKER'S book on the *Treatment of the Commoner Diseases*,⁴ and those of the older generation who are familiar with, and admirers of, the writings and work of Osler will read with special interest this work of his successor.

The book is based upon a series of ten post-graduate lectures delivered in Ohio in the autumn of 1933, in which the author makes no pretence of discussing fully and completely any topic, but claims his freedom to make comments on any subject he considers "pertinent to general practice." Thus the book embodies the personal opinions of one who speaks with authority from long experience, and one who has read widely. The extent of his reading may be judged from the fact that within the compass of some 300 pages there are references to more than 1,000 authors.

The first chapter deals with advances in the methods of studying patients, and Dr. Barker notes in particular that studies in heredity have thrown new light on the "human constitution." He accepts the classification of constitutions on the basis of Kretschmer's work on physique and character—in which character formation as well as bodily structure are taken into account—distinguishes four main groups, and indicates how the practitioner may be helped through familiarity with these types to a better understanding of his patients and their predisposition to physical and mental disorders. The importance of the social, economic, and psychological conditions of the patient are not forgotten, and the practitioner is reminded that the problem of treatment has in many cases to be solved in relation not to a single disease, but to a group of disorders. Dr. Barker shares the view of many of his fellow countrymen that periodic health examinations are of very great value in the prevention and early detection of disease. In this respect he is preaching to the unconverted, for practitioners in this country have been slow to recognize the importance of such examinations.

The subsequent chapters deal with a considerable number of the commoner diseases, together with some rarely met with in general practice and a few surgical conditions. Several chapters begin with a short account of recent advances in knowledge, and this forms a valuable introduction to the treatment of the diseases that follow. The general excellence of the articles in which the treatment is discussed with a moderate degree of fullness makes it difficult to single out any for special mention, but note might be taken of the chapter dealing with circulatory diseases and that treating of metabolic and endocrine disorders.

In fairness it must be stated that there are some notable omissions in this book, and that several im-

portant diseases receive insufficient attention. For example, in the chapter on respiratory diseases chronic bronchitis and emphysema are not even mentioned, and the references to pleural inflammation, acute bronchitis, and bronchopneumonia are too short to be adequate. Again, the ketogenic diet treatment of chronic pyelocystitis is dismissed in a line and a half, and the new drugs, atabrin and plasmoquine, used in the treatment of malaria, receive no mention. Further, it seems unnecessary to insist that uncomplicated cases of measles should be compelled to rest in bed for two weeks after the temperature has become normal. These defects, however, scarcely detract from the merits of the book as a whole, which is clearly and interestingly written, and contains much of considerable value for the practitioner who seeks to keep up to date, for throughout the volume there is a skilful blend of the older well-tried methods with the best modern therapy. Among the numerous remedies advocated there are some little known to practitioners in this country, to whom, too, American nomenclature is sometimes strange. Of these may be mentioned Schlesinger's solution, of the value of which in hopeless cancer cases Professor Barker speaks enthusiastically. It is interesting to note that in several wasting diseases the use of insulin is advised to promote appetite and gain in weight.

This is a book that meets the need of the general practitioner and deserves a wide circulation.

Notes on Books

Dr. O. LEYTON has now published a fifth edition of his little book, *Diagnosis and Treatment of Diabetes Mellitus*,⁵ which first appeared in 1917 and which has been noticed on more than one occasion in these columns. The preface to the new edition ends with the following words: "If the patient will not submit to occasional examination of the blood, all that the physician can hope to do is to retard the progress of the disease. It is not a bad custom to tell the patient who refuses to follow the advice of his physician that it would be wise for him to seek a physician who will give him advice which he can follow."

The plan of *Clinical Contraception*,⁶ by GLADYS M. COX, follows lines that have now become stereotyped in works on birth control. This is a pity, for the author has valuable and original observations to make, and makes them well. As medical officer to two of the largest birth control clinics in this country, she has had a vast experience of imparting birth control instruction and adapting contraceptive appliances to working women; and from the lucidity and orderliness of her exposition in the chapter dealing with occlusive pessaries (as well as in her evaluation of contraceptive devices for normally and abnormally formed women) it is evident that this experience has been assimilated very thoroughly. But in pursuit of an in fact unattainable completeness—an account that should omit nothing which any other writer on the subject may have considered worth mentioning—the author introduces snippets of material (mainly quotations from, and summaries of, original papers) on the chemistry of contraception, hormonal and spermatoxic sterilization, and intrauterine appliances, the clinical significance of which is highly dubious, or at least is seldom sufficiently brought out in the text. These matters are important enough to be discussed as thoroughly as Dr. Cox discusses the practical matters that have come within her very wide experience, or not at all. Wherever the book is concerned strictly with the subject-matter of its title the methods described are those favoured by leading authorities in this country and America.

⁵ *Diagnosis and Treatment of Diabetes Mellitus*. By O. Leyton, M.D., D.Sc., F.R.C.P. Fifth edition. London: Adlard and Son, Ltd. 1934. (Pp. 144. 6s. 6d. net.)

⁶ *Clinical Contraception*. By Gladys M. Cox, M.B., B.S. With an introduction by Lord Horder. London: William Heinemann (Medical Books) Limited. 1933. (Pp. 174. 7s. 6d. net.)

⁴ *Treatment of the Commoner Diseases*. By Lewellys F. Barker, M.D. London: J. B. Lippincott Company. 1934. (Pp. 319. 12s. 6d. net.)

In succession to the three volumes containing the addresses delivered at the fourteenth Concilium Ophthalmologicum at Madrid a year ago, to which reference was made in these columns (1933, i, 1121), five supplementary ones have now been received. The first contains the shorter communications made and the discussions which ensued relative to one of the main subjects considered by the Concilium—namely, retinal detachment. Each is published in the language in which it was delivered, and the tome is fully illustrated with photographs, charts, and diagrams. The second volume includes the special contribution prepared for the congress by Professor Ramón y Cajal, and deals with the histological and physiological problems of the retina. With this is associated a reprint of his monograph on the retina of the vertebrates in view of its great historic importance and the fact of its having been out of print for so long. The author has taken this opportunity to bring the work up to date, and to interpolate in the text illustrative diagrams from his later writings. The third volume comprises the transactions in the course of the congress of the two international organizations concerned respectively with the campaign against trachoma and the prevention of blindness. In the case of the first it was decided that the executive committee would hold a meeting at Budapest in June, 1934, and that there would be a plenary meeting of delegates in 1935 in Holland or Switzerland. In addition to articles on certain scientific aspects of trachoma, there are contributions on the progress being made against the disease in Poland, Spain, and Algeria. In the latter part of this volume the report of the meeting of the International Association for the Prevention of Blindness includes a survey of the more striking advances in different countries, and a classification of the causes of blindness suggested by Professor Marquez. A discussion followed, to which Mr. Bishop Harman and Dr. Ballantyne of Glasgow contributed. These five volumes represent a notable addition to ophthalmological literature, especially taken in conjunction with the three previous ones on tuberculosis of the iris and ciliary body, retinal detachment, and trachoma.

Preparations and Appliances

A RADIUM HOLDER FOR GYNAECOLOGICAL WORK

Dr. SYLVIA D. BRAY, M.B., B.S. (Radium Registrar, Sydney Hospital, Sydney, N.S.W.), writes:

The following is a brief description of a radium colpostat which I have made for applying well-screened radium to the vaginal fornices.

It is made of: (1) two bored rubber corks, such as are used in drop-anaesthetic bottles; (2) tinned copper wire, of such thickness that it is rigid but is easily bent. The wire is

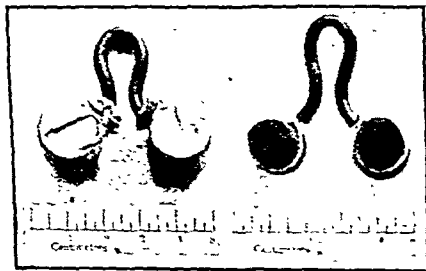


FIG. 1.

FIG. 2.

Colpostat ready for use. Apparatus unprepared.

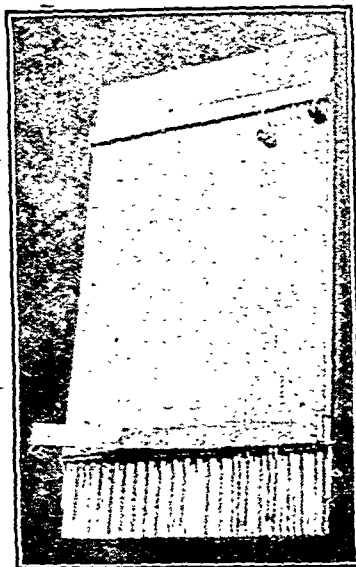
about 4 to 5 inches long, and is fixed around each cork in a groove; the handle part of the wire is covered by thin rubber tubing before attaching it to the corks. When the radium is *in situ* the corks are covered with rubber dam to cut off the secondary irradiation from the wire.

This apparatus can be contrived in a few minutes, and may be made of any size to fit any vagina and fornices. The wire handle part is especially useful, for by packing gauze over and under this the corks are kept firmly in position.

STERILIZING TRAY FOR RADIUM NEEDLES

Dr. J. MERVYN THOMAS (Cardiff) writes:

As Radium Registrar to the National Radium Centre for Wales, at Cardiff, my attention has frequently been called to the minor but oft-recurring troubles attending the sterilization of radium needles. Such methods now existing involve linen cloths, etc., and only lead to the entanglement of the threads. I therefore suggest the following tray, which fulfils the needs required and may serve a useful purpose in hospitals where radium is available.



It consists of a copper tray about 12 by 6 inches, one end of which is corrugated to hold the radium needles and the other end fitted with a metal handle. About 1½ inches from either end there is a spring clip to fasten the threads securely to a slotted narrow strip. The whole is chromium-plated, and can be placed direct in the sterilizer without fear of (a) bending the needles, (b) entangling the threads.

I am indebted to Mr. Smith, our engineer, for producing this apparatus to my design.

SYRUP MINADEN

Syrup minadex is a "tonic" mixture prepared by the Glaxo Laboratories (56, Osnaburgh Street, N.W.1). It contains vitamins A and D in amounts equivalent to more than an equal volume of cod-liver oil. It also contains a mixture of minerals. Each fluid drachm contains 1/4 grain iron, 2 grains of calcium glycerophosphate, and small quantities of copper and manganese. The syrup has a sweet and pleasant taste, and is particularly suitable for infants and children.

"GLUCOTEST OUTFIT" (B.D.H.)

The British Drug Houses (Graham Street, London, N.1) have introduced a new reagent for the determination of sugar in the urine, and have put up an outfit consisting of three test tubes, a 2 c.cm. and a dropping pipette, together with a 50 c.cm. bottle of "glucotest" solution, test-tube holder, and spirit lamp—price complete, 12s. 6d. The advantage of the solution is that it gives a finer end-point in titration than does the familiar Benedict's solution. A powder is also provided to eliminate "bumping" during boiling and to make the colour change from dark blue to white more definite at the end-point. Two c.cm. of the reagent with 1/2 grain of the powder is transferred into a test tube, urine being added drop by drop from a pipette to the boiling contents. The amount of glucose in the sample is inversely proportional to the number of drops required for the titration, and a table is provided from which the sugar content can be read off in either grains per ounce or percentage. In the case of urine with a high percentage of sugar more accurate results can be obtained by diluting the specimen. The test is easily and quickly performed, and is simple enough to be carried out with success and accuracy by laymen. Parts of the outfit may be purchased separately—for example, a 50 c.cm. bottle of glucotest solution, allowing of twenty-five separate tests, costs 4s. 6d., the pipettes being 1s. 3d. each.

THE NUTRITION QUESTION

AN AGREED REPORT

A notice appeared in the *British Medical Journal* of January 27th (p. 161) from the Secretary to the Ministry of Health saying that a conference had been arranged between physiologists representing the Nutrition Advisory Committee of the Ministry of Health and the Nutrition Committee of the British Medical Association. The conference met on February 6th and 27th, and the following members took part in the proceedings:

Prof. E. P. Cathcart, M.D., D.Sc., F.R.S.	Representing the Minister's Advisory Committee.
Sir F. G. Hopkins, M.B., Sc.D., F.R.C.P., P.R.S.	
Prof. E. Mellanby, M.D., F.R.C.P., F.R.S.	Representing the British Medical Association's Committee.
Prof. S. J. Cowell, M.A., M.B., M.R.C.P.	
G. P. Crowden, M.Sc., M.R.C.S., L.R.C.P.	
Prof. V. H. Mottram, M.A.	
G. C. Anderson, M.D., Medical Secretary, B.M.A.	Joint Secretaries
H. E. Magee, M.B., D.Sc., Ministry of Health.	

At the first meeting Sir Frederick Hopkins was unanimously elected chairman. The conference discussed the differences which appeared to exist between the views of the two committees in regard to the amounts of energy-giving foods and first-class protein appropriate as a basis for suitable diets, and, having come to agreement on these points, issues the following report.

REPORT OF JOINT CONFERENCE

The business before the conference was to consider whether any important differences existed between the recommendations of the Ministry's committee, as stated in its memorandum "The Criticism and Improvement of Diets," and those of the British Medical Association's committee, as outlined in its special Report on Nutrition,¹ and, if so, to determine the significance of such differences.

After examination of the position it became clear to the conference that the divergencies were more a matter of misunderstanding and misinterpretation than of actual fact.

In the first place, it is desirable for a proper understanding of the position that the nature and objectives of the two committees should be made clear.

The Ministry's committee is a permanent advisory body, first appointed in January, 1931, by the then Minister of Health, Mr. Arthur Greenwood. The duties of the committee are to advise the Minister on the practical application of modern advances in knowledge of nutrition. The committee consists of workers with a special knowledge of nutrition, who, as occasion demands, place their scientific knowledge at the disposal of the Minister and his staff to assist him and his department in administrative action. It does not possess any authority, nor does it attempt to give advice on economic matters. In its memorandum "The Criticism and Improvement of Diets" the committee recommended 3,000 calories and 37 grams of first-class protein, or thereabouts, as adequate to supply the needs of the average "man" of the entire population of the country. These recommendations were intended as a rough guide to medical officers of health so as to assist them in placing the nutrition of communities and institutions under their charge on a proper basis. These values, being statistical averages, were meant to be applied to

whole communities, and not to individuals or even to single families. It is in this respect that the purpose of its recommendations differed most markedly from those published by the British Medical Association's committee.

It is necessary also to point out that the responsibility for these and other recommendations made by the Advisory Committee belongs to the members of the committee entirely, and not to the Ministry of Health; and, further, that in the above-quoted memorandum no recommendations of an economic nature were put forward.

The British Medical Association's committee, on the other hand, is not a permanent body, but was a special *ad hoc* committee assembled for a specific purpose—"to determine the minimum weekly expenditure on food-stuffs which must be incurred by families of varying size if health and working capacity are to be maintained, and to construct specimen diets."

The terms of reference thus involved a task of a financial nature, but in order to discharge this the committee had to decide on the food allowances necessary to maintain health and working capacity. In coming to a decision it thought naturally of unemployed men and their families, and bore in mind that many unemployed spend a good deal of their time working on allotments, going to and from labour exchanges and places of employment in search of work, or else in keeping themselves in good physical condition by daily exercise in training centres. And since the food requirements of the individual depend on the amount of physical exercise taken, the committee felt justified in recommending 3,400 calories and 50 grams of first-class protein per "man equivalent" as essential to maintain the health and working capacity of a family of this type. The committee regarded these figures as sufficient to cover a wastage of 10 per cent., but did not suggest that they should be applied to the population as a whole, or even to communities or institutions. It can thus be seen that, whereas the British Medical Association's committee confined its attention to single active families, the Ministry's committee had in view communities of people many of whom lead comparatively inactive lives.

The conference considers it important to emphasize the fact that nutrition and dietetics, dealing as they do with physical and chemical changes inside the body, most of which are imperfectly understood, cannot be considered exact sciences. The calorie is merely a convenient unit for measuring the energy content of food and the energy output of the body. Furthermore, it must be clearly recognized that, owing to individual differences in physique, personal habits, likes and dislikes, and the variations in the degree of muscular effort involved in different occupations, it is not only impossible to define, but also there does not in fact exist, any standard of food requirement which can be rigidly applied to all men alike. If such a standard were defined and universally applied, it would at once be found that, while some individuals were satisfied, others would have either too much or too little. The amount of physical work, housing conditions, clothing, climate, and personal characteristics are factors influencing the need and desire for food which have to be considered when dealing with individual men.

It appears, therefore, that a workable solution of the problem of physiologically desirable dietary standards for individuals can only be found in a sliding scale of calorie needs based on age, individual physique, occupation, and habits. On the other hand, in the case of mass calculations of the total food requirements of the population as a whole, where the question of distribution to individuals or purchasing by single families does not arise, or in the case of communal feeding, the difficulty of the standard ration being suited to the needs of each

¹ *British Medical Journal Supplement*, November 25th, 1933.

individual is largely overcome by the give and take in the food demands of the various individuals making up the community.

It is indeed a fact that, while certain limited classes of men need well above 3,400 calories per day, others need less than 3,000, and therefore the sliding scale of calorie needs now put forward by the conference has been constructed, in the hope that it may provide authorities with a satisfactory working basis on which to determine the needs of individual men and families of varying composition. Such a sliding scale should not, however, be interpreted in too rigid a sense, for the unique nature of each individual's food requirements cannot be too strongly emphasized. The sliding scale adopted by the conference is shown below.

Sliding Scale of Calorie Requirements per Day

Individuals.	Calories gross.
Man: heavy work	3,400-4,000
Man: moderate work	3,000-3,400
Man: light work	2,600-3,000
Woman: active work	2,600-3,000
Woman: housewife	2,600-2,800
Boy: 14-18	3,000-3,400
Girl: 14-18	2,800-3,000
Child: 12-14	2,800-3,000
Child: 10-12	2,300-2,800
Child: 8-10	2,000-2,300
Child: 6-8	1,700-2,000
Child: 3-6	1,400-1,700
Child: 2-3	1,100-1,400
Child: 1-2	900-1,100

The conference also agrees that the all-round-average requirements of the entire population or of large mixed groups of people at the present time is about 3,000 calories per day. This figure can safely be employed for calculations of mass requirements, but in the case of individuals and single families due regard should be paid to the sliding scale detailed above.

Of as great significance to health as calories are the proteins, minerals, and vitamins in the foodstuffs which go to build up the tissues of the body. Because of the special needs associated with the growth and development of new tissue, proteins, minerals, and vitamins are particularly important for children and expectant and nursing mothers.

The general statements recited in regard to standards in respect of calorie requirements apply also to the needs of individuals, families, and communities for protein. Accumulated evidence indicates that the total daily need for protein per man unit probably lies between 80 and 100 grams—that is, from $2\frac{1}{2}$ to $3\frac{1}{2}$ ounces. The precise amount of protein needed by any particular individual depends on physique, occupation, habits, personal tastes, and age, while climate appears also to be a factor of some importance. There is a general consensus of opinion that a certain proportion of the total protein should be in the form of first-class protein—that is, protein of animal origin, such as milk, eggs, cheese, meat, or fish. The desirable proportion of animal protein to total protein has, so far as our knowledge goes, never been exactly determined; but we are convinced from the evidence which is available that the growing child and the expectant and nursing mother require relatively large amounts of first-class protein—much more, indeed, than would be arrived at by simple calculation based on their man-value equivalents.

All recent studies on the nutrition of children have shown that milk is for them a most valuable food. It is indeed the only naturally balanced food we know of, containing as it does in readily available form not only first-class protein (18.7 grams, or $2\frac{1}{3}$ oz., to the pint), but also minerals, vitamins, carbohydrate, and fat. The conference therefore desires to stress the importance of this highly nutritious food for the child and the nursing

and expectant mother. Both the Ministry's committee and the committee of the British Medical Association were mindful of these facts in regard to the special needs of the child, and both stressed the importance for children of the provision and consumption of milk in adequate quantities.

In the case of the adult the conference is of the opinion that a diet, to be reasonably adequate, should always contain a proportion of protein of animal origin; and that, on the basis of accepted dietaries, which have stood the test of practical experience, this proportion should not be lower than one-third of the total protein consumed, and may perhaps with advantage be increased to one-half.

In applying these recommendations to individuals it must be remembered that in the case of both children and adults the foregoing statements are generalizations, which may well be qualified by individual tastes and variations; and, moreover, it should be pointed out that all proteins of animal origin do not necessarily possess the same nutritional value.

The members of the conference deplore the exaggerated importance which has been attached to the alleged disagreement between the two committees, and wish to avail themselves of this opportunity of stating that there did not exist, nor does there exist now, any fundamental disagreement on matters of scientific fact between the two bodies.

In conclusion, it may be said that it is the earnest hope of the conference that these recommendations will prove of practical value to local authorities and others, and will enable them to place the nutrition of those under their charge, both individually and collectively, on a sound basis, in the interests of the health, fitness, and well-being of the nation.

(Signed) F. GOWLAND HOPKINS (*Chairman*).

E. P. CATHCART.

S. J. COWELL.

G. C. ANDERSON.

GUY P. CROWDEN.

H. E. MAGEE.

E. MELLANBY.

Joint Secretaries.

V. H. MOTTRAM.

THE MINISTRY'S CIRCULAR

The above report is being issued to county councils and sanitary authorities in England and Wales by the Ministry of Health, together with the following letter (Circular 1406), signed by Sir Arthur Robinson, Secretary of the Ministry:

I am directed by the Minister of Health to refer to Circular 1370 of January 4th last, relative to the report made by a committee appointed by the British Medical Association "to determine the minimum weekly expenditure on foodstuffs which must be incurred by families of varying size if health and working capacity are to be maintained, and to construct specimen diets."

Reference was made in the circular to certain respects in which the conclusions of this committee differed from the principles enunciated by the Minister's Advisory Committee on Nutrition in their memorandum on the Criticism and Improvement of Diets, and it was subsequently arranged that three physiologists representing the Advisory Committee should confer with three physiologists representing the British Medical Association Committee in regard to the differences which appeared to exist between the two committees on the question of the amount of calories and first-class protein appropriate as a basis for suitable diets.

The Minister has now been furnished with the report of this conference, and he directs me to forward a copy of the report for the information of the local authority. Copies of the report and of this circular are also being sent to the medical officer of health, and further copies may be obtained from H.M. Stationery Office.

British Medical Journal

SATURDAY, MAY 19th, 1934

THE PATHOLOGIST IN MEDICINE

The place of the laboratory in the modern world forms the subject of a well-written little book by Dr. D. Stark Murray,¹ who is one of the assistant pathologists under the London County Council. Though the book is presumably intended for the lay public, it can hardly fail to prove of interest to medical men who are unaware of the enormous strides taken by laboratory workers of recent years. Dr. Murray does not confine himself to the pathological laboratory; his survey extends over the whole field of academic, routine, and industrial scientific endeavour, and it is for this reason that his tale is of such general interest. But it is mainly with the pathological laboratory—using this term to include morbid histology, experimental pathology, bacteriology, and biochemistry—that his reflections are concerned. How great a change has come over pathology during the last twenty years it is difficult to realize. Before the war the pathologist was too often a poorly paid, rather secretive worker, who was housed in what was often no better than a cubby-hole, whose main duty was to act as a servant of the clinician, and who, if he did engage in research, made practically all his observations himself. Now he is much better paid, he is coming far more into the open, he has in many instances entirely detached himself from clinical work, he is housed in excellently designed and well-equipped laboratories, and with the help of often numerous assistants, who do the majority of the technical work, he is able to investigate fundamental problems concerning the pathogenesis of disease. Whereas before the war money for research was scanty and scholarships were few, there are now so many sources of income which can be tapped and so many scholarships and fellowships available that great new institutes have arisen, employing scores of workers and spending several thousand pounds each year on research, which is coming more and more to rely on co-operative investigation and team work.

With this greatly increased importance of the pathologist, it is not surprising that Dr. Murray raises the question of his financial remuneration. His salary is not only diminutive compared with the income of a successful clinician, but it is much less than his abilities would win for him in commerce. It is said, of course, that the laboratory worker derives such satisfaction from the results of his work that he is not justified in expecting any great financial reward. This is true up to a point. It was true, for instance, before the war, of the don at one of the older universities,

who led a peaceful life, free from worry and intrusion, whose work alternated pleasantly with play, and whose privilege it was to explore the delights of a well-stocked cellar. But this picture is not true now. In the larger and more important centres of teaching and research the senior pathologists are burdened with an amount of work and responsibility that is often far more than that of administrative officials who receive a greater income and who do not suffer from that continuous urge to do research from which the real scientist is never free. The life of such a pathologist is no longer peaceful; he is no longer left to work quietly in his own laboratory. Besides having to take his share in the teaching or routine work of the institute, he is expected to serve on numerous committees, to place his expert knowledge free of charge at the disposal of Government Departments, to write reports on special subjects, to apply to different outside bodies for grants and scholarships, for perhaps half a dozen workers under his care, to supervise the whole of the research activities of his department, to carry on a correspondence with persons in other countries who are working along similar lines to his own, to inform himself of the main inquiries being conducted in other institutes, to attend the usual pathological meetings, to receive visitors and answer telephone calls at both convenient and inconvenient hours, and all the time to keep himself abreast of a scientific literature which every year becomes more and more overwhelming. Such a life may be interesting, but it is one full of responsibility and care, and one that demands adequate remuneration.

The rapid change that has come over pathology raises a problem of increasing importance. How is the experienced pathologist to find time for individual thought and research work? With very few exceptions no outstanding piece of work is done by a young man working on his own. The old days, when qualitative observations of real value could be made by workers coming to pathology afresh, or more frequently by half-time workers, are gone, and it takes years of observation, reading, and experience to gain a sufficient knowledge of the field to judge what lines of investigation are likely to be most fruitful. Just at the time, let us say 40 years of age, when the pathologist has gained this knowledge, when he has learnt how to make an experiment, and when, most important of all, he has acquired the ability to define his problem, he is taken away by a multitude of administrative and consultative duties, and prevented from thinking about or carrying out research work with his own hands—research work of a type which has often to be done by the individual before it can be handed over for extension or completion to skilled assistants. This state of things, which has long been deplored in the medical services of the Army and Navy, is now becoming established in civil life, and is being viewed with increasing dismay by workers who are finding themselves in a position very different from that to which they had looked forward on first taking up a

¹ *The Laboratory: Its Place in the Modern World.* By D. Stark Murray, B.Sc., M.B., Ch.B. London: The Fenland Press. 1934. (Paper, 2s.; cloth, 3s.)

scientific career. What the solution of this problem is no one can say. Possibly the establishment of the Leverhulme Fellowships to enable senior workers to take a year or so off from their ordinary duties in order to concentrate on particular problems may be a step in the right direction. In any case the position is serious enough to demand the consideration of those who are interested in the future of medical science.

GAS WARFARE

A short time ago the British public heard reassuring words about the harmlessness of gas warfare, and it was even suggested that an aerial gas attack on a city need only be the occasion for a quiet rest in a warm bath. It is probable that these comforting views were accepted most readily by those who had not had first-hand experience of the effects of poison gas, and, moreover, a survey of foreign medical literature suggests that the Continental outlook on this subject is very different. Interesting articles have been published in the last few years dealing with the medical problems likely to arise from aerial gas attacks on civilian populations,¹ and a fairly exhaustive summary of the actions of certain war gases has just appeared in the current number of *Tabulae Biologicae Periodicae*.² This latter account is, of course, incomplete, because all the newest and most potent gases are secret. In the introduction to the article it is, however, pointed out that reports regarding new gases of fantastic activity ought to be received with the greatest scepticism. This suggestion gains confirmation from the published data which indicate that Lewisite (monophenyldichlorarsine) has a toxicity not very much greater than that of mustard gas, though highly sensational reports were current at one time about the activity of the former compound. It is interesting to note, however, that one table in this article contains a description of no fewer than sixty-two poison gases, the majority being complex organic compounds containing halogens or arsenic. Since the toxic actions of all of them have been studied most carefully it is clear that a great deal of research has been prosecuted on this subject.

The term "poison gas" is rather a misnomer, because a large number of the most effective compounds do not form true gases, but produce clouds either of droplets or of solid particles. Poison gases have been classified as follows: (1) "Green cross," which are true gases—for example, chlorine and phosgene. (2) "Yellow cross," most of which are heavy fluids forming clouds of droplets—for example, mustard gas and Lewisite. (3) "Blue cross," most of which are solids forming clouds of particles—for example, Adamsite (diphenylamine chlorarsine). The green cross gases attack the lungs; the yellow cross are vesicants and also produce lung injuries if inhaled; while the blue cross are the tear and sneezing gases, which, if once inhaled,

render the wearing of a gas mask impossible. It is a curious fact that it is more difficult to produce gas masks which protect completely against the toxic dusts of the blue cross series than against the true gases and the liquids. The article under discussion contains details regarding gas filters, and gives data for calculating the efficacy of various types of charcoal, etc. In this connexion it is of interest to note that some of the modern gas masks made in Germany are constructed with a series of seven different filters. This indicates how complex a mask has to be if it is to prove effective against all likely toxic agents. In a series of tables showing the relative toxicity of poison gases we find no record of any agent with a toxicity greatly superior to mustard gas; but unfortunately this does not prove that no such compound is known, for if a much more diabolical agent were discovered it would be kept secret.

The most reassuring table in the article is one giving a summary of the effects of gas in the world war of 1914-18. The percentage of gas casualties that died varied from 4 to 1.7 in the different armies; this is a surprisingly low mortality. Massed figures which include all armies show a total of 35 million casualties with 10 million deaths, but out of the one million gas casualties there were only about 30,000 deaths, indicating that gas was much less lethal than other weapons of war. On the other hand, we have to remember that these figures record the effects of gas on soldiers scattered thinly over open country, fully equipped with gas masks and well trained in their use, and results obtained under such conditions do not indicate the probable effect of gas attack upon the population of a city. The increasing attention which has been paid to poison gas in recent years is certainly disquieting.

PROSPECTS IN THE R.A.M.C.

For some years all has not been well with the medical branches of the Defence Services. Of the causes of dissatisfaction, inadequacy of pay and pension and restriction of professional opportunity have been the most important, and reduction in the number of men taking up this career was an inevitable consequence. In May, 1931, a Committee, under the chairmanship of Sir Warren Fisher, was set up by the Prime Minister to investigate the causes of the shortage of officers and nurses in the medical and dental branches of the Defence Services, and to recommend by what means the situation could be remedied. This committee imposed upon itself a condition that its recommendations should not involve increase in total expenditure, and its conclusions must be viewed in the light of that limitation. The British Medical Association gave exhaustive evidence before the committee, and after considerable delay the final report, the "Warren Fisher Report," eventually appeared in July, 1933. The Naval and Military Committee of the Association, with the help of special subcommittees, carefully examined the report from all angles and submitted memorandums thereon to the respective departments. To these the departments have replied in considerable detail, and the Royal Warrant relating to the

¹ *Dent. med. Woch.*, 1932, lviii, 1629; *Forsch. d. Medizin*, 1933, li, 168.

² *Tabulae Biologicae Periodicae*, Band III, Nos. 2 and 3. Berlin: W. Junk, 1933. (M.55; subscription price, M.48.)

R.A.M.C. was published on April 27th, 1934,¹ and considered by the Naval and Military Committee on May 15th.

In effect, the Royal Warrant indicates that the Army Council has adopted the suggestions of the Warren Fisher Committee. All entrants will receive short-service commissions, and at the end of five years an officer will have the choice of retiring with a gratuity of £1,000 or applying for a permanent commission. As a result of substantial upgrading, an officer in the permanent service will spend a larger part of his career in the higher ranks than formerly. Assuming that the officer joins at 25 and is granted a permanent commission, it is guaranteed that he will be a captain at 26 and a major at 35, instead of at 28½ and 37 as at present. Pay in the various ranks remains unchanged, but promotion is accelerated. Promotion to lieutenant-colonel and colonel will be by selection, and it is estimated that it will occur, on the average, after seventeen and twenty-five years respectively. This is to be achieved by a careful control of the permanent entry. Further, the career of the average officer will be lengthened and will normally extend to the age of 57. How has the pay—and in consequence the pension—of the average officer been improved? Assume that the officer joins the Service at the age of 25 and that he is accepted for permanent service:

Age	Former Rate	New Rate
25	£ 356—Lieutenant	£ 356—Lieutenant
26	356—Lieutenant	438—Captain
35	529—Captain	608—Major
42	690—Major	934—Lieut.-Colonel
48	934—Lieut.-Colonel	1,016—Lieut.-Colonel
50	1,016—Lieut.-Colonel	1,138—Colonel

Short service is the first essential of this scheme, because there must be control of permanent entry if the promotion by selection is to take place at the estimated time. Reduction of establishment is a second essential, and civil practitioners will be employed to the extent that is necessary. It is hoped that one consequence of reduction of establishment will be the concentration of medical officers on actual professional work and a corresponding reduction in non-medical administrative duties. An increase in the number of specialist posts carrying specialist emoluments is another recommendation of the Warren Fisher Committee directed to this end; of officers on the permanent establishment, one-third will be receiving specialist emoluments. A question of highest importance is the degree to which the proposals are to be applied to existing officers and particularly to the large number of majors awaiting promotion to lieutenant-colonel. The problem of the wave of majors awaiting promotion to lieutenant-colonels now as a result of the abnormal 1915-16 entry is one of the greatest difficulty. How many of them will be upgraded to enable them, at least, to retire on lieutenant-colonels' pensions? It is understood that the intention of the War Office is to apply the upgrading proposals to existing officers in the shortest possible time. We observe that in the *London Gazette* of May 8th it is announced that forty-five majors are

promoted from May 1st to lieutenant-colonels and twenty-one lieutenant-colonels to colonels. We are assured that almost every existing major will reach the rank of lieutenant-colonel, enabling him to retire on the pension of lieutenant-colonel.

These were the changes that the Naval and Military Committee considered at its meeting on May 15th. The changes in terms and conditions of service have not been made in the way the Association hoped—a state of affairs not altogether dissociated from the financial limitation which the Warren Fisher Committee imposed upon itself. Proposals were made by the Association which the Warren Fisher Committee and the War Office have not found it possible to accept. We regret that this is the case. Nevertheless, a careful examination of the changes has convinced the Naval and Military Committee that the reconstruction of the Royal Army Medical Corps on the lines of the Warren Fisher Report, if faithfully and consistently carried out, will do a great deal to make the corps a more attractive career. This is the view that the committee is recommending to the Council. It is a bold experiment, and we think that the R.A.M.C. is worthy of the consideration of the young medical man seeking a career in which professional work, travel, and service life are possible at good pay with assured prospects of promotion and pensionable retirement.

THE ROYAL SOCIETY CONVERSAZIONE

The Royal Society held a conversazione at Burlington House on the evening of May 9th, when the President, Sir F. Gowland Hopkins, received the distinguished guests who had come to catch a glimpse of the multifarious activities of the world of science. In its choice of exhibits the Royal Society is refreshingly latitudinarian, for between a demonstration of a fractional-seconds chronograph and one of the phthalocyanines was a table of photographs illustrating the ravages effected by the bed bug in the slums. The bed bug itself, safely corked, was also shown in different phases of its career, and in various states of hunger and repletion. This exhibit included a photograph of a fumigating machine which can clear a house of bugs within eight hours. Of particular interest to readers of last week's *Journal* was a demonstration by Sir Henry Dale, Dr. W. Feldberg, and Dr. A. Vartiainen of physiological tests for the detection of acetylcholine. Captain S. R. Douglas, Mr. P. P. Laidlaw, and Professor W. Levinthal arranged a number of stained specimens of the virus of psittacosis, which could be seen as a minute coccoid micro-organism, and inclusion bodies in a section of the nasal mucous membrane of a ferret with dog distemper. A microscope for ultra-violet microscopy was exhibited by Mr. J. E. Barnard. What is now known as the Bragg pulsator narrowly escaped not being shown at the conversazione, for the model to be demonstrated was in practical use elsewhere until the early part of the evening. At Sir William Bragg's request the apparatus was designed by Mr. R. W. Paul, M.I.E.E. It consists of an inflatable air-bag, or belt, which encircles the chest (the bag has a non-extensible outer skin), a pulsator which rhythmically inflates the bag, and a controller which governs the speed of the pulsator.

¹ *British Medical Journal*, May 5th, 1934, p. 830.

The apparatus can be worked off the water supply or by electricity. It is silent and automatic in operation, is easily transportable, and seems admirably to fulfil its function of carrying on artificial respiration for as long as this is needed. Interesting experiments in histochemistry were illustrated by specimens set up by workers from the Strangeways Research Laboratory at Cambridge. Mr. C. H. Waddington and Drs. J. and D. M. Needham have found that the activity of the organization centre of the amphibian egg, which controls the formation of the axial embryonic organs, is due to an ether-soluble substance. These workers have also found that the injection of sterols (such as cholesterol, calciferol, oestrol) into the developing embryo causes proliferation, without differentiation, of the ectoderm; similar effects, grading into true inductions (for example, of a structure resembling a neural tube), were also obtained with the carcinogenic hydrocarbon 1.2.5.6. dibenzanthracene. Among other exhibits were microscope slides showing sericite fibres in silicotic lungs and in rocks and substances giving rise to dangerous dust, by Dr. W. R. Jones; a Metropolitan-Vickers portable noise-measuring apparatus; evolution in the budgerigar under domestication, by Professor R. C. Punnett; and the earliest known dated optical instrument in the world, a telescope of 1646, shown by Mr. George H. Gabb.

CENTENARY OF THE LIVERPOOL MEDICAL SCHOOL

This centenary was celebrated on Friday, May 11th, by a ceremony in which the University conferred a number of honorary degrees. The Liverpool School has in the past enjoyed much richness of personality, and with possession of the necessary facilities for study there is good reason to believe it will continue to develop as a worthy seat of learning. At the graduation function nearly a score of delegates from British and Irish universities were present, as well as representatives of national medical bodies, and the mayors of eight neighbouring boroughs. The Chancellor of the University—the Earl of Derby—was unable to attend, and he was represented by Pro-Chancellor Lord Leverhulme. Among others present were: Sir Norman Walker (President, General Medical Council), Sir H. J. Waring (President, Royal College of Surgeons of England), Dr. H. Morley Fletcher (Royal College of Physicians of London), Sir Ewen Maclean (British College of Obstetricians and Gynaecologists), and Dr. J. O. Wakelin Barratt (Master of the Society of Apothecaries). In his address the Vice-Chancellor—Dr. H. J. W. Hetherington—expressed, on behalf of the University, their pride in the shining record of the medical school and faculty, and continued: "In the romantic record of the last century this school has borne its share—in all parts of the world, and in every phase of medicine, of surgery, and of the sciences of which these arts have increasingly availed themselves. Its work has been the product not only of individuals of insight, and even of genius, but still more of the continuous and friendly co-operation of men who have given themselves devotedly to their task. We do well to recall to ourselves the heritage which has been given to us, and in that act to think of this day as but the opening of another epoch in our history." An

address on the Liverpool School of Medicine was given by Professor John Hay, who suggested the foundation of a chair in clinical science. The professor, he said, should be a clinician with special training in the elucidation of scientific problems; his activities would be complementary to, and independent of, those of the professor of medicine. Honorary degrees were then conferred on the following distinguished persons: Professor Henry R. Dean, Sir Thomas Lewis, Mrs. May Mellanby, Mr. Wilfred Trotter, F.R.C.S., Emeritus Professor Blair-Bell, Emeritus Professor Henry Briggs, Dr. Herbert R. Hurter, Dr. W. S. Paget-Tomlinson, and Emeritus Professor C. H. Reilly.

CLINICAL TEACHING IN THE U.S.A.

In the Hospital Number of the *Journal of the American Medical Association*, under date March 31st, are three papers dealing more or less directly with medical education: "The Restoration of the General Practitioner," by Dr. Dean Lewis; "The Out-Patient Clinic," by Dr. J. H. J. Upham; and "The Importance of Introducing Psychiatry into the General Internship," by Dr. Franklin G. Ebaugh. The chief impression left after reading these articles is perhaps a pronounced sense that both situation and nomenclature are different in the United States from those which obtain in this country. Happily here in Great Britain there is no need to "restore" the general practitioner: he has never lost his position as the mainstay of the profession, or in the first line of defence of the health of the nation. The out-patient department of the hospitals, though clearly in many cases in need of reform, can with relative ease be dealt with on lines already broadly marked out and largely agreed upon. Medical psychology and psychotherapy (for, in American, the term "psychiatry" appears to connote these) are already recognized, or at least seem on the point of recognition, as essential parts of the teaching of every medical practitioner. In America it seems that until lately "everything up to the eyebrows belonged to the consideration of the physician, while all above them was relegated to the cleric and philosopher." Dr. Dean Lewis differs widely in his ideas about disease from Dr. Ebaugh. He says: "A deep knowledge of pathology is the foundation stone of diagnostic ability," and quotes with approval the statement: "The observation of function is of little value if it is divorced from the alteration of structure. Our studies of function serve chiefly to allow us to decide accurately the character and extent of structural lesions." Dr. Ebaugh emphasizes that the practitioner "becomes cognizant after not too many weeks that he is unable to find 'pathology' to account for all symptoms and complaints presented. Chest thumping fails to reveal the mysteries surrounding the strange case. Unless he is willing to consider the individual in his entirety, to evaluate his life situations and emotional responses, he is of little service to his patient." Dr. Upham makes one important point very well. "Practitioners of medicine," he says, "have not a vested right in patients, but they do have a definite and necessary place in the social and economic scheme of life and a moral right to expect returns for many years of preparation for practice.

They expect the competition of other practitioners, and this has a wholesome effect in keeping up and improving the quality of service; but the giving of medical service by free clinics to those able to pay is unfair competition, and every effort should be made to avoid it."

A DIABETIC CLINIC

The diabetic clinic at King's College Hospital, London, under Dr. R. D. Lawrence, which has been functioning for several years, and has built up a reputation and a clientele far beyond the confines of Denmark Hill, has lately moved into enlarged quarters in the hospital and is rejoicing in new equipment. The clinic was to have been opened by Mr. H. G. Wells on May 11th, but he was called away to the United States, and there was no formal opening ceremony, though a number of visitors were received by Dr. Lawrence and inspected the rooms. It would have been appropriate if Mr. Wells had been able to be present, as it was in response to an appeal of his that last year Mr. W. Chapman of Capetown supplied funds for the refurnishing. The clinic, which consists of a series of rooms chiefly for consultation and examination, is on the ground floor of the hospital, but is still separated by a considerable distance from the kitchen where the meals for the diabetics are prepared and served. A large, specially constructed trolley for the conveyance of food is the gift of a number of ladies of the neighbourhood. A feature of the kitchen is the crockery cupboard, which, with its contents and other cookery utensils and a refrigerator, is the gift of the diabetic patients themselves, who also attend to all replacements. Under the sister in charge of the clinic the patients receive instruction in dieting and in insulin administration. The new department includes a cheerful waiting room for out-patients, screened cubicles for investigation, with equipment for the necessary ophthalmic and other examinations, and a consulting room, which can be curtained off to make three, for the medical staff. There is also a laboratory bench for blood sugar and other determinations. The hospital has from 100 to 150 in-patients in a year with diabetes, and the number of out-patient attendances, which was 1,746 in 1930, 2,069 in 1931, and 2,472 in 1932, rose to 3,324 in 1933, and the curve is still ascending.

HUNTINGTON'S CHOREA

An extremely interesting account¹ has recently been given of Dr. George Huntington of Easthampton, Long Island, New York, who in 1872 published the account of the chronic hereditary disease with mental deterioration which bears his name. He was a general practitioner, born on April 9th, 1850, the day after Professor W. H. Welch, with whom there is another rather remote association; for the Huntington family came from Norwich in 1633, and two of them in 1660 laid the foundations of the present city of Norwich, Connecticut, which is at the opposite end of

that State to Norfolk, where Professor Welch was born on April 8th, 1850. George Huntington in 1872, when on a visit to Pomeroy, Ohio, read a paper on the ordinary chorea of children, at the end of which he added the account of a disease which, as far as he knew, existed almost exclusively in the east end of Long Island, where ordinary chorea was extremely rare. It was confined to a few families who regarded it with horror, and were reluctant to mention it, and then spoke of "that disorder" or the "megrims." Its hereditary character was continuous, and if one generation escaped their offspring were immune. It was further prone to cause insanity and induce suicide; and did not begin, at least as a grave affection, until adult life. Huntington, who was then a very young practitioner, later dutifully pointed out that his description of the disease was based on the observations and information handed to him by his father and grandfather, who had practised in Easthampton since 1797. The disease had not entirely escaped previous notice, for it was mentioned in 1842 by C. O. Waters, and in 1863 Irving W. Lyon wrote on chronic hereditary chorea; but Huntington's was the most graphic and accurate account. To refer to printers' errors is invidious, but this otherwise admirable article by Dr. C. S. Stevenson contains a transposition, it would almost appear of diabolical ingenuity, which to the rapid reader might give Dr. George Huntington, who died in 1916 aged 66, the credit of having been engaged to be married for the record period of ninety-two years.

We regret to announce the death of Mr. Frank Kidd, M.Ch., F.R.C.S., formerly surgeon and surgeon in charge of the genito-urinary department at the London Hospital.

We regret to announce the death of Sir A. Jarvie Hood, M.B., C.M., consulting physician to the Sydney Hospital, who had been a member of the New South Wales Branch of the British Medical Association for nearly fifty years.

The next session of the General Medical Council will open on Tuesday, May 29th, at 2 p.m., when the President, Sir Norman Walker, M.D., will take the chair and give an address. The Council will continue to sit from day to day until the termination of its business.

A complimentary dinner to Mr. R. H. Burne, M.A., F.R.S., was held at the Langham Hotel on May 10th, on the occasion of his retirement from the Physiological Curatorship of the Museum of the Royal College of Surgeons of England after forty-two years in the service of the College. The chair was taken by Sir Holburt Waring, the President of the College, and among those present were: Sir Cuthbert Wallace, Sir Arthur Keith, Sir Arthur Smith Woodward, Sir Peter Chalmers Mitchell, Dr. Tate Regan, Sir Charles Ballance, Professor E. Barclay-Smith, Professor William Wright, Sir Buckston Browne, Professor E. S. Goodrich, and Mr. C. Forster-Cooper. Mr. Burne's health was proposed by Sir Holburt Waring, supported by Sir Arthur Keith and Sir Peter Chalmers Mitchell.

¹ Stevenson, C. S.: "A Biography of George Huntington, M.D." *Bull. Johns Hopkins Hosp.*, Baltimore, 1934, liv. Supplement, *Bull. Institute of History of Medicine*, vol. ii, p. 53.

THE PROFESSIONAL MIND

MAUDSLEY LECTURE BY LORD MACMILLAN

The fifteenth Maudsley Lecture, under the auspices of the Royal Medico-Psychological Association, was delivered by the Right Hon. Lord MACMILLAN, M.A., LL.D., Lord of Appeal in Ordinary, on May 17th, at Manson House, Portland Place.

After some prefatory remarks on the admonition which he said had been given him that he must on this occasion deliver a popular address Lord Macmillan asked his audience to consider certain phenomena which, while they fell within a special province of psychiatrists and psychologists, were at the same time matter of common observation and interest—namely, the phenomena exhibited by various types of the professional mind in its daily working. The choice and practice of a profession had a decisive and pervasive influence on a man's whole mental outlook. The first question asked about a new acquaintance was, "What does he do?" and the answer afforded the first clue to the kind of man he was, for, wide as were the individual differences among the members of a profession, there were always common elements shared by all belonging to it. Their habits were controlled; their thoughts canalized, their prejudices formed, by the profession they practised. Even their place of residence might be dictated by their vocation, as witness the Temple for lawyers, and Harley Street for medical men.

Dr. Henry Maudsley, after whom the lecture was founded, in discussing the larger topic of the inculcation of morality, had described the process as one of moral manufacture, and had pointed out that the whole purpose of education in morals was to produce a nature in which moral action should have become automatic. Each moral act by the law of nervous action rendered the next more easy, and so a man's nature was gradually modified. It was by some such means, together with imitation, that the process of professional training and experience gradually moulded the mind and character until the man's reactions became largely instinctive. Thus it was said, generally in a disparaging way, of lawyers, "Oh! He is a lawyer; you know how lawyers always look at things."

PROFESSIONAL ORGANIZATION

From the earliest times the practitioners of a particular art had shown a tendency to draw away from the rest of the community and to constitute themselves a separate class with their own ceremonial rites and shibboleths. The widest of all caste cleavages in former days, and still a wide one, was that between the clergy and laity. Within the ranks of the laity in turn many associations grew up of men united by a common calling. Lines of demarcation were much more rigidly drawn in former times, and the resulting mutual exclusiveness produced much more distinctive types of persons. Nowadays the barriers were broken down, and men of all careers mixed with each other—certainly a more excellent way of living. Nevertheless, there still remained certain typical attributes engendered by the life-long pursuit of a particular calling, and lending colour and interest to social life.

COMPETING INTERESTS

While it might be claimed, Lord Macmillan continued, that devotion to a common calling tended to create a sense of professional brotherhood, and thus widened and liberalized the minds of its practitioners, there was, on the other side of the account, a mental tendency resulting from immersion in a profession which was not so meritorious. This was the tendency to resist all changes. Those who, after much time and labour, had acquired facility in the practice of a system were naturally disinclined to scrap what they had found to work well enough. They were reluctant to make the effort of examining and adopting new ideas which might be subversive, and the beaten path

was so much easier to tread. As an illustration he briefly glanced at the hostility often shown towards the discoveries of the great pioneers in medicine, but in the gathering he was addressing he thought it more discreet as well as courteous to refer to the inveterate conservatism of his own profession, that of the law; or again, he might instance the Civil Service. The truth was that no profession or calling was immune from this tendency. The prophet had always been greeted with a volley of stones, for, to quote Professor Whitehead, "Routine is the god of every social system." There was a good side as well as a bad one to this instinct. It was not all obscurantism. Without the stability of routine the social fabric would disintegrate. Resistance to innovation was part of the protective armour of civilization. The same Scriptures which lamented the stoning of the prophets bade those who followed them prove all things and hold fast that which was good.

Another charge which, so far as it held good, must be placed to the debit side of the reckoning, was the proneness of the professional mind to put the interests of the craft before those of the community. Changes were often advocated in the general interest which were inimical to the interests of those engaged in a particular calling, and these were apt to resist the changes, not on their merits, but for purely selfish reasons. Examples would occur to his audience, but he thought it better again to be discreet. He wondered what Adam Smith, who was very critical of professional and trading corporations in his time, would have thought of the innumerable congresses and conferences which in these days were constantly being held by every trade, calling, and profession. There was more lip service nowadays to lofty social motives, but the pursuit of selfish aims under the guise of public good was not an unknown phenomenon.

THE LIMITATIONS OF THE EXPERT

In these days an increasing resort was made in all departments of life to the particular type of professional man known as the expert. In medicine the specialist had long been a familiar figure, but there were specialists now in every branch of human affairs, the reason being that the field of knowledge had become so vast that no individual could hope to be master of more than a corner of it. When a public problem arose in any province of administration the demand always was for the expert to be consulted, if not put in charge. The results were not always happy. The expert mind as a species of the genus professional mind was apt to have failings as well as excellencies. The attainment of a highly specialized knowledge of one isolated subject tended to create a certain arrogance of assurance. It was not unnatural to assume that if one knew *more* about a subject than anyone else one knew it *better* than anyone else, but he doubted whether that was necessarily so. It might be so if human life and knowledge were divided into watertight compartments, but no one factor in the social organism could be isolated. The result was that the conclusions of the specialist had often to be corrected and modified when brought into relation with wider considerations. The constitutional tendency of experts to differ, so unjustly associated in the proverb with the medical profession only, had also to be considered. The faith of the public in political economists had been rudely shaken by the discordant advice they had tendered since the war. This proneness of experts to differ was easily explicable. Even the most arrogant expert would not lay claim to complete knowledge of his subject: he had probably devoted himself to one aspect of it to the exclusion of others, and having formed certain opinions from what was, after all, only partial knowledge, he developed a parental affection for them which became emotional rather than scientific.

On the other hand, the value of specialized knowledge was incontestable, being the product of intensive research and experience quite beyond the range of the ordinary practitioner. One of the most interesting problems of the day was how best to utilize the expert in the public interest. Lord Macmillan here digressed to speak of the

various methods in which the expert was utilized in the law courts, and put forward the strong view, in discussing the expert witness, that no scientific man ought ever to become the partisan of a side; he might be the partisan of an opinion of his own science, if he honestly entertained it, but he ought never to accept a retainer to advocate in evidence a particular view merely because that was the view which it was in the interests of the party who had retained him to maintain. To do so was to prostitute science and to practise a fraud on the administration of justice.

A less perilous sphere for the exercise of the expert mind in the administration of justice was to be found in the utilization of the expert as a referee, as, for example, under the Workmen's Compensation Act. The medical referee was exempt from the temptations of the witness-box, and had to exercise the functions not of a partisan but of a skilled adjudicator. It was a highly responsible part to play, but he had no doubt that the duty was faithfully and conscientiously performed. Another method in which the law invoked the aid of the expert professional mind was by employing the expert as an assessor. On the whole the lecturer was disposed to think that it was in some form of consultative capacity that the abilities of the expert mind were best utilized in the public service. The faculty of practical judgement was not always to be found in conjunction with scientific learning. The art of judgement was itself an art. The judge, the statesman, and the business man might often be better able than the expert to reach a wise solution of a practical problem, even though it did involve technical matters, but it was essential that the requisite technical assistance should be at his disposal.

THE LEGAL MIND

Lord Macmillan next passed to consider some of the mental phenomena exhibited by the practitioners of the three learned professions—the Church, the Law, and Medicine. Sir Walter Scott uttered the pregnant aphorism that "the clergy live by our sins, the medical faculty by our diseases, and the law gentry by our misfortunes." It was odd to think that the main object of the clergyman, the doctor, and the lawyer was to combat in each case the very thing which was the cause of his existence. Nevertheless, the clergyman was not always in the confessional, the doctor by the bedside, or the lawyer in the courts.

Speaking of the legal mind, the professional type which throughout the ages had been most consistently the subject of depreciatory comment, he said that the advocate was supposed to be perpetually engaged in distorting the truth in his efforts to make the worse appear the better reason. Speaking from a long experience, he could only say that the conception of the advocate as a kind of artful dodger who made his living by stupefying his conscience was utterly remote from the truth. He would even go so far as to say that the lawyer encountered no more problems of moral conduct in his daily professional life than did the practitioners of any other art or business; there was no profession which had a higher, a better recognized, or a more rigidly enforced standard of honour. But the great bulk of the legal work of the country was administrative and non-contentious, requiring no perverse intellectual subtlety, but just the ordinary workaday virtues of industry and honesty. At the same time he was not blind to elements of truth in the popular caricature. The profession undoubtedly tended to foster certain intellectual habits, which, when they became exaggerated, were not admirable. The business of the lawyer was pre-eminently with words, not with things, and a pre-occupation with words ("Wise men's counters," as Hobbes said, "but the money of fools") had its dangers. There was a danger even in logic in human affairs. The practical problems of humanity were not solved by syllogisms or by neatly framed codes. There was a proneness in the legal mind to prefer formulas to facts, and to place too much reliance on the power of words.

Another defect commonly attributed to the legal mind was that it was unduly critical. The critical habit was useful in its proper place, but often handicapped the lawyer in dealing with constructive proposals where success could be attained only by disregarding risks. Therefore lawyers were not temperamentally well fitted for leadership either in politics or business, where an adventurous spirit was essential. In the State and in society the most useful function of the legal mind lay in the orderly and just regulation of human relations.

THE OUTLOOK OF THE PHYSICIAN

Turning to the profession of medicine, Lord Macmillan said that it seemed to him that the outlook of the physician upon life must necessarily be widely different from that of the lawyer, his service to humanity being of an altogether different order. Sir Wilfred Grenfell had said that in Labrador the Eskimos called him by a name which meant "the man that has to do with pain." The effect on the mind of constant contact with human suffering could not but be profound. The relation between a patient and his medical adviser had an intimacy which did not subsist between a client and his legal adviser, and it was a relation which made a call upon the emotions as well as upon the intellect. In study and research the medical man was a man of science, and might be expected to exhibit the mental qualities of accurate observation and induction, but in the region of professional practice calls were made upon him of a very special nature. There was no exact science of therapeutics, and its practice must be largely empirical. Diagnosis required not only knowledge but reasoning power, and often imagination as well. Personality counted for much, and the mere presence of a trusted medical adviser might itself be therapeutic. The demand thus made upon his physical, mental, and emotional resources created a special type of character, exemplified in the highest degree in those who had to minister to minds diseased. Moreover, the exacting nature of the doctor's work and its irregularities tended to cut him off to some extent from the ordinary social life and public work.

IS THERE A DEFINITE MEDICAL TYPE?

Could it be said that there was a distinct medical type of professional mind? The lecturer thought there was, but it was not easy to put into words. The role which the doctor was required to play must react on his mental and moral make-up. "I do not believe that his constant contact with suffering renders him callous, but he must acquire a certain calmness in the presence of the emergencies and tragedies of life which is apt to be mistaken for unconcern. His natural sympathies must be under control if he is to perform his work adequately. The very confidence which is reposed in him and the immunity from publicity which he enjoys may tend to make him professionally oracular. The traditions of spells and incantations dies hard, and prescriptions are still made up in hieroglyphics. On the other hand, the unselfishness and devotion to duty which are the very hall-mark of the profession far outweigh any of the foibles which may be laid to its charge. It is perhaps in the medical man that the professional mind finds its finest sphere. At any rate I envy the physician the epithet which is peculiarly his own, and which gratitude and affection have bestowed on him, the epithet 'beloved.' I have never heard of a beloved barrister or a beloved solicitor."

The Prussian Minister of the Interior has revoked his decree of December 20th, 1933, described in the *Journal* of March 24th (p. 565), in so far as to allow anti-vaccination societies to resume their activities, but still forbids any public propaganda against vaccination as well as the exhibition of medical certificates allowing exemption from vaccination without medical examination.

SPECIALIZATION IN SPA TREATMENT

BALNEOLOGISTS IN CONFERENCE AT HARROGATE

The value of spa waters in liver diseases and in skin affections, with special reference to the sulphur springs of Harrogate, was the subject of a medical conference arranged by the British Health Resorts Association at Harrogate on May 12th. The annual meeting of the Section of Physical Medicine of the Royal Society of Medicine was arranged to be held at Harrogate on the same date, with the result that a large number of balneologists and other members of the profession from London and elsewhere attended. The Yorkshire spa showed its usual hospitalities: a mayoral reception was held in the Winter Gardens, and the visitors were given the freedom of the Royal Baths, and inspected Harrogate's latest amenity, the sun promenade and pavilion in the Valley Gardens.

THE USE OF SPAS IN DISEASES OF THE LIVER

The first of the two discussions, on liver diseases (with Mr. D'OYLY GRANGE, president of the Harrogate Medical Society, in the chair), was opened by Professor W. LANGDON BROWN, who reviewed recent advances in the conception of hepatic metabolism. He said that the knowledge of the biochemistry of the subject had been extended and made more accurate by three discoveries during the last ten years: the discovery of insulin, which had made the whole story of carbohydrate much clearer; the discovery of the storage of certain haemopoietic factors in the liver, which had led to the practical rewriting of the pathology and treatment of the anaemias; and the quite recent discovery of the influence of choline on the fat metabolism of the liver. The liver helped to prepare all three food materials—proteins, fats, and carbohydrates—for utilization by the tissues. Its antitoxic functions included the process of rendering a poison harmless by conjugating it with a protective substance, also the formation of harmless glucuronates after administration of camphor, morphine, and the like. The liver was credited with playing an important part in anaphylaxis. Again, it was the principle stored in the liver which was essential to the formation of normoblasts from megaloblasts. He then went on to speak of the external secretory and the excretory functions of the liver, and of the recent work on the gall-bladder. One way in which hydrotherapy could definitely help followed from the idea now entertained that infection arrived at the gall-bladder by way of its surrounding lymphatics quite as much as by ascent of the common bile duct, and a gall-bladder filled with stagnant bile would easily fall a victim. Professor Langdon Brown concluded by saying that in a recent discussion on renal tests several surgeons expressed their willingness to abide by clinical signs alone. He himself was neither so bold nor so sceptical, but he urged that in Harrogate there were remarkable opportunities for scientific research into individual reactions to the therapeutic measures available at the spa.

Dr. J. W. McNEE said that simple cholecystitis was now stated to be the commonest intra-abdominal inflammation. In its treatment outside spas it was customary to give magnesium sulphate by the mouth in concentrated solutions. He thought that spa treatment should be able very effectively to deal with the more chronic stages, or even with the acute stages, of this condition. With regard to the true bacteriology and aetiology of cholecystitis, for some reason the practice of duodenal intubation had never gone to the length in this country to which it had gone in others, the main reason being that a wrong duodenal tube was used, one which did not pass easily through the pylorus. To be able to examine direct films of the centrifugized bile obtained by the duodenal tube afforded the greatest information as to the diagnosis and possible treatment of cholecystitis. Many chronic inflammations went smouldering on indefinitely. In what way could spa treatment come to the aid of the physician in these cases? Here he made a special reference to

dietetics. In hepatic and biliary diseases the question of the diet of the patient was of the greatest importance, particularly in chronic cases. When the patient was under one's care in his own home the dietetics could be to some extent controlled; in the spa this was less easy, and he pleaded for a much closer co-operation in British spas between the doctor, the patient, and the hotel manager as regards the diet of the patient undergoing the courses.

Dr. WILFRID EDGECOMBE (Harrogate) outlined the clinical aspects of the treatment of disorders of the liver by the spa methods there available. The treatment was based on the use of the old sulphur water internally, the application of liver packs externally, and the use of baths—the strong sulphur bath or the massage douche. The strong sulphur baths were extensively used in the treatment of liver affections by the spa physicians of a generation ago, but were not so commonly prescribed now. The spa physicians to-day made more use of the massage douches than of the sulphur baths, in alternation with the liver pack. The Harrogate treatment of "congestion of the liver" was strikingly effective; the strong sulphur water had an almost specific action, the liver packs producing active counter-irritation and reducing visceral congestion, the sulphur baths inducing a determination of blood to the surface, and the massage douches accelerating interchange of tissue fluid.

Dr. C. W. CURTIS BAIN (Harrogate) described some interesting experiments with the sulphur water and its effect on liver disorders. He mentioned that in cases showing marked enlargement of the liver he had not been able to satisfy himself that alcohol was a factor more than in other groups, and he put forward the suggestion that alcohol had no effect upon the normal liver, but once there was a cholecystitis with a secondary hepatitis then alcohol became a poison to the liver. In a number of cases of varying degrees of disorder he endeavoured to assess the reasons for recovery. Three factors should be taken into consideration: the spa atmosphere, the liver pack, and the sulphur water. He had carried out experiments, mostly on himself, with the duodenal tube, and these had suggested that the cholagogic effect of the sulphur water (20 c.cm. of which was administered down the tube) was very similar to that of olive oil. Although his experiments were still incomplete, it could be said that sulphur water was a powerful cholagogue, perhaps the most potent in therapeutics; but it could not be said yet why it was potent. He went on to suggest that Harrogate waters might have specific properties for the treatment of liver disorders. Nobody had yet produced, he said, any satisfactory evidence to show that sulphur water, taken internally, had an influence upon the rheumatic group of diseases, but if the primary effect of sulphur water was shown to be on the liver the result might be some much desired specialization among spas, and it would be possible to give an answer to the cynic who asked how it was that the waters of Bath, Buxton, and Harrogate were all so successful in curing the same diseases when they differed from each other as much as chalk from cheese.

Professor D. P. D. WILKIE (Edinburgh) laid it down that in well-established cases of infection of the biliary passages with gall-stones surgery was the rational treatment and the only form of treatment wholly successful; but if surgery was to be undertaken the preliminary preparation of the patient was as necessary as the operation itself. For many patients the operation was as great an ordeal as the boat race for the undergraduate, and what would be said supposing a preliminary purge were the only preparation for the boat race? He referred to the diminishing mortality in cholecystectomy, due in part, no doubt, to increasing surgical experience, but in the main to increased attention to the pre-operative regime, in which diet and exercises played an important part. Professor Wilkie also mentioned that when cholaemia supervened benefit had been found by giving diathermy through the lower part of the chest; this was comparable to the liver pack given so effectively at Harrogate. He felt that in modern abdominal surgery, particularly of the biliary tract, it was needful to get away from a purely mechanical pathology and anatomical outlook and to remember that they were dealing not only

with obstruction from stone or irritation due to stone, but with a disordered physiology which affected the liver.

Dr. P. H. MANSON-BAHR spoke from the point of view of tropical medicine, and mentioned incidentally that tropical medicine had now come almost to the end of its war against parasites. It had an armamentarium against the diseases with which it had to deal the like of which was possessed by no other branch of medicine. Nothing like the same number of people were found returning from the Tropics with active parasites in their blood, and he humorously suggested that there was need for a new society for the preservation of diseases that were rapidly becoming extinct! "Tropical liver," however, was still a problem; as to whether there was such a thing he quoted Sir Patrick Manson, who said that he himself had suffered from it in early days in China. One would like to send many cases of tropical disorders to Harrogate, but he himself was not clear as to the advisability of sending people who had had properly diagnosed dysentery to Harrogate for after-treatment. It was one thing to eradicate the parasite and another thing to irritate the intestinal tract. If the case was one of amoebic dysentery, and a cure could be promised, he did not think that after-treatment should consist in douching out the bowel with large quantities of irritating waters.

Professor LANGDON BROWN, in summing up the discussion, endorsed Dr. McNee's plea for more definite control over the dietetic treatment of patients while at spas. It was a common experience that patients who went to Continental spas were more prepared to "toe the line" in this respect than those who went to British spas, the reason being the lack at the latter of definite and authoritative regime.

THE SPA TREATMENT OF SKIN DISEASES

The second discussion, over which Dr. M. B. RAY, president of the Physical Medicine Section of the Royal Society of Medicine, presided, was opened by Dr. S. ERNEST DORE, who remarked that, with some notable exceptions, it seemed to him that the present trend of opinion favoured the theory of exogenous causation of the eczematous group of skin diseases. He doubted whether Harrogate practitioners would altogether subscribe to the view that eczema had its origin from external causes. Simple protection of the skin of patients so affected from all possible forms of external irritation was not enough to secure removal of the disease, and in the more chronic cases some form of stimulating treatment by means of various local medicaments—including sulphur baths in suitable cases—combined, if thought necessary, with sulphur internally, colonic irrigation, or other measures, might be required. The question of the relative importance of the external and internal treatment of skin diseases was one which he would like to hear discussed by Harrogate practitioners with their unrivalled opportunities of comparing the two. Dr. Dore went on to indicate on broad lines certain groups of skin diseases which were suitable for spa treatment. He uttered a word of warning against the indiscriminate and excessive use of sulphur in any cutaneous affection. He so often saw severe dermatitis and pruritus caused by its ill-judged or protracted application that he felt such a caution to be very necessary. Sulphur was a two-edged weapon, and Spartan methods of employing it were apt to react upon the practitioner as well as on the patient and the spa at which he was being treated.

Dr. H. HALDIN-DAVIS referred to the advantage of spa treatment in those skin diseases which were particularly associated with conditions of anxiety and neurasthenia, of which lichen planus was the most typical. This condition was one which, above all, did well when treated away from home, and preferably at a spa. He expressed himself in favour of the internal rather than the external use of the water. The eliminatory properties that Harrogate water enjoyed had a beneficial effect on many types of dermatoses which he thought far more important than the external employment of the various springs. Dr. F. A. BEARN spoke of skin diseases which he had seen

and treated during twelve years' practice at Strathpeffer. Only two types stood out as giving really satisfactory results—namely, the so-called gouty eczema, and psoriasis arthropathica—and one was struck at once with the fact that these were not cases of skin diseases at all but skin manifestations of metabolic disorder. Dr. W. BERTRAM WATSON (Harrogate) summarized the results of a long and varied clinical experience of the spa treatment of skin diseases, fully agreeing with Dr. Dore that the trend of present opinion favoured the theory of exogenous causation of the eczematous group. Cases of psoriasis which did best were those in which the eruption was widespread and neither progressive nor hyperaemic—psoriasis inveterata. It appeared that the proportion of cases of cutaneous disorders dealt with at Harrogate was declining over recent years. From the records of the Royal Bath Hospital five times as many skin patients were treated there in the first ten years of this century as in the last ten years. There were, however, fashions in medicine as in everything else, and he believed that the pendulum would swing back.

Dr. J. C. BUCKLEY took up a remark of one speaker that in acute or subacute eczema water ought not to be applied; yet he was under the impression that in these conditions they were told that sedative lotions were the proper treatment, and, after all, what was the basis of a sedative lotion but water with some slight mineral or organic mixture; and what was spa water but water of that character? Dr. EDGECOMBE said that in treating these conditions a great deal depended on the soil as well as the seed, and this applied not only to cases of so-called constitutional dermatitis, but also to the whole group of the allergic type—the chronic urticarias. Patients in this group could be rendered less susceptible to the irritating agent by a course of internal treatment in addition to the external.

Dr. ALFRED COX, secretary of the British Health Resorts Association, before the discussion concluded, made a few remarks on the management of spas, and expressed the view that what the average member of the public wanted when he went to a spa for treatment was to be taken, figuratively, by the scruff of the neck and told exactly what to do. British spas had doctors of great skill and experience, they had waters of proved value, but there was still something lacking in the organization and authority which they needed to cultivate.

In the evening the Harrogate Medical Society were the hosts at a dinner at the Hotel Majestic. In reply to the toast of the health of the British Health Resorts Association, Lord MESTON, the President, gave a brief outline of its achievements and intentions, and said that there was no desire on the part of anybody concerned to decry or depreciate the great thermal institutions of the Continent. There was much in Continental spas which was worthy of imitation, and a good deal to incite envy, especially the way in which they were subsidized and patronized by the State; but it was felt that British resorts represented a great national asset of which full use had by no means been made. The Mayor of HARROGATE (Councillor Newsome) mentioned that although the waters had been known for three centuries Harrogate as a town was comparatively modern, celebrating this year, indeed, the jubilee of its incorporation. The recent provision of the new sun walk and pavilion was only part of an extensive scheme, which was to include a new pump room.

The Royal Waterloo Hospital is accessible for people living in some of the poorest parts of London and southern England, and the calls on its out-patient department have recently become embarrassing in their number. During the past ten years the number has increased from 50,973 to 83,680 per annum. Such an increase has made extension an urgent necessity, and the 118th annual report refers to proposals for building on the further side of Waterloo Road, though no definite action can be taken till the scheme has been approved by King Edward's Fund.

England and Wales

The Liverpool Medical School

In connexion with last week's celebration of the centenary of the Liverpool Medical School (see p. 905) a brief record of its history has been prepared by Dr. A. A. Gemmell and published as a pamphlet.¹ The Liverpool Royal Institution School of Medicine and Surgery was founded in 1834, but ceased to exist ten years later, its work being continued by the Royal Infirmary School of Medicine. The origin of medical teaching in that town is actually traceable to 1789, when the requirements of the slave trade necessitated the testing of ship surgeon candidates by the medical board of the Liverpool Infirmary. There are definite records of lectures as far back as 1811, and before 1826 the staff of the Infirmary, especially the surgeons, had private pupils who worked in the wards. Private teachers flourished in Liverpool in the early part of the nineteenth century. In those days students worked for about four years in the wards, and then went to London for a year of lectures and "walking the hospitals" before they could sit for their professional examination. Although teaching was carried on in buildings on the Infirmary grounds, the cost of furnishing had to be met by the lecturers, who each contributed £5 for the purpose. The lecturer in chemistry refused to subscribe, since he had already been obliged to rent the laboratory at the Royal Institution in order to start his classes. In 1846 the trustees of the Infirmary assumed certain liabilities in respect of the outside repairs to the buildings and the supply of gas, coal, and water, but the remainder had still to be financed by the lecturers. A rota of the honorary staff for giving clinical lectures is first noted in 1849, and a year later prizes were established in clinical medicine and surgery. In 1852 the lecturers offered a gold medal to the best student of the year, and the committee of the Royal Infirmary agreed to grant to the successful candidate a free residence in the house, with a free clerkship and dressership for six months. The Northern Hospital had been opened in 1833, and some little time before 1852 pupils were admitted to it. In 1857 the Southern Hospital, with one hundred beds, became recognized as a teaching hospital by the Royal College of Surgeons, but the Royal College of Physicians did not grant recognition until 1870. The Royal Infirmary School of Medicine steadily developed, and in 1881 a charter of incorporation of University College was obtained, work commencing the next year on buildings erected on a site previously belonging to the Royal Infirmary. In 1884 the College became a part of Victoria University with the Colleges of Manchester and Leeds. The closing years of the nineteenth century saw great advances in all directions with the growth of modern medical science, and eventually the charter of the University of Liverpool was granted in 1903, establishing simultaneously a guild of undergraduates. Since then progress has been rapid, recent outstanding achievements being the reconstruction of the department of biochemistry in 1932, and of the departments of physiology and pathology last year.

Village Hygiene

A Chadwick Public Lecture, entitled "Village Hygiene: Water supply; Disposal of Refuse," was given by Dr. Jane Walker, C.H., on May 8th, at the Royal Society of Tropical Medicine and Hygiene. She began by stating how much more attention had been paid to sanitation in towns than in villages, and how little material there was for such a lecture. Indeed, Dr. Vivian Poore's *Rural Hygiene* was still the only standard work on the subject,

and that was published in 1894. Dr. Vivian Poore was a great friend of the lecturer, and helped her in arranging the sanitation for her sanatorium in Suffolk for the open-air treatment of tuberculosis. The methods of refuse disposal, established in 1901, were then detailed and the contemplated change to water carriage discussed. Reasons were also given which made such a change imperative, deplorable as they were. The value of the dry system of sewage disposal, from a manurial point of view, was stressed, and the difficulties of dealing with large quantities of refuse water were pointed out, also the fact that sewage must be diluted enough not to kill, but really to nourish plant life. The value of rain water and the importance of conserving it was dwelt on, and a method of rendering it pleasantly drinkable was described. The duties of rural district councils in providing pure and sufficient water for everyone, and the various Acts and by-laws with this requirement were touched upon. The lecturer mentioned the Homecroft Association, founded in 1926, which is interested in promoting rural dwellings on the margins of towns for industrial workers and giving them land enough to produce food for their own tables in their spare time, thus enabling them to live a healthy life. Dr. Walker finally pointed out how a cottage could be kept clean and wholesome, and drew attention to the Leeds plan of providing new furniture and bedding for their new housing scheme, thus preventing the charge being made against slum dwellers that they became such wherever they were. The four "acid tests" for hygienic arrangements in the country were: (1) Are they efficient? (2) Are they easy to use? (3) Are they inexpensive in installation? (4) Are they sightly?

Central Midwives Board

At its May meeting the Central Midwives Board for England and Wales agreed to reply to a letter from the Ministry of Health that the Board did not consider that the new rules in Section E could be circulated in sufficient time to enable local supervising authorities, midwives, and any other bodies and persons concerned, to become conversant with them by July 1st next, and that therefore it would be glad if the Minister could see his way to approve the existing rules until October 1st next, on which date the Board considered that these rules should become operative. It was reported that the following resolution had been received from the Queen's Institute of District Nursing:

"That the Central Midwives Board be asked to call the attention of its members representing the Society of Medical Officers of Health, the County Councils Association, and the Association of Municipal Corporations, to the number of necessitous cases which are referred by doctors to midwives with a request that they should be summoned by a medical aid form, though the patients have been under medical care and suffer from complications due to general illness which renders them unsuitable to be midwives' cases."

It was agreed to inform the London County Council, in reply to a letter received from it:

Rule 10.—(a) That a midwife must not, except under a grave emergency, undertake operative procedure or any treatment which is outside her province. *Note.*—The question whether in any particular case such procedure or treatment was justified, will be judged on the facts and circumstances of the case.

(b) A midwife must not, on her own responsibility, use any drug unless in the course of her obstetric training, whether before or after enrolment, she has been thoroughly instructed in its use and is familiar with its dosage and methods of administration or application. *Note.*—The Board, for example, would regard the giving of pituitary extract before the birth of the placenta, except under a grave emergency, as treatment outside a midwife's province.

A study of these rules will show that in grave emergency it will be permissible for a midwife to adopt the procedure in question, and the Board will be glad to know, in due course,

¹The Liverpool Medical School, 1834-1934. A Brief Record. By Arthur A. Gemmell. Liverpool: University Press; London: Hodder and Stoughton, Ltd. (1s)

the results of the Council's experience of the working of this treatment.

Approval as lecturer was granted to Dr. Gertrude Elizabeth Cuttle, Dr. J. G. H. Ince, Dr. P. G. S. Kennedy, and Dr. J. V. O'Sullivan.

Guy's Hospital Radiographic Departments

Sir Albert Levy, who is a governor of Guy's Hospital, visited the hospital's radiographic departments on May 9th to see the working of the new equipment which has recently been provided by a gift of £6,000 from the Albert Levy Benevolent Fund. Creating the fund in 1929 for the purpose of assisting hospitals and other charitable objects, and alleviating distress and poverty, Sir Albert Levy transferred to the trustees of the fund securities to the total value of £250,000, the deed of settlement providing that, in addition to the annual distribution of the income received, the trustees should distribute the whole of the capital in twenty-five yearly instalments. The cash to be received and distributed by the trustees during the operation of the fund, therefore, will amount to upwards of £400,000. During the five years of its existence the fund has benefited a large number of important charities of all kinds, and grants have also been made to individuals in relief of poverty. Upwards of sixty hospitals have received grants, in particular the Royal Free Hospital, where a wing, opened by Queen Mary in 1932, bears Sir Albert Levy's name, and Guy's Hospital, where the radiographic departments have been entirely re-equipped at a cost of £6,000. At Guy's 14,608 patients were x-rayed in 1933 (23,377 photographic films and 5,361 screen examinations).

Scotland

Annual Meeting of the British Association

The annual meeting of the British Association for the Advancement of Science will be held in Aberdeen from September 5th to 12th inclusive, under the presidency of Sir James Jeans. Previous meetings took place in that city in 1859, when the Prince Consort delivered the presidential address, and in 1885. On the present occasion Sir James Jeans will address the inaugural meeting on September 5th at 8.30 p.m., his subject being "The New World-picture of Modern Physics." There will be two evening discourses. The first, on September 5th, will take the form of a memorial lecture for the late president, Sir William Hardy, and will deal with the preservation of meat, fish, and fruit. The second will be delivered by Professor W. L. Bragg on September 10th on the exploration of the mineral world by x rays. It is also hoped to arrange an evening symposium on September 11th on the general relation between science and the community. The Sections this year will be: mathematical and physical sciences, chemistry, geology, zoology, geography, economic science and statistics, engineering, anthropology, physiology, psychology, botany, educational science, and agriculture. The presidential address in the Section of Physiology will be delivered by Professor H. E. Roaf on normal and abnormal colour vision, and there will be papers and discussions on nutrition in relation to disease; food preservation; and recent contributions to the physiology and pathology of the blood. Dr. Shepherd Dawson's presidential address in the Section of Psychology will deal with psychology and social problems. In this Section there will be a joint discussion with the Section of Zoology on the interpretation of animal behaviour, and another joint one with the Section of Educational Science on some aspects of child guidance. Other papers and discussions will relate to perseveration and its testing,

and the measurement of fatigue. In connexion with the annual meeting whole-day excursions will be made on Saturday, September 8th, to Inverness, Morayshire, Deeside, the Grampians, the Trossachs, and other centres of interest. The programme and daily time-table of the meeting will be forwarded in August to those who have intimated their desire to attend; and with it will be issued copies of *The Scientific Survey of Aberdeen and District*. Inquiries about membership should be addressed to the secretary, British Association, Burlington House, London, W.1. It is announced that future annual meetings will be held at Norwich in 1935, at Blackpool in 1936, and at Nottingham in 1937.

Victoria Hospital Tuberculosis Trust

At the annual meeting of the Royal Victoria Hospital Tuberculosis Trust, held in Edinburgh, Sir Ralph Anstruther, referring to the decline in the tuberculosis mortality rate, said that this was due in part to the work of the Trust for many years past. He believed that at the present time insufficient attention was being paid to the incidence of tuberculosis among children. Dr. A. H. H. Sinclair, President of the Royal College of Surgeons, stated that Southfield Sanatorium, managed by this Trust, was largely intended for the treatment of tuberculosis in its earliest manifestations, and one-quarter of the patients there were children. He had been an assistant in the Victoria Dispensary in 1896, and the feature which distinguished the work to-day from that of forty years ago was the attention now given to research. Professor Sir Robert Philip, vice-president of the Trust, said that a curious idea was abroad that when the Government of a country took an interest in a movement, voluntary effort might sink into the background. This was a great error. The Government had provided, as no other Government in the world had done, a tuberculosis scheme working efficiently throughout the country on a uniform pattern. Beyond this, however, there was much work which could only fall to be done by such agencies as the Trust in virtue of the fact that the Trust was a free agent. Among other things, the Trust was concerned with educating public opinion and also doctors, and mitigating, as far as possible, the difficulties which overtook households when tuberculosis entered the doors. A large measure of success in any campaign depended upon the intelligence department, and the Trust claimed through its research work to form a part of that department in the campaign against tuberculosis. Much success had already attended its efforts: during the past twenty-five years the tuberculosis mortality rate had fallen by 50 per cent. Dr. William Robertson, formerly medical officer of health for Edinburgh, said that the Trust had taught local authorities all over the country how their work should be organized. The report of the Trust for the past year points out that forty-six years ago practically nothing was done towards the control of tuberculosis. Since then, however, mortality had fallen steadily. The Trust, while watching every part of the field, had decided to focus its energies especially upon questions attaching to the tuberculous child. The modern view was that infection occurred in various ways during childhood, and this influenced the whole life of the individual. The child should be protected, therefore, first from the infection, and secondly from its more serious consequences, which might disturb health or cause death at any subsequent date. Research work at Southfield Sanatorium continued to be directed to the avenues of infection and the channels of spread, and it was becoming more and more clear that tuberculosis in the adult was simply a late consequence or end-product of the infection. With regard to diet, the committee, through long experience, had become convinced of the great value of fresh fruit and vegetables,

eggs, raw meat, fresh milk, and butter, with a limitation of certain carbohydrates. Each case, however, should be considered on its merits—for example, in intestinal tuberculosis the value of fresh tomato juice had been confirmed. The strict limitation of salt in many forms of tuberculosis had also been found beneficial. Investigations had been renewed to determine the place of sheep's brains in the dietary. Observations on patients who were making slow progress on ordinary diet showed that coincidentally with the addition of brains noteworthy improvement occurred in respect of checking systemic and circulatory disturbance. The report appeals for help for research work, and states that the trustees of the late Mr. W. L. Stewart have allocated £750 to provide the salary of a research scholar for three or four years, but that much more is required for prolonged investigation, a sum of £5,000 being desirable. Appended to the report is considerable information concerning the handling of cases of tuberculosis, and the rules for the maintenance of health by tuberculous patients.

Glasgow Post-Graduate Courses

A summer session for post-graduate teaching has again been arranged under the auspices of the Glasgow Post-Graduate Medical Association. The facilities will fall chiefly into two divisions: (a) general medical and surgical course, and (b) clinical assistantships. During the last two weeks of August and the first two of September a whole-time course, for which an inclusive fee is charged, will be conducted in some of the general and special hospitals. The course will include most of the subjects of interest to the general practitioner—the mornings being occupied with general medicine and surgical diagnosis, and minor surgery in the Royal Infirmary and the Victoria Infirmary, and the afternoons with special subjects in the special hospitals or departments of the general hospitals, two subjects being dealt with each afternoon. Clinical assistantships, which are limited in number, are available in the summer months as well as at other times. Full particulars may be had from the secretary, Post-Graduate Medical Association, The University, Glasgow.

Central Midwives Board

The results of the recent examinations of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, were as follows. Out of 165 candidates who appeared for the examination, 147 passed: of the successful candidates twenty-five were trained at the Royal Maternity Hospital and twenty-one at the Elsie Inglis Memorial Hospital, Edinburgh; fifty-six at the Royal Maternity Hospital, Glasgow; five at Stobhill General Hospital; two at the Eastern District Hospital; one at the Western District Hospital; six at Govan Maternity Hospital; eight at Bellshill Maternity Hospital; one at Barshaw Hospital, Paisley; three at the Maternity Hospital, Aberdeen; fourteen at the Royal Infirmary, Dundee; and one at the Royal Infirmary, Stirling.

Presentation to Larbert Doctor

At a public meeting in Larbert on May 10th a presentation was made to Dr. John Gilfillan Ronald, who for forty-three years has been a medical practitioner in the district. The chair was occupied by Sir Ian Bolton, and a number of Dr. Ronald's former assistants, now practising elsewhere, were present. The occasion was the centenary of the commencement in practice of Dr. Ronald's father; the latter retired and was succeeded by his son in 1891. The presentation was made on behalf of the community of Larbert by the Rev. D. S. Mcrow, and took the form of a silver loving-cup suitably inscribed and a cheque for £268.

Reports of Societies

SELF-ADMINISTERED ANALGESIA FOR THE MIDWIFERY OF GENERAL PRACTICE

At the meeting of the Section of Anaesthetics of the Royal Society of Medicine on May 4th, with Dr. H. P. FAIRLIE in the chair, a paper was read by Dr. R. J. MINNITT (Liverpool) on "Self-administered Analgesia for the Midwifery of General Practice." The paper was accompanied by a film.

Dr. Minnitt began by a reminder of the great mental and physical suffering of women in labour. In the relief of labour pains three principles were taken: (1) the procedure must be simple and inexpensive; (2) there must be no danger to either mother or child; (3) labour must not be prolonged by the means adopted. He was satisfied that his gas-air analgesia technique satisfied these requirements. He used the term "analgesia" as indicating insensibility to pain without loss of consciousness. The gas-air analgesia apparatus which he demonstrated weighed, including face-mask, seven and a half pounds. The average consumption of gas was thirty-five gallons per hour, and analysis of the mixture inhaled showed approximately 35 per cent. nitrous oxide in air. The whole action was controlled by inspiration. The apparatus was never intended for inducing anaesthesia, hence it was not applicable for such procedures as version, the application of forceps, or any extensive repair of a torn perineum. The only important instruction was that whoever applied it must see that it fitted the face in an airtight manner. Scientific work showed that there was no danger to mother or child in its use, and electrocardiograms taken before and during application bore out this fact. The report of the medical officer in charge of the electrocardiograph department of the David Lewis Northern Hospital on six patients was that the electrocardiograms did not appear to have been influenced to any significant extent as the result of the patient's experience. The alterations in the mother's pulse and the foetal heart rates estimated at approximately equal intervals during analgesia were within normal limits. He was unable to submit scientific evidence that labour was not prolonged, but the average length of the second stage in normal deliveries with gas-air analgesia for eighty-one primigravidae, making use of the analgesia for varying times from fifteen minutes to nine hours, including delivery, was one hour and eighteen minutes, and in a total number of forty-seven multigravidae, making use of analgesia for varying times from fifteen minutes to four and a half hours, including delivery, the average length of the second stage was thirty-five minutes. The inference was that the length of the second stage of labour was within normal limits. Finally, there could be no question about the relief from pain and distress due to the use of the apparatus: the cinematograph film demonstrated it. In his wards there was comparative quietude; patients were less tired than formerly from their efforts at expulsion; and amnesia was produced, sometimes until the next day, patients avowing that they did not remember anything about delivery. The report on the method given by the medical board of the Liverpool Maternity Hospital stated:

"From their own observations the members of the board are satisfied that the method does relieve pain without interfering with the progress of labour, and without ill effect on the mother or child. The recent observations on the electrocardiographic readings and the blood gases support the clinical findings from the experimental point of view, and it is hoped that further work of this nature will be undertaken."

"The method is simple and safe; the apparatus is portable and admirably adapted for use in domiciliary work in the hands of any well-trained midwife. Arrangements have already been made for the instruction of nurses in the administration of this form of analgesia, and it is hoped that the method will be introduced into district work in the near future."

Dr. JOHN ELAM spoke of having used the method for 141 cases at Wellhouse Hospital, Barnet. There were five failures. He made a practice of getting the apparatus

going and assuring himself that the patient was all right, after which she was able to carry on. No premedication was used, though one or two of the patients had had a little morphine earlier in the labour. In his opinion the method was the greatest advance that had been made in order to bring the advantages of anaesthesia in labour to those women who were attended only by midwives or nurses, or even busy general practitioners.

Miss LLOYD WILLIAMS (Royal Free Hospital) said that the apparatus had been in use at her hospital for three weeks, and during that time it had been used on twenty-nine cases, all but one of which were primiparae. All except one received some form of sedative treatment beforehand. In twenty-seven of the cases the gas-and-air was given only for the second stage; in the other two it was given also at the end of the first stage. In the twenty normal cases there was good analgesia in nine, fair in six, and poor in five. Though gas-and-air was a good analgesic, she and her colleagues did not feel that it was adequate to tide the woman over the actual birth of the child, therefore in most of their cases some anaesthesia was used—in most, chloroform.

Dr. GEMMELL (Liverpool Maternity Hospital) said that it should be emphasized that the method of self-administration left the doctor's hands free; the instruction to the patient as to its use could be carried out while the doctor was preparing his hands. The use of the apparatus certainly lessened the voluntary resistance of the patient, and so tended to shorten the second stage. He had specially noted the restfulness of the mother between the pains, and that at the end of labour she was much less tired than had previously been the case. He did not foresee any emergencies, except total failure of the apparatus; the larger problem would be as to how midwives could obtain the use of the apparatus, the cost being beyond their private means.

Dr. HILDA GARRY (Liverpool Maternity Hospital) said that the use of the apparatus by hysterical patients was sometimes difficult, but in the great majority of cases the analgesic was administered entirely by the patient herself during delivery. In many there was complete amnesia, and the woman would say she had no pain. She did not think that perineal tears were more frequent or serious with the apparatus than without it. She had conducted 121 cases at the Liverpool Maternity Hospital, and in 103 there was good relief from pain. These included three forceps deliveries, all after prolonged second stage, the patients receiving analgesia up to the time of the general anaesthetic. The eighteen poor results were classified under tardy administration, dislike of gas, non-cooperation, hysteria, and other causes.

Dame LOUISE McILROY said that her view was that the period of most acute pain was at the end of the first stage; even the passage of the head did not cause quite so much pain as that. The majority of the cases at her hospital had light chloroform, or ether, or gas-and-oxygen when the head was passing over the perineum. The great point in this apparatus was the self-administering factor, though it should not be used, she thought, without supervision, either by doctor or nurse, as she would hesitate to regard it as completely foolproof. She hoped the apparatus would be produced cheaply; it would be interesting to know that various hospitals were trying it. It seemed likely to solve the problem for the midwives of the future.

Dr. L. C. RIVETT reminded the meeting that more than half the confinements in the country were conducted by midwives without a doctor, and this would be a boon to them. The machine described had been used at Queen Charlotte's Hospital for three weeks, on twenty-five cases. About half the patients said that they had no recollection of the birth of the child, and nearly half said the pains were very much relieved, though they did remember the birth. There had been no delay in the second stage of labour; if anything, the apparatus shortened the second stage, at the same time reducing the patient's voluntary response to the progress of the child's head. From what he had seen of the apparatus he had nothing but praise for it. Miss KELLY spoke of her experience of the apparatus in eighteen cases, in only three of which was it unsuccessful. Two of the three were very hysterical

women who could not be persuaded to help in any way. Dr. WADDEY said he had seldom found the ordinary analgesia sufficient for the delivery of the child's head. He also expressed some anxiety about cases when the heart was not very strong, as the midwife was not likely to be able to deal with the emergency which might happen at the height of the pains. Dr. WRIGLEY believed that the widespread use of such an apparatus would ensure a much greater number of normal deliveries.

Dr. MINNITT, in reply, said that he had tried a number of patients with a small dose of scopolamine, but it seemed to make them too drowsy, and that might delay the pains. There were two conditions in pregnant women which, with gas, produced cyanosis—namely, serious heart disease and lung disease—and a midwife should not allow cyanosis when using this apparatus without calling in a doctor.

THE GALL-BLADDER IN VARIOUS ASPECTS

A meeting of the Clinical Section of the Royal Society of Medicine on May 11th, under the chairmanship of Dr. BERNARD MYERS, was devoted to the consideration of the gall-bladder from various aspects.

ANATOMY AND CONGENITAL ABNORMALITIES

Professor H. H. WOOLLARD, in discussing the anatomy of the gall-bladder, said that in some mammals the gall-bladder was absent. It might be absent or present in closely related members of the same genus. These variations were somewhat obscure. It had been stated that it was the intermittent feeders who possessed a gall-bladder, but not much value need be attached to that distinction. In those animals which had not a gall-bladder, such as the rat, the bile from the liver was a much more concentrated liquid than that which occurred in animals with a gall-bladder; therefore there seemed to be an intrahepatic concentration of the bile. He reminded the meeting of the general position and anatomical relationships of the gall-bladder. It had been suggested that the adjacent relationships, such as the pressure of the abdominal wall or the respiratory excursions of the liver, might have something to do with the emptying and filling of the gall-bladder, but the speaker considered it improbable that any of these structures were concerned. Very great variations were possible in the normal anatomy. The gall-bladder might be buried within the liver. In one in 3,000 it showed a tendency to be double. A host of anatomical variations were present with such frequency that one could not well talk about a normal structure, and it seemed clear from radiological studies that none of these anatomical variations was of any importance; it was always possible, whatever the variation, for the gall-bladder to empty itself sufficiently. The musculature of the gall-bladder was poor, not arranged in any regular strata; outside the muscle wall there was a perimuscular layer in which blood vessels and lymphatics were abundant. The movements of the gall-bladder had been intensively studied. It had been said that nobody had ever seen it contract or had observed peristalsis within it, but, despite this, there could be no doubt that the gall-bladder did contract and that the contraction was associated with a relaxation of the sphincter of Oddi. Various drugs, such as pituitrin and pilocarpine, would stimulate the gall-bladder, as would ingestion of foodstuffs, or even the anticipation of food, such as cream and yolk of egg, also the circulation of chemical substances. It appeared that the movements were initiated in the first instance by nervous reflex, and subsequently maintained by chemical activity. The speaker showed examples of the anomalies in the hepatic duct system; some 320 variations had been described, and it was impossible to reduce them into a classification. One had simply to be prepared for almost anything.

PHYSIOLOGY, PATHOLOGY, AND CLINICAL ASPECTS

Dr. CHARLES NEWMAN said that the function of the gall-bladder was twofold: concentration, and emptying and filling activity. The important question was what was added to the bile and taken from it during its stay

in the gall-bladder. The fact that the gall-bladder did empty was accepted by everybody. The nervous mechanism was of some importance, the vagus being the stimulating nerve to the muscular apparatus. Strong stimulation of the vagus caused spasm in the muscle. The strongest muscle in the biliary system was the ampulla, but mucous secretion from the walls of the bile ducts would produce a very high pressure in the system—much larger than the gall-bladder could produce or the ampulla could withstand, even when in a state of spasm. The abnormal physiology of the gall-bladder was very much the same whatever the disease of the biliary tract—that is to say, the effect of spasm of the ampulla or stasis of the biliary system was very much the same whatever the cause producing it—hence the extraordinary similarity of the symptomatology in gall-bladder disease. He believed that cholecystitis, if sufficiently definite to be diagnosed, should be treated by operative procedure, and not by medicine. The only difficulty was to be certain of the diagnosis of cholecystitis, which might be classified into three groups—namely, acute, chronic with gall-stones, and chronic without gall-stones. The patient with genuine chronic cholecystitis usually suffered from flatulent dyspepsia. The bile recovered with the duodenal tube, apart entirely from the information obtained as to the way in which it was expelled, was of some value in showing whether the gall-bladder was inflamed or not. Cholecystitis was a subserous inflammation, and not a submucous one. The theory of gall-bladder infection had passed through certain phases. The original suggestion was infection with *B. coli* which had got into the gall-bladder; then it was thought to be staphylococci, and again streptococci; and now there was a very strong return to the original doctrine that the agent was usually *B. coli*. The way in which the organism got there presented an equally difficult problem; so little was known concerning it that it was not worth quarrelling over the subject. Dr. Newman went on to discuss the nature of the gall-stones, and the arguments that the pure cholesterol stone might be due to metabolic changes. He felt himself that it was probably produced by very mild infections of the gall-bladder. Cystic duct obstruction was the conditioning factor for the production of excessive calcium in the gall-bladder. Carcinoma of the gall-bladder was commonly supposed to be due to gall-stones, but one-third of the cases of carcinoma were found in stone-free gall-bladders, and it was much more likely on statistical grounds that both gall-stones and carcinoma of the gall-bladder were due to cholecystitis, and not the carcinoma of the gall-bladder to the gall-stones. It was said by many people that the gall-bladder was never palpable, and while Dr. Newman did not wholly agree with this he thought that sometimes the clinician felt a single segment of the rectus and thought it was the gall-bladder, largely because his clinical sense suggested that the patient was likely to have a distended gall-bladder.

RADIOLOGY

Dr. H. K. GRAHAM HODGSON discussed the radiological appearances. Radiology never would take the place of routine clinical methods; its real purpose was ancillary, and it was not the spearhead of the diagnostic attack. He demonstrated how far it was possible for the radiologist to assist in the diagnosis of pathological conditions in the gall-bladder. He divided the history of the subject into two distinct eras. The first was from 1899 to 1924, when the increasing refinements of x-ray technique helped in the ascertainment, the limiting factor being the calcium content of the stones, for unless this calcium content was sufficiently large, gall-stones were not opaque to x rays. In considering opacity it must be remembered that radiography was based on relative and not absolute opacities, and a stone removed from the gall-bladder might cause an x-ray shadow, whereas in the body it could not be differentiated from the shadows of the surrounding tissues. The second period, from 1924 onwards, had been one of marked advance in cholecystography through the use of a particular dye to bring about a difference in density. That

was largely a test of physiological capacity, in contrast to the almost wholly mechanistic nature of the opaque meal examination. In cholecystography a very careful technique was essential, the word "technique" including the previous preparation of the patient. The main physiological factors governing examination must be strictly observed. Forty-eight hours previous to the examination the patient should take a purgative. On the following day a control radiograph should be taken on a large film, to include the area of the lumbar and the lower dorsal spine. The patient should be carefully instructed to hold his breath, as the slightest movement made the faint shadow of a gall-stone invisible. The radiogram so taken should be carefully examined for renal calculi or any condition of the lower dorsal spine which might lead to error. The patient should take a prescribed meal in the evening, and half an hour after the meal the dye should be given. The patient should then be required not to eat or drink anything until the radiogram was taken fourteen hours after the ingestion of the dye. A further radiogram was usually taken at sixteen, or eighteen, and sometimes at twenty hours. It was in eighteen to twenty hours that the maximum degree of concentration was reached. With the aid of a number of radiograms Dr. Hodgson discussed the x-ray findings, and closed by remarking that cholecystography was still a young subject, and much had to be learned.

SURGICAL ASPECTS

Mr. A. J. WALTON said that, although cholecystitis was a common cause of formation of stones, cases of acute cholecystitis were rarely seen to-day without stones. He thought that one ought to be very chary of diagnosing cholecystitis without stones unless it had a very short history and had arisen more or less in the course of some acute infection elsewhere. If the condition appeared to be quietening down in a few days one was justified in watching it and seeing how it progressed, but if it became worse, then operation was necessary. The operation of preference was cholecystectomy, but if the patient was gravely ill cholecystostomy as a palliative might have to be undertaken. Chronic cholecystitis was a condition much too frequently diagnosed, and much too frequently operated on. If the patient had chronic cholecystitis he would ultimately develop gall-stones, and until the stones did develop, as a general rule, one would lose nothing by treating the patient medically, and the patient was in no grave danger. The danger to-day was in having cholecystitis too easily diagnosed and too easily operated on. If the medical treatment failed to give benefit the patient would probably develop gall-stones, which would make the diagnosis more assured. Many of the cases wrongly diagnosed as chronic cholecystitis were in fact due to altered function of the gall-bladder. He discussed the formation of the stones, mentioning that he had long maintained, on clinical grounds, that the pure cholesterol stone was not metabolic. This was indicated by the fact that it was always in its outer layers amorphous, that it was never in any circumstances found in the ducts, and that every such stone which he had seen had been associated with pathological evidence of chronic cholecystitis. He believed that all gall-stones, other than purely pigment stones, were secondary to chronic cholecystitis, and therefore should theoretically be operated on, though there were certain types of patients—especially those who were able to adapt themselves to the conditions of their disease—to whom it might be preferable to give medical treatment, and by a well-regulated course of medical treatment the patient might at any rate be put in a much better condition for operation ultimately. But operation must not be delayed too long. Mr. Walton gave some statistics of cases which had been under his care. Of his total number of gall-stone cases—namely, 662—the number in males was 149 and in females 513. There were 133 cases of stone in the common ducts—twenty-seven male and 106 female. Recurrent stone in the gall-bladder occurred in seventeen cases, in the common ducts in eleven, and in both in sixteen. His list included eighteen cases of carcinoma of the gall-bladder (four male and fourteen female), and twenty-eight of obstruction due to

carcinoma of the common ducts (eight male and twenty female). Of the eighteen cases of carcinoma of the gall-bladder twelve were without stones, and in the twenty-eight cases of carcinoma of the ducts twenty-one were without stones. These twenty-eight cases were referred as follows: ampulla, nine; common duct, six; junction, ten; hepatic duct, three. He would not agree with Dr. Newman that one could not feel the gall-bladder; he had felt it in dozens of cases. It was very interesting to watch a patient admitted to hospital with acute cholecystitis. During the first day there was pyrexia, but after a day or two the temperature fell and the condition improved, and then the gall-bladder could be felt. The symptom which was perhaps most helpful in diagnosis was the character of the jaundice. Intermittent jaundice in the case of a patient who had jaundice in the presence of gall-stones led to a combination of orange and red colours in the skin, which was unmistakable.

MEDICAL TREATMENT OF CHOLECYSTITIS

Dr. A. F. HURST said that he believed chronic cholecystitis to be the most common organic cause of indigestion. He stressed the enormous value of cholecystography if combined with palpation. One of the most important signs of gall-bladder disease was to find the point of tenderness at what one took to be the gall-bladder, and it was useful to have one's opinion of the location verified or otherwise by the x-ray picture. He made a plea for the greater use of the duodenal tube, which revealed many cases of what he would call medical cholecystitis in which the cholecystograph was perfectly normal. He did not quite agree with the way in which Dr. Newman had dismissed the question of infection, and he believed that the finding of *B. coli* in the bile was of the greatest importance, particularly if, by careful examination of the duodenum before the magnesium sulphate was given, it was found that *B. coli* were absent from, or present only in very small numbers in, the duodenum, as compared with very large numbers in the concentrated bile. He believed there was a large class of cases of cholecystitis which were curable by medical means—cases in which the cholecystograph was normal, but in which there was some abnormality in the bile. In these cases biliary drainage by magnesium sulphate every morning, olive oil before meals, and large doses of hexamine, with sufficient alkali to prevent the hexamine from being broken up in the bladder and having an irritating action there, was very likely to result in clearing up the condition.

The remainder of the meeting was devoted to the exhibition of cases and photographs bearing on the subject under discussion. These were shown by Mr. T. HOLMES SELLORS (for Mr. MORTIMER WOOLF), Dr. CHARLES NEWMAN, Dr. J. E. A. LYNHAM, and Mr. R. RUTHERFORD, and a number of specimens were lent by St. Bartholomew's Hospital and the Royal College of Surgeons.

NON-TUBERCULOUS PULMONARY FIBROSIS IN CHILDREN

At a meeting of the Society of Medical Officers of Health on April 27th, with the president, Dr. STANLEY BANKS, in the chair, Dr. C. D. AGASSIZ opened a discussion on the relationship of measles and whooping-cough to chronic inflammatory conditions of the chest.

Dr. Agassiz said that since the work of Clarke, Hadley, and Chaplin in 1896 comparatively little further work had been done until recently, but radiological and tuberculin tests had enabled them to diagnose the condition at a much earlier stage. He emphasized the importance of cyanosis as showing the considerable lung involvement that must be present before cyanosis was produced, though the physical signs and x-ray findings might not lead one to suspect the extent of the disease. Cough, dyspnoea, and displacement of organs were the chief symptoms and signs, and he contrasted the latter with those found when the child was suffering from pulmonary

tuberculosis, stressing the variety of the adventitious signs and their inconstant character. In the majority of cases the attacks of bronchitis or bronchopneumonia to which these children were subject were attributable to a previous attack of measles, whooping-cough, or pneumonia. Dr. Agassiz drew attention to the mild febrile attacks to which such patients were liable, and to the concurrent radiographical findings. In his opinion the inflammatory condition in the lungs during these attacks was in the form either of a consolidation affecting the vesicular portions of the lungs or of a peribronchial inflammation.

Dr. G. JESSEL said that intermittent or chronic cough was a frequent complaint among children seen by medical practitioners, and a number of such children were referred by them to tuberculosis officers and seen either at the dispensary or at home. The illness had often been preceded by an attack of measles or whooping-cough, but this was not invariable. In 1933 he had examined 282 children on account of chest symptoms, and eighty-three (29 per cent.) gave a history of measles or whooping-cough: 221 were non-tuberculous, and sixty-three (28 per cent.) of them had a history of measles or whooping-cough. Of the eighty-three who had had these diseases five (6 per cent.) were suffering from pulmonary tuberculosis, and fifteen (18 per cent.) from non-pulmonary tuberculosis—that is, 24 per cent. were found to have tuberculosis in one form or another. Of the 199 children with no history of measles or whooping-cough four (2 per cent.) had pulmonary tuberculosis, and thirty-seven (18.5 per cent.) non-pulmonary tuberculosis—that is, in 20 per cent. there was tuberculosis in one form or another. From these figures, Dr. Jessel concluded that: (1) in children who had had measles or whooping-cough there was a slightly increased incidence of tuberculosis over those who gave no such history, although the difference was not statistically significant; (2) that this slight increase was in the direction of pulmonary tuberculosis; and (3) there was no apparent difference in the frequency of non-pulmonary tuberculosis, whether the child had had measles or whooping-cough or not. He then discussed the radiology of tuberculous and non-tuberculous conditions of the lungs.

Dr. J. E. MCCARTNEY, in introducing the pathological aspect, first outlined briefly the histology of the lung, particularly with reference to the terminal bronchioles. He then dealt with the different types of pneumonia—namely, lobar, lobular or bronchopneumonic, and the interstitial variety. The type of consolidation in measles, he said, was of the interstitial variety, often with oblitative bronchiolitis. Bronchiectasis was caused by a combination of several factors: mechanical, due to inspiration in partially occluded bronchi, and to weakening of muscular and elastic tissue in the bronchial wall; infective, the result of retained secretion; and fibrotic, the sequel of contraction of connective tissue. These various factors combined to produce a vicious circle, with the resultant bronchiectasis and fibrosis met with in later childhood. Dr. McCartney said that these and other sequelae of measles could be avoided if the disease were attenuated by the prophylactic use of human convalescent serum or adult human serum. He advocated widespread publicity for the advantages of attenuating the severity of measles, and said that provision should be made for the extensive employment of adult serum for measles contacts.

Dr. J. S. WESTWATER, commenting on the factors contributing to the development of a respiratory sequel to measles, said he had found it was the younger child who was the more likely to be affected. Equally important, however, was the child's previous history. In a series of cases with lung trouble after measles, 42 per cent. were found to have had a previous respiratory infection. It was possible that minor degrees of vitamin deficiency accounted for the child's susceptibility to pulmonary infection, and it was important to realize that measures directed only towards the prevention and attenuation of acute infections such as measles would be insufficient in preventing chronic lung disease. The prophylaxis of the condition lay as much within the sphere of infant welfare as in fever hospital practice.

Dr. J. N. Dobbie agreed with Dr. Westwater that prophylaxis might largely rest in maternity and child welfare work in preventing avitaminosis of the rachitic type, as well as with Dr. McCartney's suggestion of producing attenuated attacks of the diseases by adult or convalescent serum.

Dr. V. FREEMAN said that, according to Professor Harris, a febrile disturbance such as acute bronchitis or bronchopneumonia interfered with bony growth and left a scar which could be seen radiographically. One might therefore expect that a child subject to repeated acute and subacute exacerbations would suffer considerable interference in its growth and general nutrition, and that growth would certainly be delayed. In a large number of cases he had examined, those suffering from respiratory catarrhs tended to be below normal in height and weight, while the proportion of such catarrhs was very small in those above average weight and height.

The PRESIDENT said that the relatively common disease of pulmonary fibrosis in children of school age was still confused with phthisis, which was a rare disease at this age. At one time the term "pretuberculous" was applied to these children. When sanatorium schemes

were established by local authorities there arose a tendency to drop the prefix in order to obtain sanatorium treatment for the children. With his colleague Dr. J. H. Weir he had investigated one hundred such cases. In 42 per cent. Pirquet and Mantoux tests were negative. Ultimately a diagnosis of chronic pulmonary catarrh or fibrosis, or what might now be termed dry bronchiectasis, was reached in 66 per cent.; the apparent starting-point was severe measles or whooping-cough in sixty and bronchopneumonia in six. The remainder, except one, were also found to be suffering from non-tuberculous conditions, the single exception being a case of pleurisy with effusion. The immediate hope lay in the prevention of severe measles by the widespread use of adult serum by the general practitioner in the case of known contacts under the age of 5 years. The association of severe measles and whooping-cough with malnutrition or avitaminosis, including rickets, required investigation. Healthy, well-nourished children rarely suffered severely from measles or whooping-cough. The ultimate ideal, though doubtless remote, for the prevention of pulmonary fibrosis might be nothing less than the raising of the standard of nutrition of the whole of the infant community.

CORRESPONDENCE

The Method of Medical Care

SIR,—I have just read with great interest the editorial which appears in your issue of April 7th, 1934, page 626, on "The Method of Medical Care" in which reference is made to an abstract of a meeting on the socialization of medicine, recently held in Philadelphia.

In the first column of your editorial you seem to indicate that the Board of Trustees of the American Medical Association and its official staff do not truly voice the opinion of the Association. For this assumption there is not the slightest support. The policies presented by the Secretary of the Association, Dr. Olin West, by myself as Editor, and by the *Journal of the American Medical Association*, which is the official publication of the American Medical Association, are policies officially adopted by the House of Delegates of the American Medical Association which can be found in its proceedings. The House of Delegates of the Association has gone on record officially as opposed to state medicine in all its forms. Until the House of Delegates changes its point of view, the *Journal of the American Medical Association* will continue to present that point of view. Inasmuch as you urge that the *Journal of the American Medical Association* should always present the official view from Great Britain as presented by yourself and your associates in the British Medical Association, it would seem only reasonable to ask that you observe the same courtesy in relationship to the American Medical Association.

It is wholly with a view to avoiding some of the difficulties which admittedly exist in the British scheme of affairs that we have pointed out these weaknesses from time to time. Indeed, you yourself in the last paragraph of your editorial list a number of weaknesses which apparently you have found impossible to overcome.

May I say again that the official policy of the American Medical Association is to welcome experimentation in new forms of medical practice always with the understanding, however, that such experimentation conforms to the principles of medical ethics and does not represent an exploitation of the medical profession by commercial interests or by politicians.—I am, etc.,

Chicago, April 30th.

MORRIS FISHBEIN.

Strangulated Hernia

SIR,—I have read Mr. Wood Power's article (*Journal*, May 5th, p. 787), advocating the use of local analgesia in the treatment of strangulated hernia, with nothing but pleasure. He also advises its use in the operation of "radical cure," quite apart from the complication of strangulation, but apparently limits this advice to patients over 45 years of age. Why? It is certainly quite as good in the case of adults of any age, and I have used it so for many years with altogether admirable results.

As Mr. Power says, the necessity for operation in almost all cases of hernia does not seem to have been sufficiently stressed, and there must be many thousands of people walking about London every day wearing more or less inadequate trusses. Even in the cases where the truss is effective and correctly in place, they do not understand the necessity of wearing some support while in bed and when bathing, and do not realize the care needed to keep the subjacent skin clean and in good nutrition. Cases have come to me with coils of bowel in the scrotum, and the ordinary spring truss pressing more or less over the inguinal canal, with the skin chafed and excoriated. Fortunately the spring had lost its tension long ago, or the result would have been more disastrous still. Mr. Power is unwilling to lay the blame on the general practitioner, and he may or may not be right. At any rate the sale of trusses should be forbidden by law, except on the order of a medical practitioner, and the latter should see the instrument fitted in person, and give full instructions about its use, after fully realizing that he has accepted a grave responsibility in ordering one at all.

When we come to the question of treatment of an apparently strangulated hernia, I am afraid that I cannot altogether agree with Mr. Power on several important points. It is obvious that he dislikes the idea of taxis. Why not be dogmatic, and say straight out that no general practitioner should ever attempt taxis in the patient's home provided a surgeon is within any reasonable call, or a hospital within any reasonable distance? This will clarify the matter at once. Then Mr. Power reluctantly allows himself to put a time factor of safety of four or five hours, while prohibiting the use of taxis altogether in femoral hernias. It is not always easy for a good surgeon to distinguish inguinal from femoral cases in the presence of strangulation, and we have all met with cases where a patch of bowel was more or less necrotic in two or three hours, and an occasional case

where the constricting agent was a band in the hernial sac itself.

But Mr. Power makes his worst mistake in the priority he gives to taxis over the manœuvre to which he gives only second place after taxis has failed. This is a very bad error. When called to a case which he diagnoses as an *early* strangulated hernia, there is only one piece of advice that should be given to a general practitioner:

Raise the foot of the bed about three feet from the floor by pushing a small table or other object under this end, and apply a partly filled hot-water bag (which should not be too heavy) over the part, carefully interposing some soft woollen material to prevent burns, and ease the weight. Send for a surgeon or a hospital ambulance, and give a small hypodermic injection of morphine.

Even if reduction has apparently taken place before one or the other reaches the house, the patient should go to hospital, where he is under observation, and more time can be given to a really adequate skin preparation. It offers a belated chance of doing a job that should have been done long ago, and no man should be given the chance to endanger his life by delay again.

In treatment Mr. Power advocates the use of the stomach tube when regurgitant vomiting is occurring, with gastric lavage. It may be a quibble, but I prefer to pass the small-calibre duodenal tube, not troubling about lavage, and connect this to a low negative pressure bottle, the patient being kept in a slight Trendelenburg position, and the tube fixed in place as long as there is a regurgitant tendency. In long-standing, badly shocked cases slow infusion of normal saline solution with 0.5 c.cm. of 1 in 1,000 adrenaline solution to each pint should be run into each axillary region from a suspended container while the operation is in progress and for twelve hours after removal to the ward. Mr. Power uses kerocaine 1 per cent. I have always used novocain 0.5 per cent., and find this quite strong enough, but I combine it with 1 in 150,000 adrenaline chloride.

But I think his method of reaching the deep tissues of the cord and the internal ring in the presence of strangulation is horribly dangerous. No doubt he has acquired great skill in the method, but most surgeons will find it much safer and just as efficient to lay bare the external oblique aponeurosis first, clear the pillars of the ring in front, if possible, and pass quite a blunt, short-bevel needle from the external ring region upwards and outwards beneath the aponeurosis, and then inject about 10 c.cm. all down the canal. Mr. Power describes his own method of performing a "radical cure," if necessary combining ablation on the one side. Well, there are many methods, and some of them very good, but any of them will fail unless the aseptic technique is meticulous and adequate relaxation of the parts maintained with properly thought-out support during the first three or four weeks. Old people must be kept propped up, and got into an easy-chair after a few days, or the death rate from pulmonary complications will remain definite.—I am, etc.,

ROY HUCKELL, M.D. Melb., F.R.A.C.S.

London, W 2, May 8th.

SIR,—Mr. R. Wood Power, in his article on strangulated hernia in the *Journal* of May 5th, mentions two methods of non-operative treatment of strangulated hernia—taxis and postural methods. These are discussed as separate lines of treatment. Yet it is possible to combine the two. The patient lies with his buttocks on a pillow on the side opposite to the hernia, the face and shoulders are turned towards the bed, the legs are flexed after a hand is introduced over the swelling in the groin, and taxis is applied. I have found this manœuvre to be

successful where taxis as ordinarily applied on the supine patient has failed. Perhaps it is the combination of better relaxation of the abdominal muscles and decreased intra-abdominal tension, with the additional pull of the gut ascending in the abdomen, on the strangulated part which brings about the reduction.—I am, etc.,

St. Peter's (Whitechapel) Hospital, May 7th. G. NORMAN CLARK, F.R.C.S.

SIR,—Mr. Wood Power, in his very important article in your issue of May 5th, urges that to prevent strangulated hernia, with its consequent appalling mortality, "There is a way, and only one, by which we can eradicate this mortality; that is a radical cure of the hernia as soon as it appears."

"'Tis a consummation devoutly to be wished," but we are not the only parties in carrying this highly desirable state of affairs into effect. No steps can be taken without the co-operation and consent of our patients, and it is useless to shut our eyes to the fact that there are thousands, if not hundreds of thousands, of men walking about to-day with inguinal hernia, varying from a small bubonocoele to scrotal hernia the size of a foetal head or more, who are fully aware of the danger of strangulation, and yet have not the slightest intention of submitting to a radical cure. No amount of argument seems to convince them. Why? There are two reasons. (1) Many are terrified at the thought of an operation or anaesthetic. (2) Many, possibly the majority, simply cannot afford the time. This applies to medical men, busy city men, and those of the working class alike.

Hitherto there has been only one method of cure of inguinal hernia—namely, by operation, with its attendant loss of valuable time, and, only too often, actual loss of employment. Most of the latter class of patients would be only too glad to be cured if it did not necessitate this more or less lengthy period of incapacity, and many of the former would accept any cure that avoided the dreaded operation or anaesthetic. This is shown by the truly remarkable commercial success of the purveyors of so-called hernia cures "without trusses," in spite of their obvious futility (vide advertisements in the lay press).

There is a method of radical cure without operation for selected cases, the value of which has been demonstrated conclusively by workers in other countries, especially the United States, where Dr. Ignatz Mayer of Detroit is the leading exponent. This is the injection method of cure of inguinal hernia, which is steadily "growing in favour, though we do not hear of many British practitioners using it" (*Medical Annual*, 1934, p. 227). This method I described two years ago in the *British Medical Journal* (July 2nd, 1932), and it is a remarkable fact that the only opposition to it comes from those who have never seen it carried out, or have only seen one case, and that a failure, and on this they base their judgement. My experience in this method of treatment, since the publication of my article, has only served to confirm the opinion I then expressed, that it is sound and quite safe, and it also has the great economic advantage that it can be carried out without interference with the patient's employment.

It is, of course, only possible to use this method in cases where the hernia is completely reducible, and can be controlled by a steel spring truss, and there must be few completely reducible hernias that cannot be so controlled. I have still to see one. The method has been used by Professor Bratrud of the University of Minnesota for the last four years. He is enthusiastic about it, and tells me that it is well received by the medical profession there. It is also on trial at the Mayo Clinic, although so far only in cases considered quite unsuitable for opera-

tion on account of heart or chest conditions. Cases other than inguinal hernia must, of course, submit to operation.—I am, etc.,

London, W.1, May 11th. ST. GEORGE B. DELISLE GRAY.

The Control of Obesity

SIR.—It may be of interest to report a personal experience of Dr. Douthwaite's reducing diet No. 1 (*Journal*, April 21st, p. 701). Commencing on April 21st, when weight in clothes was 13 st. 11 lb., the following is a record of weights day by day: April 22nd, 13 st. 9 lb.; April 23rd, 13 st. 8 lb.; April 24th, 13 st. 7 lb.; April 25th, 13 st. 7 lb.; April 26th, 13 st. 6 lb.; April 27th, 13 st. 4½ lb.—a loss of 6 to 7 lb. in a week. The full rigidity of the diet was relaxed on April 28th, and an addition of a little butter and sugar allowed. The loss of weight was 1 to 2 lb. in seven days, the final weight on May 6th being 13 st. 3 lb.

From the above it will be seen that the diet is remarkably efficient in reducing weight gradually and steadily, but I would hesitate to describe the process as pleasant or the diet as satisfying. Physical lethargy was marked and mental concentration difficult, so obsessed was the mind with the constant thought of food. "The pangs of hunger" was no longer an empty phrase—the sight of such a name as Hungerford was sufficient to intensify the almost constant gnawing and sinking. Sleep was broken and restless: I dreamt of beer though I was not accustomed to drink it. An almost identical record of the sensations of starvation was broadcast recently by one of the survivors of the siege of Kut. Unfortunately, too, I had just read Jack London's epic of starvation, *Love of Life*, and was able to appreciate what surely must have been personal experience.

It is in providing the sensation of satiety that such a diet as Dr. Douthwaite's is so unsatisfactory: meat and fresh fruit are poor substitutes for sugar and fat in this respect, and vegetables are little, if any, better; but the slowing down in the loss of weight since the addition of these constituents is proof that excess of these is essentially the cause of most cases of obesity. Life has worn a rosier aspect since the addition of a little sugar and fat, and it is here that I would disagree with Dr. Douthwaite and contend that it is better to be fat and laugh than to diet and be miserable.—I am, etc.,

London, May 6th.

M.D.

Heredity and Hyperpiesia

SIR.—Hyperpiesia, which is such a common disorder of modern life, has been attributed to a variety of causes: of these, prolonged mental and physical stress has perhaps the greatest support. Other suggested causes are: over-indulgence in food, alcohol, or tobacco; auto-intoxication from teeth, tonsils, accessory nasal sinuses, colon, or genito-urinary tract; gout; and nephritis. That arteriosclerosis and high arterial pressure are symptoms of chronic nephritis is, of course, well known to everyone.

Few, if any, writers have drawn special attention to the factor of heredity. Perhaps most of them have made their deductions mainly from the study of cases seen in hospitals or consulting rooms, the report of whose family history is often vague and uninstructed. Having been engaged in family practice for more than forty years, I have had ample opportunities of examining various members of the same family. Many of these dated from the middle Victorian period, when birth control was practically unknown and large families of ten or a dozen were quite common. As a result of this experience I am convinced that heredity is by far the most important factor in hyperpiesia.

I have seen examples of large families the members of which have been brought up in comfortable circumstances, have led normal healthy lives, without undue mental stress or anxiety or physical strain, and have not over-indulged in food, alcohol, or tobacco—and yet nearly every member, and sometimes every member, who reached the age of 50 or upwards has died of cerebral haemorrhage or myocardial degeneration the result of high blood pressure. To quote one instance only of hereditary transmission in a smaller family.

Two brothers, A and B, who were married, died of "apoplexy" at the ages of 55 and 68 respectively. A, who was considerably the older, left two sons and two daughters (the wife died from another cause when the youngest daughter was a few years old). One of the sons has since died of cerebral haemorrhage at a little over 50; the other son and elder daughter both suffer from hyperpiesia; the younger daughter (who resembles the mother) has normal blood pressure. B's wife died of phthisis, leaving one son and three daughters. The three daughters died of pulmonary tubercle as young women. The son (who resembled the father) died of cerebral haemorrhage at 50. His blood pressure had been abnormally high for several years.

On the other hand, I have known other large families some members of which have had exceptional mental stress and worry, and others who have had considerable physical strain—and all of them have had practically normal blood pressure throughout their lives.

Alcohol is often considered to be a contributory cause. It is difficult to see what grounds there are for this: alcohol is a vaso-dilator. The first symptom of a slight overdose is usually flushing of the face. I have hardly ever seen chronic alcoholic addicts with high blood pressure; generally it is notably subnormal. Hyperpiesia appears to be decidedly more common among total abstainers or very moderate drinkers than among alcoholics.—I am, etc.,

HERBERT H. BROWN, M.D., F.R.C.S.

Wexham, May 7th.

Epidemiology of Influenza

SIR.—In your issue of March 24th (p. 556) Dr. Howard Wise refers to the paper of Dr. Torrens (February 17th), and attempts to associate the periodic invasions of Europe and other parts by influenza with the periodic silting up and overflowing of a certain large river in Asia. Now, to bring up a theory such as Dr. Wise has done the facts on which he bases his argument must be correct, otherwise his whole argument falls to pieces.

Dr. Wise suggests that in the pandemic of 1918 the usual route of invasion was closed on account of the privations of war, and that it arrived in Europe "via the Cape," making its first appearance in Spain—hence the term "Spanish influenza." As one who has been practising in the Cape for many years, and who was in Capetown during the epidemic, I am able to write with a first-hand knowledge of the epidemic as it affected this part of the world.

For some weeks before a single case was seen in Capetown we knew of "Spanish flu" by means of the daily papers, and tried, as far as we knew how, to prepare for it. (Any preparation we made was utterly useless.) The first cases, curiously enough, appeared in Johannesburg, where the occupants of a mine compound suddenly succumbed. This invasion was later traced to a boat which had arrived in Capetown from Europe, but the infection had missed Capetown and gone straight to Johannesburg, appearing a few days later in Capetown. The first authentic case that I saw was about September 27th, long after the epidemic was raging in Europe. After this date the deluge came, and I believe that the Cape Peninsula suffered more severely in this epidemic than

any part of the world, except some parts of India. "Black October" is still very well remembered in this peninsula. The invasion of Central Africa (Nyasaland, Kenya, Uganda) came later than in South Africa, and only when things were beginning to quieten down here.

Dr. Wise is incorrect when he states that "the disease was spreading in South and West Africa before it reached Europe." The reverse is, however, true. South Africa received its infection direct from Europe, and in its turn passed on the disease to other parts of the continent. As the epidemic of 1918 definitely did not arrive in Europe by way of the Cape, and as the ordinary routes of invasion from Asia were closed, according to Dr. Wise, because of the war, it seems possible that "Spanish flu" originated in Spain! On the other hand, I am not at all convinced that the war was a barrier to invasion. Rather would I credit the war and war conditions with easing the way for a direct spread of infection from one country or continent to another, and therefore, if the epidemic were of Asiatic origin, all conditions were at that time favourable for a world-wide spread.—I am, etc.,

Capetown, April 19th.

EDWARD E. WOOD.

Silicosis and South Wales Colliers

SIR,—As a radiologist practising in the South Wales coalfield, it would seem to me that a few observations on this important subject would not be out of place at this juncture. Discussion has been fast and furious as to the causative agent, to the findings of the boards, and to the great prevalence of the disease among the miners of this area.

From my standpoint it matters little whether the cause of the condition be silica or sericite, so long as there is a definite increase of fibrous tissue formation in the lungs. Further, there seems to be little mystery why there are so many cases of silicosis in this part of South Wales when the full facts are known. Among the coal miners it is the custom to have deductions made at the colliery offices on behalf of the medical men in the district. This has many advantages, and also many disadvantages, both for the doctor and for the mine worker. One of the advantages, so far as I am concerned, is that the workmen can have a roentgenological examination if the family doctor is doubtful of the patient's condition. Silicosis is the fashionable disease in this area at present. The result is that a great many men have been examined, and that a more or less systematic examination (x-ray) has been made of those men who have worked in the mines for several years.

It is probably safe to state that more colliery workmen have been x-rayed in this area than in any other part of the coalfield; hence more cases of silicosis have been found than in any other areas where no such examination has been carried out. This, it would seem, is part of the reason why there are many more known cases in this area than in any other part of the country. What the results of similar examinations would yield as regards silicosis in the other coalfields it is impossible to state until such examinations are carried out.

All that can be said is that there would appear to be more cases in South Wales than in the other parts of the coalfields. The returns of the Registrar-General need not of necessity be very accurate. Professor Kettle (*British Medical Journal*, February 10th, 1934, p. 254) states that the specimens sent to him were nearly always those of infective silicosis, and the infecting organism was most commonly the tubercle bacillus. This statement is much more reliable than any returns of the Registrar-General. There would therefore seem to be no difference between the silicosis found in South Wales and the type

of silicosis as commonly accepted. I can find no roentgenological difference between cases of silicosis in South Wales and cases seen by me in the Belgian coalfields. Further, as soon as the silicotic receives his compensation all interest is lost in his case until his death and post-mortem examination. The results of the examination show the cases to be typical of pneumoconiosis.

Unfortunately I did not keep an accurate record of all the cases examined by me during the past year, as my findings are sent on to the local medical men. I can, however, trace some fifty-eight patients, all of whom are suffering from pneumoconiosis in one stage or another. Some of the number refused to be examined by the board, as partial compensation of about £1 per week is a very inadequate sum to meet the necessities of life. These men prefer to continue at work regardless of the cost to their health, as they refuse to be compulsorily retired with partial compensation and no further hope of any employment. There are therefore more cases of silicosis than have been either examined or passed by the board.

A few notes on the fifty-eight cases would probably be of interest. For my own purposes the stages of the disease were divided into three as follows: first stage, five cases; second stage, twelve cases; third stage, forty-one cases.

First Stage.—Roentgenologically this stage shows an increase in the prominence of the hilum shadows, with some slight haze and very fine lines containing fine granular deposits. This condition is, as a rule, confined to the right lung field. (Patients were advised to continue at their ordinary work.)

Second Stage.—This stage naturally falls into three subdivisions: (a) early, (b) medium, and (c) late. This is the commonest stage seen, and is characterized by a definite distribution of small opacities, somewhat rounded, varying in sizes and densities. These opacities are at first seen in the hilar region of the right lung field; they spread outwards and downwards in a fan-shaped manner; the condition spreads to the left lung, and a typical picture of the disease is one, in which both lung fields are occupied by numerous irregular granular deposits—more extensive in the right lung field than in the left lung field—with a fine network-like arrangement of fibrous tissue. This network gives rise to numerous pseudo-cavities. (Some of these patients continued at work; others were advised, on account of their shortness of breath, age, etc., to be examined by the board. Some had full compensation, while others obtained partial compensation.) The findings of the board were in my opinion all that had been anticipated, with the exception of one case. This man received partial compensation only: I should have awarded him full compensation.

Third Stage.—(a) Medium, and (b) advanced. In this stage the larger granular opacities begin to fuse into large irregular masses, best seen in the region of the hilum, and as a rule more marked in the right lung than in the left lung. The process continues until two or three masses may be seen in the right lung field, and one or two in the left lung field. The diaphragm is definitely flattened, irregular, and shows sharp peaks. Although these large opacities are to be found as a rule in the hilar area, they are occasionally found subapically. Finally, the opacities occupy the larger part of both lung fields. (All these cases have been examined by the board.)

Differential Diagnosis.—This is from pulmonary tuberculosis. In silicosis both lung fields are affected almost to the same degree—the right a little more than the left. The condition principally affects the middle and inferior parts of the lung fields. The distribution, size, and form of the individual spots are more even, while there is a deformity of the diaphragm. The granular deposits are denser, and are connected together by a fine network-like arrangement of fibrous tissue, giving coniotic lung a definite lacework-like appearance with numerous pseudo-cavities. There is also the marked difference between the roentgenological findings and the physical condition of the patient, whose only complaint is shortness of breath on exertion, while any haemoptysis is, as a rule, transient and inconsiderable.

In the cases under consideration (late second and third stages) all the men have received compensation. Their

ages vary from 36 to 64 years, and the men have been engaged in the mining industry from twenty to thirty-eight years. Two were engaged as colliers for some two years, and then became shot-firemen. Several stated that they had never worked in a "hard-heading." Their family histories were good—no relatives were, or are, suffering from tuberculosis. With the exception of one, who had several years previously suffered from pneumonia, all were free from any chest complaint up to one year previous to the roentgenological examination. In only one family were two members suffering from silicosis; while in another instance, of two men who had been working across each other for several years, one showed advanced disease while the other showed no evidence of any disease.—I am, etc.,

ARCHIBALD HARPER, L.M.S.S.A.,
Diploma in Radiology, Anticancerous
Centre, University of Liège.

Ammanford, Wales, April 30th.

The Tuberculosis Problem: Canadian Experience

SIR,—I have been much interested during the past few months in letters written on the tuberculosis problem, especially that of Dr. F. R. Waldron. May I submit the following with reference to the campaign for the prevention of tuberculosis among our school children, and its results in the city of Fort William, Ontario?

Our city has a very cosmopolitan population of about 25,000. The public school attendance (ages 5 to 15 years) is about 4,000; the secondary school attendance (ages 15 to 20 years) is 1,800. The problem of prevention of tuberculosis among school children first came prominently before the Board of Education about three years ago, when one of our teachers was a victim of this disease and one of our high school pupils succumbed soon after graduation. As the milk of our city is all pasteurized before being consumed bovine and bone tuberculosis are unknown. We therefore centralized our efforts on the prevention of tuberculosis of the lungs.

May I state at the outset that our school teachers and other employees undergo a yearly medical examination. A set form is supplied for this purpose, having special reference to tuberculosis of the lungs. For health purposes our schools are divided into three zones, supervised by three school nurses working in conjunction with the medical health officer and under the direction of the Board of Education. Illustrated lectures on the prevention of tuberculosis have been given by both local doctors and school nurses at the schools. Radio addresses have also been given and printed matter distributed. All our public school children have been examined, and suggestive signs of incipient tuberculosis reported to the parents. Contacts and suspects have been tabulated and the intracutaneous skin test given. Positive reactors have been noted, watched, and advised. If deemed necessary, x-ray photographs have been taken by a specialist, the plates interpreted, and reports given at a minimum cost. For parents unable to afford this service the fee is provided by a local charity, any positive reports being sent to the family doctor or the medical health officer. To date, about 600 have been given the tuberculin skin test, about 5 per cent. showing a positive reaction. Forty-five x-ray photographs have been taken, of which three contacts showed incipient tuberculosis. These were given suitable treatment and excused school for six months. They are now restored to perfect health.

Our experience shows (1) that the Mantoux test is reliable; (2) that it is not necessary to have such a high percentage of x-ray plates taken; (3) that infected tonsils and adenoids, enlarged heart, or quiescent fluid or pus in the lungs may be mistaken for tuberculosis; and (4) that we are getting fewer positive tuberculin tests, and that

tuberculosis of the lungs is now a rarity. Further, skin reactors should be carefully watched and building-up treatment advised. If there is any loss of weight, or should the child become easily fatigued, an x-ray examination of the chest should be recommended. Through our efforts the community has become tuberculosis conscious. Adults are consulting their physicians more frequently, and cases are becoming diagnosed earlier and therefore more easily cured. We are hopeful that the time is not far distant when tuberculosis of the lungs will be entirely eradicated.—I am, etc.,

Fort William, Ontario, Canada. B. C. HARDIMAN, M.D.
April 17th.

The Cancer Problem

SIR,—It does not seem likely that Dr. Cramer, in his reference to the review of Mr. Lockhart-Mummery's and my own books on the cancer problem, would have denied so emphatically that cancer increases with civilization unless he has given the subject serious consideration and is prepared with evidence more definite than that which he mentioned.

1. He surely accepts the view commonly accepted that among human beings cancer seldom makes its appearance until middle age or afterwards. According to Sir George Newman the proportion of those who live to 55 years or over has risen from 10.6 per cent. in 1900 to 15.3 per cent. in 1929, or nearly 50 per cent. Nor is it possible to attribute this increase to anything but improvements in our methods of civilization. Can Dr. Cramer say how this advancement in age and in civilization can be reconciled with his statement that cancer is not also increasing?

2. In attributing the rise in the death rate from cancer to improved methods of diagnosis does Dr. Cramer take into consideration not only those instances in which death from cancer was formerly put down to other causes, but also those which at one time would have been wrongly certified as cancer?

3. Then again, increase in cancer deaths is not the same as increase in cancer, for many more cancers are now eradicated than was the case thirty years ago. Hence it seems by no means unlikely that those saved from death by modern treatment more than balance those additions to the death statistics which are due to modern improvements in diagnosis. Cancer may be increasing in prevalence year by year while the death rate from cancer is stationary or diminishing.

4. Advancement in material civilization implies the invention of an ever-increasing number of appliances, some of which—for example, tar products, x-rays, radium, dentures, tobacco, alcohol, arsenic—are carcinogenic. Another cause of cancer—syphilization—is also notoriously a product of civilization. Can Dr. Cramer explain how it is that the increase of these exciting causes of cancer in a civilized community is not attended by an increase in cancer? This anomaly can hardly be due to a decreased resistance to cancer-producing agents on the part of the civilized, for the testimony of various authorities, medical and lay, seems decidedly to favour the view that savages are more and not less resistant to the cancer-producing effects of stimuli.

Among much other but more controversial evidence in favour of the view that cancer is rapidly becoming more prevalent are some recent figures collected from the records of the post-mortem room at Guy's Hospital. These tend to show that whereas from 1904 to 1913 the average yearly figures were sixty-nine cancers of various types, from 1924 to 1933 the number had risen to a yearly average of 102; or an increase from 10.7 per cent. to 19 per cent. of post-mortems.—I am, etc.,

Reading, May 14th.

HASTINGS GILFORD.

SIR,—In the review of my book *The Origin of Cancer*, which appeared in your issue of May 5th, your reviewer starts with the statement: "The fact that cancer is much more frequent among civilized than savage races," etc., "is one of the outstanding features of the disease." It might reasonably be inferred by anyone reading the review that I had expressed such an opinion in the book, whereas my opinion is the exact opposite. The actual statement in the book is: "It seems at least reasonable to conclude that were it possible to collect equally reliable data from all parts of the world, the statistics would show that after making proper allowances for the number of individuals living per 1,000 at a given age, etc., the cancer incidence varies very little geographically or racially." I notice that Dr. Cramer has in to-day's issue drawn attention to this matter, but I should like to make it quite plain that I had expressed no such view in my book.

I am much interested in Dr. Harry Campbell's criticism of one of the views expressed in my book—namely, "that man and his domestic animals have not been subject to the law of natural selection for thousands of years." I had not meant to suggest that the elimination of the unfit had entirely stopped, but that the process had been so seriously interfered with that the unfit were no longer entirely eliminated or prevented from passing on their unfit characters to succeeding generations. We have very strong evidence of this in the number of persons exhibiting hereditary defects at the present day, such as cleft palate, hereditary blindness, mental deficiency, haemophilia, deaf-mutism, etc. One can hardly doubt that if natural selection had been acting in the natural way such defects would have been quickly eliminated, instead of which the number of persons exhibiting such defects is increasing. Where natural selection has full sway only perfect individuals would have any real chance of survival, the rest being quickly eliminated. The individual members of any family of wild animals show very little variation either in appearance, ability, or character. Modern civilization tends to preserve individuals with hereditary defects, and allow them to pass on their mutated genes to succeeding generations in ever-increasing numbers. When man began to civilize himself and his domestic animals he put a bolt in the machinery, which prevented it from functioning properly, and unless he can find a way out by other means he must inevitably pay the price of his interference.—I am, etc.,

London, W.1, May 12th. J. P. LOCKHART-MUMMERY.

** There was no suggestion in the review that either Mr. Lockhart-Mummery or Mr. Hastings Gilford was responsible for the opening statement.—ED., *B.M.J.*

Poisoning by Ground Ivy

SIR,—I think the case mentioned by Dr. Aitchison Robertson (May 12th, p. 872) must have been one of idiosyncrasy. I have handled this plant for many years, and so have the men employed in my garden, with no harmful results, nor have I been able to come across any such cases. But I have found an infusion of the bruised herb of the greatest value in the treatment of that particularly distressing prurigo that often accompanies the later stages of cancer, especially the abdominal forms. I got the idea from a country girl, servant to a well-known London practitioner. He was kept awake by the itching; there was no rash. She said that in her part of Kent an infusion was used to allay this sort of trouble. We got some, made an infusion with boiling water—two handfuls of the herb, well bruised, to the pint. The result was relief, good sleep, and a grateful patient. Another case in a consulting surgeon to one of our leading hospitals had the same excellent result. Our country folk used to

dry the plant and make tea with it. It was used in the acute ophthalmia in horses resulting from injury. A leaf was put under the lid, and the carters said it was a good remedy. About this latter idea I "hae ma doots," but of the former I am sure.—I am, etc.,

F. WILLIAM COCK, M.D., F.S.A.
Appledore, Kent, May 13th.

Maternal Mortality

SIR,—Some weeks ago a popular daily paper published an article entitled "Maternal Mortality" by a "Famous Gynaecologist." This article aroused a good deal of interest in both medical and lay circles at the time. Having read the contribution in question, to me one fact seemed very obvious—namely, that the famous gynaecologist was simply quoting from textbook writing on the subject. The suggestions made in the publication were the well-worn ones, familiar to every student of public health, and incorporated in the Maternity and Child Welfare Act, 1918. It is interesting, therefore, to see what influence the adoption of the above Act has had during the past fifteen years on the maternal mortality rate.

In 1918 the maternal mortality rate was 3.79; in 1933 the rate was 4.32. It follows that in so far as the Act is a measure to reduce maternal mortality it has failed. It seems to me that the subject must be approached on different lines if any headway in reducing deaths in confinement is to be made.

It must be obvious to all medical men that no amount of improved training in midwifery, for students, nurses, etc., and no amount of increased theoretical knowledge, will help towards reducing maternal mortality so long as midwifery is practised as it is at present (that is, as practised by the majority of general practitioners). The general practitioner is fully aware of the dangers associated with interference at a confinement, but in order to keep his practice he must placate the midwife and the patient's friends, and so he often interferes without adequate assistance, and before the conditions for interference are fulfilled. As a general practitioner, I believe the adoption of the following scheme would reduce maternal mortality.

1. Compulsory notification of pregnancy and a fee for such notification.

2. The practitioner, when notifying the pregnancy, to indicate whether he is willing to be responsible for the confinement or wishes the local authority to be responsible.

3. By such a selection the doctor can retain those patients who are able to pay him a composite fee to cover ante-natal care, etc., while he can pass on to the local authority those patients unable to pay such fee.

4. Local authorities to provide whole-time medical officers for the care and delivery of expectant mothers so referred to them.

5. Local authorities to circularize all notified cases concerning (a) health in pregnancy, (b) the desirability of allowing the doctor to choose the midwife, (c) the importance of being patient in labour and of leaving the conduct of the confinement to the doctor's decision.

6. Such circularization will do much to stop the craze for hasty delivery—which, usually, implies bad midwifery.

7. It is important that the doctor should choose the midwife; in this way the meddlesome and impatient midwife will be driven out of active practice. At present, in most places, the midwife chooses the doctor, and in order to conserve her energy she, frequently, has schooled her clientele to expect the doctor to be a man of magic.

8. At the end of each year every doctor practising midwifery to make and send to the local authority a statistical table showing (a) the number of confinements conducted, (b) morbidity rates, (c) deaths, if any, and causes of same.

9. Comparison of such tables with records of cases conducted by the local authority. Such a comparison would be very informative. Presumably, the local authority would

appoint only medical officers with special midwifery experience, and it would be interesting to compare their results, when working in poor homes and under difficult conditions, with those of the less specialized general practitioners, working in somewhat better home conditions.

In this way a healthy competitive spirit to secure good results would be engendered among medical men. They would therefore hesitate to act hastily, nature would conduct most of the confinements, interference would be reduced to a minimum, and, as a result, sepsis would be largely eliminated and so the maternal mortality rate would fall.

It is my belief that a definite drop in the maternal mortality rate would follow (1) legislation on the above lines, and (2) its immediate and compulsory adoption by medical men.—I am, etc.,

JAMES G. DEVLIN, M.B., D.P.H.

Handsworth, Birmingham, April 25th.

Osteopathy

SIR.—Sir Ernest Graham-Little has reminded us that the Osteopaths Registration Bill is now before Parliament, and I think that medical men at least should be acquainted with the truth about this movement. "In the first place, osteopathy has nothing whatever to do with "bone-setting," or with manipulative surgery, or the therapeutic manipulation of stiff joints. Manipulative surgery is now a recognized branch of orthodox surgical practice based upon sound pathological principles.

Osteopathy was started little more than fifty years ago by a certain Dr. A. T. Still of Chicago, who enunciated the principle that "the law of the artery is supreme," and taught that practically all diseases are due to pressure upon the blood vessels in the intervertebral foramina, brought about by (imaginary) displacements or "lesions" of the vertebrae. About twenty years later a man named Palmer of Davenport, Iowa, announced that he had made the "discovery" that 95 per cent. of all diseases are due to pressure upon the nerves in the intervertebral foramina, brought about by the same (imaginary) displacements of the vertebrae. He enunciated the principle that "the law of the nerve is supreme," and he founded a school of chiropractic in opposition to the school of osteopathy previously founded by Still. The essence of both these doctrines is the treatment of remote diseases by the manipulation or "adjustment" of the imaginary spinal lesions which are supposed to be their cause. These rival factions (to mention only two) have flourished exceedingly in the United States of America. But they have almost exhausted the field of credulity in that remarkable country, and they are now making the most strenuous efforts to secure a status which would enable them the better to exploit the resources of this country. It should be clearly understood that this is an American stunt; the British element in osteopathy is practically negligible.

Enough has been said to show that these factions are not agreed among themselves as to which particular "theory" shall be put across the public as a cloak for empirical manipulation of the spine, and it will be interesting to see whether our enlightened legislators decide to give their official blessing to "the law of the artery" or to "the law of the nerve," or to all and sundry of these quick manipulators. It has been naïvely suggested that osteopaths do not require the full training of the medical curriculum to fit them for the practice of their art. One answer to this is that the last *Osteopathic Journal* that came into my hands was concerned entirely with the treatment of cancer of the uterus!—I am, etc.,

London, W.1, May 7th.

A. S. BLUNDELL BANKART.

Obituary

ALFRED RICHARDSON, M.B., B.S., F.R.C.S.
Honorary Surgeon, General Infirmary at Leeds; Professor of
Clinical Surgery, University of Leeds

The death, at the age of 49, of Mr. Alfred Richardson occurred with tragic suddenness on April 22nd as the sequel to an attack of coronary thrombosis on April 13th. The General Infirmary and the Leeds School of Medicine have been hard hit during the last fifteen months, for within that space of time they have lost three members of the active staff and three of the consulting staff.

Educated at Epsom and trained at the Leeds School of Medicine, Richardson graduated M.B., B.S. Lond. in 1907, with distinction in pharmacology and honours in medicine. He held in succession the appointments of house-surgeon, resident casualty officer, and resident surgical officer at the Infirmary, and subsequently that of surgical tutor and registrar. In 1910 he obtained the Fellowship of the Royal College of Surgeons of England. During the war he served with the 2nd Northern General Hospital at Beckett Park, Leeds, and for a period with a general hospital in France. In 1920 he was elected honorary assistant surgeon to the General Infirmary, and became surgeon in 1927. He quickly made for himself a reputation as a skilful operator, a sound diagnostician, and a clear and capable teacher. In his operative work he combined a perfect and delicate technique with a rare judgement, which enabled him to carry through, with safety and success, operations often of great difficulty. His chief concern was always the welfare of his patient and to plan that particular line of treatment which would be best for the individual case. These qualities earned for him the admiration and confidence of his fellow practitioners and a large and increasing practice. After holding the appointment of honorary demonstrator in surgical pathology he was, in October last, elected to the chair of clinical surgery, and the enthusiasm with which he discharged his duties made it clear that a very valuable addition had been made to the staff of the University. In addition to his Infirmary appointment Richardson was consulting surgeon to several of the small hospitals in the neighbourhood, including the Ilkley Coronation Hospital and the Ministry of Pensions Hospital. For this last appointment no better man could be imagined: his cheery, forceful personality, combined with his kindness and great technical skill, were just the qualities to appeal to the ex-service man, and the large attendance of these men at his funeral was evidence of the affection and esteem with which they regarded him.

An athlete in his younger days, he was always intensely virile and alive, and among students a popular and stimulating personality. His method of teaching was simple, clear, and concise, punctuated with witty and sometimes caustic comments which effectively brought home the points he wished to make. Not suffering fools gladly, he nevertheless was full of the milk of human kindness, and enjoyed the confidence and affection of everyone connected with the hospital.

His death at a time when it appeared that an increasingly successful career as a surgeon and a teacher was before him means a loss to the profession and the Leeds School of Medicine which it is difficult to estimate.

H. C.

THE LATE PROFESSOR WELCH

Through the courtesy of Colonel Fielding H. Garrison we have received extracts from the *Baltimore Sun* of May 1st, a large part of which was devoted to the career of Professor William H. Welch, of whom a memoir by Sir Humphry Rolleston appeared in our last issue at page 874.

A leading article in the *Sun* pays high tribute to the part played by Welch in the advance of American medicine, and adds:

"Baltimore, where Dr. Welch lived and worked, must not be allowed to forget that the man was, from his arrival here as a young man to the end of his life, an explorer, a scholar who challenged, every time he met it, the tendency to 'believe nothing so firmly as that which we least know.' That he did it with a gentle urbanity did not weaken his attack. Those who opposed Dr. Welch in his early fight for public health work here in Baltimore knew they had been in a fight. The epicure, the lover of books and plays and talk, the homely philosopher—all merged into Welch the scientist, tireless in the search for truth and restless in its propaganda. Should this be ignored, and this amazing career be passed over in favour of amusing anecdotes about Dr. Welch's attitude on woman suffrage or the long cigars he smoked, then we could say that Dr. Welch was dead. But the world of science and achievement will place a true and lasting estimate upon Dr. Welch, knowing that, above and beyond the gracious memories of kindness and wit and worldly wisdom, there was the great man."

THE LATE DR. CAMPBELL MCCLURE

Dr. TEMPLE GREY writes: *Médecine* can ill afford to lose such men as Campbell McClure. Big in mind and big in body, narrowness of vision and pettiness alike were strangers to him. It is a tragedy that, in the nature of things men who have seen and done so much should have so little time to write for our instruction. One of the dwindling body of true clinicians, he could have written as few others on common sense in medicine. He saw his patient as a whole, and was able to bring to bear upon his case a true erudition culled rather from experience and observation than from books. It was little satisfaction to him to be "right" in his diagnosis unless he could relieve his patient. High-sounding diagnoses made little appeal to him, nor did fussy therapeutics enchant him. Large numbers of patients to whom he brought comfort and relief, and friends who valued his friendship, will miss him badly.

The death took place at his residence, St. Catherine's, Linlithgow, on May 9th, of Dr. JAMES HUNTER, one of the best-known practitioners in West Lothian. Dr. Hunter was born at Dumfries in 1856, and after a medical course at Edinburgh University graduated M.B., C.M. in 1878, proceeding M.D. with honours in 1887. After a period of study in Vienna, Dr. Hunter went to Linlithgow as assistant to his uncle, the late Dr. George Hunter, and subsequently was in practice in South Queensferry at the time when the Forth Bridge was being built. Later he took over his uncle's practice in Linlithgow, where he continued for fifty years. He identified himself with local public affairs, serving on the town council for nine years, and as J.P. for the county of West Lothian. In 1929, in recognition of his fifty years' service to the community, Dr. Hunter was presented with his portrait. He was a brother of Dr. Joseph Hunter, Member of Parliament for Dumfries, and is survived by a widow and family, of whom one son and three daughters are members of the medical profession.

We regret to announce the death of Dr. JAMES KIRK, on May 3rd. Dr. Kirk, who was in his sixty-seventh year, had only within the last twelve months relinquished practice in Bridlington to take up work in North London. After winning the Grierson bursary in pathology and materia medica, he graduated M.B., C.M. at the University of Edinburgh in 1895, obtaining the M.D. two years later. In the meantime he had made a special study of ophthalmology. He joined the Colonial Medical Service, being stationed for many years in Penang, where he acted as ophthalmic surgeon to the Government hospitals, and was physician to the King Edward VII Hospital for Women and Children; he was also, at one time, surgeon to Singapore General Hospital, held the rank of major, and was officer commanding the Ambulance Company of the Penang Volunteers. At the outbreak of the Great War he came home and at once obtained a temporary com-

mission in the R.A.M.C., serving as ophthalmic specialist at the Curragh and in Malta. At the conclusion of hostilities Dr. Kirk entered into general practice at Bridlington, where he remained till the middle of last year; he held appointments as ophthalmic surgeon to the Education Committee and to the Lloyd Hospital. He was a member of the North of England Ophthalmological Society, a Fellow of the Royal Society of Tropical Medicine and Hygiene, and had been a member of the British Medical Association since 1898. Dr. Kirk was of a quiet, retiring disposition, never seeking to be in the limelight, fond of country walks, his dog, and a pipe by his own fireside. Behind a somewhat aloof manner was hidden a genial and kindly nature, and his colleagues knew him to be incapable of any mean thought or petty action. He is survived by a widow, two daughters, and a son.

The sudden death of Dr. DAVID FALCONER RIDDELL came as a shock to Woolwich and its neighbourhood, where he was very well known. Born in Glasgow in 1878, he was educated at the High School, where he obtained the Lumsden gold medal, and at the University of Glasgow. He took his degree in Arts in 1897, and in 1903 graduated M.B., Ch.B., and in 1907 obtained his D.P.H. at Cambridge. After holding house appointments in the Glasgow Royal Infirmary and Ruchill Hospital he entered the service of the Metropolitan Asylums Board, and was a senior assistant medical officer when he resigned, in 1919, to take up general practice in Woolwich. When the war broke out he became medical officer in charge of the Belgian Dispensary (Sheffield Street, London) until 1916, and for his work there he received King Albert's Medal. Thereafter, as an officer in the R.A.M.C., he served with distinction, and was awarded the Military Cross in 1918. For many years Dr. Riddell was the secretary of the School Treatment Committee in Woolwich, and was a past chairman of the Woolwich Division of the British Medical Association. He leaves behind a widow, and a son and daughter. His name and record of service will not soon be forgotten, and his fine qualities will be warmly cherished by a wide circle of colleagues, patients, and friends.

We regret to record the death of Dr. HUGH JONES of Dolgelly, at the age of 70. Dr. Jones graduated M.B., C.M. (with commendation) at the University of Glasgow in 1888, and in the following year received the D.P.H. He had been a member of the British Medical Association for forty-four years, and was a member of the Insurance Acts Committee from 1919 to 1921, and the Rural Practitioners Subcommittee from 1920 to 1922; he also served on the British Medical Association's Ministry of Health Committee during 1920 and 1921, and had been president of the North Wales Branch of the Association. Among his medical appointments were those of senior house-physician, Western Infirmary, Glasgow; house-surgeon, Glasgow Maternity Hospital and Glasgow Lock Hospital; medical officer of the Endowed High School for Girls, Dolgelly; lecturer and examiner of the St. John Ambulance Association; medical officer of health for the Dolgelly Rural and Urban District Councils; public vaccinator for the Dolgelly District; and medical referee for the Prudential Assurance Company. Dr. Jones was an honorary member (late president) of the Glasgow University Medico-Chirurgical Society. He was a justice of the peace for the county of Merioneth.

The May issue of the *Canadian Medical Association Journal* contains a full memoir, with portrait, of Professor Archibald Byron Macallum, M.D., F.R.S., whose death was announced in these columns on April 14th. "In him," our contemporary says, "Canada loses one of the most distinguished scientists she ever produced, a man outstanding all over the world in the field of biochemistry. His great achievements were never spectacular, but among the scientists of the nations he was recognized as a leader."

ROYAL MEDICAL BENEVOLENT FUND

During the first quarter of this year £3,674 has been voted in grants, as against £3,489 during the corresponding period of last year. The increasing number of cases and the necessity of helping the many applicants who are known to be deserving and in great financial difficulties render the appeal for the support of the Fund the more urgent. Cheques should be made payable to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W.1.

The following are particulars of a few cases recently helped:

M.B., Ch.B., aged 47, married, daughter aged 10. On leaving the Army after the war the applicant had no practice to return to; and, having developed disseminated sclerosis, he was not capable of undertaking the medical work of an arduous practice. A county council in 1920 appointed him medical officer, in which post he made a great effort to carry on. His condition did not improve, and finally he had to resign in 1933. Income, pension £100, wife's private income £20. Fund voted £40 in four instalments for a period of one year.

Widow, aged 32, of M.B., Ch.B. The husband served abroad, and died recently from tuberculosis at the age of 33, leaving the widow and two children—boy aged 7, girl 5. The widow is entitled to a pension of £60 and allowances for children £45. A life policy, when invested, will yield £35. Total income £140. No relations can help. Fund granted £26 in four instalments over a period of one year.

Daughter, aged 69, of M.R.C.S. The applicant has been working for her living for over thirty years. She and a cousin ran a boarding house up to two years ago, when they had to give up owing to local competition. They moved to a smaller house with a view to taking lodgers. Only a little money is now earned. The cousin has the old age pension of £26, but the applicant is not eligible for that till next year. Fund granted £26 in four instalments over a period of one year, and is endeavouring to get other assistance for these two ladies.

Universities and Colleges

UNIVERSITY OF OXFORD

On the evening of May 3rd an audience of over 200, including many eminent people in university and city life, attended a demonstration of x-ray cinematograph films, given in the large Lecture Theatre of the University Museum by Dr. Russell J. Reynolds of London and Dr. Robert Janker of Bonn, two of the pioneers of this branch of medical science.

The examination for the Diploma in Ophthalmology will be held on Monday, June 18th. Names must be entered by 10.30 a.m. on Thursday, May 31st.

The following nomination has been duly received by the Registrar: As a member of the General Medical Council of the United Kingdom, Sir E. Farquhar Buzzard, Bart., D.M., Student of Christ Church. Nominated by K. J. Franklin, D.M., Fellow of Oriel College and Dean of the Medical School, and E. W. Ainley Walker, D.Sc., D.M., Fellow of University College.

UNIVERSITY OF CAMBRIDGE

At a congregation held on May 11th the following medical degrees were conferred:

M.B.—R. W. Billington, M. Westwood.

UNIVERSITY OF LONDON

The following appointments to the Senate for the period 1934-8 are announced: Faculty of Medicine, Mr. H. L. Eason, M.D., M.S. (reappointed), and Dr. A. M. H. Gray; General Medical Schools, Mr. W. Gurling Ball, F.R.C.S.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council of the Royal College of Surgeons of England was held on May 10th, when the President, Sir Holburt Waring, was in the chair.

Diplomas of Membership were granted to A. J. W. Branch and V. P. Gupta, and to 164 other candidates who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Examining Board in England, and whose names were printed in the report of the meeting of the Royal College of Physicians of London in our issue of May 5th (p. 827).

The Diploma in Gynaecology and Obstetrics was granted, jointly with the Royal College of Physicians, to K. S. Jayakar. Mr. C. A. Pannett was re-elected a member of the Court of Examiners.

Mr. Laurence O'Shaughnessy was reappointed College Research Scholar from June 24th to September 29th, and Mr. G. C. Knight and Mr. G. Slome were reappointed Leverhulme Scholars for a second year from July 1st. Sir Holburt Waring was appointed, *ex officio* as President, a member of the Governing Body of the British Post-Graduate Medical School, to hold office from July, 1934, to July, 1935.

Mr. Claude Frankau has resigned his membership of the Court of Examiners as from the end of the July examination. His resignation was received with regret, and the vacancy thus occasioned will be filled at the Council meeting on August 2nd.

The following nominations were reported for the Primary Examination for the Fellowship beginning in Melbourne on November 29th: Assessor in Anatomy, Professor F. Wood Jones, D.Sc., F.R.C.S., F.R.S.; Assessor in Physiology, Professor W. A. Osborne, M.B., D.Sc.; Superintendent of Dissections, W. E. A. Hughes-Jones, F.R.C.S.

UNIVERSITY OF BIRMINGHAM

At the annual degree ceremony, on June 30th, the honorary degree of LL.D. will be conferred on C. A. Lovatt Evans, D.Sc., F.R.S., F.R.C.P., Jodrell Professor of Physiology, University College, London.

Medico-Legal

ALLEGED POISONING BY OYSTERS

In the King's Bench Division, before Mr. Justice Swift and a special jury, a case was heard on May 7th and following days in which Mr. Charles Frederick Wimple of Beckenham claimed damages from the Royal Victoria Hotel, St. Leonards, for supplying him with oysters which, he stated, brought about a severe attack of typhoid fever. The defendants denied negligence or breach of warranty, or that the plaintiff's illness was the result of his eating the oysters. They brought in as a third party the fishmonger, Mr. W. E. Baker, who had supplied the oysters to the hotel, and he in turn brought in as a fourth party the Seasalter and Ham Oyster Fishing Company, Ltd., from whom he obtained them. All denied liability.

Mr. J. E. Singleton, K.C., said that on a certain date in October, 1932, Mr. Wimple ordered two dozen oysters at the hotel, which were shared between him and two other persons (these others also became ill, although they did not suffer from typhoid). Some days after he returned home he became ill, Lord Horder was called into consultation, and a blood test confirmed the view that he had contracted typhoid fever. He was away from business for five months, and the special damages, subject to liability, were agreed at £325.

Dr. G. R. F. Stilwell of Beckenham, who attended the plaintiff, said that he had no reasonable doubt that the illness was traceable to the oysters. In cross-examination he said that he was aware that there was an outbreak of typhoid in Hastings at about that time. In reply to a suggestion that if the oysters were sent open from the fishmongers and remained on the hotel table for twenty minutes they might be contaminated by flies, Dr. Stilwell thought that unlikely at St. Leonards.

Lord Horder, in evidence, said that he was called in consultation to see Mr. Wimple in November, 1932, and came to the conclusion that he was suffering from typhoid fever. He judged that the onset of the disease had taken place about three weeks earlier, and that it was probably the oysters which had infected him. In general it was very uncommon for an oyster to become infected after it had been opened, and the care taken to prevent infection at the filter beds was shown in the fall in total incidence of typhoid. He agreed that if there were shown to have been five cases of typhoid in Hastings in 1932 it pointed to a source of infection in the town, and that if a number of those who suffered were not oyster eaters it indicated some other source of infection. One contaminated oyster was sufficient to have done the injury to the plaintiff, and the fact that

two other persons were taken ill after the meal made him suspect that the oysters were dirty.

In defence evidence was given as to the cleanliness and good management both of the hotel and of the fishmonger's premises.

Mr. Justice Swift, in summing up, said that if a hotel keeper supplied food which was contaminated and gave rise to typhoid fever—though he did not know of the contamination and might not have done anything careless—having undertaken to give food fit to eat, the law was that he must pay.

The jury found for the plaintiff, and assessed the damages at £725.

The second defendant, Mr. Baker, the fishmonger, did not contend that he had no responsibility to the hotel company, and accordingly, on a second action, a formal verdict was given for the hotel company against the third party for the amount awarded. A third action then followed as to the liability of the fourth party, the Seasalter and Ham Oyster Fishing Company, to indemnify the fishmonger.

New evidence was called to the effect that in October, 1932, there were in Hastings several cases of typhoid, though not amounting to an epidemic. One of the sufferers was a man who had eaten oysters bought at another fishmonger's shop, but which had been obtained from the defendant company. Professor R. T. Hewlett, bacteriologist, gave evidence that when oysters were infected with typhoid bacilli it was usually through the water in which they were laid, and that the danger of the oysters in question becoming infected after the fishmonger obtained them was practically negligible. To contaminate oysters in their bed the sewage content of the water would have to be pretty high, and if polluted water flowed over the bed he would expect a large number of oysters to become infected, and more than an isolated case of typhoid to occur. The reports of the Whitstable beds of the company in August showed absolute purity, as they did also in November, but in September they indicated the presence in the water and in the oysters of small quantities of various kinds of bacilli. Contaminated oysters which were transferred to clean surroundings might clear themselves in the course of a few days.

Dr. G. R. Bruce, medical officer of health for Hastings, gave evidence as to typhoid notifications in that town, and Major Austin Gardner, chairman of the Seasalter Company, said that the company had supplied many millions of oysters to all parts of the world, and during the past twenty years there had been no complaint as to their wholesomeness. Dr. J. F. Beale, bacteriologist to the Essex County Council, said that he had inspected the beds of the Seasalter Company for the past twenty-two years. The water of the beds was very clean, and bacteriologically was considerably better than milk.

After other evidence for the defence had been given Mr. Justice Swift said that no suggestion had been made against the way in which Mr. Baker handled the oysters or against the cleanliness of his premises. On the other hand, the Seasalter Company's oysters had had the highest testimonials. He put a question to the jury: "Has Mr. Baker satisfied you that the Seasalter Company supplied him with contaminated oysters?" and to this question the jury, after an absence of nearly an hour, replied, "He has not."

Judgement was accordingly entered for the Seasalter Company, and Mr. Baker was ordered to pay the costs of the fishing company and of the hotel company, a stay of execution being granted with a view to possible appeal. The judge said that he was afraid Mr. Baker must submit to being crushed between the upper and nether millstones.

The Services

HONORARY PHYSICIANS TO THE KING

Colonel D. P. Goll, I.M.S., has been appointed Honorary Physician to the King, vice Major-General Sir John W. D. Megaw, K.C.I.E., I.M.S., retired.

Lieut.-Colonel R. C. Priest, R.A.M.C., has been appointed Honorary Physician to the King and promoted Brevet Colonel, vice Major-General H. C. R. Hime, C.B., D.S.O., late R.A.M.C., retired.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week read the Unemployment Bill a third time. This Bill also secured a first reading in the House of Lords. The Commons took the second reading of the Finance Bill and of the Cotton Industry Bill, and had discussions on disarmament and on accidents in coal mines.

On May 9th Sir Henry Jackson presented a Local Government and Other Officers' Superannuation Bill "to amend the Local Government and Other Officers' Superannuation Act, 1922, and to make further provisions with reference to the superannuation of local government and other officers, and other matters connected therewith."

The Birmingham United Hospitals Bill was reported to the House of Commons, with amendments, on May 10th, and passed through report on May 15th.

On May 14th the South Devon and East Cornwall Hospital, Plymouth, Royal Albert Hospital, Devonport, and Central Hospital, Plymouth (Amalgamation, etc.) Bill was read a second time in the House of Commons.

On May 14th the Protection of Animals (Cruelty to Dogs) (Scotland) Bill was read a second time in the House of Commons.

The House of Lords, on May 15th, read the Water Supplies (Exceptional Shortage) Bill a third time, and passed the Protection of Animals Bill through its remaining stages. On the same day in the Lords the Registration of Births, Deaths, and Marriages (Scotland) Amendment Bill passed through committee.

The committee stage of the Betting and Lotteries Bill was set down for May 16th in the House of Lords.

A conference was arranged at the House of Commons, on May 16th, between hospital representatives, medical members of Parliament, and Peers to discuss the drafting of new clauses or amendments to the Road Traffic Bill to secure compensation to hospitals and medical men treating those injured on the roads.

The Parliamentary Medical Committee was summoned to meet on May 17th to consider the duty on arc carbons and the removal of the duty on insulin.

Minimum Needs of Unemployed

During re-examination of the Unemployment Bill on report, on May 9th, Mr. RHYS DAVIES moved to leave out Clause 39 ("Persons to whom, and circumstances in which, allowances may be granted"). He said the clause would make permanent what was called the means test as applied to a large section of the unemployed. Mr. KENNETH LINDSAY said Parliament should be more scientific in determining the minimum standard of allowances. For a man, wife, and three children the standard set up by the British Medical Association was 40s. 7d. Ordinary benefit fell below that figure unless extra shillings were given for the children. Mr. E. J. YOUNG said that whether the first 5s. of sick benefit from a friendly society was given in part compensation of inability to earn, or to provide extra nourishment during convalescence, it was unfair that it should be reckoned, under the Unemployment Bill, against a person who was recovering from an illness. Sir HENRY BLTERTON said the Bill was drafted to permit the Board complete flexibility in its regulations governing assistance. He had been asked about blind persons. So far as a blind person was put to special expense on account of his affliction it would be the duty of the Board to have regard to such expense in assessing his means.

Miss RATHBONE said she understood that, in answer to a deputation, the Minister had said that assistance should not be less than what was necessary to ensure to the applicant and his household, taking his resources into account, the minimum needs of healthy subsistence. That foreshadowed a revolution in the scale of assistance to unemployed people.

Under the scale of ordinary benefit a man getting full scale with no other resources would be far below those minimum needs. Taking the scale of nutrition adopted by the British Medical Association for a man, wife, and three children, the man, if he got the full ordinary benefit of 32s. a week, would have 2s. 3d. left over for rent and everything except food, clothing, and light. A man with five children had nothing left over for rent, and a deficiency on food and clothing needs of 5s. 3d.

The clause was retained in the Bill by 228 to 63.

On May 10th the report stage of the Bill was postponed. Miss RATHBONE moved an amendment to exempt from the Bill universities and their constituent colleges in respect of their employees, such as laboratory assistants, clerical workers, porters, and so forth, who were on the permanent staff and earned individually less than £250 a year. She said Oxford and Cambridge had successfully claimed exemption for the corresponding group of their employees. Other universities saw no reason why they should not enjoy this privilege. Sir HENRY BETTERTON opposed the amendment, which was rejected. The report stage ended on the same date.

Doctors' Cars and the Proposed Speed Limit

The Standing Committee of the House of Commons is considering the Road Traffic Bill. One provision in this measure is the imposition of a thirty-mile-an-hour speed limit in built-up areas. On May 15th the committee discussed a proposal to exempt from the limit fire engines, ambulances, and police cars. Mr. TOM SMITH proposed that doctors' cars should also be given this exemption to facilitate medical men attending cases of urgency. Mr. LLEWELLYN-JONES said that the result of this exemption might be that any doctor could exceed the speed limit at any time, and set up a defence, in case of a prosecution, that he was hurrying to an urgent case. If, in the event of accident in factories or mines, doctors and nurses were rushed to the scene in vehicles which exceeded the speed limit, he was sure that the courts would take a lenient view. Mr. OLIVER STANLEY said he could not recommend the committee to accept the amendment as it stood. It would be impossible for the police to detect when a car was going along a road whether it was a doctor's car, and if the doctor was going to an emergency case. That the driver was a doctor and was proceeding urgently might relieve him of prosecution, but he would be stopped by the police and his journey would be delayed; it was desirable there should be no delay in such circumstances. He would discuss the subject with Mr. Smith before the report stage, and see whether he could provide a suitable amendment. Mr. DAVID GREENFELD asked whether it would not be possible to overcome the difficulty by allowing doctors to carry distinguishing marks on their cars. No answer was given to this suggestion, and Mr. Smith, in view of the Minister's statement, withdrew his amendment.

Safety in Mines

On May 15th the House of Commons discussed the votes for the salaries and expenses of the Mines Department. Mr. E. BROWN said that there was no infallible cure for explosions in mines. The deaths over the last sixty years showed a large and progressive reduction. He did not agree with the statement that if there were enough ventilators there would be no explosions. In the Bentley explosion, in which forty-five lives were lost, the inquiry showed that the ventilation was as nearly perfect as possible. In the opinion of his advisers there were times and circumstances when it was impossible to prevent an accumulation of gas. He had made draft regulations with regard to automatic detectors, and on the following day the Mining Association and the Miners' Federation were attending at the Mines Department to present their views on the regulations. Replying later to the debate, Mr. BROWN said that classes for boys were held in a number of centres throughout the country, and were succeeding in making boys "safety-minded." The first-fruits of this work were shown in the decreased number of accidents. The Safety in Mines Research Board was applying itself with vigour to the problem of accidents, and was making its research available in popular form. Attention was being given to protective equipment to avoid the large number of acci-

dents to hands, eyes, feet, and heads, and experiments were being made with special types of gloves, "goggles," boots, and hats. He hoped to preside at a conference, which would be held at Swansea in June, to discuss the problem of dealing with silicosis. All the mining members representing South Wales constituencies would be invited to attend, and both mine-owners and miners would be heard. The Department had one inspector spending his whole time on this problem of silicosis, and a medical man was similarly engaged.

Insulin Prices

On May 14th Dr. BURGIN informed Mr. H. WILLIAMS that reductions in the price of British insulin were made in January. In the last few days the price of one brand of British insulin and of one brand of imported insulin had been reduced from 1s. 5d. to 1s. 4d. per 100 units. Sir F. FREMANTLE asked if it was not true that it was also sold to Poor Law authorities at 1s. per 100 units. Dr. BURGIN: That is the fact.

The second reading of the Finance Bill was the business of the House of Commons on May 16th. Clause 5 of this Bill runs: "Repeal of Customs duty on insulin. The Customs duty chargeable on insulin and its salts under Part I of the Safeguarding of Industries Act, 1921, shall cease to be charged, and the Import Duties Act, 1932, shall have effect as if insulin and its salts were included in the first schedule to that Act."

Verminous Premises in Sheffield.—Mr. SHAKESPEARE told Mr. Hamer Russell, on May 9th, that, under Part IV of the Public Health Act, 1925, which was in force in the city of Sheffield, the corporation had power to secure the cleansing of verminous premises, and when this was done it was not necessary to provide alternative accommodation. He would make inquiries concerning one case, in which it was suggested that cleansing was impossible owing to the nature of the property infected. Mr. FIFE asked whether the medical officer in Sheffield had written that he possessed no power whatever to "proclaim" bug-infested properties.

Health Insurance on Leaving School.—Replying to Sir R. GOWER, on May 9th, Sir HILTON YOUNG said he had received resolutions passed by the insurance committee for the county of Kent which urged that, in order to secure to boys and girls entering employment a continuance of medical supervision, similar provisions in regard to age of entry should be made in respect of national health insurance as in the proposed new unemployment legislation, and that the school medical record in respect of such children should be made available for incorporation in the medical records provided in connexion with medical benefit. The subject, which involved administrative and financial considerations of great complexity, would receive his attention.

Maternity and Infant Welfare in Kensington.—In reply to Mr. James Duncan, on May 10th, Sir HILTON YOUNG said the Kensington Borough Council had provided a comprehensive maternity and child welfare service, which had recently been augmented by the appointment of a special whole-time medical officer. His information was that the service was constantly under review by the borough council; he was satisfied with the nature of these measures. Replying to Mr. West, Sir HILTON YOUNG said undoubtedly the effects of slum conditions upon infant mortality were direct. Mr. West asserted that 55 per cent. of the total deaths in West-Kensington were of babies of the unemployed.

Diphtheria Inoculation in the Army.—On May 15th Mr. GROVES asked the Financial Secretary to the War Office the reasons which led to the decision of the Army medical authorities to discontinue the use of preventive inoculations against diphtheria. Mr. DUFF COOPER replied that no such decision had been taken.

Automatic Fire-damp Detector.—Mr. E. BROWN, on May 15th, told Mr. Conant that the Staveley Coal and Iron Company, after carrying out pit trials of the Ringrose automatic fire-damp detector at their Markham Colliery, had decided to equip with this detector each of the conveyor faces in two of the seams.

Voluntary Hospitals Commission's Report.—Sir ROBERT GOWER gave notice that on May 16th he would ask Sir Hilton Young whether he had given further consideration to the report of the Voluntary Hospitals Commission, and whether he proposed to provide public funds for hospital extension on the lines recommended.

Rural Water Supply Schemes.—Mr. SHAKESPEARE states that applications have been received for grants in aid of rural water supply schemes from thirty-seven rural district councils in respect of 175 parishes and from four urban district councils. The total cost of the schemes involved is £615,000. The applications are under consideration.

Notes in Brief

Sir HILTON YOUNG told Captain Erskine-Bolst on May 10th that he had no statistics showing the number of domestic servants who made use of the services of panel doctors in any given year, nor the percentage of those who did so.

Since the Borstal system was brought into operation nearly 11,600 young men have been licensed from Borstal institutions. Of 3,407 discharged on licence during the five years ended 1933, approximately 60 per cent. have not been reconvicted.

Proposals for the voluntary restriction of exports to the United Kingdom of condensed milk, milk powder, and cream have been accepted by Belgium, Switzerland, and Germany.

Medical News

Sir Gomer Berry and the Committee of Management of the Infants Hospital, London, have issued invitations to a dinner in the Guildhall on Wednesday, May 30th, to meet H.R.H. Prince George.

The annual dinner and dance of the West Kent Medico-Chirurgical Society will be held at Chiesmans Restaurant, High Street, Lewisham, S.E., on Thursday, May 24th, at 8 p.m. Reception at 7.30.

A meeting of the Medico-Legal Society will be held at 11, Chandos Street, W., on Thursday, May 24th, at 8.30 p.m., when Mr. W. J. Foster will read a paper on "Incapacity for Work within the Meaning of the National Health Insurance Acts," followed by a discussion.

A joint meeting of the Society of Medical Officers of Health and the Fever Hospital Medical Service Group will be held at 1, Upper Montague Street, W.C., on Friday, May 25th, at 5 p.m., when there will be a discussion on "Current Methods of Control of the Common Infectious Diseases," to be opened by Dr. H. Stanley Banks, Dr. E. H. R. Harries, and Dr. William Gunn.

A meeting of the School Medical Service Group will be held at the House of the Society of Medical Officers of Health, 1, Upper Montague Street, W.C., on Friday, June 1st, at 5.30 p.m., when Dr. Temple Gray will give an address on "The Bacteriology of Diphtheria." Members of the Fever Hospital Group and others interested are invited to attend.

We are informed that the annual general meeting of the British Institute of Radiology will be held at 32, Welbeck Street, W., on Thursday, May 31st, at 8 p.m., and not on May 17th, as announced in the *Supplement* to last week's issue (p. 252).

The thirty-fifth annual meeting of the Lebanon Hospital for Mental Diseases, Asfuriyeh, Beirut, Syria, will take place at the Westway Hotel, Endsleigh Street, W.C., on Tuesday, May 22nd, at 3.30 p.m., with Dr. Percy R. Smith, president, in the chair. The speakers include Dr. H. Watson Smith, medical director of the hospital, and Dr. Henry Wilson.

Founders' Day will be celebrated at Lord Mayor Treloar Cripples' Hospital and College on Monday, June 11th, when the Lord Mayor of London, the Lady Mayoress, and Sheriffs will visit Alton. After the meeting in the college hall at 1.15 p.m., presided over by Colonel the Hon. Frederick Lawson, chairman of the hospital, the wards, workshops, etc., will be open for inspection.

The Medical Prayer Union will hold its annual medical missionary breakfast at the Refectory, University College, Gower Street, W.C., on Wednesday, May 30th, at 8 a.m. The chair will be taken by Mr. W. McAdam Eccles, and Dr. Florence Robinson will give an address. The honorary secretary is Dr. Tom Jays, Livingstone College, E.10.

Meetings of the Tuberculosis Association will be held at Manson House, 26, Portland Place, W., on Friday, May 25th. At 5.15 p.m. a discussion on "The Palliative Treatment of Cases of Advanced Pulmonary Tuberculosis" will be opened by Dr. C. D. Agassiz and Dr. Ernest Ward. At 8.15 p.m. Dr. Jacques Stephani (Montana, Switzerland) will give an illustrated lecture entitled "Some Observations on the Value of Improved Radiological Technique in Pulmonary Tuberculosis."

The Fellowship of Medicine (1, Wimpole Street, W.) announces a further lecture-demonstration, on functional heart disease, at 11, Chandos Street, W., on May 29th (there will be no lecture on May 22nd). A week-end course at the Brompton Hospital will be given on May 26th and 27th, followed by a week's course in chest diseases at the City of London Hospital, Victoria Park (May 28th to June 2nd). A fortnight's course in gynaecology has been arranged at the Chelsea Hospital for Women from May 28th to June 9th, and a month's course in venereal disease at the London Lock Hospital from May 28th to June 23rd. There will be a week-end course in medicine and surgery at St. Mary's Hospital, Plaistow, on June 2nd and 3rd. A panel of teachers provides daily clinics in various branches of medicine and surgery. A debate will take place on May 30th, at 8.30 p.m., at 26, Portland Place, W., on the motion, "That in the absence of complications, surgical interference in cases of gastric and duodenal ulcer is unnecessary," with Lord Moynihan in the chair. The motion will be proposed by Dr. A. F. Hurst and seconded by Mr. Mortimer Woolf. Dr. Robert Hutchison, seconded by Mr. Herbert Paterson, will oppose the motion. All members and associates of the Fellowship, and their medical friends, are invited to be present.

A congress of the Italian Medical Association of Hydrology, Climatology, Thalassotherapy, and Physical Therapy will be held in June, partly at Acqui and partly at San Remo.

The nineteenth French Congress of Legal Medicine will be held at Lille from May 27th to the 30th, under the presidency of Professor J. Leclercq, when the following papers, among others, will be read: "Blood Groups in Legal Medicine and Anthropology," by MM. Lattes, D. Dujardin de la Rivière and Kossowitch; "The Painful Sequelae of Injuries and their Indemnification," by MM. Héger-Gilbert and de Laet; and "Contradictory Medical Expert Opinion," by MM. Raviart and Vullien. Visits will be paid to mines, sanitary institutions, and air parks. Further information can be obtained from the general secretary, Dr. Muller, 14, Rue de Friedland, Lille.

On May 10th the Duke of York paid his first visit to the new offices of the Industrial Welfare Society, of which he has been president since its inception in 1918. The society is an association of about a thousand firms who find it advantageous to pool their information on matters of health, co-operation, accident prevention, canteens, and working conditions. This store of information is available to any employer in return for a nominal annual subscription. The Duke welcomed those who were present, and said that members had been meeting at the old office for fourteen years, but that the society had long since outgrown the accommodation there. He believed that with returning prosperity the organization would soon outgrow even its spacious new home, for welfare work had now undoubtedly become an established branch of any progressive enterprise. As president, he welcomed to 14, Hobart Place old friends of the society, and extended an invitation to those many employers who had not yet availed themselves of the services it was so well equipped to render, and which industry had found so valuable in the past. His Royal Highness was received by Mr. Robert R. Hyde, the founder and director, who thanked the Duke for all that he had done for the movement.

The Committee of Award of the Commonwealth Fund Fellowships has made a number of appointments to fellowships tenable by British graduates in American universities for the two years beginning September, 1934. These fellowships are offered by the Commonwealth Fund of New York, of which Mr. Edward S. Harkness is president. The only award in medicine is to A. G. M. Weddell, M.B., B.S., of St. Bartholomew's Hospital Medical College, to the University of Rochester.

At the annual general meeting of members of the Society for Relief of Widows and Orphans of Medical Men, held on May 8th, with Mr. V. Warren Low, president, in the chair, the report of the directors for 1933 showed that £4,993 had been distributed during the year as grants to the fifty-three widows and six orphans, at present on the books of the society. Each widow over 75 received £90, those over 65, £85; and those under 65, £70; each orphan £60. Included in the amount distributed was £442 allotted to orphans to enable them to continue their school education or start on some professional career. It was stated that the by-laws of the society had been redrafted and brought into accord with existing practice, and that the Propaganda Subcommittee had been active in trying to obtain new members. By the payment of a small annual subscription a newly married man assures, in the event of his early death, that his widow and young children will not be left unprotected. At the present time the widow of a member, left with £125 per annum or under, is eligible for a grant. Membership is open to any registered medical man who, at the time of his election, is resident within a twenty-mile radius of Charing Cross. The secretary will give full information to any prospective candidate who writes to the offices of the society, 11, Chandos Street, Cavendish Square, W.1.

The Board of Education has approved an extension of the course—from eighteen months to two years—for blind students at the massage school of the National Institute for the Blind. Such extension is considered necessary in view of the wide range of subjects, which now include massage, remedial exercises, and medical electricity. All scholarships awarded by the Gardner Trust for the Blind for this particular study will be increased accordingly.

A State academy for racial and health welfare was opened at Dresden on April 14th, the first institution of the kind in the world, with Ministerialrat Dr. Ernst Wegner as director.

Professor Spillmann, dean of the Faculty of Medicine of Nancy, and Professor Mouriquand, who occupies the chair of paediatrics at Lyons, have been elected national corresponding members of the Académie de Médecine.

Dr. Alfred Shearer, who has been appointed High Sheriff of Montgomeryshire, is deputy coroner for Montgomery and surgeon to the county infirmary. For many years he has been chairman of the county Panel Committee. Dr. Shearer graduated M.B., B.Ch.Ed. in 1898, and had been medical officer of health for Newtown up to December, 1931.

Professor L. Lichtwitz, formerly director of the Rudolph Virchow Hospital of Berlin, has recently been appointed director of the medical department of the Hospital of New York.

Geh. Rat Anschutz, professor of surgery at Kiel, has been elected corresponding member of the Société Nationale de Chirurgie, and Professor A. von Eiselsberg, the well-known Vienna surgeon, has been elected an honorary member of the Surgical Society of Lyons.

A neurological investigation institute has been founded at Breslau under the direction of Professor Offried Foerster, who has received a grant of 50,000 dollars from the Rockefeller Foundation.

On the initiative of Professor Lowenberg a centre for distribution of convalescent serum has been formed at Strasbourg, where, in the course of a year, three and a half litres of serum have been collected from thirty-five scarlet fever convalescents, 4,180 c.cm. from thirty-eight cases of infantile paralysis, and about a litre of serum from measles convalescents.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and **LETTERS** forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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All communications with reference to **ADVERTISEMENTS**, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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QUERIES AND ANSWERS

Unusual Symptom in Diabetes Mellitus

Dr. E. M. R. FRAZER (Barton-on-Trent) writes: The discussion on the white powder found on the boots of these cases prompts the memory to recall the story of the methods of a famous Edinburgh teacher who was renowned for his "spot" diagnoses of certain cases. For instance, he would astonish both clinic and patient by announcing, as soon as he saw the latter, what was his particular occupation by the soil on his boots, the colour of the hands, situation of trade callusities, and so on. If he saw an old gentleman with white powder on his boots he would announce that here was a case of diabetes mellitus and enlarged prostate, the sugar having dried out on the boots, and its site being determined by the small dribbling stream. This diagnosis would be clinched in hot weather by the presence of flies, feeding on the dried sugar.

* This Edinburgh teacher must have been Joseph Bell, surgeon to the Royal Infirmary, whom Sir Arthur Conan Doyle acknowledged as having served in part as the original of Sherlock Holmes.

Movement of Needles in the Tissues

"F. S. D. H." writes: The following may interest "Sceptic," whose query appeared on May 12th (p. 880): An ordinary sewing needle, carelessly left sticking in the back of an armchair, penetrated, and broke off, into the skin somewhere over my right scapula. An abscess formed, which was opened, but the needle was not removed. A small subcutaneous nodule remained, which slowly travelled in the course of the next year or two to my left axilla, where it disappeared.

Income Tax

Commencement of Partnership

"IN DIFFICULTIES" was engaged from February 1st to November 1st, 1933, as an indoor assistant, and received £r. Since November he has been carrying on his profession elsewhere, it having been arranged that he should enter a partnership as from January 1st, 1934—the agreement, however, has not yet been signed. On what basis should his return be made? He has not yet received any money for his work since November 1st, 1933.

* As regards the year 1933-4, our correspondent is liable to account for tax on (a) his earnings as an assistant up to January 1st, 1934, and (b) on his share of the partnership assessment for the three months to April 5th, 1934. For the year 1934-5 he will be liable as a member of the firm on his share of the firm's assessment, which will normally be based on the practice profits of the previous year—probably preferable to claiming to restart the calculations as if a new practice were set up as at January 1st, 1934. The fact that the partnership agree-

ment is not yet signed is immaterial. A visit to the office of the inspector of taxes to explain the exact position might save future trouble.

Endowment Policy for Child

"A. H. S." has just received the first of five annual payments under an endowment insurance policy for the education of his child. Is this liable as income?

** No. Assuming the policy to be drawn in the appropriate terms, the payments do not constitute an annuity, and merely represent receipts which "A. H. S." has purchased by past payments to the insurance company.

Making a Return

"T. P." sold his practice on February 19th. All subsequent income will be derived from investments. What should his "return" consist of for 1934-5?

** The untaxed part of the income declaration should be marked *nil*, except as regards any investment income that may be untaxed, such as bank deposit interest, and the other part of the declaration should contain summarized particulars of his income. The professional earnings for the period April 5th, 1933, to February 19th, 1934, are not relevant, unless the practice has been regarded as ceasing and being restarted at the latter date; in that case the revenue authorities may call for particulars, not to make any assessment for the current year 1934-5, but to revise the assessment for 1933-4 if that course should be justified by the figures.

Loss on Sale of Car

"N. F." bought a car a year ago for the use of his assistant for £115. That assistant left and his successor brought his own car, so "N. F." sold the car for £29. Can he claim a deduction for the loss of £115 - £29 = £86?

** No. The income tax allowance extends only to the case where a car is purchased in replacement of the one discarded. The only allowance that "N. F." can claim is "depreciation" on the car while in his possession, say £115 at 20 per cent. = £23 + the (now) usual 10 per cent. — that is, £25 10s. in all. This is an example of the hardship which arises from the absence from the Income Tax Acts of any general allowance for loss of capital property, or even necessarily, employed in earning the income assessed.

LETTERS, NOTES, ETC.

Bee Venom for Rheumatism

Dr. HERBERT G. WHITE (Heathfield) writes: I was interested to read the letter of Drs. Shipton and Burt in the *Journal* of April 28th. About twenty years ago an agricultural labourer came to see me who was quite unable to work, being crippled with arthritis and unable to grasp the handles of a wheelbarrow. I recommended him to try bee stings. Accordingly, he went to a bee keeper and received half a dozen bee stings on each hand once a week. In three months' time he was able to return to work completely cured. Surely some of our manufacturing chemists should be able to put up bee venom for treatment of rheumatism; of course it would have to be less painful than the ordinary bee sting. I have frequently recommended others to try the cure, but have not been able to get them to submit to it.

Sterilization in Hereditary Disease

FRIEDRICH VON VERSCHUER, who is a director of the Kaiser Wilhelm Institute for Anthropology, Human Heredity, and Eugenics in Berlin-Dahlem, urges in the *Deutsche medizinische Wochenschrift* of January 19th the organization of a hereditary-biological census, which will tell the German nation exactly where it stands in the matter of the unit whose hereditary ailments qualify them for sterilization. In this connexion there should be special centres in which a card index could be kept of the subjects of hereditary disease. Hitherto the incidence of hereditary mental disease has been imperfectly known. In the case of the congenital mental defectives, for example, the statistical data at present available are most conflicting. According to a census taken in 1925 there were then about 100,000 mental defectives in Germany, of whom 46,000 were in institutions. But if attendances at schools for the backward be made the basis for a calculation of the total incidence of mental deficiency, then over a million belong to this category. As about 70 per cent. of the inmates of

asylums are schizophrenics, there should be about 190,000 such persons in Germany, but their number is higher than this according to some. After discussing in detail the national incidence of other diseases, such as epilepsy, deaf-mutism, and physical deformities with a presumably hereditary basis, and after calculating the approximate chances such persons have of passing these ailments on to their progeny, the author urges the courts concerned with this problem to hasten its solution by concentrating on the worst and most urgent cases, in which it is not difficult to express an expert opinion. There is, however, a growing number of more obscure cases about which investigations of whole families would have to be undertaken before an expert opinion could be given with regard to sterilization. Dr. von Verschuer pleads not only for research and the systematic collection of material on which to base it, but also for the education of the medical profession in this subject so that it may become hereditarily-minded.

The Word "Clinic"

Dr. L. FIRMAN-EDWARDS (Ryde, I.W.) writes: Is it too late to register a protest against the misuse of the word "clinic" to describe a place where patients (all walking cases) are seen, examined, or treated? The word as now used is becoming associated with this type of patient, whereas it obviously refers to a bedside examination. As first applied, it referred to certain establishments where patients were admitted as in-patients for special study, and in my opinion it should be confined to such institutions. But many so-called "clinics" have no facilities at all for clinical (that is, bedside) observation, and are merely out-patient departments or dispensaries for special cases. Would it not be better to reserve the term for the institutions to which it properly applies, and invent some new word for the purely out-patient department? "Centre" is a word which has rendered good service, and means what it says. Perhaps some other of your readers can suggest a better term.

Barbiturate Poisoning

Dr. STAFFORD GEDDES (Belfast) writes: In reply to Messrs. May and Baker's comments (April 28th, p. 786) on my letter (note on case of barbiturate poisoning, April 14th, p. 689) I wish to state that since reporting this case I have found that, by mistake, the patient was given a larger dose of sodium soneryl than he should have received according to his weight, which was eight stone. The dose given was five capsules (0.75 gram).

Disclaimers

Mr. ALECK BOURNE, F.R.C.S., writes: My attention has been drawn to a paragraph in the lay press of May 4th, which implies that I am a "super-specialist" (whatever that may mean) in a small corner of obstetrics. I have never claimed such a doubtful distinction; it is an absurd untruth, and the paragraph was inserted without my knowledge.

Mr. A. R. D. PATTISON, F.R.C.S., Newcastle General Hospital, Newcastle-upon-Tyne, writes: In its issue of May 10th the *North Mail* published a laudatory article in extravagant phrases referring to the work of the neurological surgeon at the Newcastle General Hospital. No name was mentioned, but it must have been obvious to anybody remotely acquainted with the facts that this article referred to me. The harmful effects of the article have been aggravated by the fact that certain charges for maintenance, which are made from time to time by the hospital authorities, have been quoted in a sensational manner as representing my customary fees. I should like to state emphatically that this article was published entirely without my knowledge or consent.

Messrs. EDWARD ARNOLD AND CO. (Maddox Street, W.) write: It has been pointed out to us by Dr. William Brown that certain phrases in our advertisements of the third edition of his book *Psychology and Psychotherapy* might be construed as being contrary to the accepted principles of medical ethics. In view of this we wish to make it clear that the responsibility for these advertisements rests entirely with us, and not with the author, who did not know of their contents until they were published. Future advertisements will be suitably modified.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, 44, 45, 46, 47, and 50 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48 and 49. A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 260.

PRINCIPLES OF PSYCHOTHERAPY AS APPLIED TO GENERAL PRACTICE*

BY

C. STANFORD READ, M.D.

LECTURER IN PSYCHOLOGICAL MEDICINE, BETHLEM ROYAL HOSPITAL; CLINICAL PSYCHOLOGIST,
WEST END HOSPITAL FOR NERVOUS DISEASES

Though in the time we have at our disposal there is much ground to be covered on a specific subject, it will be worth while just to take a very cursory glance at the historical aspect of mental healing. The treatment of disease by mental means can be traced back to the earliest times. Its beginnings were of a magical nature and in the hands of the primitive medicine man, and later in those of the priests. Magic and theology became inextricably confused, and in the dark Middle Ages the "laying on of hands," exorcism, and miraculous intervention were the procedures employed to combat mental ills as well as much bodily disease. The superstitious credulity of those days is by no means non-existent now, and mankind is still actuated by the same motives and emotions as he always has been. Doubtless it was because of the mystical atmosphere in which mental healing had always been surrounded that until comparatively lately the whole subject was hardly thought worthy of serious consideration by the medical profession.

In the latter part of the eighteenth century Mesmer, a Viennese doctor, drew universal attention to his theory and practice of animal magnetism, or mesmerism as it came to be called. Though much of his work savoured of charlatanism it was through investigation of it that one form of psychotherapy became placed on a scientific basis. The theory of animal magnetism was negated, and the phenomena of hypnotism, as it was later termed, were found to be the product of suggestion. Although the practice of hypnotism never became popular, there were medical men of repute who specialized in it in all the capital cities of Europe. The work of Charcot in Paris and that of Bernheim and others in Nancy gave the subject a stamp of respectability. The studies of Janet in this realm and his psychopathological contributions mark him as a pioneer in our present-day psychotherapy. Hypnotic suggestion fell greatly into disuse, for it was found that curative results were so frequently as well obtained through simple suggestion alone. This method then held most sway, though a few employed what was known as rational psychotherapy or persuasion. About twenty years ago the psychological doctrines of Freud began seriously to influence our ideas of mental medicine, to such a degree that the analytic approach to mental disorder has now, to a vast extent, superseded all other forms of psychotherapy. It was the Great War that gave such an impetus to interest in psychological medicine and methods, and in latter years it has become increasingly evident that the general practitioner must make up for the deficiency in his medical curriculum and gain some insight into the principles underlying psychotherapy in order that he may extend his sphere of usefulness.

SCOPE FOR PSYCHOTHERAPY IN GENERAL PRACTICE

Hitherto, without such knowledge, his ability to understand and help a patient with neurotic disorder has been but small. He has had to fall back upon such trite remarks as "Don't worry," "You must control yourself more": just the things, in fact, which the patient would love to do but cannot. That is why he has come for medical advice. The inevitable nerve tonic and rest and change will then probably be advised. Should no progress

be made, the doctor tends to regard the patient's condition as one overstepping all reasonable pathology, and pays the patient out for this by accusing him of "Not trying to pull himself together," ascribing perversity to him, and withdrawing his interest entirely from the case. Such a state of affairs is rapidly passing away, and most practitioners recognize the fact that neurotic disorder cannot summarily be dismissed as unworthy of medical aid, and are, if no skilled help is available nearby, endeavouring to treat such patients themselves on modern rational lines. For many reasons the medical man in general practice is in a particularly advantageous position to apply, usefully and successfully, the principles of psychotherapy. True he has not the time, even if he had the knowledge, to use the more lengthy methods of treatment, but he will have ample opportunity to do a large amount of good. The family physician is in a special position of trust and confidence; he is regarded as one who understands the mental and bodily constitution of his younger charges, and especially those he brought into the world. He has a close link with his patients, and this gives him prestige and power. If only these factors are utilized in the right way his psychotherapeutic influence should be extensive. He sees nervous ills, too, at their earliest stages, when they are most amenable to treatment and more capable of being cured or alleviated.

THE IDEAL PSYCHOTHERAPIST

In speaking of the principles of psychotherapy we must first devote our attention to the psychotherapist himself. For many reasons one might say that a good psychotherapist is born, not made. With all the psychological knowledge in the world he will be of comparatively little use unless he has the right type of personality for this special work. He must be a man of the world, have wide interests and sympathies, be patient, able to identify himself with his patients, possess a love of humanity, and have not only an earnest desire to help, but the firm conviction that somehow or other he will be capable of doing so. This factor of personal conviction on the part of the doctor can hardly have its importance overstressed. Between doctor and patient, there is a subtle emotional interchange which, handled in the right way, can be productive of wonderful results. I often recall the fact that many years ago, when I believed so intensely in the curative effects of hypnotic suggestion and almost regarded it as the panacea for all ills, my capacity to hypnotize and alleviate or cure symptoms was astonishing. Now that my faith has been shaken in its wide application and my views lean towards a more analytic therapy, I find much diminished ability to produce hypnotic phenomena, and less success attends my efforts. All of us are cognizant of the fact that stupendous mental and bodily changes are brought about through earnest faith, whether it has its source in the spheres of personality, philosophy, or religion. Modern psychology has thrown much light upon its essential meaning, and it is the duty of the psychotherapist to understand the mental processes involved and direct them scientifically, instead of allowing the quack to flourish through the faults of omission and commission in medical practice. Faith acts through suggestion, a mental process we will deal with later.

* A lecture delivered to the Isle of Thanet Division of the British Medical Association on March 23rd, 1934.

FIRST STEPS IN PSYCHOTHERAPY

Presuming, then, that we have the psychotherapist who possesses the requisite mental attributes, what will his first step be when consulted? It should be to listen, listen attentively and understandingly, with but few, if any, interruptions. One is so tempted to make remarks or to stem somehow a flow of eloquence. Let the patient tell his story in his own words. This outlet, as a relief of mental tension by itself, is helpful. Worries, fears, apprehensive ideas, and guilty desires may, when kept to the self, create the feeling of being cut off, as it were, from the rest of the community. When a secret fear is shared with another this feeling of social ostracism is removed, and biological security and happiness tend to be re-established. This "catharsis"—or cleansing of the mind—this confession of troublous thoughts and emotions, must be the first stage in any psychotherapeutic treatment. From the initial experience of finding a sympathetic and understanding ear the patient will be encouraged to unburden himself still further, and to unload mental undercurrents that had, because of their painful content, been long suppressed. When psychoanalysis as a form of treatment first saw the dawn it was known locally as the "talking cure," and though to-day this method has a highly developed scientific technique, popularly it might still thus be aptly described.

Having listened attentively to the patient's story the psychotherapist must orientate himself adequately to the case by questioning. Experience will enable him very quickly to get a brief longitudinal survey of the individual's life-history as regards his adaptations to early life, school, parents, family, husband or wife, social environment, and sex. With the knowledge now gained the doctor should be in a position to gauge the important factors of the severity of the neurosis, the type of personality he has to deal with, and what form of treatment will be best to apply. However, before any treatment is undertaken it is highly probable that certain attending circumstances will become a subject for discussion. In every neurosis there is the unconscious tendency to evade some duty or responsibility, to gain something, as it were, by the illness, and the question of whether or no the patient should not temporarily relinquish his work is frequently asked. Since it is true that all neurosis is in some way the result of a defective adaptation to life's stresses, so at the very outset we must stimulate our patient to face the continuance of his work, notwithstanding his feelings of growing incompetency and fatigue; encourage him to live a normal life; and resist the great temptation to take the path of least resistance. The neurotic has lost courage. He will for a time, at any rate, need a personal prop, but he must from the start be inspired with the need of standing on his own feet. Then there is the point of whether or no the patient is best treated while in his own home milieu or not. We may be sure that the neurosis is in some way intimately related to the emotional factors of home life. A father, a wife, some relation, or lodger, may be the situational pivot of the neurotic outbreak. One can lay down no hard-and-fast laws as to whether for the time being the difficult situation had not better be avoided until the patient is in a better position to adapt to it, or whether, the situation being what it is, it would not be more rational to face the inevitable straight away. In severe neurosis removal from home is practically a necessity; in mild cases such need may not arise.

Let us presume, then, that we have summed up the type of personality with which we have to deal, and have noted what form of neurosis the symptoms point to. The past history will probably also give us some indication of the amount of benefit we are likely to obtain. Having

got sufficient initial data, the question of what method of psychotherapy shall be employed has to be decided. There is too great a liability for hard-and-fast schools of psychotherapy to arise according to certain psychopathological theories held, in which only one form of mental treatment is used. We shall discuss these different avenues of therapeutic approach and recognize the principles upon which they are based. It will be seen that in varying circumstances our methods should differ accordingly. In the simplest imaginable neurotic trouble a heart-to-heart talk, a little added insight, a little advice, and some encouragement are all that is necessary. At the other end of the pole comes the severe and disabling disorder that requires a prolonged mental analysis to disentangle the disharmonies in the mind and to restore any measure of stability. As a generalization we may say that the long-standing cases with their much poorer prognosis had better be treated by simpler means, whereas the more recently developed neurosis should receive a deeper attention, since complete rehabilitation is the more likely. It must be borne in mind that the analytic approach in psychotherapy must involve intelligence in the patient and more expenditure of time and money. It is quite possible to be too scientific, and with our high aims forget the simpler means by which we may banish or alleviate nervous symptoms.

THE USE OF SUGGESTION

In our brief glance at the historical aspect of psychotherapy we noted that hypnotism was the method that held sway when mental healing was first seriously studied by the medical profession. It was shown by an English physician that hypnotic phenomena had no relation with animal magnetism, but were the product of suggestion. This psychological process of suggestion is a very potent force, and it is well that its power should be duly recognized and applied usefully in psychotherapy when called for. Consciously or unconsciously the physician is constantly employing it in connexion with his patients; and not infrequently this influence is neglected or misused. The expression of the doctor's face, the tone of his voice, the conviction of his assurances, and his expression of opinion on the patient's symptoms are all potent suggestive influences working for good or for ill. How often a nervous sufferer who on examination reveals no organic signs of disease is told there is nothing the matter with him. As if anyone consults the doctor without there being something the matter with him. There is no such thing as an imaginary disease, but there is a disease of the imagination. One must recall the true paradox that "if a man is ill enough to think he is ill when he is not ill he must be very ill indeed." The factor of being thus misunderstood not uncommonly has driven a patient to suicide, since he feels that if the doctor fails him all is lost.

Let us note some psychological facts about this suggestibility which should be helpful in its understanding, and therefore in its practical applications.

1. Some people are swayed by suggestion very much more than others. This is especially the case with children, who tend to accept any idea uncritically, since their reason and judgement are undeveloped, while in old age, where fixed ideas are the rule, any modification of the mind by this means is highly unlikely. Similarly, those who have their critical faculties well developed, and who therefore analyse any presented idea before acceptance, will not prove suggestible; while those who are impulsive, with less self-control, may easily become its victims. The suggestibility of an individual is enormously increased in the presence of others. This fact used to be taken advantage of when hypnotizing soldiers during the Great War. If all the subjects were in one ward, after the production of hypnotic effects in a few the rest

were almost in a state of hypnosis before any suggestions had reached them personally.

2. Then the same individual differs in his suggestibility according to various factors. Anything that lessens cerebral controlling forces will render him more suggestible. Fatigue, prolonged worry, a long illness, and hypnosis have such an effect. Alcohol, we know, inhibits higher control, so that when under its influence we are more amenable to suggestion.

3. We may be only suggestible to certain types of ideas—accepting those which flatter us and those we believe because we want to believe them.

4. We may be highly suggestible towards some people and not towards others. In the main we are in a submissive, receptive, and suggestible state in the presence of those who impress us with their power and superiority. From this we can well understand the suggestibility of the child to its parents and of the patient to his doctor. Friendliness, unity of aim, respect, confidence, and love all enhance suggestibility, and must be thought of in our psychotherapeutic aims. In hypnotism there is increased suggestibility, and it is because of this fact that one hopes to get definitely helpful results from specific suggestions which relate to the symptoms.

TREATMENT BY HYPNOSIS

It is not feasible here to deal with the method of the induction of hypnosis, but every medical practitioner should acquaint himself with sufficient knowledge of the subject so that he may employ it on occasion. I am inclined to think that the use of hypnosis has been somewhat too much neglected since analytic therapy has come to the fore. In many minor ways its employment may be helpful, while in such conditions as fugues, amnesia, and dual personality it is of inestimable value. In hypnosis there is a widening of the memory field, and verbal suggestions produce, not only mental effects, but effects on bodily processes which normally are controlled by the voluntary or involuntary nervous system. Thus suggestions can modify salivary or mammary secretion, the peristalsis of the bowel, vasomotor processes, and the functions of menstruation. There is a very close *rapprochement* between the doctor and patient; this is of interest, and will be referred to later.

During the hypnotic state the curative suggestions can be made in different ways, varying somewhat according to the patient, the kind of symptom, and the doctor's custom. They may be made in a commanding or gentle tone, the former constituting a masculine approach and the latter a feminine. They may be directed immediately against the symptom, or an indirect attack may be adopted. Given an average suggestibility, there is the tendency for indirect suggestion to be far more effective, as the critical attitude is thereby disarmed and no contra-suggestions tend to be formed. Naturally repetition of these suggestions adds to their therapeutic force. It is to be noted, however, that apart from any specific verbal suggestion the mere induction of hypnosis itself may not uncommonly do good, and minor symptoms occasionally thus disappear in a striking manner. Unfortunately there is a somewhat deeply rooted prejudice against hypnotism on the part of the public, due to the fallacious idea that it is dangerous and not right that a person should be dominated by the will of another. Nevertheless, in practice I have seldom found any such objection sustained after a reassuring explanation. Some time after hypnotic phenomena had been scientifically studied it was found that just as good medical results could be obtained through suggestion in the waking state with the patient in a condition of absolute passivity of body and mind. Those who have had ample experience in the use of hypnotic and simple suggestion do not find, in the main, noticeable advantages in the former method, notwithstanding the heightened suggestibility of the hypnotic

state. Suggestion, therefore, to-day is mainly employed in this way. In both cases similar conditions for success are necessary on the part of the subject—fixation of the attention, monotony of impression, limitation of voluntary movements, limitation of the field of consciousness, and inhibition of all distracting thoughts. Suggestion while the patient is asleep, too, is possible, though seldom called for. In the case of children, difficult otherwise to treat, such a method is to be borne in mind.

SOME POINTS IN SUGGESTIVE THERAPY

Though there is insufficient time to discuss the psychology of suggestion, it will be interesting to note the psycho-analytical theory concerning it. According to this, suggestibility is the unconscious desire to believe blindly and to obey without criticism which originated in the child-parent relationship. It is the expression of a latent tendency to be persuaded by love (or intimidated by fear), and is due to the establishment of a relationship between the person who receives the suggestion and the person who gives it, which is an unconscious reactivation and transference of the relation that existed in infancy between the child and a loving mother, or a stern or imposing father. An affective bond, we know, does form in hypnosis between the subject and operator, and this *rapprochement* that exists is undoubtedly a necessary factor for success. At the same time, this link between doctor and patient must not be allowed to become an exaggerated one. For suggestive treatment the object is to produce a condition of mind which will set in action the right affective forces for the induction of those states of suggestibility which will harmonize with and reinforce the ideas to be suggested, and so to get them accepted with conviction. First the state of personal suggestibility should be induced by arousing the necessary instinctive tendencies, showing the patient sympathy, and impressing him with a knowledge of, and interest in, his condition, so that he has respect for, and confidence in, the physician. The personality of the physician and his attitude is thus perhaps his greatest asset in this form of psychotherapy. The individual should wish to be cured, and the whole atmosphere should be one of cure. A quick insight and an investigation of the case will show how the suggestions should be arranged and what form they should take. Repetition is naturally an important factor. The response to suggestion made may be positive, negative, or neutral, according to whether it is accepted, opposed, or simply not accepted.

AUTO-SUGGESTION

You will note that I have not referred in any way to auto-suggestion. I have not done so because I doubt its validity. In endeavouring to get away from the old idea that the will-power of the operator in hypnosis was the main factor, and the subject merely a tool in his hands, the disciples of M. Coué went to the other extreme, and negated the psychological forces involved in the operator altogether. That auto-suggestion has at times been employed with success I am willing to concede, but in such instances the personal influence is executed through the reading of a book or through the repeating of phrases previously spoken by a physician. The use of the word seems so wide and loose that it loses all value. The principle that the wish is father to the thought is so generally at work in our minds that almost all our mental processes, except the highest intellectual ones, would fall under the heading of auto-suggestion. We should be on much safer ground if we view suggestion as a phenomenon resulting from the interplay of emotional forces between two individuals.

LIMITATIONS OF SUGGESTIVE THERAPY

If we criticize suggestive therapy, it can be judged by the results obtained by its use, and also by how it agrees with the principles of treatment based on our knowledge of disease. The results vary very much. At times they seem miraculous, and the beneficial effects may be permanent. Cured cases, however, are often only seemingly cured and relapse later, and further courses of treatment are necessitated. Where we are dealing with neurotic disorders—and in the vast majority of instances suggestion is only employed in this sphere—there is no attempt to investigate the inner life of the patient nor any endeavour to get at the basal causes which, we now have good reason to believe, depend upon mental conflicts. This is unscientific, and it is impossible to foretell whether any real lasting benefit is likely to accrue, because the morbid source is never attacked. Unfortunately Baudouin's statement that if we only suggest the cure the subconscious mind will always find the way is not borne out by experience. The great disadvantage of suggestion, therefore, is its blind nature. The belief in the magical effect of mere words is an irrational one, and reflects a primitive type of mind. Nevertheless, there is a distinct field for the employment of suggestion if only it be applied to the right human material. In the realm of the psychoneuroses it should be used when, for any reason, a more scientific and analytic approach is not feasible. In intractable and severe long-standing neurotic disorder it may prove beneficial in alleviating symptoms, but, if possible, the earlier cases should be dealt with more radically. Advance in age and lack of intelligence are factors which commonly stand in the way of an analytic method. In the case of organic disease—and not infrequently a neurotic element becomes superimposed—the drawbacks to suggestion which were mentioned do not apply, and in the future such a therapy may prove useful in this realm.

ON PERSUASION

In considering other psychotherapeutic measures we shall note that we are getting away from the blind nature of attacking symptoms and are endeavouring to obtain the conscious and active co-operation of the patient in our efforts towards his betterment. Nevertheless, in the intimate relationship existing between doctor and patient the unconscious factor of suggestion can never be entirely eliminated. The doctor has always been wont to appeal to the individual's reasoning power, and to try to combat neurotic fears by his assurances that they are groundless and that only added insight and more self-control are needed to overcome them. The hysterical paraplegic is told at some length that walking is quite possible if only the idea of incapacity—that direction is banished. This method of so-called "persuasion" has been, and is still, employed, so that its principles should be examined. Here the therapist presumes that, if he explains the meaning and the origin of the symptoms, the patient has the capacity to modify the morbid mental processes. Much, however, depends upon whether the physician does really know and understand the meaning and origin of the symptoms. Commonly enough these symptoms are only taken at their surface value, so that any explanation can have little or no effect and the process is just as much floundering about in the dark as suggestion is. If we take up the attitude, as we must in the light of modern knowledge, that neurotic illness is motivated by factors below the threshold of consciousness, it is evident that any superficial attack by itself is futile. A very small experience should make us realize that logical reasoning has little power to modify what goes on in the

mind. The obsessional neurotic is frequently highly intellectual, and is only too convinced of the absurdity of his compulsions, fears, and doubts; yet he is impotent to inhibit them. The physician who has little or no insight into these forms of pathological disturbances is only too apt to regard them as largely due to mere irrational habits of thought and a lack of will-power. Were such premises largely true, one would expect persuasion to bring about beneficial results, but unfortunately experience teaches us otherwise. Will-power is not a special faculty that can be stimulated. The will is the whole character in action. It is not that symptoms arise from a weakness of will, but that some underlying emotional impulse is too strong for normal control. Nevertheless, I am by no means trying to convey the idea that this method has no value whatever, for, as we shall see later, when it is combined with a preliminary investigation and understanding of the deeper sources of the neurotic symptoms, in the simpler type of cases much good can be accomplished. Without some knowledge of the pathological reactions taking place any good that may eventuate will be due to the unconscious suggestive influence of the physician.

Another psychotherapeutic method not uncommonly adopted has been that of attempting to divert the patient from his symptoms and resulting self-centredness without any real understanding of them. The going away for a change of scene has been the most usual recommendation given to a nervous sufferer, with the hope that constant distraction will gradually give the symptoms the chance of withering away from inattention. This by itself is a poor way of attacking the problem, for a person cannot thus run away from his own ego. Nevertheless, when the diversion from symptoms is carried out more scientifically by the development and encouragement of useful and personal interests which will tend to drain off energy from pathological channels into healthy ones, much benefit may follow. Unfortunately, however, experience shows that those who can be helped in this way are comparatively few in number, since the morbid forces seem too strongly fixed to be thus diverted. Combined with other methods of psychotherapy though, this diversion of forces is a sound principle, and should always be thought of. Because of its diverting value and the dangers attendant upon evading responsibilities, the giving up of work should not usually be advised.

VALUE OF RE-EDUCATION

We now come to another psychotherapeutic approach, which is still more rational and in which the patient takes a much fuller share. It has been termed "re-education." The physician, believing that the neurosis depends upon mental factors of which the patient is mainly unaware, carefully takes a longitudinal survey of the life-history, discovers the emotional disharmonies to which the individual has been subjected and the reactions to them, and notes the psychical traumata of the past. By such means he sums up the type of personality he is dealing with, and discovers, if possible, the pathological processes that are responsible for the symptoms. With this knowledge he proceeds to explain to the patient the significance of his past in relation to the present disorder, and endeavours to modify the attitude that has been taken up, to render that attitude more rational, to encourage the general interest, to give a new goal to life, and generally to broaden the mental horizon. Here there is a distinct advance, in that hidden causative and unconscious mental factors are investigated and taken into consideration, instead of only dealing with the end-product of symptoms. The patient cannot help but feel gratified

that his case is worthy of such investigation and that he is understood, while the point that he finds that he himself has to be the main agent in bringing about a cure is extremely important. Provided the physician is well equipped with modern psycho-pathological knowledge, so that his mental examination is on the right lines, we shall find that the re-educative method will be most applicable to the majority of cases met with in general practice, and will be productive of most good. From a strictly scientific point of view it may well be that the investigation of the mental factors cannot be sufficiently prolonged or probed deeply enough, and that much pathogenic material lying in the unconscious mind remains untouched. Be that as it may, it is quite evident that in practice, for many reasons, it is impossible to do more.

THE ANALYTIC METHOD

Lastly, we come to the analytic method of psychotherapy. Using the word analysis in its ordinary connotation such a method involves the scientific sifting out of the varied past and present mental processes and reactions of an individual in order that the pathogenic source of the neurotic symptoms may be traced, their meaning understood, and a rational therapy made possible for their alleviation or cure. Psychology teaches us that only a comparatively small part of our mental functioning lies in the region of our awareness, and that for the real motivation of most of our thoughts, feelings, and actions the deeper unconscious mind must be explored. It is now fairly established that mental conflict in some way is the root cause of most neurotic disorder, and that this disharmony is due to the presence in the unconscious mind of emotionally toned groups of ideas and impulses which, being alien to the main body of the personality, have been refused recognition and become dissociated from it. Such complexes lying repressed in the unconscious are essentially dynamic in nature, the underlying urges striving for outward expression but being directly prevented from doing so by the inhibiting influence of the ego. The neurotic symptom appears in a disguised form as a compromise between the two forces, so that it is not recognized for what it really is. Such disguises are manifold; many require much patience and analysis to unveil; while others may be more or less rapidly recognized through our knowledge of psychological mechanisms.

For instance, the mental mechanism of projection, which involves the conception that an inner mental process seems to be existent in the external world, is one of the commonest ways in which we disguise painful thoughts from ourselves. The very fault we see so much in others is really ours; the husband who manifests exaggerated jealousy of his wife does so because the idea of his own leanings towards infidelity is too much out of harmony with his self-respect for him to recognize and accept. This mechanism of projection is what hides the real meaning of many a morbid fear. It seems to be a fear of some external danger; but in reality it is an impulse, a desire within ourselves of which we are afraid. The old spinster who cannot get into bed without looking under it for fear there is a man there develops such a symptom as a defence against her biological craving for the male. The patient with agoraphobia, or the fear of being alone in the streets, may be really in terror of being exposed to temptations which his ego yearns for but which his conscience forbids and represses from his conscious mind. The insane patient who constantly hears voices from without accusing him of vicious practices and calling him by opprobrious names is projecting that blame which he dare not give himself.

THE OBJECT OF ANALYSIS

Now the object of analytic psychotherapy is to bring these buried complexes into consciousness so that they may be duly recognized by the patient and assimilated by him as part of his personality. It is essential to see that consciousness can deal with and control a mental process that is itself conscious far better than one that is not. In our everyday life we know how various little tricks of conduct we had got into the habit of manifesting, but of which we were unaware, can be successfully dealt with when our attention is drawn to them. In this way, too, mental energy which has been unhealthily bound up with the repressed complexes and the formation of neurotic symptoms can be released and diverted into useful and social channels. The mind thus, instead of being divided against itself, tends to become a harmonious whole. It must be understood that mere intellectual appreciation of a complex on the part of a patient will be of little or no avail except in so far as he grasps the fact that the source of the trouble is resident within his own mind. Otherwise, an experienced psychotherapist might at a first interview accurately spot the pathogenic forces at work. But merely imparting such knowledge will not help. There are strong internal resistances within the patient's mind which must be overcome before he can accept the truth about himself and assimilate it emotionally. Neurotic symptoms constitute a defence against the recognition of something within the self; that is why from one point of view we can speak of "a will to illness," and why a psychoneurosis is difficult to modify and cure.

Since we are only dealing briefly with the principles of psychotherapy, this is no occasion to discuss any further the intricate psychological points involved in the analytic method. As you probably know there is more than one school of psychopathology, and the trend of any analytic investigation will depend upon what particular theories are held. It would carry us much too far afield to speak of them. Anyone sufficiently interested must consult suitable literature on the subject. All would agree, however, in regarding a so-called nervous disorder as due to mental factors of which the patient is quite unaware, and that some form of analytic therapy is the ideal method of treatment. It has already been pointed out that hypnosis, simple suggestion, persuasion, and re-education all have their useful applications. The psychotherapist must not pin his faith to any one method, but must be prepared to employ them all as occasion demands. Suggestive influences cannot be eliminated from any one method because of the special relationship that exists between doctor and patient, though in analysis it is reduced to a minimal degree. The practical side must ever be kept in view—in general practice especially. The severity of the neurosis, the amount of the maladaptation to social life, the suffering involved, the disturbance of the capacity to work, the age of the patient and his intelligence, the situational factor, time, and expense—all have to be taken into consideration. It may be that the disturbance is slight, so that a short psychotherapeutic conversation or two, assurances given that the individual is not "going off his head," and stimulation to face the difficulties of life with greater courage will be all that is necessary. It may be that the age of the patient is too advanced for any active interference. It may be that the symptoms patently depend upon some comparatively simple domestic problem which necessitates interviews with other members of the family to bring harmony into the home. In some cases it will be seen at once that pathological investigation must go deeper for later treatment, as seems fit; while in others it is evident that

more expert knowledge and treatment is called for. In a certain proportion of cases the technique of Freudian psycho-analysis will hold out the best chances of cure. Those patients who, for any reason, cannot be adequately treated by the general practitioner can be referred to one or other of the many clinics which exist for this purpose. It will, however, add greatly to the interest of general practice work if the doctors themselves further their psychological knowledge and learn to apply it themselves.

CONCLUDING REMARKS

It is not feasible here to speak of the types of cases to which psychotherapy should apply. In some degree it may be said that every patient will need some of its applications, even if it be only that of instilling cheerfulness, hope, and courage. It is in this way that the personality of the physician, his bedside manner, and the atmosphere he creates in his consulting room mean so much. Conan Doyle told us a short story of two youthful medicos, lately qualified and well versed in the use of all the latest medical knowledge and appliances, who set up in a small community as partners. The other doctor there was an old man with a lovable personality, who had been there for many years, and who was by no means up to date in his work. After their courtesy visit the budding practitioners laughed among themselves at his age and ignorance, pitied his patients, and came to the conclusion that before long he would not have many left when their academic superiority became recognized by the inhabitants. Soon afterwards, on the outbreak of an epidemic of influenza, one of the young doctors was struck down. As he lay in bed feeling very sorry for himself the thought of the scientific attitude of his partner at his bedside had no attraction for him, whereas the presence of the old doctor, he felt, would bring peace and comfort. He therefore sent for the latter, but found that his partner, who had been taken ill as well, had also sent for the old man they had both so much derided. The moral is obvious.

Though it is in the realm of the psychoneuroses that psychotherapy especially applies, it must be borne in mind that psychogenic factors so frequently have bodily manifestations. The old bugaboo of the relations existing between mind and body must be relegated to the dust-heap. We must regard body and mind as simply different aspects of an individual who is a psychosomatic unity. All the emotions have their physical expressions. It is therefore important in every patient to view the individual as a whole and take into careful consideration possible psychological factors as well as bodily ones. In time experience will teach you that the mental element enters far more into disease than you ever dreamt of. The increased heart-beat may be due to a secret fear; the lump in the throat the result of an insult that cannot be swallowed; the obstinate feeling of nausea or vomiting may be the sequel of the inability to digest a psychic situation with a resulting buried complex of disgust and revulsion. We do not for nothing speak of a sickening horror or of having a nasty taste in our mouth after reading something of a disagreeable nature. All our emotional feelings may be expressed somatically, and if long continued may bring about definite organic disease. Superficial inquiries, at any rate, should always be made into the emotional life, into the possibility of there being ungratified instinctual yearnings; and the sphere of sexuality must not be neglected. Your patient must be viewed not as a "case," but as a human personality that somehow or other is maladapting to his environment. In dealing with the human body never forget the human heart. With the earnest desire to understand, and with a comparatively small knowledge of medical psychology,

the practitioner will be surprised at the fresh light that will be thrown on many recalcitrant symptoms.

Now a word as to prognosis. Commonly enough too much is expected of the psychotherapist. Just as we come across people with poorly developed chests who will always be liable to coughs and who break down under respiratory strain, so we meet with a constitutionally poor mental soil that will ever be apt to find it difficult to withstand the stresses of life without developing symptoms of maladaptation. Whatever method we adopt in psychotherapy we must be prepared to face the fact that we cannot make some individuals normal, but perhaps can alleviate to some extent and render life more bearable. The less we use the word "cure" in psychotherapeutic practice the better. On the other hand, at times brilliant success may be achieved. Those of you who are sufficiently interested to learn more of that hitherto neglected subject—psychological medicine—will find it a most engrossing study, and one that will greatly enhance your usefulness as a physician.

INADEQUATE IMMOBILIZATION AND NON-UNION OF FRACTURES*

BY

R. WATSON JONES, M.Ch.Orth., F.R.C.S.

LECTURER IN ORTHOPAEDIC PATHOLOGY, LIVERPOOL UNIVERSITY;
ASSISTANT SURGEON AND IN CHARGE OF ORTHOPAEDICS,
LIVERPOOL ROYAL INFIRMARY

The crippling disabilities which at one time resulted from excessive immobilization of joints in the treatment of fractures entirely justify the recent wave of enthusiasm for early mobilization and functional activity. The essential principle of modern treatment is complete immobilization of the fracture, with at the same time active movement of every joint which need not be immobilized. When this principle is observed massage treatment becomes unnecessary, incapacity periods are reduced, and many permanent disabilities are avoided. But there is some danger of undue enthusiasm and of misrepresentation of the principle, so that the mobilization of joints is allowed to interfere with the immobilization of the fracture. It must be recognized that complete immobility of the fracture is a primary necessity, that there must be no mobilization except in joints which need not be immobilized, and that mobilization should be the result of the patient's own active exercise and not of the passive manipulations of the masseuse.

A fracture of both forearm bones was recently plated by a distinguished surgeon, and from the time of operation the arm was taken daily from its splints for two hours of massage and passive movement. The constant strain on the fractures had not only caused non-union, but had produced painful spasm of the muscles and stiffness of the joints, which was even greater than if there had been no movement at all. When the fractures were completely immobilized by a plaster cast active finger movements could be practised without pain and improvement in the range was immediately observed.

Such gross misapplication of the principles of early functional activity in fracture treatment is rare. Unfortunately, however, equally disastrous results are not uncommonly seen when the principles have been misapplied in a less obvious manner. In one group of cases splints or plaster have been inexpertly applied so that the fracture has not actually been immobilized at all. Angulatory movement may have been completely con-

* A paper read in Manchester on March 8th, 1934, at a joint meeting of the Liverpool Medical Institution and the Manchester Medical Society.

trolled, but the fact that rotatory torsion strains inhibit union just as certainly has been overlooked. In the second group of cases complete immobility has been maintained for six or eight weeks, but the joints have then been mobilized before the fracture is sufficiently consolidated. These two factors—incomplete immobilization and immobilization for too short a period—are the factors responsible for delayed union and non-union, whether in the shaft of a long bone such as the tibia, the humerus, or the ulna, in the neck of the femur, or in the carpal scaphoid bone.

The many theories of inadequate blood supply, impaired nutrition, inaccurate apposition of fragments, failure of impaction, the inhibitory action of synovial fluid, and the absence of blood clot are of no real significance. The only important cause of non-union is inadequate immobilization.

HYPERAEMIC BONE DECALCIFICATION AND NON-UNION

Recently acquired knowledge of the calcium content of bone in relation to its vascularity provides the pathological basis for these clinical observations.¹ No longer are we confused by the suggestion that although the decalcification of infected bone is obviously the result of an increased blood supply, the decalcification of fractured bone, such as the fractured neck of the femur, is due to impairment of its blood supply. Hyperaemia of bone always results in decalcification, whether the blood supply is increased by injury, by infection, or by the growth of a neoplasm. Increased calcification or sclerosis, on the other hand, is the result of impairment of blood supply, as may be seen in syphilitic periostitis and Charcot's disease, where there is endarteritis obliterans, or in the late stages of osteomyelitis, where the early infective hyperaemia has been replaced by the ischaemia of reparative fibrosis.

The same hyperaemic decalcification and ischaemic recalcification may be observed in fractures. The initial traumatic hyperaemia gives rise to decalcification of the bone ends. So long as the hyperaemia persists, decalcification goes on: not until it has subsided can calcium salts be redeposited in the young connective tissue which has grown between the bone ends to form callus. When, with the final stages of repair and fibrosis, the blood supply is impaired, the callus undergoes dense calcification with consolidation of the union.

If, on the other hand, the fragments are imperfectly immobilized, the shearing and twisting strains tear the young connective tissue between the fragments. The repeated traumatization gives rise to constantly recurring hyperaemia, and more and more of the bone ends undergo decalcification. A crack becomes a cavity, a linear fracture becomes a gap fracture. When, finally, there is repair and fibrosis there is no continuous bridge of callus to recalcify, sclerosis is observed in the plaque of bone across the concave bone ends, and non-union is established. Even when the fracture has been properly immobilized for several weeks so that the initial hyperaemia has subsided and recalcification has begun, if it is then repeatedly strained before the stage of final dense consolidation the same traumatic hyperaemia is observed. Recalcification ceases at once, decalcification supervenes, and non-union develops.

FRACTURES OF THE CARPAL SCAPHOID

Fractures of the scaphoid illustrate very clearly the three stages in the life-history of an ununited fracture. Within a few days of injury the crack is so fine that it may be overlooked in radiographs, and, indeed, it may only be possible to suspect it even with the aid of a magnifying lens. But if it is not immobilized the

traumatic hyperaemia of movement of the fragments on each other gives rise to decalcification and the appearance of a cyst. This intermediate stage of non-union persists from about one to four or five months after injury, and the fracture will still unite if it is immobilized. In the third stage, reparative fibrosis and ischaemia have caused recalcification; the "cavity" has partly filled in, but the surfaces of the fragments are dense and sclerosed. Obviously it is now wasted effort to immobilize the fracture without first breaking up the sclerosis, refreshing the fractured surfaces by multiple drilling, and so allowing revascularization of the bone surfaces and of the intervening fibrous tissue.

The last 100 cases of fracture of the carpal scaphoid which were immobilized at the Liverpool Royal Infirmary may be analysed as follows:

One Hundred Fractures of Carpal Scaphoid Bone

	Number of Cases	Average Period of Immobilization	Number of Cases of Non-union	Percentage Securing Bony Union
* Recent fractures of waist and tubercle	65	2 months	None	100
* Recent fractures of proximal pole	6	5½ months	1	83
† Old fractures of waist and proximal pole	23	7½ months	1	95
† Old fractures of waist with dislocation semilunar	5	16 months	2	60

* Recent—less than 1 month old.

† Old—less than 1 year old (drilling in 13 cases).

Cases older than 1 year (usually with osteoarthritis of the wrist) were not immobilized.

It is evident that in recent fractures, even including the difficult polar fractures, bony union may be secured in 98 per cent. of cases by complete immobilization with an unpadded plaster cast. The average duration of immobilization is little over two months, but occasionally it is necessary, even in recent fractures, to continue for six or twelve months. *If in every case immobilization had ceased after two months there would have been a high frequency of non-union; but by continuing immobilization until the radiograph shows evidence of consolidation every one unites by bone.* Similarly, when treatment is delayed for several months, it is still possible to secure union in the majority of cases, but drilling is frequently required and it may be necessary to maintain immobilization for as long as twenty-two months.

These statistics compare most favourably with the results which were at one time secured by the inadequate immobilization of a cock-up splint for a few weeks. With such treatment bony union was the exception rather than the rule.

FRACTURES OF THE NECK OF THE FEMUR

In subcapital fractures of the neck of the femur we have another example of a fracture in which apparently trivial movement, especially rotatory movement, is sufficient to perpetuate traumatic hyperaemic decalcification and to delay or to prevent union of the fragments. It is generally believed that a high fracture of the femoral neck is completely immobilized by a plaster spica extending from the toes to the upper chest. Special precaution may have been taken to flex the knee so that the limb cannot rotate within the plaster; but the fact that the upper fragment can rotate is overlooked. Every surgeon who operates on such a case is impressed with the extraordinary mobility of the detached head of the femur. It has no attachments whatever, apart from the ligamentum teres, and it can twist and slide within the acetabulum even when the limb below it is held rigidly immobile. Moreover, in the obese patient it is practically impossible

to mould the trunk part of the plaster in such a way that the pelvis is prevented from rotating.

It is this constantly repeated rotation movement of the fragments which accounts for the decalcification and absorption of the neck of the femur with non-union which is seen in about 50 per cent. of the cases so treated. Even in the 50 per cent. which do ultimately unite the same decalcification is seen in the shortening of the neck of the femur which almost always occurs, and which proves that the hyperaemia due to the trauma of movement has continued long after the hyperaemia of the initial injury subsided. There is no such thing as a "dry fracture" of the neck of the femur; the capsule of the joint is always distended with blood. The distal fragment is more vascular than the proximal fragment, and it is the distal fragment (the neck of the femur) which undergoes the greatest decalcification and absorption.

The stainless steel Smith-Petersen nail is made in such a way that the length of the nail prevents angulatory movement, and the three flanges prevent rotatory movement. With the nail driven centrally through the head and neck of the femur immobility is absolute. For the first time in the history of the treatment of fracture of the neck of the femur we have prevented rotational strain and movement, and for the first time we have a method which secures union of the fracture in 90 to 100 per cent. of cases. Moreover, shortening of the neck of the femur from the decalcification of continued movement of the fragments is no longer observed.

I have operated on twenty-eight subcapital fractures of the neck of the femur with one death. Of the twenty cases in which a stainless steel nail was inserted more than twelve months ago, all have united by bone except one, and this single failure was a case in which the nail was removed four months after operation, before there was radiographic evidence of consolidation. Many of these fractures are not firmly united in the accepted period of three or four months, and if immobilization is discontinued at that stage, union may never go on to consolidation. The imperfectly calcified callus cannot withstand the trauma of movement, and it undergoes decalcification with resulting non-union. If it were reasonable to continue the use of a Whitman plaster for a sufficiently long period, it is possible that most high fractures of the neck of the femur would unite despite the mobility which is permitted. But there is a limit to the endurance of old and fragile patients. The Smith-Petersen nail, on the other hand, may be retained for an indefinite period without hardship; the fact that it affords absolute immobility, and that the immobility is continued for a sufficiently long period, accounts for the difference between bony union in 100 per cent. of cases by this method and in 50 per cent. by the old Whitman method.

INTRA-ARTICULAR ARTHRODESIS OF THE OSTEOARTHRITIC HIP

It is remarkable that the analogy between union of fractures of the neck of the femur and consolidation after arthrodesis of the hip-joint has never been drawn. It is generally recognized that high fractures of the neck of the femur only unite in about 50 per cent. of cases if a plaster spica is relied on for immobilization. It is also recognized that after intra-articular arthrodesis of the osteoarthritic hip only 50 per cent. of cases consolidate. Wherein lies the difference? It is exactly the same problem—the problem of preventing rotational movement of the fragments. If a Smith-Petersen nail is driven through the neck and head of the femur into the pelvis, every such arthrodesis undergoes firm consolidation, and there is no necessity for the complication of an extra-articular graft. The method has been employed in sixteen cases without failure of consolidation in any.

NON-UNION IN FRACTURES OF THE LOWER SHAFT OF THE ULNA

In fractures of the lower shaft of both forearm bones non-union is commonly seen in the ulna, but is practically never seen in the radius, despite the fact that the injuries were sustained simultaneously, and that their treatment was apparently identical. There is no difference in the blood supply of the bones or in their nutrition. Why should one surgeon in the last four years have operated on fourteen cases of ununited fracture of the lower shaft of the ulna, when in every case the radius had united without difficulty? The explanation lies in the fact that pronation and supination of the forearm is a bucket-handle movement of the radius round the fixed axis of the ulna. During the seven or eight weeks which is usually considered an adequate period of immobilization both fractures undergo some degree of union; at the same time the inferior radio-ulnar joint becomes stiff. After removal of the splints or plaster, massage is usually instituted, and an attempt is made to restore radio-ulnar movement. But this movement can occur just as easily at the unconsolidated fracture of the ulna as at the stiffened radio-ulnar joint. The treatment resolves itself into frequent torsion strains of the ulnar fracture, causing traumatic hyperaemia, and therefore decalcification of the callus and non-union. In the radius, on the other hand, both fragments swing together, there is no rotatory strain, and the callus continues to calcify until union is consolidated.*

When these fractures are treated from the beginning in forearm gutter splints or a short below-elbow plaster cast (even though it be unpadded) it is obvious that non-union of the ulna is still more inevitable. Although such a plaster prevents any angulatory displacement it does not prevent rotatory movement of the fragments. The fracture is not immobilized unless there is absolute limitation of radio-ulnar movement by complete fixation of both wrist and elbow. Moreover, this absolute immobility must be continued for three or four months until there is radiographic evidence of consolidation. With such treatment non-union is never seen.

Even after a successful bone-grafting operation complete immobility must be maintained for several months. Two cases which were grafted several years ago were immobilized for ten weeks. The complete plaster was then replaced by a short cast which prevented angulatory movement, but did not completely limit radio-ulnar movement. In the first case subsequent radiographs showed progressive decalcification of the graft at the level of fracture with recurrence of non-union. In the other, the graft fused firmly with the distal fragment, but the callus between the graft and the proximal fragment decalcified and non-union persisted. In both cases after re-grafting, and in all of the other twelve which have been grafted, firm bony union was secured after several months of immobilization. The duration of immobilization was never less than fourteen weeks; in the last case recalcification was so slow that immobility was maintained for eleven months, and there can be no doubt from the radiographs that if movement had been allowed at any time earlier than this non-union would have recurred.

NON-UNION IN FRACTURES OF THE SHAFTS OF OTHER LONG BONES

The same relation of a stiffened joint to an unconsolidated fracture is seen in fractures of the lower shaft of the humerus. Not infrequently, in the treatment of this fracture, rotation movement is incompletely controlled and union is delayed. But the elbow-joint rapidly stiffens, and if attempts are made to restore mobility to the joint

* The position is exactly analogous to that of the fractured rib, where with every respiration both fragments move together but not on each other. The intercostal muscles and aponeuroses provide a natural protection from shearing and rotatory strains.

by passive movement the fracture is strained and non-union persists. Incidentally this is merely one of the complications which are directly attributable to passive movement of the elbow-joint—a procedure which cannot be defended on any grounds.

Non-union is quite frequently seen in fractures of the shaft of the femur when a Thomas splint has been ineptly used, so that the extension tapes have rarely been tight and the limb has been allowed to twist and angulate within the splint. The non-union may persist for months, and yet as soon as adequate nursing is available, so that the extensions never slacken even momentarily, the fractures unite.

The belief that the rate of union of a fracture is determined only by its site, and that the correct treatment is to immobilize for a certain number of weeks and then to institute massage treatment, is responsible for many cases of non-union. It is a stock examination question to ask a candidate how long he would immobilize a fracture of the shaft of the tibia, and there can be no doubt that he would receive little credit for the correct reply: "Until it is united." The rate of union varies very considerably in different individuals, and although many fractures unite in eight or ten weeks, it may be several months before union is consolidated. If at any time before the fracture is clinically firm, absolute fixation is interrupted, even by the substitution of walking splints for the complete plaster, union is delayed. If sufficient mobility is allowed the soft callus undergoes decalcification, and in the course of time the fractured surfaces become sclerosed with establishment of non-union.

INFECTED COMPOUND FRACTURES

The infected fracture is exactly like the simple fracture, except that the hyperaemia of infection is added to the hyperaemia of injury, so that decalcification is more marked and continues for a longer period. A wide gap may appear between the fragments, but the space is only apparent, and, like the "cyst" in the old fracture of the scaphoid, it is filled with granulation tissue which will recalcify after quiescence of the infection. If perfect immobilization has been maintained by the Winnett Orr no-dressings-plaster method the fracture will unite. If, on the other hand, the treatment of the infection is allowed to interfere with the immobilization, the fracture fails to unite. The application of the Winnett Orr method is of far greater importance in the treatment of infected fractures than in the treatment of osteomyelitis. However comminuted the fracture may be, however serious the infection, and however extensive the destruction of skin, the use of this method avoids the necessity for amputation in almost every case except that in which the main artery is injured.

It is in the terminal stages of the infection that immobility is of the greatest importance. Even if the fracture is already several months old, and if there are still sinuses with sequestra between the fragments, it is obvious that the gap is filled with hyperaemic granulation tissue which has not yet undergone fibrosis. In such a case, after simple sequestrectomy *unaccompanied by any scraping away of the valuable granulation tissue*, the application of a Winnett Orr plaster will usually determine union of the fracture in three or four months. If, on the other hand, the infection has already recovered and the sinuses have healed without the fracture having been immobilized, the granulation tissue has undergone fibrosis and the fragments are sclerosed. It is now useless to immobilize the fracture without first freshening the surfaces, either by multiple drilling or by bone grafting.

If after such a refreshing operation there should be a recurrent flare of infection, it does not by any means

follow that the operation will fail. The flare of infection will itself produce the hyperaemia and decalcification which is a necessary preliminary, and if the fragments are immobilized while the infection subsides the fracture will usually unite.

CONCLUSIONS

1. Non-union of fractures is almost always avoidable, and is a complication entirely within the control of the surgeon.

2. Many physiological and biochemical factors may be concerned in the rate of union of fractures, but the only one factor which is of practical importance in determining non-union is inadequate immobilization. Immobilization may be adequate in two ways. (1) The fracture is allowed movement within the splints or plaster; rotatory movement is especially inimical to union. (2) Immobilization is not continued for a sufficiently long period. There can be no fixed period of immobilization for any fracture; the average duration of immobility may be exceeded in occasional cases by many months.

3. Hyperaemic decalcification and ischaemic recalcification of bone must be accepted as pathological facts. The initial traumatic hyperaemia mobilizes calcium salts from the bone ends, but rapidly subsides, and allows recalcification of the young connective tissue to form callus. With final repair and fibrosis the callus consolidates by increased calcification. If the hyperaemia is perpetuated by the trauma of movement there is excessive decalcification—a crack fracture becomes a gap fracture. This is the first stage of non-union. In the final phase of ischaemic fibrosis the surfaces of the fragments undergo sclerosis; this is the second stage of non-union. The two stages of non-union are distinguishable radiographically. The first is cured by immobilization. In the second, preliminary revascularization is necessary by a drilling or grafting operation.

4. The infected compound fracture is pathologically similar to the simple fracture, except that the initial stage of decalcification is prolonged. If it is immobilized the fracture will usually unite. An old infected fracture which has not been immobilized is in the first stage of non-union so long as the infection is active, but passes into the second stage of non-union after quiescence of the infection. In the first stage, sequestrectomy without "scraping," followed by immobilization, determines union. In the second stage a revascularizing operation is necessary. Even if the operation is followed by a flare of infection the fracture still unites if it is immobilized.

REFERENCE

- ¹ Watson Jones and Roberts: "Calcification, Decalcification, and Ossification," *Brit. Journ. of Surg.*, xxi, No. 53, p. 461.

E. A. Fennell (*Journ. Amer. Med. Assoc.*, April 7th, 1934) states that at irregular intervals during the last ten years sporadic cases clinically resembling typhoid or paratyphoid fever, but with persistently negative laboratory results, have been reported in Honolulu. The symptoms consisted in a prodromal period; rather sudden onset; rose spots of exaggerated character on chest, abdomen, and inner aspect of the arms and thighs; headache; cough; and fever. McCoy's suggestion, in 1932, that these might be cases of typhus fever was confirmed by a positive Weil-Felix reaction. Up to date ten cases of endemic typhus have been detected in Honolulu. It differs from epidemic typhus, first, in being essentially a disease of rats, transmitted to man by the flea; secondly, in being a disease of the summer and autumn (whereas epidemic typhus is a disease of winter); and thirdly, by its very low fatality rate.

HYOSCINE AMNESIA IN LABOUR

AN ANALYSIS OF FIFTY CASES

BY

TREVOR BARNETT, M.D., F.R.C.S.

SOUTHSEA

The use of hyoscine during labour was first brought to my notice in a paper by Jennings (*British Medical Journal*, November 2nd, 1929), in which a series of twenty-four cases was reviewed. The method is attributed by him to Dr. Bertha Van Hoosen of Lyola University, U.S.A., who, working on the suggestion that morphine used in the usual twilight sleep technique was responsible for the oligopnoea and asphyxia of some of the newborn, developed a technique in which hyoscine alone is used for the production of amnesia.

The drug used is hyoscine hydrobromide, and it is given by hypodermic injection. The Burroughs Wellcome tablets of 1/100 grain have been used.

NUMBER OF INJECTIONS AND DOSAGE

At the commencement of treatment three injections of hyoscine 1/100 grain are given at half-hourly intervals, and a further dose of 1/100 grain is given two hours later, and repeated every two hours until the termination of the second stage. In many cases the initial three doses are sufficient, and they are given without regard to the age or weight of the patient. The effect of the first injection is slight, and the actual injection is always remembered by the patient. After the second injection, in some few susceptible patients, semi-coma develops, the woman sleeping deeply between the pains, and only stirring slightly during contractions. In such cases the third injection is omitted. The vast majority still complain after the second injection, and a third is then given. In this series of fifty cases no patient received less than three injections. After the third injection amnesia is well developed in most cases. Many patients remember being given the second injection, but they are all oblivious of the third. When fully under the influence of hyoscine the patient sleeps quietly in the intervals between the pains. During the contractions she wakes up, moves the legs and arms, sometimes talks incoherently, but does not cry out. At any time she can be roused sufficiently to open her eyes, but cannot answer simple questions. If she can carry on a conversation, or if she cries out with the pain, a further injection is required.

The state of obfuscation begins to wear off about two hours after the last of the three injections. At this time the patient will begin to complain of the pains; she will cry out and will be able to answer questions put to her. The fourth injection is then necessary. In most cases delivery has been effected before a further lapse of two hours, but if this is not the case a further injection may be given if the signs of returning awareness appear. In this particular series a fourth injection was given in eighteen cases. In no case in this series was a fifth one necessary, although in cases not here included I have given up to seven injections.

WHEN TO COMMENCE TREATMENT

It is essential that uterine contractions should be occurring regularly and with some strength before hyoscine is given. The cervix must be taken up, and should admit two fingers. Hyoscine is not given whilst an elongated cervix can be felt.

As soon as pains are occurring with regularity and with ten to fifteen-minute intervals, a rectal or vaginal examination is made. If the cervix is effaced, and if the os

admits two fingers, the injections of hyoscine are commenced. If the cervix is not effaced chloral and bromide are given if the patient is complaining. If the cervix is effaced and dilated but pains are absent or infrequent an enema, or quinine 10 grains, is given, and as soon as good pains commence the hyoscine is started.

No distinction has been made between primiparae and multiparae, the indications for commencing the injections in both cases being the regular occurrence of pains, the effacement of the cervix, and commencing dilatation.

COURSE OF LABOUR

An important feature of the amnesic labour is the absence of the bearing-down efforts of the patient during the second stage. This absence of the action of the abdominal muscles does not retard the labour seriously, if at all, though the point is difficult to determine. Owing to the absence of visible bearing-down efforts it is difficult to tell from observing her whether the patient is in the first or second stage of labour, and unless frequent examinations are made the onset of the second stage will not be appreciated.

In this series of cases examinations, usually rectal, have been made to determine the state of the cervix before giving the initial injection of hyoscine. In many cases no further examination has been made: in others the descent of the head has been followed by one or more further examinations. These can always be made satisfactorily by the rectum, and only if in doubt as to the state of the cervix or the position of the presenting part in cases of delayed descent need a vaginal examination be made.

DURATION OF LABOUR

It has been observed that under hyoscine amnesia the total duration of labour is somewhat lessened (Jennings). In this series of cases it was not possible accurately to obtain the exact time of onset of labour. Instead, the duration of labour after the initial injection of hyoscine has been measured. It has not been found to be unduly long. The interval between the initial injection and the termination of the second stage in forty-seven cases was found to average 5.4 hours in primiparae and 4.5 hours in multiparae. The actual intervals were as follows. In thirty-two primiparae four cases were completed in three and a half hours or less, seven in over six and a half hours, whilst the majority, twenty-one, fell between four and six hours. In multiparae six were completed in three and a half hours or less, one took seven hours, whilst eight were between four and six hours.

These times represent the duration of labour after two-finger dilatation of the effaced cervix—that is, the time taken for the termination of the first stage and the whole duration of the second stage of labour. It was not deemed expedient to make the necessary examinations in order to determine accurately the duration of the second stage, but these figures clearly indicate that there is no serious delay in labour, if in fact there is any delay at all.

THE THIRD STAGE

There is no ill effect on the third stage nor is there any effect on the post-partum loss. In two cases the duration of the third stage was not noted; in one case the placenta was adherent and manual removal was necessary. In the remaining forty-seven the time varied from five minutes to thirty-five minutes, the majority being about fifteen minutes. In thirty-seven cases the duration of the third stage was between fifteen and twenty-five minutes, in three between five and ten minutes, and in seven between twenty-five and thirty-five minutes.

It was not found practicable to measure accurately the total amount of post-partum loss, but in no case was this excessive, nor did it differ from what experience has led one to expect after any normal labour.

RESTLESSNESS

The only drawback to the more general application of the method is the restlessness which occurs in about half the cases.

In this series twenty-three cases were restless, the symptoms varying from simple agitation during the pains to more decided efforts to get off the bed. The remaining twenty-seven cases were quiet, showing little reaction, except slight movements during pains. Of the restless cases three were very restless. In none of the cases did restlessness extend beyond the pains, all lapsing into somnolence during the intervals. These patients may cry out, kick, sit up, endeavour to get off the bed or to stand up, and they are very troublesome. The percentage of these very difficult cases is small. They require the time of two nursing attendants. The great majority of those classified as restless are easily controlled by one nurse. Of the twenty-seven quiet cases ten were very quiet, barely evincing evidence of the pains, and being comatose in the intervals.

There is no means of ascertaining which patients may be expected to be quiet and which restless. A nervous or hysterical patient may be most favourable, whilst a more stolid individual may give considerable trouble. The depth of amnesia is not affected by the behaviour of the patient, the very agitated and difficult cases being completely unaware of the trouble they may have caused. As mentioned, in this series of fifty cases, twenty-seven were quiet, twenty were restless and required active restraint, whilst three necessitated the presence of two nursing attendants for some hours.

THE PUERPERIUM

The puerperium was normal in forty-seven cases. Two cases developed recrudescence of pregnancy pyelitis, but in both cases, as the pyelitis had been present during the eighth and ninth months, this was to be expected, and does not mean that pregnancy pyelitis is a contraindication to the method. One case developed puerperal mania, but here again the history was one of mental instability with two previous nervous breakdowns. During labour the pupils are widely dilated and remain so for some hours after delivery. Vision is blurred from paralysis of accommodation, but returns to normal within a few hours, the time varying with the amount of hyoscine given and the duration of somnolence after the labour.

Much has been written concerning the occurrence of terrifying nightmares after morphine-scopolamine narcosis. In my experience this is not true of hyoscine amnesia. The only two cases I have met with of unpleasant dreams after labour have been in two rather highly strung cases, and even these were not bad.

NEED FOR ADDITIONAL ANAESTHESIA OR FORCEPS DELIVERY

In twenty-two cases no other anaesthesia was necessary. In the remaining twenty-eight chloroform was given during delivery of the head. This additional anaesthetic is given rather to prevent restlessness than to alleviate pain. The twenty-eight cases in which additional chloroform was given included eight in which forceps were applied, and one case of delivery of the after-coming head. Of those receiving no other anaesthesia fifteen were quiet and the remaining seven restless. Of those receiving chloroform thirteen were quiet and fifteen restless. Two

cases were delivered by forceps without additional anaesthesia.

Owing to the non-participation of the patient during the second stage, the conscious bearing-down efforts are, as already stated, not present under hyoscine, though their absence has little effect on the descent of the head as far as the perineum. Descent may be aided to some extent by pressure exerted on the fundus during the pains. It has been my practice, if any delay occurs after the scalp can be seen at the vulva, to expedite the final stages by applying forceps. This has been done more particularly in the restless cases. In this series of fifty cases forceps delivery was necessary in ten. In seven of these low forceps were applied to help the head along the perineum. The remaining three included two cases of persistent posterior occipital rotation, and one of generally contracted pelvis. The instrumentation rate is thus low, and were it considered undesirable to apply low forceps at the termination of labour the figure could have been kept lower still.

EFFECT ON THE INFANT

Of the fifty infants two were stillborn. Of these, one was a post-mature foetus, presenting as a breech with extended legs and arms, and the other was a premature foetus (thirty-five weeks) with imperforate anus. The final injection of hyoscine had been given three hours before delivery in this latter case. A premature baby (thirty-six weeks) lived only eight hours. The last dose of hyoscine was given five hours before delivery. Of the remaining forty-seven babies one was noted as being blue at birth, and this was a thirty-fourth-week baby weighing 4 lb. 8 oz. It rapidly recovered and did well. In this case hyoscine had been given four hours before delivery. The remaining forty-six babies were normal in all respects, crying lustily at birth, and showing no signs of asphyxia or apnoea. It can definitely be stated that hyoscine, as given above, has no ill effect whatever on the foetus, even when given a short time before delivery. In this series the shortest interval between the last dose of hyoscine and the time of delivery was thirty minutes.

DURATION OF AMNESIA

Patients remember the first injection, sometimes the second, but never the third. The total duration of amnesia was between four and six hours in thirty-seven cases, below four in five cases, and above six in eight cases. In twenty-three cases there was no recollection of any event from one and a half to two hours before delivery; in twenty-two the amnesia extended back from three to five hours; in four amnesia was for one hour before delivery, and in one case for half an hour only, but in this case the third injection was given forty minutes before the child was born. In all cases there was no memory of the actual delivery, and amnesia extended for some hours afterwards.

The amnesia after delivery persisted for from one to two hours in forty cases, and in the remaining ten it was between three and five hours. That is, it was not until from one to five hours after the birth of the child that the patient awoke to the realization of her surroundings. The patients appear well and smiling, and are generally incredulous when they learn that the baby has been born. The most striking feature is their fresh and smiling appearance a few hours after delivery, compared with their flushed and often somewhat dishevelled appearance during the labour, and if one is inclined to abandon the method during the conduct of a particularly obstreperous labour, one is amply repaid by the sight of the placid, smiling patients, who have no knowledge of the trouble they may have occasioned.

CONCLUSIONS

It may be stated that hyoscine amnesia in labour has in my hands proved an entirely safe method, as regards both the mother and the child. Labour is not delayed, puerperal morbidity is not increased, and the babies are born without circulatory or respiratory defects. Amnesia is absolute, and covers a period including the whole of the second stage of labour. There have been no fatalities nor accidents attributable in any way to the hyoscine.

The only disadvantages are the need for constant supervision during the labour, and the occasional necessity for two nurses to control the patient. I do not wish to minimize this difficulty, as it is a real one, and the only serious objection to a more general use of the method. It may, however, be emphasized that restlessness occurs in less than half the cases, and is only of serious degree in a small minority—three cases in this series of fifty.

I have never adopted hyoscine amnesia in domiciliary midwifery, and would not do so unless I could be assured of the presence of the possibly necessary skilled assistants. I consider that the best results will always be obtained when one has the assistance of a nursing staff who are thoroughly acquainted with the details of the treatment. The cases in this series have been consecutive and were treated in one nursing home with a constant nursing staff.

SOME OBSERVATIONS ON THE SYMPATHETIC NERVOUS SYSTEM*

BY

E. R. FLINT, F.R.C.S.

SURGEON TO THE GENERAL INFIRMARY AT LEEDS

The sympathetic nervous system and the parasympathetic make up the autonomic nervous system, with which the endocrine glands are in close association. I would, at first, like to call your attention to one or two facts which indicate that the sympathetic system is anatomically arranged to give a widespread physiological effect on stimulation, and that all its diverse activities are co-ordinated to produce in the body the response required to meet most favourably circumstances arising at any particular moment. The bilateral ganglionated cord of the sympathetic system reveals a ganglion for each segmental area of the body (except in the cervical region, where fusion has reduced the number to three); from each ganglion sympathetic fibres proper are carried to each of the spinal nerves by the grey rami for distribution to the somatic areas. The connexions of the ganglia to the cord, however (named white rami), are confined to the dorsal and upper lumbar spinal segments, and each of the fibres making up the white rami synapse with several cells in the sympathetic chain, so that a generalized body effect is produced by stimulation passing out of the cord in a comparatively restricted area. The splanchnic nerves spread their impulses widely in a similar way to the viscera. Moreover, there is a central control situated in the hypothalamic region at the base of the brain, which is, in turn, influenced to some extent by the cortex.

Woollard and Norrish (*Brit. Journ. Surg.*, 1933, xxi, 83) say: "It is to be inferred that the autonomic system as a whole appears comparatively late (in development), and of its three portions the sympathetic system (keeping this term for the thoraco-lumbar outflow) is the last of all to appear." Another feature in development which seems to run parallel with the perfecting of a sympathetic system is the independence of the organism of vagaries in its external environment. This is accomplished by a mechanism for keeping constant the internal environment in all

the many conditions which are always tending to its variation, and the co-ordination of the components of this mechanism are apparently controlled by the sympathetic system and its closely associated allies. The more urgent the demand on this mechanism the more does it seem to be controlled by the sympathetic nerves. In quiet conditions, presumably, the endocrine glands are sufficient protection, since it has been shown by Cannon that the whole of the peripheral ganglionated cords of the sympathetic system can be removed in an animal; and, provided it is not exposed to great variations in temperature or to any other condition which might demand a struggle for existence, it can live comfortably and without difficulty.

If one keeps in mind this fundamental purpose of the sympathetic nervous system it is easy to understand its apparently contradictory action on tissue of the same character: for example, stimulation by strong emotions causes constriction of the unstriated muscle of the peripheral vessels and relaxation of the unstriated muscle of the intestine and bronchioles, the object being to force blood into such important organs as the brain and the heart, to conserve energy which would otherwise be expended on intestinal activity—for the moment wastefully—and to ensure a freer supply of air to oxygenate the rapidly moving blood. Moreover, the spleen is contracted, whereby a large number of red cells are forced into the circulation to carry an increased supply of oxygen to the hyperactive tissues, where rapid oxygenation is essential; and sweating (another sympathetic function) dissipates the heat so engendered, which would quickly become dangerous if not eliminated. I want to emphasize this aspect of the sympathetic system, because surgery has become rather busy with it in recent years, and the localized nature of the operations is apt to make us rather forgetful of the generalized activities of the sympathetic, with which surgery has had little to do as yet.

The chief conditions for which operations have been performed on the sympathetic nerves can be arranged under four headings: (1) vascular; (2) secretory; (3) dysfunction of unstriated muscle of hollow viscera; and (4) certain painful conditions.

ACTION OF SYMPATHETIC NERVES ON VESSELS

The predominating effect of the sympathetic nerves is constriction of the vessels. The more unstriated muscle in the wall the more is the vessel influenced by the vaso-constrictors; consequently the large vessels are little affected, whereas the small arteries can be constricted to the point of complete closure. Section of the vaso-constrictors releases the vessel from its normal tonicity, and dilatation results. It is not known whether there are vaso-dilator fibres to the vessels; if there are, they are probably parasympathetic in origin, and take the same peripheral course as the sympathetic nerves—that is to say, run in the ordinary spinal nerves and innervate the vessels by branches distributed as they pass along the limbs. A limb deprived of its sympathetic supply becomes hot and, at first, rather red, and sweating cannot be induced by normal means. In the course of a few days the redness lessens and the extremity becomes rather paler than the normal side; this is said to be due to the capillaries regaining some tone. The blood, however, still flows more quickly, and the part remains permanently warmer than the other side.

Raynaud's Disease

This being the case it seemed reasonable to expect sympathectomy to be beneficial in conditions which are obviously due to vasospasm, the typical example being Raynaud's disease. This is a paroxysmal, bilateral vasospasm of the digital arteries provoked by cold or emotion in certain subjects, and in severe cases it goes on to

* An address delivered to the Nottingham Medical Society.

superficial necrosis or loss of the terminal parts of the digits by a process of dry-gangrene. But it soon became obvious that the vessels in Raynaud's disease do not behave in quite the same way after sympathectomy as they do in normal cases. The immediate response is the same, but if, very soon after the operation on the upper extremity, the hands be cooled for twenty minutes in water at 15° C. in a constant room temperature of 18° to 20° C. and the rest of the body be then heated to 40° C. with the dried hands lying exposed, it will be found that the surface temperature of the normal hands very quickly rises to the maximum of 32° to 34° C.; whereas in Raynaud's disease there is a longer latent period before the rise begins, though thereafter it rapidly goes on to the same extent. Six to nine months later the same experiment shows that the normal vessels respond to heating better than those in a patient with Raynaud's disease, but in neither case is the response so marked as it was just after operation. According to Lewis, Raynaud's disease depends on a local fault in the small arteries, and this explains why it is possible to induce cyanosis by immersing the hands in cold water in all cases of the disease after sympathectomy, since the operation does not cure this local defect. But why should not the limb with normal vessels respond fully to heating after it has been sympathectomized? No doubt a recovery in tone accounts for this in part, but in order to get a completely satisfying explanation it seems necessary to assume that sympathectomy interrupts dilator as well as constrictor fibres to the vessels.

Theoretically, therefore, the ultimate benefit to a patient with Raynaud's disease would appear to be doubtful; experience demonstrates, however, that such a patient actually gains a great deal. The majority of cases do not develop cyanosis after sympathectomy so easily as before; the attacks are shorter; they are not painful; the functional capacity of the digits is increased; and the liability to ulceration is removed. A small number of patients receive little or no benefit; they are found among the advanced cases with sclerodactyly and marked ulceration or gangrene—that is to say, organic changes have been superimposed on the spasm. There is a curious difference between the upper and lower limbs: in the latter the results are said to be always good, the failures being confined to the upper limb. The greater difficulty of the operation and the greater variability of sympathetic distribution in the latter case do not seem to me to be the full explanation, though it is the one usually given.

Acrocyanosis: Thrombo-angiitis Obliterans

Acrocyanosis is another disorder which reacts to sympathectomy in the same way as Raynaud's disease, and for similar reasons. The principle underlying this operation is an improvement in the blood supply, and in this respect it conforms to that of the usual medical methods—such as massage, radiant heat, counter-irritation, and so on; but, whereas the latter are intermittent and have to be repeated, sympathectomy seeks to produce its effects once and for all. The usual methods should be tried first, but it must be kept in mind that sympathectomy gives its best results in cases which have not been allowed to progress too far. Where organic obstruction to vessels is present removal of constrictor fibres can offer little or no useful prospect, and that is why the operation has had only a limited use in such diseases as thrombo-angiitis obliterans. This is a progressive disease, mainly of the lower limbs, in which the larger arteries become slowly obliterated; it is painful, and may be accompanied by intermittent claudication. The ultimate result is usually gangrene requiring amputation, but in some cases the disease is arrested spontaneously. Sympathectomy will abolish pain (except that due to claudication, which it

only lessens); but whether it will improve the blood supply can only be determined by preliminary tests—tests which should normally produce vaso-dilatation. These are heating the body, local anaesthesia of the main nerve trunks or of the appropriate sympathetic ganglia, spinal anaesthesia in the case of the lower limbs, and protein shock phenomena induced by the intravenous injection of triple typhoid vaccine. Should one or other of these tests show that no vaso-dilatation can be obtained in the affected limb, or only a rise of 2° or 3° C., the operation is contraindicated. A bigger rise in temperature affords ground for hope that sympathectomy will at least retard the disease, and, as it is usually bilateral and generally progresses to gangrene, this is a gain: but there is evidence that the value of the operation extends even to that of a curative effect. I have had little success in these cases, because they have mostly been late ones; but in two there has been no evidence of advance during twelve months since the operation.

There are many diverse conditions in which a better blood supply would be of benefit to the tissues, and if it can be shown that sympathectomy is able to effect this the operation should be considered: such are chronic ulcerations of many kinds, and recurrent chilblains and ulceration in limbs afflicted with the results of anterior poliomyelitis (I have had one very successful case of this type). There is a possibility that better knowledge of the anatomy and physiology of the sympathetic system may open up eventually a much bigger field for the operation. So far I have seen no real ill effects following limited interference with sympathetic innervation.

SYMPATHETIC NERVES AND SECRETIONS

Sympathectomy permanently abolishes sweating due to natural causes over an area which accurately delineates the sympathetic supply. This is so definitely established that it is a useful sign as to whether complete division of the sympathetic supply has been accomplished. I have had only one case of excessive sweating in which I have had the opportunity to perform the operation. This was that of a young man of 26 in the Salvation Army. The fervour generated in the course of his work caused sweat to pour down the left side of his face, the right being only normally moist. I removed the superior cervical sympathetic ganglion and his face remained perfectly dry for the time he was under my observation. This was done three years ago. I recently had a letter from him from the Sandwich Islands, to which locality he has been transferred, in which he says that the left side of his face still remains dry, and he is highly satisfied with the result.

Probably a wider application for the operation will be found in those unfortunate people—usually excitable females—who suffer intensely from moist, clammy hands and feet. The feet, particularly, in these cases become sodden, fissured, painful, and offensive: these can be relieved at once and quickly cured by sympathectomy.

DERANGED FUNCTION IN HOLLOW VISCERA

Functional derangements of the bladder, ureters, and colon are those for which sympathectomy has been most often performed. I shall confine my remarks to the colon. The action of the sympathetic system here is inhibitory, except at the sphincters, where it causes contraction; the parasympathetic system has the reverse action. It is assumed that overaction of sympathetic or diminished activity of parasympathetic nerves is responsible for certain irregularities of bowel function, and in either case sympathectomy permits more effective peristaltic efforts of the colon.

Hirschsprung's Disease

In Hirschsprung's disease no medical treatment alone is satisfactory, and hitherto effective surgical intervention

has been accompanied by too serious a risk; but in sympathectomy we have undoubtedly a safe and efficient method of attack. The bowels act from the first without enemata, whereas these were necessary before; the abdominal distension becomes much less; the general well-being is immensely improved; and by x-ray examination it is seen that haustrations appear in the sac-like colon, which was present before operation. The operation should be done in childhood because the hypertrophied colon gradually develops a good deal of fibrous tissue in its wall; and as in the case of the vessels, so in that of the colon, such organic change cannot be rectified by sympathectomy. Moreover, it is a mistake to think that surgery is all that is needed: there is always a tendency to relapse, which can only be prevented by re-education of the bowel muscle by careful medical attention.

Chronic Constipation

As such excellent results followed sympathectomy in Hirschsprung's disease it was perhaps natural that surgeons should have turned their attention to its effect on chronic constipation. This is a subject bristling with difficulties, and so far it is not easy to be sure of the proper place surgery should take. Hitherto many surgical procedures have had their day and passed into desuetude. Sympathectomy may share the same fate. I think it almost certainly will, when we understand better the chemical phenomena which lie at the root of unstriated muscle response. In the meantime the results as a whole are encouraging; the operation is without any greater risk than attaches to any simple intra-abdominal procedure; and the only ill effect which may occur seems to be a relapse into the pre-operative state. The main difficulty, in my opinion, is selecting the right case. The first essential is the failure of medical treatment materially to relieve the chronic ill-health which sometimes accompanies irregular and infrequent action of the bowels. The second essential is, I think, the state of the colon as revealed by x-ray examination: there should be some distension, absence of well-marked haustrations, and apparent increase in length of the colon. These are the signs one would expect to see with inhibition; the reverse would indicate spasticity, and would presumably not be improved by sympathectomy. In the type of case I have indicated there is no question as to the immediate results being good, even dramatic: patients who have had no action of the bowels for days, and then only with huge doses of aperients or not without enemata, begin in two or three days after operation to have the bowels moved without other artificial help; they gain in weight, improve in complexion, and later get back to work, which they may have had to give up; they also lose the abdominal discomfort, sometimes amounting to pain, which so often accompanies their pre-operative state. There is, however, a decided tendency to relapse in the course of six or twelve months; but, even so, the majority of patients are better off than before. I am sure, from my experience, that careful medical supervision after operation delays this tendency to recur; and improper selection of cases is another reason for relapse. It may be, too, that further experience of the path of sympathetic impulses will show that operative procedure can be improved.

I have performed sympathectomy on sixteen patients with chronic constipation of the kind I am describing. In answer to inquiries I have had no reply from two; in two the results have been poor, the patients having relapsed into their former condition; in two, large doses of aperients, but not enemata, are required, but both say they feel much better generally; six of the remaining ten have daily action of the bowels without any aperient,

have no abdominal pain, and feel very well. Three of these patients were operated on in 1931 and three in 1932. Here is a letter from one of the former: "I should like to say my operation was a success; my bowels work regularly from day to day, I never have any pains, and I am stronger and better in health than ever before in my life." The others write in a similar strain. Four of these ten cases have been operated on too recently to be sure of the ultimate result. There have been no fatalities.

CERTAIN PAINFUL CONDITIONS

The association of the sympathetic system with pain is confusing. As regards the viscera there is no great difficulty. Pain is caused by abnormal tension on the muscle fibres in the hollow viscera, and probably by stretching of the fibrous capsule in the case of the solid organs. The only afferent pathway from the viscera is via the sympathetic nerves, though the ultimate entrance into the central nervous system is supposed to be by the posterior spinal roots. Sympathectomy, therefore, must interrupt the afferent fibres. But in the case of the limbs it is different. The sympathetic fibres run in the ordinary somatic nerves, not as separate trunks, as in the case of the splanchnics; and if they enter the spinal cord through the posterior roots, as they are said to do, there is no means of interrupting them apart from section of the peripheral nerve trunks. Nevertheless, sympathetic ganglionectomy, which does not interfere with these trunks, undoubtedly abolishes certain types of pain in the limbs. The pain which can be so influenced is of the ill-defined, rather widespread, and usually burning type, which Head called protopathic, and which seems to arise—sometimes at any rate—in the walls of the vessels. Sympathectomy, therefore, may abolish pain indirectly by an efferent effect, having nothing to do with the afferent impulses—or our supposition that the afferent fibres pass directly by the posterior roots, avoiding the sympathetic ganglia, may be wrong. There is a third possibility—namely, that pain fibres pass up the network of nerves which surround the vessels, in which case they would ultimately reach the sympathetic ganglia. The most dependable evidence favours the first view. It is assumed that the pain experienced in Raynaud's disease is caused by spasm of the small arteries, or by the collection of irritating metabolites in the capillary areas beyond the spasm; in either case sympathectomy should, and does, relieve the pain by causing vasodilatation.

Causalgia

I have had five cases of causalgia in which the patient has been instantly relieved of the excruciating pain experienced before sympathectomy, and probably for the same reason as applies to the cases of Raynaud's disease. Whatever the real explanation, this method of treatment is so effective that it should entirely displace the crippling operation of median or ulnar nerve excision, which is carried out by some surgeons with the object of intercepting the pain fibres, and in the hope that, when regeneration ultimately occurs, the pain will not return.

The paroxysmal attacks of pain so characteristic of trigeminal neuralgia suggest very strongly what one notices in causalgia, and it was for this reason that I removed the right stellate ganglion in an elderly woman suffering from a severe manifestation of this complaint. This was done eighteen months ago, and was followed by instant relief of pain: on inquiry during the last fortnight her doctor tells me she has had no return of it, and he considers her cured. The dangers of injury of important structures at operation are as nothing compared to those associated with direct attacks on the Gasserian ganglion or its roots, and if further experience substantiates its effectiveness this procedure will be a very distinct gain.

THE INFLUENCE OF EMULSIONS OF OILS AND FATS UPON THE ACTION OF BACTERIAL TOXINS

BY

G. NORMAN MYERS, M.D., Ph.D., M.Sc., A.I.C.

REIT MEMORIAL RESEARCH FELLOW

(From the Pharmacological Laboratory, Cambridge)

Investigators now are generally agreed that certain bacterial toxins, when absorbed into the circulation, are capable of producing fatty degeneration in tissues. In this way the heart, kidneys, liver, adrenals, and central nervous system may be profoundly affected.

Numerous workers¹⁻¹¹ have reported that diphtheria toxin, in particular, may cause widespread damage to cells of the body in this way. While investigating this problem in the summer of 1929 I examined several hundreds of hearts taken from guinea-pigs, rabbits, and cats which had succumbed to the lethal effects of diphtheria toxin. The regularity with which fat is laid down in cells in response to injury by this toxin led me to carry out a number of experiments with a view to finding whether fats exert any protective influence against the destructive effects of toxins. The original idea was that the fat deposited in the cell might act as a protection against further damage to the cell. A few experiments, using various oils and fats, quickly showed that this supposition was ill founded, and that oils or fats in such coarse globules as are found in cells during fatty degeneration have no influence whatever on the lethal effects of the toxins. This, however, led to a series of experiments, using oil emulsions in a very fine state of division, and it is a brief outline of the results of these experiments which is embodied in this communication.

SCOPE OF INVESTIGATION

The object of this work was to determine whether very finely divided emulsions of oils and fats have any modifying effect upon the action of bacterial toxins. Oils and fats derived from vegetable, mineral, and animal sources were used, and those selected as being the most suitable were olive oil, liquid paraffin, and the cream of cow's milk. Their influence upon the lethal effects produced by the toxins of *B. diphtheriae*, *B. tetani*, *Cl. welchii*, and the *Cl. oedematis maligni* (Koch) was studied.

The oils and fats were made into finely divided emulsions by means of mechanical emulsifiers, and, in certain experiments, an emulsifying agent was added to make the emulsions more stable. Aqueous solutions of the toxins were mixed with the emulsions immediately prior to injection into the animals. The toxins were kindly supplied by Dr. O'Brien of the Wellcome Laboratories, and the emulsions were made by Mr. E. Saville Peck of Cambridge. All the toxins were standardized, using standard animals. An emulsion containing 50 per cent. olive oil and gum acacia as an emulsifying agent was used in the first experiments.

EFFECT OF OLIVE OIL EMULSION

Twelve guinea-pigs were injected subcutaneously with a mixture of 4 m.l.d. of diphtheria toxin in the emulsion. Four guinea-pigs were used as controls, and injected with 4 m.l.d. of the toxin in an aqueous solution, without the addition of the emulsion. All the animals which had been injected with the toxin-emulsion mixture survived, and were fit and well twelve months later. Other experiments, conducted on similar lines, but using 6, 12, and 24 m.l.d., yielded similar results. The volume of the emulsion contained in each injection was usually thirty to fifty times that of the aqueous solution of the toxin, and the total volume injected rarely exceeded 0.5 c.cm.

Three further series of experiments were conducted in a similar way, using the toxins of *B. tetani*, *Cl. welchii*, and the *Cl. oedematis maligni* (Koch) respectively. In every case the results agreed with those using diphtheria toxin, thus proving that if lethal doses of these toxins are mixed with finely divided emulsions of olive oil before injecting them subcutaneously into animals, then such animals do not succumb to the lethal effects of the toxins.

INFLUENCE OF EACH CONSTITUENT OF THE EMULSION

Experiments were then performed to determine the cause of this protection, and the relative importance of the constituents of the 50 per cent. emulsion. The emulsion contained olive oil, gum acacia, and water, and one might conclude that either the oil or the gum may have modified the action of the toxins, or even destroyed them in some way. This might explain the protective action of the emulsion.

OLIVE OIL

The influence of the oil alone was first determined by omitting acacia from the emulsions. This necessitated making a simple emulsion of olive oil with water by means of a mechanical emulsifier. These were mixed with the toxins and injected subcutaneously soon after they had been prepared. The results obtained were very variable. In some experiments the mortality rate of the emulsion-toxin animals was as high as 100 per cent., while in others all the animals survived. This discrepancy was found to be due to the degree of division and stability of the emulsions. The protection afforded appears to be proportional to the degree of fineness of the emulsion. Coarse emulsions afforded no protection against lethal effects of the toxins.

GUM ACACIA

A solution of gum acacia was made so that the concentration of the gum within it was equal to that contained in the 50 per cent. olive oil emulsion. This gum solution was mixed with aqueous solutions of superlethal doses of the toxins immediately prior to injection into animals. Using guinea-pigs, it was found that with 4 m.l.d. of diphtheria toxin all the animals died irrespective of whether they had received the gum acacia or not. Further experiments, using the toxins of *B. tetani*, *Cl. welchii*, and the *Cl. oedematis maligni* (Koch) instead of diphtheria toxin, yielded similar results. It is obvious from this that gum acacia does not modify the lethal effects of these toxins, but simply assists in binding the emulsion together in a more stable form. The protective action of the emulsion is therefore concerned with the fineness of the olive oil globules, while the gum acacia renders the protection more secure by making the emulsion more permanent.

DISTRIBUTION OF TOXIN IN EMULSION

This question was investigated further in another series of experiments. A simple emulsion of olive oil was made in as fine a state of division as possible, using a mechanical emulsifier. The emulsion was mixed with a superlethal dose of diphtheria toxin (8 m.l.d.), and injected subcutaneously into a number of guinea-pigs. A suitable number of control animals were injected subcutaneously with 8 m.l.d. of the toxin alone. A portion of the toxin-emulsion mixture was next centrifugalized at 2,500 revolutions per minute for two hours, when the constituent parts of the emulsion separated into two layers. Two further groups of guinea-pigs were now injected with the aqueous layer and the oily layer respectively. The results were very clearly cut. All the guinea-pigs which had been injected with the toxin-emulsion mixture survived, whereas all the controls died within three days. The group which had received the aqueous layer after centrifugalization of the toxin-emulsion mixture also died within three days, showing a mortality rate of 100 per cent., while those in the group which had been injected with the oily layer all survived.

It is apparent from these results that when the emulsion breaks down the toxin has a greater solubility or affinity for water than for oil, even when both have been previously

mixed so as to form a very finely divided emulsion. Little or nothing has been done to determine the partition coefficients of toxins in oil and water, but it would appear from these experiments that diphtheria toxin is insoluble, or only very slightly soluble, in olive oil. This experiment was repeated using a 50 per cent. emulsion of olive oil containing gum acacia, but the emulsion was found to be so stable that centrifuging it for two hours at 2,500 revolutions per minute failed to cause anything but a very slight separation of the constituents. All the groups of guinea-pigs survived except the control animals, which were injected with toxin alone. The difference between this result and that of the previous experiment is well marked, and is probably due to the greater stability of the toxin-emulsion mixture containing gum acacia, so that the "layers" obtained from it were in reality emulsions.

EXPERIMENTS WITH LIQUID PARAFFIN

A long series of experiments, using liquid paraffin instead of olive oil, was conducted. This oil was chosen so that a comparison might be made between oils of vegetable and mineral origin. It might be mentioned here that some difficulty was experienced in preparing simple emulsions with liquid paraffin. The oil persistently separated out after standing from ten to fifteen minutes, unless an emulsifying agent such as gum acacia was added. The results obtained using this oil show that when gum acacia is added the emulsion is able to confer upon the animals a protection against the lethal effects of large doses (12 m.l.d.) of the toxins of *B. diphtheriae*, *B. tetani*, *Cl. welchii*, and *Cl. oedematis maligni* (Koch). Emulsions of liquid paraffin without the addition of an emulsifying agent are too unstable, and easily separate out into their constituent parts. The protection conferred by such emulsions was found to be of a very low order and very erratic.

CREAM OF COW'S MILK

A few experiments were conducted using this form of natural animal fat instead of vegetable or mineral oils. Milk cream is easy to obtain, and is liquid at ordinary temperatures. In the earlier experiments the toxin was added to the cream and mixed thoroughly by shaking immediately prior to injection. The results showed that this fat, when used in such a manner, afforded no protection whatever against these toxins, even when only 1.5 m.l.d. were used. In later experiments the cream was passed through a mechanical emulsifier before the addition of the toxin. The results obtained using this fat emulsion were very erratic, and very similar to those already described for liquid paraffin without the addition of an emulsifying agent.

PATHOLOGY

The pathological changes in the heart in toxæmia were studied during the course of this investigation. Necropsies were carried out on all the animals which had died from the lethal effects of the toxins used. In addition, a large number of the animals which had been injected with the toxin-emulsion mixtures, and had survived the lethal effects of the toxin, were killed and examined at varying periods, from four months to two years after the experiments. The hearts were removed within a few hours of death, and portions fixed in (a) osmic acid, (b) 10 per cent. formal saline, and (c) Carnoy's solution. Sections from the two latter were stained with haematoxylin and eosin, and haematoxylin and van Gieson's stain. In many cases the liver, kidneys, and other organs were also examined microscopically.

The effects of diphtheria toxin on the heart have led to no detailed agreement among workers, though all are agreed that the heart can be profoundly affected. Several hundreds of sections were examined by me to determine if differences existed between the tissues of the control

animals and those which had been injected with the toxin mixed with the oil emulsions.

The results show quite definitely the following features:

When death occurred in an animal which had been injected with a diphtheria toxin-emulsion mixture the post-mortem findings were almost identical with those of the control animals which had lived for a similar length of time after having been injected with the toxin alone. These findings were very constant. A large number of animals were killed and examined four months after the injection of the toxin-emulsion mixtures.

In all cases the myocardium was practically free from degeneration or fibrosis, and only very minor degrees of fatty changes were seen in a few animals. Speaking generally, the hearts showed no difference from normal healthy hearts. Another series of animals which was alive and well twenty-four months after the administration of the toxin-emulsion mixture was killed and examined. The results are in complete agreement with those just described as occurring in animals after four months.

No cardiac lesions were found in any of the animals which had succumbed to the lethal effects of the toxins of *B. tetani*, *Cl. welchii*, or the *Cl. oedematis maligni* (Koch) which could definitely be attributed to these toxins.

DISCUSSION

It is well known that fine suspensions of charcoal or kaolin have the property of adsorbing ferments and certain toxins both inside the body and *in vitro*. Finely divided oil globules in emulsions carry a negative charge, and may adsorb toxins in the same way as these colloidal suspensions. The amount of toxin adsorbed depends upon the surface area of the particles. This is dependent upon the degree of fineness of the particles in suspension, or, in the case of emulsions, upon the fineness of the oil globules. That the adsorption phenomenon of these emulsions is of the reversible type is shown by the experiments which demonstrated the recovery of the toxin in the aqueous layer after centrifugalization of the toxin-emulsion mixtures.

The pathological findings in this investigation offer strong evidence in favour of the suggestion that either the toxins are first adsorbed by the oil particles, and very slowly absorbed from the tissues, and later destroyed in the body, or that the toxins are destroyed by the emulsions. The experimental evidence outlined here would seem to favour the first suggestion. Further experiments are at present in progress with a view to determining whether an active immunity can be produced in animals in response to the injection of these toxins mixed with oil emulsions, and whether the serum of such animals is able to confer a passive immunity upon other animals against the specific toxin used. A few preliminary experiments on these lines have just been completed and appear to be very promising.

Walsh and Frazer¹² have, quite independently and unknown to me, been investigating a somewhat similar problem, and some of their results are in agreement with those outlined in this communication.

CONCLUSIONS

1. Finely divided emulsions of olive oil, when mixed with superlethal doses of diphtheria toxin and injected subcutaneously, protect animals from the lethal effects of the toxin.

2. Olive oil emulsions also protect against the lethal effects of large doses of the toxins of *B. tetani*, *Cl. welchii*, and the *Cl. oedematis maligni* (Koch).

3. The addition of a suitable emulsifying agent to give the emulsion greater stability makes the protection against the toxins secure.

4. Emulsions of liquid paraffin with a suitable emulsifying agent behave in a similar manner, but the cream of cow's milk affords no protection.

5. Coarse emulsions of these oils do not exhibit this protective action.

6. The toxins used in this investigation are more soluble in water than in oils.

7. Solutions of gum acacia do not influence the lethal effects of these toxins.

8. Diphtheria toxin, when mixed with stable, finely divided emulsions of olive oil before being injected subcutaneously into animals does not produce the myocardial degeneration which is a constant feature of the control animals.

This investigation was commenced in September, 1929, at the Pharmacological Laboratory, Cambridge, and my sincerest thanks are due to the late Professor W. E. Dixon for his interest and encouragement, and to Dr. Clifford Hoyle for his valuable suggestions and criticisms at the outset. I am also indebted to Mr. E. Saville Peck of Cambridge for his generous assistance in the preparation of the emulsions.

This communication is only an abstract of the results of this investigation, and a more detailed account will appear at an early date in the *Journal of Hygiene*.

REFERENCES

- ¹ Abramow, S.: *Zeitschr. f. Immunitäts. u. Exp. Therap.*, 1912, xv, 12.
- ² Avigagnet, E. C., Lutenbacher, R., and Le Soudier: *Arch. des Mal. du Cœur*, 1918, ii, 241.
- ³ Coghlan, E. F.: *British Medical Journal*, 1912, i, 534.
- ⁴ Councilman, W. T., Mallory, F. B., and Pearce, R. M.: *Journ. Boston Med. Soc.*, 1901, i, 137.
- ⁵ Farr, C. B.: *Penn. Med. Journ.*, 1920, xxiii, 633.
- ⁶ Fleming, G. B., and Kennedy, A. M.: *Heart*, 1910, ii, 77.
- ⁷ Hecht, A. F.: *Ergebnisse d. inn. Med. u. Kinderh.*, 1913, ii, 324, 413.
- ⁸ Holt, L. E.: *Diseases of Infancy and Childhood*, New York, Appleton and Co., pp. 835, 1038.
- ⁹ Hume, W. E., and Clegg, S. J.: *Quart. Journ. Med.*, 1914, viii, 1.
- ¹⁰ Loth, M.: *Arch. Int. Med.*, 1923, xxxi, 637.
- ¹¹ Myers, G. N.: Thesis for the Ph.D. degree, Cantab., 1932; *Journ. Pharm. Exp. Therap.*, 1933, xlix, 483; *British Medical Journal*, 1934, i, 564.
- ¹² Walsh, V. G., and Frazer, A. C.: *British Medical Journal*, 1934, i, 557.

Clinical Memoranda

A CONCEALED INCISION FOR INTERVAL APPENDICECTOMY

There is a certain class of abdominal case in which it is important to avoid anything that might contribute to the production of surgical neurasthenia. The sight of a long scar may constantly remind the patient of her operation. She begins to feel symptoms, her friends make suggestions, and sooner or later a diagnosis of "adhesions" or other trouble is arrived at. In some cases the patient becomes an invalid, and may suffer for years as the result of a simple laparotomy. Quite apart from general considerations, it is an accepted surgical principle that in operating the surgeon should aim at restoring the part to its original anatomical condi-



tion. If the scar can be completely hidden, this ideal is achieved.

Last year I was asked to perform an interval appendicectomy in the case of a nervous, highly strung young woman of 19. It occurred to me that a modification of Pfannenstiel's median inferior incision might be employed. Since then I have used this incision in about a dozen cases with entire success.

A curved skin incision is made round the mons veneris, with its convexity upwards, so that the upper edge of the pubic hair will cover the scar later. The incision is deepened through the fat, until the linea alba and rectus sheaths are exposed on either side. After undercutting, the upper flap can be pulled up sufficiently to allow of a 4 to 5 inch vertical incision through the right rectus sheath. The muscle is displaced outwards, and the peritoneal incision can then be made of sufficient length to allow of the introduction of the half hand. I have not yet found any difficulty in bringing the caecum and appendix out of the wound. The pelvic organs can be examined with great ease.

The photograph shows the incision a week after operation. More room can be obtained, if required, by prolonging the ends of the incision along the folds of the groin. A second photograph (not shown), taken from the same patient three months later, shows the line of incision completely covered.

The concealed incision is not a suitable one for every case. Suspected adhesions or the presence of any acute or subacute inflammatory condition are definite contraindications. The operation does not take any longer than removal of the appendix by the ordinary routes, and the patient has less pain and discomfort afterwards. The patient can be moved out of bed on the third or fourth day, without any risk of damage to the wound.

ERNEST COWELL, M.D., F.R.C.S.

Senior Surgeon, Croydon General Hospital.

MESENTERIC CYST

The first case of mesenteric cyst, in over twenty-five years of practice, to come under my notice is perhaps deserving of mention.

On Christmas morning, 1933, I was called to see Mr. S., aged 27 years. He stated that he had been leading an athletic healthy life. Three weeks previously he had received a severe blow in the abdomen. For a day or two following he experienced some soreness in the region of the navel. About 7.30 p.m. on Christmas Eve, following a fast sprint of one hundred yards, severe pain was suddenly felt in the region of the umbilicus. The pain, which continued all night, was somewhat relieved by the patient adopting a squatting posture.

I first saw him at 11 a.m. on December 25th. He was "doubled up" in agonizing pain. Palpation of the abdomen revealed a swelling in the region of the umbilicus. The tumour was movable in a plane from the right hypochondrium to the left iliac fossa.

No definite diagnosis was made. The physical signs indicated the presence of a mesenteric cyst. Immediate operation was advised, and the patient removed to a private hospital. An adequate abdominal incision was made over the region of the tumour. When the peritoneal cavity was opened a considerable quantity of milky fluid escaped. The abdominal swelling, now exposed, was obviously a mesenteric cyst. It was about as large as a cricket ball. A haemorrhagic area, involving the mesentery, was noted on the anterior surface of the cyst. It is probable this was caused by the blow three weeks before. The mesentery was incised and the cyst enucleated. The abdomen was closed without drainage. The patient made an uneventful recovery.

J. P. HASTINGS, M.D.,

Late Assistant Surgeon, Auckland Hospital, New Zealand

Reviews

A WEST COUNTRY PHYSICIAN'S DIARY, 1684-1726

Diaries written without a view to publication are always of interest, partly on account of the intimate details recorded which shed a light on the writer's character, and partly because they often give small facts about the life of the people amongst whom he lived. The diary of Dr. Claver Morris¹ fulfils both these conditions. He graduated from New Inn Hall, Oxford, as B.A. in 1679 and took his M.D. in July, 1691. He went out as a "grand compounder," so he must have had money. In 1683 he was admitted an extra-licentiate of the College of Physicians. It is probable, therefore, that he intended at first to practise in London. He changed his mind for some reason, went to Salisbury, and afterwards settled at Wells, where he spent the remainder of his life. Here he acquired a county practice, became a Commissioner of Sewers, had much to do in connexion with the Land Enclosure Act, and was evidently a highly respected citizen. The entries in the diary show, however, that there was something of Mr. Hyde in this example of Dr. Jekyll—not much, but just enough to prove that he was not perfect. Here is an entry: "I upped to let Coggin of Somerton in about 4 a clock with one anchor of Brandy which I bought of him. He brought also 3 Anchors more and left them in my inner cellar." It is not a solitary instance, unfortunately. Smuggling was rife, but he was never caught. Marriage was a simple matter of arrangement, and Dr. Morris acted on several occasions as a go-between. He was himself three times married, on each occasion with an eye to the main chance, and he too employed a go-between. Violent quarrels were frequent, and even the bishop could become furiously angry and express himself in no measured terms, just as two hundred years earlier the Pope used to speak to Benvenuto Cellini. Journeys were slow and hazardous; Dr. Morris preferred to make them in his calash rather than riding, as was the custom, even though the horses were sometimes so "bemired" that a yoke of oxen had to be borrowed to drag them out of the ruts. The visits were always made with a certain amount of state. A brother physician called in consultation arrived in a hired chaise drawn by six horses. Morris acted throughout his life as a consulting physician. He advised and wrote prescriptions, but they were made up for him by the apothecary, though he himself had a sound knowledge of drugs and dabbled in chemical experiments. When an operation was necessary he supervised the surgeon.

The real value of the diary lies in the account it gives of a very dark period in the history of English medicine. What were the lives and what was the social position of highly qualified consulting physicians who chose to practise in remote country districts during the seventeenth and eighteenth centuries? We know that their fellows in London secured a very high place in literary and artistic circles, but of their country cousins we know hardly anything. Apart from medicine Morris's chief interest lay in music. He played many instruments, from the organ to the flute. He was the central figure in a "Clubb" which undertook classical music and gave public concerts with an attendance of about thirty-two, who paid 2s. apiece when the women did not cheat.

The diary was edited by the late Dr. EDMUND HOBHOUSE, who has written a pleasant introduction. His interest in Claver Morris had already been shown by his paper on Dr. Morris's library, which was published in

the *Transactions of the Bibliographical Society* (vol. xiii, 1932-3, pp. 89-96). (The reference to it on page 8 of the foreword is incorrect.) "New Hall" on page 11 should be New Inn Hall. "Vocation" on page 122 should be "vocalion," and it is clear on page 129 that grains and not ounces are meant. Dr. Morris would certainly not have proposed to give six or seven ounces of calomel to a baby 11 months old. The book is illustrated with facsimiles of two pages of the diary, and there are some valuable extracts from his account books.

D'A. P.

BENIGN TUMOURS IN THE THIRD VENTRICLE

The removal of tumours from the third ventricle of the brain is among the most recent developments of surgery. Situated as it is in the centre of the skull the third ventricle lies at a considerable depth from the surface, and can only be explored by making wide incisions into the brain tissue. Dr. WALTER DANDY'S² record of twenty-one operations on tumours in the third ventricle is therefore a record of pioneer work, and, considering the difficulties encountered, one of remarkable achievement. His greatest success has been with colloid cysts, of which post-mortem specimens have been described at intervals during the past twenty years, but none has been successfully removed during life. Dr. Dandy has operated on five such cases, removing the cyst wall completely in all, with only one fatality. In this case blockage of the iter of Sylvius led to recurrence of hydrocephalus and death a month after operation. In tumours of other kinds, most of which arose from the ependyma and choroid plexus, the author's results have been less brilliant, as his mortality in sixteen such tumours has been 37.5 per cent., but in his later operations Dr. Dandy has reduced this percentage considerably.

These results depend as much on exact diagnosis as on operative technique. Tumours in this situation produce no localizing signs, but cause hydrocephalus by blocking the foramina of Monro or the iter of Sylvius. The ordinary methods of clinical examination will therefore give little help in localizing the tumour. Radiograms may occasionally show an opacity in the region of the third ventricle, but it may not be easy to distinguish this from the normal pineal shadow. The only certain method of localizing the tumour is, according to Dandy, total or subtotal filling of the lateral ventricles with air. This in his hands has been a safe, and even a remedial, operation. Although tumours in the anterior part of the third ventricle usually block both foramina of Monro, the resulting hydrocephalus may lead to fenestration of the septum pellucidum, allowing air to pass from one lateral ventricle to the other. Often, however, it is necessary to fill each ventricle separately. Encephalography by the spinal injection of air Dandy considers to be both useless and dangerous in cases of this kind. His operative approach to the tumours has been either by a parietal bone-flap, with retraction of one hemisphere laterally and incision of the corpus callosum, or by a frontal bone-flap, opening into the lateral ventricle through a large window in the frontal lobe. It is remarkable that neither of these incisions through cerebral tissue appears to cause any permanent loss of function. Dandy, however, carefully avoids injury to the inner part of the left frontal lobe, where he considers that the seat of consciousness lies in right-handed individuals.

It is unfortunate that this interesting monograph should be marred by innumerable misprints, which in some instances are actually misleading. Surely these are not so unavoidable as American publishers appear to consider.

¹ *The Diary of a West Country Physician: A.D. 1684-1726.* Edited by Edmund Hobhouse, M.D. London: Simpkin Marshall, Ltd.; Rochester: Stanhope Press. 1934. (Pp. 155. 5s. net.)

² *Benign Tumours in the Third Ventricle of the Brain.* By Walter E. Dandy, M.D. London: Baillière, Tindall and Cox. 1934. (Pp. 171; 120 figures. 22s. 6d.)

HYGIENE IN OUTLINE

The term "synopsis," as applied to a work on hygiene, is so well authorized by precedent as almost to disarm criticism. Furthermore, it suggests a modesty of purpose which is itself disarming. The declared aim is to furnish an outline without filling in all details of the picture. If the canvas is stigmatized as bare the author may claim that the outlines are visible: if it is deemed overcrowded with detail he has the ready defence of the "lavish hand" and the "generous giver." Dr. CARYL THOMAS, in his recently issued *Synopsis of Hygiene*,² has on the whole maintained the strait path between shortage and excess with commendable consistency. The work, which closely follows the lines of his previous book on public health, is written throughout in a compressed style which in certain chapters reaches severity. For this, however, he compensates by most readable sections on the growth of preventive medicine, outline of English local government, history of isolation and disinfection, and other topics. The author states in his preface that his book is intended for the final-year medical student, in order to give him an outline of the various health activities of local authorities, and to assist him to realize the part taken by the general practitioner in the medical services of the country. He considers it suited to form a basis also for the work of the student preparing for advanced examinations. Owing to its synoptic arrangement it is not, we think, adapted for initial study as a textbook by either of these. To the medical student, however, as the date of his examination approaches, it will convey a salutary, if slightly depressing, admonition of the wide scope of present-day hygiene. By the student reading for a diploma in public health it will be found an invaluable reminder of points on which he would do well to refresh his memory before encountering his examiners.

THE MANAGEMENT OF CHILDREN

Many books have recently been written, and doubtless many more are even now in contemplation or in preparation, which are intended to help towards the understanding, the management, the up-bringing, and the education of young children. The two works now under review may be taken as illustrations of the two main types of such books, and may perhaps be regarded as the extremes of their types. The one, by Dr. SUSAN ISAACS, entitled *Social Development in Young Children*⁴ is a serious study of the subject—long, laborious, based upon detailed, patient, first-hand observation, and the result of extensive expert experience which deserves every respect and must be given its full weight. The other, by Dr. G. FRANCIS SMITH, entitled *If I Have Children*,⁵ is of a much more popular character, and is intended for the general enlightenment of parents, especially of young mothers.

The labours and publications of Dr. Susan Isaacs in this field of study are well known. Her present volume is the second of three works dealing in an interrelated fashion with the behaviour of young children. The first dealt with intellectual growth in young children; the second has to do mainly with their social and sexual development; and the third, still to come, is to concern itself with individual histories. Of this second volume the author says in her opening paragraph: "This book is addressed to the scientific public, and in particular to

serious students of psychology and education. It is not intended as a popular exposition whether of the psychological facts or of the relevant educational theory." The main part of the material quoted and discussed was gathered in her school for young children. The bulk of it is drawn from the behaviour of children under 6 or 7 years of age, although it contains a certain amount from those ages. The author regards it "in the first instance as a contribution to psychology rather than to education." The two major problems with which it is concerned are "the broad relation between the sexual and social aspects of development," and "the relation between the processes of education and of psycho-analysis." As will be expected by those who have some knowledge of the work and former publications of Dr. Susan Isaacs, the pure Freudian doctrine is assumed throughout to be unquestionable, and it is upon this basis that her interpretation of psychological data is given. There is no hint that the psycho-analysis of young children may be of doubtful wisdom or validity, or even that any alternative explanations of the facts adduced by such psycho-analysis are admissible. To those who are instructed and devoted disciples of the great psychologist the results and conclusions of the author will be convincing, and criticism from anyone who has not himself been psycho-analysed will be regarded as negligible and irrelevant. To other readers who are not so firm in the faith, or who are willing to accept other psychological explanations, the abundant, well-observed facts will be of great interest, but to them alternative interpretations of these facts will appear not only obviously possible, but preferable. Yet the author says, "Although my mode of presentation may at times have seemed very positive, I would not have readers assume that the views I offer are put forward dogmatically. They are intended to open up inquiry, not to close it." Further, she is careful to draw the distinction between the educator and the psycho-analyst—indeed, to emphasize the incompatibility of their functions—and fortunately we can have perfectly sound educational methods without being necessarily bound by uniform psychological theories.

The much smaller and very different book of Dr. Francis Smith is likewise founded upon experience—that of a medical practitioner of long standing. It displays, on some aspects of the subject with which it deals, a good deal of wisdom of a common-sense character, but does not reveal any close acquaintance with recent psychology, present-day human genetics, or modern educational methods and arrangements.

SURGICAL PATHOLOGY OF THE BREAST

HERTZLER'S *Surgical Pathology of the Mammary Gland*,⁶ the fifth of the series of monographs on surgical pathology in course of publication by the author, is one of the best of the series so far issued. Like its predecessors, it deals with the subject from a very practical standpoint, and is original in that it is entirely the outcome of the author's own experience. Dr. Hertzler has been in a position, in a non-urban population, to follow up the after-histories of his patients with considerable completeness, and he has found, in common with some other surgeons, that the results from operations are not as good as is generally supposed: a large number of recurrences take place after three or even ten years. At present, statistics for cancer of the gland seem, in his opinion, to be stabilizing at about 10 per cent. of permanent cures and about 20 per cent. living a substantial number of years before they succumb to metastases. A new feature in works dealing

² *A Synopsis of Hygiene*. By E. W. Caryl Thomas, M.D., B.Sc., D.P.H. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1934. (Pp. vi + 283, 10s. 6d. net.)

⁴ *Social Development in Young Children: A Study of Beginnings*. By Susan Isaacs, M.A., D.Sc. London: George Routledge and Sons, Ltd. 1933. (Pp. xii + 489, 15s. net.)

⁵ *If I Have Children*. By G. Francis Smith, M.R.C.S., L.R.C.P. London: H. Milford, Oxford University Press. 1933. (Pp. 133, 8s. net.)

⁶ *Surgical Pathology of the Mammary Gland*. By A. E. Hertzler, M.D., in collaboration with I. A. Koenke, M.D., M.Sc. London: J. B. Lippincott Company. 1933. (Pp. xviii + 283; 240 figures, 21s. net.)

with the breast is the discussion of the social aspects of the mammary gland. In this the author has had the collaboration of Dr. IRENE KOENEKE, who is able to regard the matter from the woman's point of view. The reason for introducing this subject is the conviction that there exists on the part of many operators a lack of appreciation of the relation of the mammary gland of a woman to the fundamental factors of her life. The policy implied in such expressions as "Better remove a hundred innocent breasts than overlook one malignant" is still favoured in some quarters; women would probably apply for treatment earlier if such sentiments were replaced by a sense of obligation to furnish a correct diagnosis and the assurance of minimal therapeutic measures.

The problem of the significance of an increase in the interstitial tissue in the breast is discussed at length with the aid of a large number of very instructive photographs of the microscopical and macroscopical conditions met with. The author considers that modern views on the nature and genesis of the fibrous tissue are in so confused a state that it would be well to disregard the entire literature and build anew, but he has presented the facts very fully, so far as they are at present known, on which a final decision must rest. The subject lends itself to lengthy discussion, but, briefly, it may be said that periodical transitory variations in the amount, staining properties, and fluid content of the fibrous tissue are normal occurrences; should they produce unpleasant symptoms, however, or persist, or occur in a manifestly exaggerated degree, they have to be regarded as pathological. They are not inflammatory, although they may have a close resemblance to genuine primary chronic interstitial mastitis, except that a lymphocytic exudate is absent. Of equal interest are the author's chapters on parenchymatous hyperplasia and cysts of the breast. Special mention should be made of the numerous fine illustrations to the volume, and more particularly the large number of photographs of macroscopical sections of breasts, which are most instructive.

Notes on Books

Lymphatics, Lymph, and Tissue Fluid, by C. K. DRINKER and MADELEINE E. FIELD, is a short book describing the anatomy and physiology of the mammalian lymphatic system. It consists very largely of original observations, and is written in a most readable style. It contains a good bibliography and index.

La Digitale,* by Professor HENRIJEAN and Dr. R. WAUCOMONT of Liège, is a short textbook dealing with the chemistry, pharmacology, and therapeutic use of digitalis. The authors have worked together on this difficult subject for twenty years, and their book is of interest because it presents the Continental outlook on the problem, an outlook which differs in many respects from that usually adopted in this country and in America.

The little book entitled "A Practical Work on the Most Important Infectious Diseases," by Professor C. HEGLER, director of St. George's Hospital at Hamburg, and co-editor of the second edition of Jochmann's "Handbook on Infectious Diseases," is a concise, clear, and up-to-date exposition based on thirty years' personal experience, partly in Hamburg and partly in the Balkan and World War, especially in the Sinai Desert, Palestine, Syria, and Mesopotamia, where he came in contact with some of the rarer diseases. After the war he had ample opportunity to study epidemic encephalitis, spirochaetosis icterohaemorrhagica, undulant fever, and psittacosis at Hamburg, as well as variations in the ordinary causes

of such familiar diseases as influenza, diphtheria, and scarlet fever. A short bibliography of exclusively German works is appended.

The interesting little monograph on *Chinese Medicine*,¹⁰ by WILLIAM R. MORSE, dean of the Medical School of the West China Union University at Chengtu, forms the latest contribution to the series of primers on the history of medicine known as "Clio Medica." The work is divided into twelve chapters, devoted respectively to Chinese national philosophy and cosmogony; Chinese gods of medicine; Chinese medical literature; anatomy, physiology, diagnosis, the pulse, materia medica and therapeutics, which are described as a potpourri of facts, fancies, and fatalisms; Chinese practitioners of medicine, who form a motley group of physicians, leeches, empirics, and impostors; surgery; acupuncture, which is regarded as a panacea; and conclusions. According to Dr. Morse, Chinese medicine began about 3,000 years B.C., and evolved to a relatively high standard for the age up to A.D. 1,000, since when there have been no advances to correspond with the progress of medicine in Western nations. Chinese medicine, therefore, at the present time is only of historical or philosophical interest. A valuable bibliography is appended.

The third edition of the *Scottish Youth Hostels Handbook* represents a great advance on its predecessors, both as regards the information it supplies about the progress of the parent association and the many more excellent topographical notes, illustrations, and maps. Thus in the three years it is shown that the membership has grown from just over 1,000 in 1931 to 7,082 in 1933, the number of hostels from nine to thirty-five, the beds from 227 to 1,053, and the "bed-nights" from 3,120 to 54,687. Here is sufficient indication that a real need is being met, and that the simple and health-giving life of the open air is being adopted in increasing measure by the urbanized population. No fewer than seventeen new hostels were opened during the year, and extensions and improvements effected at many of the older ones. The first town hostel in Great Britain was opened in Edinburgh last June, and was visited in four months by 1,505 persons, more than half of whom were English and 25 per cent. Scots. It is noteworthy that membership of this association carries the obligation to leave no litter anywhere, to respect private rights and natural scenery, and to avoid making any unnecessary noise. The community as a whole will benefit by extension of a membership of this kind, and the *Handbook* should provide effectual propaganda, for its contents reveal the many pleasures which are available. The description of the Border hostels indicates that it is now possible to walk from Newcastle to Edinburgh, and from Edinburgh to the English Lakes, using hostels all the way. There are rings of hostels in the Loch Lomond-Trossachs area, Perthshire, the Glen Cova and Cairngorm Chain, and the North-West Highlands. Hints are given on arranging a cycle tour in Skye, and many a rambling holiday elsewhere.

¹⁰ *Chinese Medicine*. By William R. Morse, M.D., LL.D., F.A.C.S. New York. Paul B. Hoeber. 1934. (Pp. xxiii + 185; 16 figures. 2.50 dollars.)

New Preparations

DRY LIVER EXTRACT

Hepamult (H. R. Napp, Ltd., 3, Clements Inn, W.C.2) is a dry extract of calf's liver. The activity of the product is controlled by clinical tests which show that 10 grams of hepamult have a haematopoietic equivalent to 8 ounces of fresh liver. The usual daily dose is 10 to 20 grams. The extract is said to be prepared by a novel and economic process, which enables it to be marketed at an extremely cheap rate. The price to the medical profession is 20s. for 16 ounces, and this works out at about 5d. per dose of 10 grams. The makers point out that therapy with this extract is actually cheaper than when fresh liver is used. The quantitative estimation of the activity of liver preparations is a matter of exceptional difficulty. If, however, the makers' estimates of activity are correct, hepamult will represent an important therapeutic advance, because the cost of liver extracts hitherto has been a factor seriously limiting their employment.

* London: Baillière, Tindall and Cox. (Pp. 254; 14 figures. 17s. 6d.)

* Paris: Masson et Cie. 1933. (Pp. 192. 15 fr.)

* *Praktikum der wichtigsten Infektionskrankheiten*. Von Prof. Dr. C. Hegler. Leipzig: Georg Thieme. 1934. (Pp. 186. M.4.50; geb., M.5.50.)

British Medical Journal

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THE ILL EFFECTS OF RADIATIONS

Dr. Hector Colwell and Professor Sidney Russ, both with long radiological experience, as shown by an earlier collaboration on radium, α rays, and the living cell, have appropriately dedicated their authoritative work, *X-Ray and Radium Injuries: Prevention and Treatment*,¹ to Dr. Stanley Melville, who, although he died before the volume was published, knew of this well-deserved tribute. Melville had done a great and lasting service to his colleagues in all countries by initiating in 1921 the first X-Ray and Radium Protection Committee, which standardized recommendations forming the basis for those adopted internationally at the Stockholm congress in 1928. Professor Russ and he had been the honorary secretaries of this committee since the start. It is interesting to learn that Professor von Roentgen escaped any untoward effects because, in order to avoid fogging of unexposed plates in the neighbourhood of Crookes's tubes, he had performed most of his experiments, which were mainly photographic, with the tubes inside a large zinc box protected, in addition, by lead screens. An early pioneer, Dr. F. H. Williams of the Boston City Hospital, being convinced that with such penetrating power α rays must exert some effect on human tissues, by his foresight in adopting protective measures did not have the terrible experience of so many early radiologists, especially the pain of α -ray carcinoma so graphically described by the late Dr. Hall Edwards in the *British Medical Journal* thirty years ago. The authors show that there have been roughly two hundred fatal cases of α -ray carcinoma, which on an average occurs at about the age of 40, much earlier than ordinary skin cancer, some nine years after the first exposure, and nearly always on the back of the hands. A number of cases have followed α -ray treatment of lupus, and, as this sequence is well known to occur without radiation, the authors insist that lupus should not be treated by α rays until all other means have been exhausted.

Some modern authorities throw doubt on the factor of idiosyncrasy in the occurrence of α -ray and radium injuries, and, indeed, seem to regard this as a euphemism for faulty technique. Dr. Colwell and Professor Russ do not discuss this attitude, but describe as the four causes of casualties: errors in dosage; idiosyncrasy; an unrecognized focus, such as a pyosalpinx which may flare up when a carcinoma of the cervix is being treated by irradiation; and the difficulty in

getting radium needles into exactly the right position and keeping them there. The whole subject is considered systematically under the headings of the skin, the respiratory, circulatory, alimentary, generative, urinary, nervous, and other organs, and full reference is made to the work of others. It is pointed out that in the early stages of radio-dermatitis itching rather than pain, which is correlated with ulceration later, is often most distressing.

Whereas the cutaneous lesions caused by α rays and radium soon became unpleasantly obvious, there was a long delay before the blood changes were recognized; attention, indeed, was first drawn to this subject in 1904 by Heineke, who investigated the cause of death in irradiated animals without any skin changes, and pointed out the leucopenia. The question whether leukaemia in an α -ray worker, a rare event, is a coincidence or a result is discussed by Dr. Colwell and Professor Russ, who reach the cautious conclusion that for the present the positive association cannot be dismissed. It is impossible to deal with all the important material so admirably marshalled in this monograph, but we feel confident that it will long remain a source of reference on the injuries due to irradiation, which, with adoption of the means of protection here advocated, should in the future have mainly an historical interest.

CANCER AND CHEMICAL STIMULI

Those familiar with modern developments in cancer research often feel moved to correct popular ideas about "the cause of cancer" and the alleged fruitlessness of experimental studies. The position is that many undoubted causes of cancer are known, at least in the sense of agents which constantly produce the disease. What we do not know is whether there is some unknown underlying mechanism common to the action of all of them, or whether cancer from the aetiological point of view is not one disease, but several. It is difficult to believe that a malignant teratoma appearing early in life has anything in common, as concerns its origin, with epithelioma of the tongue complicating syphilitic leucoplakia: one appears perfectly to exemplify the origin in "embryonic rests" postulated by Cohnheim; the other, to illustrate malignancy induced by a specific type of long-continued irritation. It may be said that there are four fully ascertained causes of experimental cancer, not without their parallels in the human disease (the word "cause" being used in the sense already defined): hereditary susceptibility, which can be increased by inbreeding until the occurrence of a particular type of malignant disease is almost constant; parasitic infestation—*Spiroptera neoplastica*, for example, constantly giving rise to a carcinoma of the stomach in rats; chemical and physical irritants, such as tar, oils, excessive exposure to light, and even α rays and radium—agents

¹ *X-Ray and Radium Injuries: Prevention and Treatment*. By Hector A. Colwell, M.B., Ph.D., M.R.C.P., and Sidney Russ, C.B.E., D.Sc. Oxford Medical Publications, London, Humphrey Milford, Oxford University Press, 1934. (14s. net.)

which from industrial and clinical experience were evidently carcinogenic and have all been shown to be so by animal experiment; finally, the virus or whatever type of agent may be held responsible for the filterable tumours of birds. A unifying conception which will explain the origins of all these forms of malignant disease in the same terms cannot even be formulated. The two last in particular would seem to be fundamentally different in nature: the recent claim of McIntosh¹ to have transmitted a chemically induced growth in the fowl by means of a cell-free filtrate affords what appears to be a connecting link between them, but raises difficulties which are still far from elucidation.

Perhaps the nearest approach towards such a unifying conception as we have envisaged, though it is still highly speculative and the limits of its application cannot be defined, is that which has arisen from the study of carcinogenic hydrocarbon compounds. The discovery of these substances by Professor E. L. Kennaway and his co-workers² was in itself a landmark in the progress of this branch of cancer research, since until then the composition of the active agents in carcinogenic tars had not been ascertained. It was known only that treatment by a certain degree of heat, the optimum lying at about 850° C., whether of coal or of certain other materials, led to their formation. The key to the recent discovery of their nature was the observation that the fluorescence spectrum given by carcinogenic substances prepared in this way corresponded closely to that of compounds of the dibenzanthracene series. These could be synthesized, and several synthetically prepared agents of this nature were found to be actively carcinogenic. For the induction of tumours by means of tars of complex composition it has hence been possible to substitute the use of single reagents of exactly known chemical composition. The first suggestion that these discoveries led any further than relating carcinogenic activity to chemical structure came in the astonishing observation made by Cook and Dodds³ that two of the most active of these carcinogenic hydrocarbons are also oestrogenic. To this, from the experimental standpoint, there is nothing yet to add; but speculation has a solid basis in the fact that there is a close relation in chemical constitution between the carcinogenic hydrocarbons, and substances, including oestrin and cholesterol, which are present normally in the body. The direction in which speculation is proceeding is naturally this: Is the immediate stimulus to malignant proliferation the presence of a compound of the nature of those we have been considering which has actually been formed in the body? Such an assumption as this might be capable of explaining the action of a great diversity of agents in producing cancer: it might well, for example, account for the effect of such physical stimuli as ultra-violet light, heat, and x rays.

Whether, or no further development of this study yields confirmation of this hypothesis, it is clear that the fully ascertained facts as they stand are of profound and fundamental consequence; they surely afford a sufficient answer to those who accuse experimental cancer research of leading nowhere. Since the whole of this work has been carried out in England, it is of interest to observe the reaction to it in other countries. Sannie and Truhaut,⁴ representing the French point of view, conclude a general review of the subject of chemical carcinogenesis with a detailed appreciation of the work of Professor Kennaway and his colleagues, in which they acclaim it with enthusiasm. An American journal has furnished hospitality to the extraordinary observations of Burrows and N. M. Kennaway,⁵ which must also be mentioned in this connexion. In view of the observation by Cook and Dodds, to which reference has already been made, it was clearly necessary to ascertain whether oestrin itself could excite malignant proliferation. This apparently it does not, but repeated application to the skin is followed not only by a series of changes of considerable interest in the reproductive organs of either sex, often eventually fatal owing to urinary obstruction, but in males by the development of massive scrotal hernias which may come to contain a large proportion of the abdominal contents. This quite unexpected consequence so far lacks any explanation.

THE BED-BUG ON THE MAP

The central departments of health have certainly "put the bed-bug on the map." In August, 1933, the Department of Health for Scotland issued a treatise on the bed-bug written by Dr. William Gunn of the Public Health Department of Glasgow. Reference was made to this booklet in the *British Medical Journal* of November 11th, 1933 (p. 885). The Ministry of Health for England has similarly been studying this pest, and an important report on the eradication of bed-bugs, prepared by a committee of experts under the chairmanship of Dr. G. W. Monier-Williams, was submitted to the Minister of Health at the end of last year. This report⁶ has now been circulated to local authorities by the Ministry of Health, together with a memorandum⁷ on the bed-bug and how to deal with it. Although there is no evidence that the bed-bug conveys disease to human beings as fleas carry plague, lice typhus fever, or mosquitos malaria, it is nevertheless a pest from which many householders in poorer localities suffer. It may be that bed-bugs are responsible for actual ill-health from lack of sleep due to skin irritation. It has even been suggested that it is possible to pick out from groups of school children those that come from bug-infested houses by reason of their sallow complexions and listless appearance, but this is obviously little more than theory.

¹ *Bull. de l'Assor Français pour l'Etude du Cancer*, 1934, xxiii, 6.

² *Amer. Journ. Cancer*, 1934, xx, 48.

³ Reports on Public Health and Medical Subjects, No. 72. Ministry of Health: Report on the Bed-bug. London: H.M. Stationery Office, 1934. (1s net.)

⁴ Memo 180, Med. On the Bed-bug and How to Deal with It. H.M. Stationery Office, 1934. (3d. net.)

¹ *Brit. Journ. Exper. Path.*, 1933, xiv, 422.

² *Proc. Roy. Soc. B*, 1932, cxi, 455.

³ *Nature*, 1933, cxaxi, 203.

Of the two documents now issued for the use of sanitary authorities the memorandum is much the more important for practical purposes. It states briefly and clearly the life-history of the bed-bug, tells of the indications of the presence of bed-bugs, and suggests where bed-bugs should be looked for when a dwelling is being inspected. This information is likely to prove extremely useful to the sanitary officer in connexion with both housing conditions and the management of housing estates owned by local authorities. The memorandum goes on to give the sources of infestation and the methods for prevention of infestation and for extermination. With regard to this last matter—namely, prevention—neither the report nor the memorandum adds much to what has already been so well said by Dr. Gunn in the treatise to which reference has already been made. The important point is that after all it is the housewife who must clean her house with care and regularity. There is no agent more effective in ridding a house of bed-bugs than the diligent application of soap and water, to which a little washing soda has been added. A disinfectant such as cyllin may be used with perhaps some advantage, but not in place of soap and water. Help should be given to tenants so that they may know the harbourages of bed-bugs—for example, behind pictures and picture rails, architraves, skirting boards, window mouldings, in cracks in plasterwork, in old articles of furniture, behind loose paper on walls, and where the upholstery meets the actual woodwork of furniture. Bugs are also found on bed mattresses and bedding, especially around the leather button of the mattress. All these special sites should be known to the sanitary officer, who should assist the tenant with his advice on how to get rid of them. Various contact insecticides are mentioned by the expert committee, but it is frankly stated that the relative effectiveness of these insecticides cannot yet be assessed from a practical point of view. With regard to fumigation, all that is known is that prussic acid gas, in a concentration of about 2 per cent. by volume with an exposure of three hours, will usually penetrate all ordinary types of hiding-place and kill bed-bugs and their eggs. Fumigation by this gas may be carried out in the homes, or the furniture may be similarly fumigated in specially devised vans. In both cases, however, there are grave dangers, and the use of prussic acid gas, except under the close direction and supervision of specially trained workers, should not be undertaken. Special measures, too, require to be adopted to free articles of furniture and particularly bedding of this poisonous gas after fumigation.

The memorandum also deals with the removal of tenants to new premises, and emphasizes that before the move takes place a thorough and not a cursory inspection of the old house and furniture should be made. Infested furniture should on no account be removed to the new house, and if such furniture cannot be destroyed its thorough disinfection must be accomplished before it is used in the new home. The memorandum winds up on the keynote which is dominant throughout—namely, that to prevent infestation or re-infestation the inculcation of habits of cleanliness among the tenants should be the primary object of the sanitary officer and property manager.

CARBON TETRACHLORIDE POISONING

Advances in industrial chemistry have led to the introduction into the domestic and the commercial worlds of a wide variety of organic chemicals, and some such innovations have not been free from dangers to health. Carbon tetrachloride is a case in point. As a liquid it is a non-inflammable fat solvent. It forms a heavy and non-inflammable gas, and hence is a valuable fire extinguisher; it is also employed very extensively as an anthelmintic for hookworm. The use of carbon tetrachloride for dry shampooing quickly provided proof of its toxic properties, for in England a case of poisoning occurred in 1907 and a death in 1909. This fatality led to the abandonment of carbon tetrachloride for shampooing in this country; but a recent report¹ contains an account of a case of poisoning from this cause in Denmark as lately as 1932. Such a risk can, however, be easily avoided, for there are alternative and safer solvents for dry shampooing, and hence carbon tetrachloride should not be allowed for this purpose. As an anthelmintic it has produced a large number of fatalities, but unfortunately there is no efficient cure for hookworm that is absolutely safe. The relative merits of remedies for ankylostomiasis are a matter of dispute. Carbon tetrachloride has become the drug of choice in many countries, but some authorities state that it should not be prescribed on account of its toxicity. For example, Clayton Lane² speaks of its administration in the treatment of hookworm infestation as "a blindfold gamble with death," and considers "the use of the drug inadmissible in the present dosage even for the individually attended patient." Incidentally, the medicinal employment of carbon tetrachloride has added much to our knowledge about its poisonous actions. Specimens contaminated with carbon bisulphide are extremely toxic, but even in the purest form it can give rise to toxic effects. Experiments on dogs have shown that it can readily produce liver degeneration, but that a considerable degree of protection can be afforded to the liver by an adequate supply of calcium. The industrial dangers of carbon tetrachloride have been recently reviewed by Möller.³ In particular he discusses the use of this drug for industrial and domestic dry cleaning, in connexion with which a number of cases of poisoning have been reported. On the other hand, it is non-inflammable, and the number of deaths from burning due to benzene must be far greater than the fatalities for which carbon tetrachloride is responsible. Möller concludes that carbon tetrachloride is, on balance, probably safer than benzene, provided that the public are instructed that it forms a heavy and toxic gas, and that great care in ventilation must be taken after it has been used. As a fire extinguisher it has been found invaluable in electric plants on account of its non-conductivity, and, in the case of petrol fires, because its heavy fumes blanket the fire. But even when employed for this purpose it is not without its dangers, and three cases of poisoning have been recently reported by Sir William Willcox,⁴ and another one in Paris.⁵ In these instances the outstanding feature was

¹ *Journ. Indust. Hygiene*, 1933, xv, 418.

² *Hookworm Infection*, Oxford University Press, 1932, p. 229.

³ *British Medical Journal*, January 20th, 1934, p. 105.

⁴ Gautier, Chatron, and Seidmann: *Bull. et Mém. Soc. Méd. des Hôp. de Paris*, 1933, No. 34, 1638.

impairment of kidney function. Möller points out an additional risk attending the use of carbon tetrachloride in fires—namely, the possibility of partial oxidation of the drug, with the formation of phosgene. Petrol fires are so dangerous and they are so difficult to put out that it is scarcely justifiable to condemn an efficient extinguisher because of its toxic properties. Every effort should be made, however, to educate the public to the risks associated with carbon tetrachloride. The peculiar danger is that the heaviness of the fumes, which makes the compound such a good fire extinguisher, also makes the fumes difficult to remove, and very thorough ventilation is necessary before it is safe to enter a room in which carbon tetrachloride has been liberated in quantity.

EXPERIMENTAL CORNEAL GRAFTING

The work of Mr. Tudor Thomas in corneal grafting is well known. His latest contribution¹ deals with improvements in the technique of experimental grafting in rabbits, an investigation into the causes of opacification in grafts, and a new method of examination of the anterior chamber in cases with general corneal opacities precluding direct observation. It seems quite clear that at present heterogeneous grafts cannot be successfully used, since an opacity which never clears always forms in the alien tissue. This is very unfortunate, as it is a matter of practical experience that, human donors being all too few, a careful selection of recipients has to be made, and borderline cases, where the results are uncertain, have to be denied the possibility of improved vision. An adhesion of the iris to the back of the graft results in formation of an opacity, and, by eliminating the danger of anterior synechiae in experimental animals, the solution of the similar problem in human eyes is one step nearer. Details of the best form of corneal needle to give accurate suturing and to avoid perforation of the anterior chamber, together with the easiest way of threading eyeless needles, have now been satisfactorily worked out. The new method of examination of the position and size of the pupil and the depth of the anterior chamber, where the cornea is opaque, by simultaneous and successive transillumination of the globe from two directions, greatly assists in the prognosis and selection of cases. It enables the operator so to place his graft that it lies over the pupil in a position of maximum efficiency. Previously in a very opaque cornea it was sometimes discovered towards the end of the operation that the graft would be eccentric to the pupil, and that a portion of the graft would be useless unless an iridectomy were performed later. This method of examination can also be used to determine the effect of mydriatics and miotics on the pupil. It has the added advantage of being easily applied to a patient on the operating table. The operation at present can hardly be performed with success by anyone who has not had practice on animals, but, by continued experiment, the ingenuity of Mr. Tudor Thomas will be able so to simplify the technique that a more universal practice of grafting will be possible. Mr. Thomas's paper allows a glimpse of the great amount of investigation and experimentation that has led, during some

years past, to the evolution of the operation. It is estimated that in animals useful vision is obtained in 75 per cent. of cases. No figures of the results obtained in man are given, but, even if they fall far short of this high percentage, the operation, which had in the past been abandoned as useless, marks a notable achievement in ophthalmic surgery.

SIX DUBLIN DOCTORS

As a result of the cholera epidemics which worked such havoc in Ireland the hospital of Saint Vincent de Paul was opened in Dublin in 1834. In the recent "Record of the St. Vincent's Hospital Centenary," Mr. William Doolin, surgeon to the hospital and editor of the *Irish Journal of Medical Science*, has given, under the title of "The Forerunners," sketches, remarkable for their interest, of the early members of the staff. The first, and for some time the only, medical officer was a surgeon, Joseph Michael O'Ferrall (?1790-1868), who spelt his name at different times in other ways—Farrell and Ferrill—and is said to have preferred it to be pronounced "O-ver-all" as an expression of universal superiority. He was poor and of humble origin, raised by his own exertions, a stern, thrifty, and egotistic character, who wrote 109 papers; as his sight failed he successfully cultivated the *tactus eruditus*, and when from paraplegia he had to be wheeled into the wards still continued his clinical teaching. As the hospital grew it became necessary that he should have a colleague, and this again was a surgeon, O'Bryen Bellingham (1805-57), and it would be difficult to find a greater contrast than that between these two. Bellingham came of an ancient family dating from the Conquest, and taking its name from Bellingham-in-Tyndale in Northumberland; a Sir Edward Bellingham was Lord Deputy of Ireland in 1548, and O'Bryen was born at Castlebellingham, County Louth, as the son of Sir Alan Bellingham. He took the degree of M.D. at Edinburgh, and with his social advantages rapidly gained practice in Dublin, was a member of "Our Club," or "The Rough and Readys," was a gentle aristocrat, courteous to all, professor of botany and librarian at the College of Surgeons, famous for his method of curing aneurysm by manual compression, and the exhibitor of so many specimens of this lesion before the Pathological Society that it came to be known, among the physicians, as "The Aneurysmal Society." He wrote an excellent work on *Diseases of the Heart*, which contained a very good account of exophthalmic goitre, but he did not live to read the laudatory notices it evoked. Edward Mapother (1835-1908), the only one of the six included in the *Dictionary of National Biography*, taught Alexander Macalister and many others their anatomy, held the chairs of hygiene and of anatomy and physiology, was the first medical officer of health for Dublin, and president of the Statistical Society, evidence of rare versatility, before he removed to London and became a dermatologist. The fourth appointment to St. Vincent's Hospital was that of Robert Cryan, a wealthy and shy personality, and the first "pure physician" in Dublin; another physician, also well endowed with this world's goods, was T. B. Quinlan; a hospitable, scholarly man, of sunny disposition,

¹ Brit. Journ. Ophthalm., March, 1934, p. 129

popular as an examiner, and more sympathetic than many of his colleagues with the candidates. The last of the "Forerunners," William O'Leary, was a surgeon of rare promise, "lost in politics," who became a member of Parliament, and died when little more than 40.

CARE OF MENTALLY AFFLICTED IN LONDON

The discharge of the duties of the London County Council in regard to the mentally afflicted forms the sixth volume, just issued, of the Council's annual report for 1932.¹ How large a population of mentally disordered or mentally deficient persons London has to carry may be judged from two figures. The number of persons for whose accommodation under the Lunacy and Mental Treatment Acts the Council was responsible at the beginning of last year was 21,760. The total number of defectives who had been ascertained at that date as subject to be dealt with, or as those who might become subject to be dealt with, was 15,890. In other words, one person out of 200 in the population of London is an inmate of a mental hospital, and one person out of 274 is a mental defective. The number of mental patients in London county hospitals is rising very slightly. It has been within one thousand of what it now is for the last five years, and even as far back as 1910 it was within 1,800 of the present figure; during the war years, however, there was a decrease of over 1,000 a year. The number of patients discharged as "recovered" since 1895, when the records were first kept, is shown to be 38,194, but 12,126 of these were readmitted to a London mental hospital, 4,202 of them within twelve months of their discharge. At the date of the present report there were 749 alien patients in the London county mental hospitals, of whom more than one-third were of Russian nationality. Another interesting fact to be gleaned from the many tables appearing in the report is with regard to the work of the psychiatric out-patient clinics which were established in May, 1931, under the provisions of the Mental Treatment Act, at three of the general hospitals under the management of the Public Health Committee of the Council. The number of such patients treated during the year under review was 963; of these, 737 were disposed of, so far at any rate as out-patient treatment is concerned, before the year ended, sixty-four were admitted to the wards of Maudsley Hospital, and 162 were still attending at the end of the year. The new cases under the Mental Deficiency Acts with which the Council was called upon to deal during the year numbered 1,719, and it is noteworthy, when so much is said about the criminal tendencies of the mentally defective, that only fifty-nine of these were criminal cases. Of these new cases 1,072 belong to the category of feeble-minded, 531 were imbeciles, and 115 were idiots; one was a moral defective. It is reported that the ascertainment of these cases indicates the further progress made in the exhaustive ascertainment of London cases of mental defect previously in Poor Law care. As already stated, the total number ascertained is 15,890, or 3.65 per 1,000 of the population of the county of London, but the real number of defectives is much

larger, because many cases, chiefly defectives who left the Council's special schools some years ago, have been known to the Council for the last nineteen years, though, for various reasons, they are no longer on the Council's books, even for friendly visitation. One curious point is the undue proportion of defectives in North-East London. During the last three years the proportion of defectives dealt with in North-East London has been 37.3, 35.5, and 31.2 per cent. respectively, as compared with 12.5, 15.3, and 13.4 respectively in the South-West. The disparity is, no doubt, open to a simple explanation, but it illustrates the fallacy of taking a local section of a community and presuming that the results apply in the larger area.

THE PASTEUR INSTITUTE, PARIS

On May 17th the ten members of the executive committee of the Pasteur Institute met and elected by a unanimous vote Dr. Louis Martin as director of the Institute in succession to Roux, and Dr. Gaston Ramon as subdirector in succession to Calmette. The importance attached to these appointments in France was emphasized at the election by the presence of a former President of the Republic, Raymond Poincaré. A "conseil scientifique" has been created with the object of providing an advisory body destined to strengthen the hands of the new chiefs of the Institute in the framing and executing of scientific policies. The members of this new body include Bordet of Brussels, Gabriel Bertrand, A. Borrel, Mesnil, Nicolle, and Yersin. Dr. Martin, who has been subdirector of the Pasteur Institute since 1917, was born in France in 1864, and Dr. Ramon, who was born in France in 1886, has for long been, and still is, director of an annexe to the Institute in Garches, one of the suburbs of Paris.

RESEARCH DEFENCE SOCIETY

At the annual general meeting of the Research Defence Society, to be held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Tuesday, June 5th, at 3 p.m., the chair will be taken by the president, Lord Lamington, supported by Sir Arthur Stanley and Professor A. V. Hill, F.R.S., chairman and vice-chairman respectively of committee. The eighth Stephen Paget Memorial Lecture will be delivered by Professor Joseph Barcroft, F.R.S., on "Experiments on Man." Tea and coffee will be served after the meeting.

We have to announce with much regret the death of Mr. Andrew Fullerton, C.B., C.M.G., lately professor of surgery in Queen's University, Belfast. Professor Fullerton had been President of the Royal College of Surgeons in Ireland, of the Association of Surgeons of Great Britain and Ireland, and of the Ulster Branch of the British Medical Association.

We regret to announce also the death of Dr. David Ogilvy, medical superintendent of the London County Council Mental Hospital at Long Grove, Epsom. A memoir will appear next week.

¹ Annual Report of the London County Council. Vol. vi. P. S. King and Son, Ltd., Westminster. (1s.)

CLEAN WOUNDS, ANCIENT AND MODERN

PROFESSOR GASK'S ORATION

The Annual Oration before the Medical Society of London was delivered on May 14th by Professor George E. Gask, whose subject was "Clean Wounds, Ancient and Modern." It had been intended that Sir Charles Sherrington should be the Orator, but he was prevented by illness from fulfilling his promise.

THE MODERN SURGICAL OUTLOOK IN ANCIENT EGYPT

Professor GASK began by saying that there had been at least two periods in past ages during which the treatment of wounds had been rational and cleanly. One of these was in ancient Egypt, during the time of the building of the Pyramids. About that time there lived a surgeon who wrote the earliest book extant on surgery, or, indeed, on any branch of medicine. So early was it that many of the most common anatomical terms had not been invented. The author had no word, for example, for the convolutions of the brain, and so he likened them to the coils which molten copper made when poured into a mould. But he knew a great deal about anatomy and surgery; he was aware, for example, of the right way to treat a fracture of the upper end of the humerus, that the arm should be abducted, and he came very near to discovering the circulation of the blood. His book was written on a papyrus roll, the beginning and end of which was missing, and so the name of the writer was not known. The papyrus was found about 1860 by an American Egyptologist, Edwin Smith, who took it to America, where it remained untranslated, and at the finder's death was presented to the New York Historical Society, and eventually translated by James Henry Breasted and given to the world in 1930. The book was written as a form of instruction to students, and forty-eight cases were described, with a detailed account of the wound or injury, the diagnosis, prognosis, and treatment.

Four points emerged from the method of treating wounds so described. The wound was to be treated with fresh meat, which was to be bound upon it for one day. Stitching was to be done at once. If the stitching was loose it was to be drawn together by two strips. After the end of the first day the wound was to be treated with grease and honey until it recovered. The use of fresh meat seemed rather a barbarous method, but one remembered that the application of raw beefsteak to a black eye had been a favourite treatment among pugilists for hundreds of years. Again, many a surgeon, bothered at operation by a bleeding point, snipped a piece of muscle and put it over the point, like a postage stamp. Was there possibly some bactericidal principle in fresh meat? Professor Gask said that he had asked Dr. Lawrence Garrod at his hospital to carry out some experiments. He got meat which had been recently killed, and, shredding it, put it in test tubes with some sterile water, and added certain micro-organisms. He found a slight diminution in the tubes containing streptococci and *B. pyocyaneus*, and his conclusion was that raw meat might assist bactericidal action, but for a short period only. The weak point in the experiment was the impossibility of obtaining meat directly it had been killed—the interval was eighteen hours. Altogether he thought that the modern surgeon should raise his hat to the ancient Egyptians. They had at least a cleanly and rational method of treatment, infinitely superior to the methods which were in vogue in a later age.

LIGHT IN DARK AGES

The Orator then spoke in passing of the wisdom and sanity of the Hippocratic school in ancient Greece, but as Greece declined, medicine and learning generally shifted towards Alexandria and Italy, and the Romans borrowed their art, science, and medicine from the Greeks, and in his opinion did not improve it particularly. The great Galen, who worked in Rome about A.D. 150, favoured dogma rather than the old method of observation and deduction. Superstitions of all sorts were entertained, one of the worst being the idea that suppuration was necessary for the healing of a wound. This must have caused an infinite amount of suffering, and one wondered what heights surgery might have reached in those centuries if only the cleanly methods of the Egyptians and the Greeks had persisted.

After the fall of Rome and the plunging of Europe into darkness, the scene reopened at Salerno, the first medical school in modern history. In 1180 Roger wrote his *Practica Chirurgicae*, but he followed the Galenic doctrine and promoted suppuration. But there arose at that time the dim figure of Hugh of Lucca, who left no writings, and what was known of him was through his disciple—some said his son—Theodoric, who wrote a book on surgery in 1266. It was evident that neither the master nor his disciple believed that suppuration was necessary to the healing of wounds, and they made a daring break-away from the tradition and authority which was then paramount and ruling the schools. Afterwards there came Henri de Mondeville, born in Normandy soon after it was lost to the English crown, a daring and original man, who, in 1301, was one of the surgeons of the King of France. He also wrote a book on surgery, and one's admiration for him was all the greater when it was realized that at that time ignorance and superstition were paramount, and authority was quoted as gospel. Henri derided the treatment of wounds by the method of the ancients, as he called it, and, considering that he knew nothing about micro-organisms, it was astonishing what a forward-looking mind he displayed, though he himself said it was dangerous for a surgeon to operate otherwise than was the custom of other surgeons. He illustrated in his method the essentials of modern aseptic treatment, and no dead hand of classical medicine was upon him.

THE LISTERIAN ERA

Professor Gask finally took his audience in imagination to the town of Lille in the middle of the nineteenth century, where, in a small and rather badly furnished chemical laboratory, Pasteur made the illuminating discovery that fermentation and putrefaction were due to living micro-organisms. Pasteur lit a candle which illuminated the whole world; but it was not of Pasteur he wished to speak, but of one phase of Lister. No praise was too great to give Lister. Had he lived in the time of the ancient Egyptians he would have been deified like Imhotep, but his country did its best by sending him to the House of Lords! It seemed almost an act of impiety to question at all Lister's method of thinking and working, yet the Orator had often wondered why Lister chose such an inconvenient method of antiseptics as carbolic when he had the agent heat at hand. Many surgeons could remember the discomfort of having to sterilize their hands in 1 in 20 carbolic, how cracked and sore and bleeding they became, and the relief when heat was substituted for the chemical. Why did Lister adopt carbolic? Lister went to Glasgow in 1860, when he was distressed at the ravages of hospital gangrene. A colleague at Glasgow at that time was Thomas Anderson, regius professor of chemistry, a very intelligent and

travelled man, who had studied under Berzelius in Stockholm and under Liebig in Germany. Professor Gask believed that it was Anderson who told Lister of Pasteur's discovery. In a letter he had received from Dr. Freeland Fergus, a Glasgow student who knew Lister, it was stated that there was no doubt that the first time Lister heard of Pasteur's work was during a walk with Anderson. Lister and Anderson lived near each other in the west of Glasgow; the university was in the east, and it was possible that they often walked together. One could imagine Lister impressed by the discovery that the micro-organisms were the cause of putrefaction, and asking whether it was possible that they were the cause also of suppuration and of hospital gangrene, and what methods he should adopt to kill them. There were three methods available—filtration, heat, chemical disinfectant; and Lister chose the last, probably because Anderson, his adviser and friend, was a chemist, and therefore would be likely to think along chemical lines. It was probable also that Anderson told him of the circumstances that at Stannix, a northern suburb of Carlisle, where a sewage farm had been established, and where there was great outcry owing to the smells, experiments had been carried out to get rid of the smell by using crude carbolic acid. Lister used carbolic acid, and the rest of the story was known to the world.

It would be interesting to speculate what would have happened had Pasteur been the surgeon instead of Lister. He believed that he would have chosen heat as his disinfectant rather than chemicals, for in 1874, when Pasteur addressed a gathering of surgeons, he urged that surgical instruments should be put through a flame, and he also said that were he a surgeon, not only would he use absolutely clean instruments, but he would make use of bandages and sponges which had previously been raised to a considerable heat.

Clifford Allbutt used to tell of an old country veterinary surgeon a hundred years ago who had wonderfully successful cures, but he guarded his secret jealously. On his death-bed, with his dying breath, he whispered to his son, "I hiles my tools."

Neither Pasteur nor Lister had an altogether happy old age. Metchnikoff, in his posthumous work *Trois Fondateurs de la Médecine Moderne*, said of Pasteur that his old age was not happy. In spite of the adoration of his family and the devotion all around him, he fretted himself constantly because his work was unfinished. Lister, too, Professor Gask had been told, was not entirely happy as an old man. He did not see the need for modern operating theatres. The ritual of cleanliness in those theatres he regarded as unnecessary, and he thought the lessons he had taught had been wasted.

"I think it is right," said Professor Gask in conclusion, "that we should pause a minute to take a legitimate pride in these discoveries and the world-wide application which has made modern surgery what it is. Like the mountaineer, we may pause awhile and look back into the mists of the valley out of which we have struggled, and pay our tribute to the good men who have led us. But now that our guides have dropped back into the shadows we have to turn our faces to the steep ascent, because the mountain top lies still far above us. But it is cheering to know that our young men are now, better than ever before, full of enterprise and energy, and they have a task before them which is worthy of them."

Sir D'ARCY POWER proposed a vote of thanks to Professor Gask, which was seconded by Sir CHARLES BALLANCE. The latter said that he thought he knew why his great teacher, Lord Lister, adopted carbolic. He (Sir Charles) entered St. Thomas's at a time when very few operation wounds in the London hospitals healed by first

intention: At St. Thomas's at that time, in what was known as No. 8 block, all the cases which suppurated and got septicaemia and other diseases were transferred from the wards. The operating theatre was dirty, the assistants at the operations were dirty, the surgeon was dirty, the patient was dirty, everything—the whole environment—was filthy, and he believed that was one of the reasons why his great teacher chose carbolic acid, and in his first case, a compound fracture of the leg, he used this crude carbolic, and the patient's wound healed, without fever and without pain.

England and Wales

Prevention of Tuberculosis

The twentieth annual conference of the National Association for the Prevention of Tuberculosis, which will take place in London on June 14th and 15th, will be conducted in the form of an all-round discussion on twenty-one years' experience of the National Tuberculosis Scheme. The time seems ripe for a review of the progress made towards the original objectives and of knowledge gained in various fields, when it is recalled that the national campaign was inaugurated by the report of the Departmental Committee on Tuberculosis in 1912-13. The conference will be held at the County Hall, and its first meeting will open with a welcome extended to it by Lord Snell, chairman of the L.C.C. The conference will then be opened formally by the Minister of Health, after which Viscount Astor, who was chairman of the Departmental Committee on Tuberculosis, will deliver an address. He will be followed by Drs. Salisbury MacNalty and Noel Bardswell and Sir John Robertson. These proceedings will occupy the morning of Thursday, June 14th. In the afternoon the main discussion will be continued, special attention being given to the tuberculosis dispensary. The opening speakers will be Dr. Lissant Cox and Dr. Melville Dunlop. Residential institutions will be considered on the following morning, the first speakers being Drs. James Watt, R. C. Wingfield, J. B. McDougall, and F. R. G. Heat. The discussion will be continued in the afternoon by Dr. H. P. Newsholme and Miss Edith McGaw. The conference is open to all persons interested in tuberculosis on payment of one guinea, either as delegates or as private members. This fee includes the supply of a copy of the report of the proceedings. Members of the association, and one member each appointed by societies affiliated to it, are entitled to attend without payment of the fee. The Minister of Health has now reverted to the former practice of sanctioning the payment of the reasonable expenses incurred in connexion with the attendance of two delegates from county councils or boroughs, of whom one should be either the medical officer of health or the chief clinical tuberculosis officer, or of three delegates when it is considered desirable that both should attend. Individual applications to him for sanction within this limit are no longer necessary.

The St. Mary's Hospitals, Manchester

The report of the maternity department of St. Mary's Hospitals, Manchester, for 1932 has now been issued, and contains the usual classified statistics and clinical details. During that year 3,604 maternity patients were treated by the hospital staff—2,401 in the wards, and 1,203 in their own homes. Of the thirty-three deaths nine were in booked cases and twenty-four in emergency cases, representing mortality rates of 1.37 per cent. for the total—0.62 for the booked cases, 0.69 for the total booked deliveries, and 2.61 of the total emergencies.

There were 204 cases of puerperal morbidity (measured by the B.M.A. standard), a percentage rate of 9.74. Of these cases 119 were booked and eighty-five were admitted as emergencies. In the 262 cases of abortion there were three maternal deaths, due respectively, to septicaemia, diabetes, and cardiac insufficiency—in all instances following therapeutic abortion by Taylor's bag. In the wards were treated 347 cases of contracted pelvis, of which 247 were booked, the maternal mortality percentage rates being 1.6 in emergency cases and the same in booked cases. The foetal mortality percentage figure was 7.7 per cent. There were seven cases of ectopic pregnancy, in one of which rupture had occurred. All were treated by abdominal section, and the patients recovered. Of twenty-two eclamptic patients admitted as emergencies four died, a mortality rate of 18.2 per cent. In each instance death ensued some time after recovery from the eclamptic state, the cause being pulmonary embolism in two, melancholia in one, and pneumonia and empyema in the fourth. The method of treatment has been, since 1928, a combination of the Dublin and Stroganoff lines, a procedure modified since January, 1930, by the addition of intravenous glucose and intramuscular magnesium sulphate injections. Half an hour after the injection of morphine sulphate, coramine, magnesium sulphate, and dextrose, gastric lavage is employed, there being left in the stomach 2 ounces of castor oil and 2 minims of croton oil. Colonic lavage is also performed, under anaesthesia if necessary, 2 ounces of magnesium sulphate being left in the colon. An hour later 30 grains of chloral hydrate are given by the mouth or rectum, subsequently succeeded by morphine sulphate and coramine at intervals. The patient is nursed in a darkened ward, and precautions are taken to ensure absolute quiet. Strict attention is paid to keeping the air passages clear, and oxygen is used if there is cyanosis. The report concludes with short notes on the fatal cases.

The Health of Newcastle's Children

An investigation into the health and nutrition of preschool children in Newcastle-on-Tyne has recently been carried out by Dr. J. C. Spence.¹ Representative sample groups of children were selected from maternity and child welfare clinics, the Salvation Army Sunday School, and the casualty department of a dispensary. The parents were unemployed in a large proportion of cases. For comparison 124 children of better-class families living under good conditions were also investigated. A thorough clinical examination was carried out, and the age, weights, and heights were recorded. A number of x-ray examinations were made to estimate the incidence of rickets, and haemoglobin estimations were carried out to study anaemia. Rather more than half the children were found to be below normal weight and rather less than half below normal height. Only five out of 103 children examined for rickets showed any active disease, but 23 per cent. were anaemic. Assessment of the physical condition from general appearance, stature, and weight revealed that 32.8 per cent. were satisfactory, 20 per cent. unsatisfactory, and the rest average or moderate. Dr. Spence was not, however, satisfied with this rather superficial examination, and when the results of the blood and x-ray examinations were correlated he had to remove five anaemic children from the satisfactory group and three rickety children and twelve anaemic children from the average group. The results indicate that out of 125 children of the city forty-five were found to be unhealthy (36 per cent.) Of these, twenty seemed to owe their ill-health to some preceding illness such as

measles, bronchopneumonia, or sepsis in skin, glands, or ear. In the history of the remaining twenty-five there seemed to be no cause other than malnutrition. An inquiry into housing showed that children could be brought up healthy in bad housing conditions, but that there was a direct relation between overcrowding and ill-health. The average of the whole group was 2.6 persons per room. The medical officer of health of the city, in a note appended to the report, deplors the absence of toddlers from child welfare centres; and points out that the population of the city at this period of life may fail to come under medical supervision. The case mortality rate for measles, he observes, is three times greater in overcrowded areas than in residential districts, and he regards premature attacks of infectious disease as the heritage of the slum child. From an analysis of family budgets in fifteen houses it appears that the amount spent weekly on food during January and February of this year was 4s. 5.8d. A diet based on the Ministry of Health standard would have cost 5s. 1½d. at the current prices. He therefore recommends the improvement of much of the existing housing accommodation, provision of more hospital accommodation for measles, whooping-cough, and convalescence, an extension of the milk issue to children between 1 and 4 years of age, and the education of mothers in the compilation of diets.

Social Hygiene Summer School

The annual summer school of the British Social Hygiene Council will be held at Digswell Park Conference House, Welwyn Garden City, from June 25th to 30th, in conjunction with the vacation school for colonial administrators and missionaries, the programme being specially designed to present the scientific background of social hygiene as a coherent whole. Professor Raymond Firth will deliver a course of five lectures on anthropology, Mr. D. Ward Cutler a course on biology, and Professor A. E. Heath a course on psychology. The inaugural session will be addressed by Professor F. A. E. Crew. This study of fundamental principles will be related to the problems of daily life at home and abroad by means of seminars each afternoon. For the home group the discussions will be centred round the problems relating to family stability and preparation for marriage. Enrolment forms are obtainable from the secretary of the council, Carteret House, Carteret Street, S.W.1. The membership fee is £1 1s., and the boarding fee £2 7s. The annual report of the council for the year ending May 31st, 1933, gives an account of the propaganda conducted throughout the country, and related work in the Dominions and foreign countries. The more medical side of the work was extended, and closer co-operation has been attained with public health authorities. The biological side of the educational activities has also increased considerably, and the various cinematographic films have been in great request. Among the subjects to which special attention was devoted during the year under review were the promoting of regular attendance for treatment of congenitally syphilitic children, the instructing of pupil midwives in venereal diseases, the treatment of women in rural areas, and sterilization in mental diseases.

Diet for Spa Patients

The important question of diet for patients undergoing spa treatment has lately been the subject of conferences between the Spa Subcommittee of the Bath Division of the British Medical Association, the Spa Committee of the Bath Corporation, and the Bath Hotels Association. By the co-operation of all these bodies a scheme has been evolved and recently put into operation whereby visitors requiring special diet will receive a diet card from their physician which they will hand to the

¹ Investigation into the Health and Nutrition of Certain of the Children of Newcastle-upon-Tyne between the Ages of One and Five Years. By J. C. Spence, M.D., F.R.C.P. Newcastle-upon-Tyne: Co-operative Printing Society Ltd.

head waiter or manager of their hotel, who will then see that the doctor's instructions are carried out. Unless some specially expensive article of food is ordered, no additional charge will be made to dieted visitors. The diet charts contain a very full list of articles of food and drink, but before being handed to the patient the doctor will delete all dishes to be avoided. Thus the individual treatment of every patient, to which the Bath Medical Committee attaches so much importance, will be provided. Small cards, informing visitors of the scheme, will be placed on all hotel tables. British spas have been much criticized, especially recently, for their alleged neglect, as compared with Continental resorts, of cure diet, and it is hoped that the scheme Bath has evolved will do much towards meeting this criticism. At the same time, it avoids either unnecessary restrictions, which are often of no real value to the patient, or routine methods imposed regardless of the peculiar conditions of the individual case.

Scotland

Work of a Tuberculosis Colony

The report for 1933 by Dr. J. Johnstone, physician-superintendent of Hairmyres Colony, Lanarkshire, deals with the question of tuberculosis in children. The after-health of two groups of children discharged from the colony in 1923 and 1930 were followed up. It was found that of the first group 83 per cent. of the boys and 94 per cent. of the girls were in good health in 1933, while in the second group 67 per cent. of the boys and 71 per cent. of the girls had recovered and maintained good health. During the past year a change had been made in the type of case admitted to the colony, which now receives patients in all stages of tuberculosis, although a certain number of beds are still reserved for those who are physically fit for systematic training. The number in residence at the beginning and end of the year was 227, while there had been 214 admissions and discharges in the course of the year. Of the 214 patients discharged 93 suffered from pulmonary tuberculosis and 103 from non-pulmonary tuberculosis. Of these tuberculous patients 70 per cent. had come from houses of less than three apartments. An open-air school had been one of the features of the colony, and the education of the children had been satisfactorily maintained. The training departments of the colony included gardens, a forest nursery, a poultry farm, a piggery, and workshops, and in these the patients had been trained by experienced instructors during working hours varying from two to six daily, according to the patients' condition.

Health of Dunfermline

The annual report of Dr. C. Barclay Reekie, medical officer of health for Dunfermline, shows that the number of births registered during 1933 was 678, giving, after correction, a birth rate of 15.6 per 1,000 as against 15.4 in the preceding year. The infantile mortality rate was 46 as compared with an average of 57 for the last five years; this is the lowest rate on record for the burgh. The death rate after correction was 12.8 per 1,000, which is slightly above the average of 12.54 for the last five years. The chief causes of death were heart disease, malignant tumours, apoplexy, bronchitis, pneumonia, and tuberculosis. Two reservoirs of the burgh were unable to maintain the water supply during last summer's drought, but with help from the county reservoir, which had a statutory obligation to augment the burgh supply, there was no scarcity. With regard to infectious diseases,

there were 426 notifications of scarlet fever with three deaths, fifty-eight first notifications of measles with no death as compared with 703 notifications in the previous year, fifty first notifications of whooping-cough with two deaths, and forty-five cases of diphtheria with one death. There had been nine cases of puerperal pyrexia and six of puerperal sepsis with one death, and thirty-three notifications of pulmonary and twenty-one of non-pulmonary tuberculosis. Four health visitors were employed by the burgh who visited notified cases of tuberculosis, and a dispensary was maintained at which 131 persons attended during the year; twenty-two patients were treated in sanatoria. The report draws attention to the maternity service and child welfare scheme. Health visitors made 514 first visits to infants, and 5,518 revisits, while 158 first visits were paid to expectant mothers, of whom a large number were referred to their family doctor for advice. Four child welfare clinics were maintained, where the number of attendances by children under one year was 1,661, and under 5 was 1,290. There were 443 admissions to the maternity home, an increase of eleven over the previous year; since its establishment twelve years before the total number of admissions had been 3,576. There were two maternal deaths in the year, and 344 live births. A scheme is proposed for the extension of the home at a cost of £27,000.

Home Relief for Incurables

At the annual meeting of the Royal Society for Home Relief to Incurables in Edinburgh Bailie Kinloch Anderson, who presided, said that the society had carried on useful work for 128 years, dealing with applications for assistance from all parts of Scotland. In the past year the society had distributed a sum of £5,173 among 465 beneficiaries. The total revenue of the society had amounted to £6,523, and its expenditure to £5,933. Separate from the ordinary funds was the Dunlop Cancer Fund, which was managed by this society for the relief of patients suffering from cancer, and out of this fund a sum of £1,892 had been distributed last year. Lord Murray said that anyone who read the report of this society's work must recognize that it deserved support. He had often in his professional life been engaged in winding up private firms and public companies, but he had never helped to close any charitable institution which had been doing good work. He therefore confidently appealed to those of the public who could afford it to support this society.

According to J. Godínez-Rivera (*Thèse de Paris, 1934, No. 155*) in Mexico typhus is most prevalent in the capital and the towns of the central plateau, where the disease is endemic, with occasional more or less severe epidemics during the winter. As in Europe, the cases are most frequent among the very poor. Typhus is rarely found in the low-lying regions near the coast, the virus apparently not being able to become habituated to tropical temperature. The clothes louse is not found in that country, but there is an abundance of rats and fleas, by which the disease is transmitted. The average annual mortality per 100,000 inhabitants from typhus in Mexico City in recent years has been as follows: 1893-1905, 173.5; 1906-15, 144.5; and 1916-25, 76.6. In 1932 it was only 5.2, but in 1931 it rose to 30.9, owing to an epidemic during the first few months of the year. The fall in the typhus mortality is attributed to the reorganization of the Mexican Health Service which took place in 1920. Good results have followed the prophylactic use of the Zinsser and Ruiz-Castaneda vaccine, which is prepared from the tunica vaginalis of infected rats and administered subcutaneously in increasing doses (1/2, 1, and 1½ c.cm.), with an interval of one week between the doses. The duration of the immunity so conferred has not, however, yet been determined.

Reports of Societies

SURGICAL TREATMENT OF CARCINOMA OF THE COLON

At a meeting of the Subsection of Proctology of the Royal Society of Medicine, on May 16th, with Mr. ERNEST MILES in the chair, a discussion took place on "Surgical Treatment of Carcinoma of the Colon."

Dr. FRED. W. RANKIN, late of the Mayo Clinic, and now of Lexington, Kentucky, opened the discussion, and showed a cinematograph film of his operation. He said that carcinoma of the colon must, in most instances, be considered as a problem for the surgeon. It occurred most frequently in middle-aged individuals, and these were found to benefit enormously by certain preoperative measures. Decompression in the preoperative stage was a fundamental principle. It might be accomplished in a period of from three to six days by medical measures, including mild purgations, or, these failing, by a surgical measure, either ileostomy or caecostomy, the latter being distinctly the procedure of choice. Blood transfusion had proved highly desirable. He was still somewhat uncertain about the utility of the employment, as a preoperative routine, of vaccination. He believed that it increased the individual's resistance against infection and built him up to withstand an operation of which peritonitis, either local or general, was a very usual accompaniment, but he would not abandon any of the other preliminary measures in favour of vaccination simply. Turning to operative procedures, Dr. Rankin said that the most usual technique which had been employed with advantage in the right half of the colon was aseptic ileocolostomy. He favoured in every case where it was possible an end-to-side anastomosis between the terminal ileum and the middle of the transverse colon. The end-to-side method was more advantageous than the lateral. There must be a number of times when it was permissible or even desirable to carry out a one-stage resection for right colonic cancer, and it seemed to him that the principles of the graded operation were required more pointedly in the left colon than in the right. The history of resection of the left half of the colon was marked by attempts to do single-stage operations, with a high mortality accompanying almost every such attempt. He then discussed, first of all, decompressive measures in the left colon, favouring caecostomy (of the Hendon or Gibson type), with colostomy and ileostomy as alternative procedures. The extirpative measures were: obstructive resection (after medical decompression); resection and anastomosis or obstructive resection (after surgical decompression); and exteriorization (Mikulicz) procedures. In his hands mortality from aseptic ileocolostomy had been lower than in any other type of left colon operation. The intensity of the malignant invasion was the most important single factor in prognosis. Of his 187 cases of carcinoma of the right colon 34 per cent. showed glandular involvement, and of his 266 cases of carcinoma of the left colon 31 per cent. showed such involvement. He would have supposed on theoretical grounds that the left colon would show the higher incidence of involvement, but, even so, the right colonic cancers, instead of the higher percentage of glandular involvement, showed a higher percentage of five-year cures. Of the cancers of the rectum 46 per cent. of his 300 cases showed glandular involvement. He did not know why cancer of the rectum should metastasize so much more frequently. There was no reason to believe that it lay dormant and unrecognized for a longer time than cancer higher up. He divided the cases into four grades from the point of view of glandular involvement on resection, and showed how in the right colon the percentage of five-year cures progressively diminished with the successive grades of involvement. In the first grade 63 per cent. showed a five-year cure; in the second grade the figure fell to 51 per cent., and in the third and fourth grades to 31 and 24 per cent.

respectively. The number of five-year cures was as follows:

	No. of Cases	Dead	Cures
Right colon ...	187	81	106
Left colon ...	266	139	127
Rectum ...	300	186	114
Total ...	753	406	347

Dr. Rankin then projected an admirably produced film illustrating every detail of the operation of aseptic end-to-side ileocolostomy; in particular, the use of the Rankin clamp between the lower portion of the ileum and the side of the transverse colon, and the two rows of catgut sutures employed in making the anastomosis. The film also showed the technique of resection, carried out, it a graded operation was decided upon, after an interval of two to four weeks. A right rectus incision was made, the colon being delivered out of the wound, and mobilization accomplished by dividing and resecting the colon with the cautery.

Sir CHARLES GORDON-WATSON said that there were very few surgical fields where judgement and experience played so important a part as in relation to malignant disease of the colon. One surgeon might regard a case as inoperable and suitable only for short-circuit or colostomy, whereas another, perhaps of greater experience, might realize that a wide resection after careful mobilization, and perhaps removal of a portion of the small intestine, though presenting very definite risks, offered a chance of cure and was a wise alternative to the inevitable sentence of death if a radical procedure was not carried out. Many cases which at first appeared too advanced for radical surgery could be attacked successfully after a carefully planned mobilization. It was difficult to assess the value of statistics, because the higher the operability rate for resection the higher the mortality, and vice versa. He thought that a very high operability rate for resection must be the aim, the endeavour being made at the same time to reduce the mortality rate. If one excluded a large number of cases by calling them inoperable, and was content with short-circuits and colostomies and the like, a low mortality rate could, of course, be shown for resections. His own figures showed a five-year survival rate of 33 per cent. after resections; he feared that this did not compare well with Dr. Rankin's cases. In his first series of cases, from 1921 to 1926, the operability rate was 57 per cent. and the mortality rate 20 per cent.; in his second series, from 1927 to 1932, the operability rate went up to 71 per cent. and the mortality rate down to 12 per cent. That was definite evidence that results were improved with increasing experience. At the same time other things had been improved also, including methods of anaesthesia. The enormous value of blood transfusion, both before and after radical procedures, had also to be emphasized. He thought that in radical colon surgery drainage first spelled safety. This was perhaps specially true for those who had their spurs to win in colon surgery. As experience increased, the surgeon could determine when it was justifiable to employ resection either in one or two stages without preliminary drainage, and could also determine when the risks were too great for primary procedures. It was not necessary to emphasize what was now an established surgical principle: that a primary resection was never justifiable in the presence of any form of obstruction; but he wished to point out that he considered that every case of left-sided colon growth did produce some degree of obstruction—in other words, every patient with a growth in the distal colon was potentially obstructed. The toxic state of the bowel behind the growth was a definite menace to aseptic surgery, and this was sometimes lost sight of by the unwary. In pelvic colon surgery it was very seldom possible to do a side-to-side anastomosis, and to remove sufficient bowel and mesentery there the surgeon was reduced to some form of end-to-end anastomosis. In other parts of the colon it was generally possible to do a side-to-side anastomosis, and he believed this was much safer. It was possible to get an opening which was larger

than the natural diameter of the bowel, and therefore there was far less risk of gas distension at the site of the anastomosis. With an end-to-end anastomosis he had had the experience of after-contraction, and that often led to trouble. With regard to marsupialization or exteriorization operations, he wished to make a claim for priority for Paul of Liverpool, as against Mikulicz or any of the other surgeons Dr. Rankin had mentioned. The advantages of the Paul operation were inestimable, and if there was doubt about primary resection nothing better than the Paul operation could be done. By employing a No. 10 catheter some few inches above the anastomosis the risk of gas distension for the first twenty-four hours after the operation was avoided. With regard to methods of immunization of the peritoneum, in 1911, with Dr. Gordon at St. Bartholomew's, he tried to see what could be done to immunize the peritoneum with vaccines, and he gave it up. On the whole question he was quite sure that better results could be obtained than those at present forthcoming, and he thought it possible that results would be better when more was known about the use of the diathermy knife. When the diathermy scalpel was used more frequently there would be an advance in this field of aseptic surgery. He believed also that there were possibilities in the future with regard to both radium and x rays in advanced cases. The time would come when, with the million-volt x rays or the heavy radium "bomb," it would be possible to attack these cases with short exposures combined with surgery. He hazarded the view that when the Section met in ten years' time the mortality rate for the resection of the colon would be down to about 5 per cent.

Mr. J. P. LOCKHART-MUMMERY was pleased to see that Dr. Rankin had made an important point of the decompression of the bowel before doing any radical operation. He agreed also that multiple-stage operations were of the greatest value in many of these cases. There were cases where it was advisable and perfectly feasible to do single-stage operations, but many in which such operations would be very dangerous. One point which had rather struck him was the question of shields around the point of anastomosis. After an anastomosis of the colon one was liable to have the elbow of the small gut caught up against the suture, and it had been his habit to bring down a piece of omentum and stitch around the point of anastomosis, or even to use detached grafts of omentum for that purpose, such detached grafts maintaining their vitality quite well. The most difficult cases were those of carcinoma in the lower end of the pelvic colon. Whereas the cases on the right colon did very well, and many on the left extremely well, the really unsatisfactory cases were those in which the growth was situated at the lower end of the pelvic colon and could not be mobilized so as to bring it properly outside the abdominal wall. With regard to Paul's operation, where the growth was mobilized, he thought it very important that the limbs of the colon should be stitched together so that no mesentery could get between the two ends when the clamp was used later. If the mesentery did get between the two ends it would be caught in the clamp, and trouble of some kind would ensue.

Mr. GORDON-TAYLOR praised the Paul-Mikulicz operation. Many of the colons with which he had to deal were in stout persons, where suturing was very difficult, and where the diagrams seen in the textbooks showing the accurate use of the sutures did not apply. The old Paul operation of mobilization of the bowel and bringing it up to the surface, although it was a retrograde operation, carried with it little or no mortality. He believed that he had done Paul's operation at least forty times, and in the difficult, fat patient, the case which was a bad operation risk, the operation had a distinct value. It was most important to do a caecostomy, and this was done even in the cases where he carried out a Paul-Mikulicz operation. It added another stage to the operation but it made the progress even better. In the majority of cases of carcinoma of the colon, when the abdomen was opened, there was no evidence of sub-hepatic metastases or evidence of peritoneal involvement, and provided there were no secondary manifestations of

the primary growth, and the growth could be mobilized no matter what its extent, surely it was worth while dealing with these cases radically. He had removed part of the abdominal wall with a carcinoma of the colon in at least a dozen cases, and in most of these cases the temerity and enterprise of the surgeon had been well rewarded by a long survival after the original operation.

Mr. LAWRENCE ABEL agreed with what had been said about the value of blood transfusion both before and after operation. It was a procedure which Mr. Miles and he had used for a number of years now, and they thought its use had lowered the mortality, both immediate and remote. He had learned his colon surgery from Mr. Trotter, who advised that when a growth was anastomosed it should, if possible, be extraperitonealized. That was a procedure he had carried out in only a dozen cases; in the last five of those he had used Dr. Rankin's clamp for an immediate anastomosis of the bowel, and he spoke highly of its value. He believed that extraperitonealization of the anastomosed loop was possibly some insurance against the development of peritonitis. Another thing which prevented post-operative distension was continuous intravenous salines after operation. His impression was that patients so treated had a much easier post-operative course. Mr. W. B. GABRIEL was not quite in agreement with some of the previous speakers as to the necessity for a caecostomy. He believed that it was possible, if one did an old-fashioned Paul operation, even though there was a subacute obstruction, to do the operation with complete safety without a caecostomy. This did not apply, of course, if there was complete obstruction.

Dr. RANKIN, in reply, considered that an average operability rate of 63 per cent. as given by Sir Charles Gordon-Watson was a splendid result; it was higher than his own average for the last eight years.

PSYCHOLOGY OF THE MENOPAUSE

At a meeting of the Medical Society of Individual Psychology on May 10th, when the president of the society, Dr. ALFRED ADLER, was present, Dr. MARY BELL FERGUSON read a paper on "Neuroses of the Menopause."

Dr. Ferguson said that the subject of menstruation was important to anyone who dealt with women, whether as patients or as workers. The girl's attitude formed in adolescence would affect her throughout the whole reproductive cycle and change of life. In the past it would be fair to say that many people, including members of our own profession, had regarded the change of life as a time of sickness, which might range from minor ailments such as headaches, to grave mental illness. Until recent years little research had been made into the psychology of menstruation. In 1925 the Medical Women's Federation had instituted an inquiry into menstruation in school-girls. From the report based on this inquiry it was found that disturbance in general health and happiness was definitely related to the presence of pain. In 1926 the Federation appointed a subcommittee "for the purpose of investigating from the clinical aspect phenomena associated with the menopause." From the findings of this report it was apparent that normal menstruation tended to be followed by a normal menopause, and a history of dysmenorrhoea by more marked menopausal symptoms. Mr. Alec Bourne, in his paper "The Chronic Pelvic Woman," had emphasized the mental and human aspects of the problem, so often overlooked by thinking in terms of viscera and not enough in terms of mind and nervous system. These aspects were more important than ever, since women were now working citizens, compelled to earn their own living. As work in many fields before the war was regarded as "men's work," and as the higher education (so-called) of women was largely on boys' lines, was it to be wondered at that women developed a "masculine protest"? Dr. Ferguson then gave details of two cases in which psychotherapy had been effective in enabling the patient to adjust herself to the change of life.

CORRESPONDENCE

The Medical Charities

A Plea for a Great Campaign

SIR,—Despite the efforts of the Central Charities Committee and of devoted workers up and down the country it must be acknowledged that there is still much ignorance regarding the medical charities, and that the funds available are insufficient to meet the clamant needs of the distressed members of the profession and their dependants. In all respects the situation is unsatisfactory, and it is time that the facts should be clearly stated and boldly faced.

1. The charities are able to deal only with the most pressing needs. Maintenance grants and annuities are pitifully meagre, and the educational opportunities of the girls are much inferior in number and value to those offered to the boys.

2. The number of those practising medicine increases steadily year by year, while economic conditions are making it more and more difficult for them to earn a livelihood, and the standard of living is tending to fall. Thus there is good reason to expect that in the future a larger number will find it impossible to make adequate provision against illness and accident and for retirement, and, in consequence, the number of those requiring charitable aid will probably be larger in future years.

3. Even should the contributions to the charities continue to grow it is very improbable that the growth will be rapid enough to suffice to meet the needs of the charities.

In short, the present methods are quite inadequate to meet present needs, and will probably remain so, at any rate for many years. Are we, then, to be content to continue as at present, or have we the courage and determination to make a supreme effort to place the finances of the charities on a sound basis? Action on a large scale is necessary—much more ambitious and far-reaching than anything previously attempted. My proposal is that a great campaign be organized, culminating in a special charities week. For this purpose a combination of forces is essential, and the help of the Royal Medical Benevolent Fund, Epsom College, the Royal Medical Benevolent Fund Guild, the Medical Women's Federation, and other representative bodies should be enlisted, and these, with the united forces of the British Medical Association, working through the Council, the Representative Body, the Divisions and Branches, and Panel Committees, should take part in this great effort.

The aims of the campaign should be: (1) to spread knowledge of, and create interest in, the medical charities; (2) to increase the number of regular subscribers to the charities; and (3) to raise a large capital sum the interest of which, after investment, would be available for special purposes—for example, the education of girls, more annuities, etc. I suggest a capital sum of at least £25,000. The methods of the campaign should include: (1) a personal canvass of every member of the profession; (2) securing the invaluable help of the wives and families of members of the profession and of other sympathizers; and (3) the use during the special week of every possible legitimate means of raising funds—for example, dances, bridge drives, concerts, sales of work, "bring and buy" sales, etc. Further, the services of the medical press should be enlisted to bring the needs of the charities before their readers and spur them on in all their efforts on behalf of this great cause.

I write this letter in the hope that this suggestion may stimulate interest and provoke discussion.—I am, etc.,

ARNOLD GREGORY,

Manchester, May 14th.

Charities Secretary, Manchester
Division, B.M.A.

Pathogenesis of Tumours

SIR,—Tumours, malignant and non-malignant alike, are composed of cells that imitate, more or less successfully, those from which they grow. There are therefore as many kinds of tumours as there are different kinds of tissues, and only a general classification is possible. There is, for example, no single form of cancer, but as many varieties, differing from each other clinically and anatomically, as there are varieties of epithelium; and the same thing is true of sarcoma and of non-malignant growths.

Tumours are not mere outgrowths from the tissues. They are more than that. They are the offspring of the tissues, with a life of their own, distinct from that of the structures from which they grow. It is true they depend upon these structures for everything that makes life possible; and that of necessity they die when their support dies; but they will continue to grow and thrive even though the parent organism starves to death. They are, in short, the offspring of the tissues, living upon them as parasites, and belong not to the same but to the next generation. Growth and reproduction are essential features of life. They are the heritage of every living cell, and if conditions are favourable they never cease to exert their driving force so long as life continues.

Every organism is composed of a number of cells which almost at once separate into two main groups: one for the preservation of the race, the other for the maintenance of the individual. The former are concerned solely with reproduction. The latter have to undertake every kind of work that is necessary for existence, and as they never have anything to do with reproduction they gradually lose the power. The tumours that grow from the former are capable of reproducing an almost perfect individual. As a rule these growths begin in the earliest moments of existence, and therefore can only be due to their innate reproductive power acting with exceptional energy. Those, on the other hand, that are developed from the maintenance group of cells present much greater variety. Just at first these cells, like the others with which they were originally equal, can throw off a bud which will grow into a more or less perfect individual; but growths of this kind are very rare in man, though they occur not unfrequently in some of the lower animals.

The vast majority of tumours spring from tissues developed out of these cells, but only from those that are not so highly specialized as to have lost the power of reproduction. Cells of the nervous system, for example, have completely lost it, and never form tumours. The cells of which these tumours are composed may attain the same standard of development as the original, but they never pass beyond it. There is never any organization, order, or arrangement. The tumours simply consist of masses of cells, all more or less of the same pattern. Development has come to an end.

The character of these tumours depends upon the stage the parent cell had reached at the moment that development was arrested. Development is the product of inheritance. Growth is part of life, controlled and guided by development. Arrest of development, leaving growth free from control, is well known in connexion with many organs of the body, and if in the case of the cells from which the tissues are derived development is stopped at the beginning while they are still in the actively growing cellular stage, there is nothing left to control growth but the supply of food.

The development of the individual is an epitome of the evolution of the race. The young cell is the victim of heredity. It is compelled by it to undertake the work of its forefathers and give up reproduction. If it were not for all that it has inherited it would be free to live on the same evolutionary level as a unicellular organism; and if it is freed from its inheritance while it is still so

young it will multiply in just the same way. If the original was still in possession of all its embryonic powers its descendants will possess them too. They will be able to move about, partly by their own power, partly carried by the lymph stream, and will spread in all directions, forming colonies wherever they settle. The result is a widely spreading tumour composed of nothing but young cells, usually of very rapid growth, carcinoma or sarcoma, according to the layer of the blastoderm from which the parent came.

If, on the other hand, before development is arrested the parent cell has become so far specialized as to have lost much of its original power of reproduction, without losing the whole, and has attained the standard of a well-formed tissue, the daughter cells will multiply more slowly and will approach the same standard, though they will never rise above it, for development is stopped. Then, instead of invading surrounding structures, they simply push them on one side, and the surrounding structures treat them as a foreign body and throw a kind of capsule around them.

Arrest of development may probably be caused by many different agencies, but there is very little definite known about them. X rays appear to have the power, for they have been shown experimentally to be able to influence the development of the embryo; and the slowness with which the injuries they sometimes inflict are repaired suggests that their action has affected the growth and development of the tissues around. There is no evidence that the numerous exceedingly diverse agencies that lead to cancer can cause actual arrest of development, but because of the length of time they all, without exception, require before there is any effect it seems probable that they are not so much the direct cause as intermediate agents that induce some necessary preliminary change in the affected tissues, perhaps in the nature of developmental arrest. Moreover, it is not unknown for the first evidence of cancer to appear some considerable time after the reputed cause has ceased to act, and it is not without significance that in many cases crops of innocent tumours, papillomata and the like, caused by the same agent, precede the outbreak of cancer by many months.—I am, etc.,

C. MANSELL MORTLIN, D.M., F.R.C.S.

Consulting Surgeon to the
London Hospital.
London, W., May 15th.

The Cancer Problem

SIR,—I recognize that my statement about cancer (May 5th, p. 503) should have been accompanied with particulars in justification. The question of the increase of cancer was thoroughly sifted a few years ago in Germany. The analysis showed that where an increase is observed some definite condition can generally be detected in explanation; and that if all such instances of increase are excluded from the statistics no general increase is indicated by the figures. In other words, there exists no general condition tending to increase cancer, and no general rise in susceptibility to cancer. The question of an increase of cancer, therefore, turns entirely on special cases and their valuation as significant or insignificant. Take the increase of cases of cancer of the lungs, rightly or wrongly attributed to the introduction of petrol. The following figures are from Hadfield and Garrod's *Recent Advances in Pathology*, and relate to post-mortem room statistics:

All Necropsies:

An increase in cancer from 0.51 to 2.05 per cent. between 1907 and 1925 (London Hospital); 0.24 per cent. before 1885, 2.57 per cent. between 1911 and 1925 (Manchester).

Cancer Cases Only:

An increase from 0.54 to 7.2 per cent. between 1886 and 1926 (Vienna); from 3.3 to 7.5 per cent. between 1903 and 1906 (Berlin).

Similar results are reported from St. Bartholomew's Hospital, and from Basel, Leipzig, Hamburg, Zurich, and certain Russian and American authors. I have no statistics at hand relating to the increase connected with the use of creosote, aniline, tar, mineral oil, arsenic, irradiation, and other causes depending on social conditions and habits which will readily occur to every pathologist. Whether the increase is preventable or not is beside the question. That modern civilization is developing an uncanny faculty of increasing cancer appears to me hardly to admit of doubt. Some people would extend its responsibility to the past.—I am, etc.,

May 19th.

THE REVIEWER.

Heredity and Hyperpiesia

SIR.—Dr. Herbert Brown is surely mistaken when he writes in the current number of the *Journal* that "few, if any, writers have drawn special attention to the factor of heredity" in the aetiology of hyperpiesia. I thought it was common knowledge. In a monograph on *Diseases of the Kidney* (Ball and Evans), published in 1932 (p. 266), the present-day opinion is stated as follows: "It is common to obtain a family history of cerebral haemorrhage or death from myocardial disease in those who suffer from hyperpiesia. Heredity is the one established factor in the aetiology of the disease." A typical case history is then given in illustration. When so much in regard to hyperpiesia is a matter of doubt it seems worth while emphasizing a fact about which there is no doubt.—I am, etc.,

London, N.W.1, May 21st.

GEOFFREY EVANS.

Cardiac Massage

SIR.—Surely the time has come when we should examine our consciences on the subject of cardiac massage. How often do we perform it with the real hope of restoring life—life in its true sense, not merely temporary reanimation? Again, how often do we perform it because it is expected of us? Unfortunately the subject has received unenviable publicity in the lay press, largely through the medium of the coroners' court. This in itself is significant: the cases are ultimately the subject of a coroner's inquiry.

In the some half-dozen cases which have occurred in this hospital during the last nine years I have observed a uniformity in the sequence of events. The patient collapses, and the ordinary routine of resuscitation is applied; finally, cardiac massage is attempted, the heart beat is re-established, and the patient returns to the ward, but not to consciousness. During the next twelve to twenty-four hours he passes from one clonic fit to the next, with a steadily rising temperature, and finally dies in high pyrexia. This cannot be regarded as restoration to life. The brain, and more particularly the mid-brain, does not survive the lack of its circulation for any considerable period, and yet the impression is created in some quarters that the greater the time lapse the greater the miracle of restoration. The condition of the "restored" is comparable to that of the physiologist's decerebrate frog.

It would seem that there is only hope when cardiac massage is applied immediately, and, generally speaking, this is only possible when the abdomen is already opened

for the purposes of the operation. To employ cardiac massage as a last resource is worse than useless; it is a mutilation of the deceased.—I am, etc.,

The Queen's Hospital, Birmingham,
May 17th.

L. T. CLARKE.

Strangulated Hernia

SIR.—Mr. Huckell, in his letter to the *Journal* of May 19th, referring to my paper, states: "When called to a case which he diagnoses as an early strangulated hernia, there is only one piece of advice that should be given to a general practitioner: raise the foot of the bed."

It would appear that Mr. Huckell wishes to debar the general practitioner from ever attempting taxis. This is far too sweeping a statement, and cannot go unchallenged. I am strongly opposed to taxis in cases which have not been seen early, but in cases seen by the general practitioner within the first few hours I can see no objection to gentle taxis. There are two reasons why a strangulated hernia becomes more difficult to reduce as time progresses: first, the increasing oedema and distension of the bowel due to venous stasis; and secondly, the contraction of the abdominal muscles. In the early stages these are not marked, and it is in this period in which reduction by taxis is most likely to be effective. The only person likely to see the patient at this stage is the general practitioner, and a golden opportunity may be missed if he is debarred from attempting taxis. Mr. Huckell also states: "We have all met with cases where a patch of bowel was more or less necrotic in two or three hours." These, I think, are the very cases in which early taxis by the general practitioner might have avoided such a catastrophe.

The question of taxis is one which will never be decided without the co-operation of general practitioners. Surgeons have no knowledge of the percentage of cases reduced by this method by general practitioners, and until such figures are forthcoming together with their views on the matter, the subject will always be a vexed one. It is a pity that general practitioners have not more opportunities of discussing this and similar subjects with their surgical colleagues; I have no doubt that it would be a great benefit to the profession at large.

Mr. Huckell asks me why I do not operate on non-strangulated hernia patients under the age of 45 with local anaesthesia. First, I find that young subjects are apt to be more frightened, nervous, and restless than the others, and that narcotics do not appear to act so thoroughly (nothing predisposes to bad surgery more than a restless and moaning patient); and secondly, because I prefer general anaesthesia as a rule unless there is some contraindication. Finally, Mr. Huckell refers to the danger of infiltrating the canal in cases of strangulation. I can only say that I have not so far experienced any complications. If the needle is inserted beneath the hernial sac at the top of the scrotum, and slowly passed up the canal, it is quite easy to tell when it impinges on the sac, and the direction can be altered. This method has the advantage of enabling the operation to be carried out without the delay of reinfiltration, plus the time necessary for it to take effect, when the tissues are already exposed and the patient more prone to shock.

I regret that I have had no experience of the injection method of treatment as practised by Mr. Delisle Gray, and, consequently, I am not in a position to criticize it. It would be interesting to have his figures up to date regarding the percentage of cases in which he can carry out this line of treatment, together with his percentages of cures and failures.—I am, etc.,

R. WOOD POWER.

Hertford, May 19th.

Maternal Mortality

SIR.—To Dr. Devlin's valuable suggestions for lowering maternal mortality (May 19th, p. 922) may I add a suggestion which I first made many years ago? Let each death from puerperal fever be followed by a coroner's inquest: Let the jury be two or three obstetric physicians of established reputation—physicians whose duty it would be to inquire into every detail of the conduct of the case. Let the results be published in the Press.—I am, etc.,

Kensington, W., May 20th.

J. McNAMARA, M.D.

Criticism of Ante-natal Work

SIR.—All general practitioners who practise midwifery should return thanks to Dr. Wrigley for his excellent criticism of ante-natal work in the *Journal* of May 19th. It is the best thing I have read for a long time; it should be printed in letters of gold.

Few of us will not agree with the concluding paragraph of his article, where he says:

"Those who practise the art of midwifery have seen that ante-natal supervision as it is being done to-day cannot accomplish all, nor yet half, what has been claimed for it. The pendulum has swung too far. The search for the abnormal has masked the preservation of the normal, and the pregnant woman receives a mixed blessing."

Very true. The propaganda issued by public health authorities, the sensational newspaper articles that have constantly appeared, demanding a stop to be put to puerperal morbidity and mortality, the blame of so much of it thrust upon the attending doctors and nurses for want of care, cleanliness, and knowledge, how it could all be stamped out if only these women had ante-natal care at public clinics, and could be attended by specially trained doctors—all this has had the undoubted effect of frightening both the pregnant woman and her friends, and the doctors as well.

I have practised midwifery for over forty years, and the only two deaths I have seen from puerperal sepsis occurred in healthy young women who never even had a vaginal examination, and whose full-time, healthy babies were born normally, without any assistance. Midwifery never had any terrors for me until the authorities and the public press "got going," but since I have read so much of the dangers of midwifery, the cases that ought to have Caesarean section or induction done, I am almost frightened to go near a case. I sometimes wish that every confinement in the country could be attended from start to finish by none other than the expert.

I would be immensely interested to see if puerperal morbidity and mortality would then be abolished. Were it so, the world would then know where the blame had lain for so long. Anyway, it is quite clear ante-natal care is doing little or nothing to abolish it.—I am, etc.,

Felton, Northumberland, May 20th

ROBERT A. WELSH.

Vaccine for Acute Gonorrhoea

SIR.—The opening paragraph of Dr. C. E. Jenkins's letter of May 12th (p. 871) indicates that he has missed the chief points of our article. He writes "with some satisfaction at the thought that a useful method of treatment is being more widely employed." In the conclusion of our paper we state that

"the results are disappointing," and again that "whilst admitting the danger of drawing conclusions from such a small number of cases, it would appear that specific gonococcal antibodies . . . have little effect in eradicating the infection from its localized sites in the genital system. This would account for the disappointing results from the use of gonococcal

vaccines, prepared in all manner of ways, in the routine treatment of gonorrhoea."

Although from our results specific gonococcal antibodies, as produced by vaccine, tend to prevent the occurrence of severe acute complications and to shorten the acute stage of the disease, they seem to have little effect in bringing about the destruction of gonococci in their foci in the genitalia. We have yet to be convinced that vaccines deal effectively with the genital focus of infection in gonorrhoea. Although we were able to raise the antibody content of the blood considerably by means of this vaccine in 83 per cent. of the acute cases treated, the results were disappointing. It would appear that, whilst the production of gonococcal antibodies in the blood is usually a simple matter, the eradication of the disease remains as difficult as ever, and therefore we cannot view the results with satisfaction. Subsequent work which we have been doing in the vaccine treatment of patients suffering from chronic gonorrhoea leads us to the same conclusion. We are aware that the use of alkali and acid (and of many other chemicals) in the elaboration of gonococcal vaccines is not novel, as it was recommended by Thomson, but it may be pointed out that in the preparation of the vaccine described by us we keep within the limits of pH 8.8 and pH 5. By this method much of the antigenic moiety of the organism is preserved, whilst its toxic effect is greatly reduced.

We entirely agree with Dr. Jenkins's suggestion that instrumentation in acute gonorrhoea is barbarous, but why accuse us of this procedure?

Opinions on standards of cure vary enormously, but as Dr. Jenkins considers our criteria of cure insufficiently stringent, this should serve to strengthen in his own mind, even more than it did in ours, the conclusion that the presence of antibody in the blood stream does not eradicate the gonococcus.—We are, etc.,

L.C.C. (Whitechapel) Clinic, E.1.
May 14th.

I. N. ORPWOOD PRICE.
AMEROSE J. KING.

Chemical Factors in Germinal Impairment

SIR,—I was pleased to see in the *Journal* of May 5th, under the heading "Heredity and Mental Deficiency," a letter by Dr. A. C. Hill drawing attention to dangerous possibilities of chemical poisons used for the purpose of contraception. It seems to be generally recognized that the ovum or embryo is susceptible to damage from chemical substances in the maternal environment; but the possibility of damage and impairment of the sperm cell by direct contact with a protoplasmic poison, and of consequent germinal impairment, appears to have received inadequate consideration. At a Central Association for Mental Welfare conference, held in London in 1924, interesting facts were reported as to the influence, both of heredity and environment, in producing degenerative changes in the offspring; the following passage, taken from the printed synopsis of a paper read by Dr. Tredgold on that occasion, is of relevant interest:

"The introduction into healthy plasma of plasma whose developmental potentiality is impaired may have an injurious effect upon posterity extending over many generations."

At the same conference MacBride, dealing with the influence of environment in producing inheritable degenerative changes, referred to the experimental production of sports and monstrosities in certain embryos, quoting Fournier's researches showing, *inter alia*, the production of germinal modifications in response to chemical stimulus:

¹ Tredgold, A. F.: "The Influence of Heredity and Environment in Causing Mental Deficiency." Synopsis of paper read at Central Association for Mental Welfare Conference, May, 1924.

² MacBride, E. W.: "The Influence of Environment in Producing Inheritable Degenerative Changes." Central Association for Mental Welfare Conference, May, 1924.

No doubt much knowledge has been acquired since the time of these researches, though I am not concerned here, in any case, with the precise deductions to be made from Fournier's experiments in relation to physical or mental inheritance. What I do desire to point out is that plenty of information already exists as to the reaction of living cells to, and their possible impairment by, chemical substances—for example, lead. If the chemical substance used as a contraceptive fails to effect completely its lethal object, the possibility of damage sufficient to cause impairment, though insufficient to cause the death of the sperm cell, has to be faced.

I agree with all Dr. Hill's remarks on this subject, and submit that, in the light of existing knowledge, all protoplasmic poisons used for the purpose of contraception—quinine included—must be regarded as potential causes of a germinal impairment that may result in physical or mental defect. However infrequently this factor may operate, the use of chemical substances for the purpose of contraception should be condemned altogether, and the State should take effective steps to terminate the sale of literature, issued attractively under the guise of authority, advocating the adoption of methods that are in fact peculiarly and subtly dangerous and, in my opinion, are in the interests of neither the individual nor the community.—I am, etc.,

Wolverhampton, May 14th.

W. SPENCER BADGER.

Poisoning by Ground Ivy

SIR,—To country and suburban practitioners, so many of whose patients spend their leisure time pottering about their gardens, the subject-matter of Dr. Aitchison Robertson's letter in your issue of May 12th (p. 872) is of considerable interest.

It is not, however, quite clear to which plant reference is made. Ground ivy and common ivy are of course distinct genera, and are classified in quite separate natural orders; ground ivy (*Nepeta glechoma*), a dingy, shade-loving creeper, is a close relative of the more showy catmint (*N. cataria*), and it would be unfortunate if its misdeeds were to be attributed to the common ivy (*Hedera helix*), which adorns so many waste places. Ivy already suffers in reputation in the minds of some, who confuse it with poison ivy (*Rhus toxicodendron*), an entirely separate genus.

The idiosyncrasy by which certain people are affected by certain plants is not constant, and it does not appear that immunity is conferred by repeated small doses of the irritant, but rather the reverse. For example, one may for years handle with impunity *Primula obconica* and then find for some unknown reason that the slightest contact with the plant produces intolerable itching. A market gardener, after years of work, found one summer that he could not handle his tomato plants without setting up eczema of his hands.—I am, etc.,

Bishopbriggs, May 16th.

JAMES B. MILLER.

Occupational Dermatitis

SIR,—Dr. P. B. Mumford, in the issue of the *Journal* of May 12th (p. 860), has so carefully and ably given expression to the major medico-legal difficulties arising in cases of occupational dermatitis that any comments which I can add may well be superfluous. I should, however, welcome an opportunity to state in your columns how warmly I endorse his remarks with regard to the power which is at present given under the Workmen's Compensation Act to the medical referees.

The diagnosis of occupational dermatitis is often one of extreme difficulty, and it is greatly to the credit of

both the certifying surgeons and the medical referees that, in the majority of cases, dermatologists can readily endorse their findings. It is the exceptional cases in which difficulties arise, but these cases are of importance because they result either in injustice to the workmen or in very considerable financial loss to the employers or their insurance companies. It will, I believe, be readily admitted that the present system whereby the ultimate responsibility for adjudication devolves upon a referee who usually has no special training in dermatology is unsatisfactory. Dr. Mumford's suggestion of a "dermatologist panel" is undoubtedly the proper solution of the difficulty, but, if the present system is to continue whereby a referee, without reference to other medical men, can adjudicate in cases of occupational dermatitis, then arrangements should be made for all cases of dermatitis to be dealt with by a special referee who has had wide experience in dermatology and who will be concerned only with dermatological cases.

If this suggestion is not acceptable to the authorities, then the law should be amended so that, in cases where a referee's certificate is disputed, the disputants may have the right to approach the referee, and in asking him to reconsider his decision request him to hear medical evidence in support of their case. The obvious objection to this last suggestion is that the wealthy insurance companies will be able to command a plethora of dermatological opinion which the workman, having no financial resources, cannot combat. In actual practice, however, that objection cannot be sustained. The Workmen's Compensation Act, as at present administered, has, very rightly, a bias in favour of the workman, and no referee will be easily hoodwinked, even if a dermatologist can be found who will knowingly become a participant in an act of injustice.—I am, etc.,

Liverpool, May 14th.

R. M. B. MACKENNA.

Measles Serum for Ulcerative Colitis

SIR.—The following case is, I think, of sufficient interest and importance to justify its being reported.

An otherwise healthy young woman, aged 21, was recently under my care suffering from her third attack (within three years) of ulcerative colitis, which had been going on uninterruptedly for just over three months. Her previous attacks were less severe, and lasted approximately one month and two months respectively.

On expectant treatment she was doing badly, passing blood and mucus about six times per day, and an ileostomy was contemplated. As her brother, who had been in contact with her, developed a typical attack of measles, it was deemed advisable to immunize her, as she had not previously had this disease. She was accordingly given 12 c.cm. of convalescent measles serum intramuscularly into the thigh. Within forty-eight hours there was marked improvement in her condition, both local and general, and within a week the blood and mucus, which had before this time increased sufficiently to cause some concern, entirely disappeared and her motions became perfectly normal.

This I cannot attribute entirely to coincidence, when one knows of other cases of ulcerative colitis that have cleared up equally dramatically after a blood transfusion. I would therefore ask those who have an opportunity of seeing and treating a number of cases of this very distressing, though fortunately rare, disease, to try this method of treatment and publish their results.

It is my belief that ordinary human serum, not necessarily from a convalescent measles patient, would act equally well, as it is probable that this disease is due to some, as yet unknown, blood deficiency.

I should be grateful to have your readers' views on this interesting case.—I am, etc.,

London, W.5, May 14th.

L. CARLYLE LYON, M.B.

Obituary

O. J. KAUFFMANN, M.D., F.R.C.P.

*Emeritus Professor of Medicine, University of Birmingham;
Consulting Physician, Queen's Hospital, Birmingham*

Professor Otto Jackson Kauffmann of Birmingham died on May 15th from cerebral thrombosis at the age of 71. Many who read this notice will be surprised at his age, for right up to a very few days before his death he exhibited all the physical and mental attributes of a very much younger man.

Educated at Owens College, Manchester, and St. Mary's Hospital, London, Kauffmann registered as M.R.C.S. Eng. and L.R.C.P. Lond. in 1885, and qualified for the gold medal of the London M.D. in 1888. He was admitted to the Fellowship of the Royal College of Physicians in 1910. His professional activities were devoted to Birmingham, where, in addition to a large consulting practice, he was associated for over forty years with the Queen's Hospital, Mason University College, and later the University. After filling resident posts at Owens College, Manchester, the Brompton Hospital, London, and the Seamen's Hospital, Greenwich, he joined the visiting staff of Queen's Hospital in 1892 as physician for out-patients, and in the following year was appointed professor of pathology at Mason University College. In 1897 he became honorary physician to the hospital, and after twenty-six years' service in that capacity was elected consulting physician. While with most men such an appointment means retirement from the hospital it was not so with Kauffmann, for up to a few days before his death he visited the wards almost daily, discussing puzzling cases, and always ready to place his wide experience at the disposal of his younger colleagues.

At the University of Birmingham Kauffmann will best be remembered as professor of medicine from 1913 to 1926, although he had previously held the chair of pathology at Mason University College from 1893 to 1897. For two years (1922 to 1924) he was chairman of the Clinical Board, and throughout his long association with the Medical School he took a prominent part in its development. His work in this respect was recognized by his appointment as *emeritus professor of medicine* on his retirement from the active duties of the chair. Although Kauffmann's interest in medicine was widespread, he always had a leaning towards neurological problems, and in 1900 delivered the Ingleby Lecture on "The Common Neuroses of Children."

Professor Kauffmann was elected by his colleagues in 1921 as president of the Association of Physicians, which met that year in Birmingham. During the war he had been attached as lieutenant-colonel R.A.M.C. to the 1st Southern General Hospital, where he worked indefatigably, and at the same time carried out his teaching and other duties at the University and the Queen's Hospital. A member of the B.M.A. since 1892, he was vice-president of the Section of Pathology in 1899, vice-president of the Section of Paediatrics in 1906 at Toronto, and president of the Section of Diseases of Children in 1911.

Professor Kauffmann was a most gifted and cultured man. Philosophy, literature, and music, no less than medicine, had for him an attraction which is seldom found to the same degree in a member of our profession. It is a matter of regret that one so eminently fitted both by education and by great critical acumen for writing on medical subjects should have left so little behind. He was a good violinist, a keen yachtsman, and a fearless rider to hounds. He led a comparatively quiet and methodical life, rose early, and as far as he could avoided social functions which threatened to keep him up to a late hour. He married rather late in life, and his married life was wonderfully serene and happy. He leaves a widow, two sons, and a daughter.

FRANK KIDD, M.Ch., F.R.C.S.

Late Surgeon to the London Hospital

We regret to announce the death of Mr. Frank Kidd, the well-known surgeon and urological specialist, which occurred at his country house, Bransbury Mill, Barton Stacey, on May 12th.

Francis Seymour Kidd was a son of the late Dr. Joseph Kidd, and was born at Charlton, Kent, on March 30th, 1878. Educated at Winchester in 1896-6, and later at Trinity College, Cambridge, he went to the London Hospital, and was awarded the surgical scholarship there in 1902. He qualified in 1903, taking in that year both the diplomas of M.R.C.S., L.R.C.P. and the Cambridge B.Ch. degree. After doing several house appointments at the London Hospital he became demonstrator of anatomy in the medical college, and took the F.R.C.S. in 1905. The appointment of surgical registrar followed in 1906, and afterwards he did post-graduate work in Berlin and elsewhere. The months he passed in Berlin made a great impression on him, and he was always a great admirer of German urology and urologists. He felt that there was no better start for a urological career than six months or a year spent at some German clinic. One of the last of many foreign professional distinctions he received, and one that he prized very highly, was his election as a corresponding member of the Berliner Urologische Gesellschaft in 1931.

Frank Kidd became assistant surgeon to the London Hospital in 1910, and in the same year published his first important work—*Urinary Surgery*. This book is a review of the state of urinary surgery at that time, and as such can still be read with pleasure and profit. It was the first of a long series of writings, and differs from the others in that it was of necessity completed before the author had much operative experience, whereas all his later works were essentially practical and the result of his own ripe experience. In his introduction to the book he pointed out that the day for treating symptoms was passing away, and that with the improvement in the technique of ureteric catheterization, the introduction of x rays, the development of bacteriology, and the improvements in the surgery of the prostate, it was now possible to discover the cause of most urinary symptoms, and to treat the cause, when found, with safety.

He was a prolific author, and many of his writings were on the subject of venereal disease. He started a genito-urinary department at the London Hospital, which included a section for the treatment of venereal disease. At first only men were treated, but later the department was enlarged to admit women and children. It had always been his firm conviction—and, now, one that almost everybody would admit—that no urologist could hope to be successful in the fullest sense, or even competent, unless he was fully acquainted with venereal disease and diseases of the urethra. His second book, *Common Diseases of the Male Urethra*, published in 1917, is perhaps his best-known work, and it certainly showed Kidd at his best as a clinician and teacher. It is a simple exposition of the lines on which urethritis in the male can be treated successfully, and it must have guided many beginners in the treatment of gonorrhoea, and prevented them from doing harm. Though the treatment advocated by him in 1917 may not nowadays be universal, it would be difficult to deny that perhaps 80 per cent. of all cases would be cured by the methods laid down in his book, and it was not Kidd's intention to do more than that in a volume written primarily for the inexperienced. He had no illusions about the difficulties of treatment in certain cases, but he deliberately made little or no attempt to deal with these in his book. In 1920 he published *Common Infections of the Female Cervix and Urethra*, in collaboration with Dr. A. Malcolm

Simpson, and in 1924 his last work, *Common Infections of the Kidneys*—both of them very popular books. In addition to his major works he wrote frequently for the journals, and no year passed without some communication from his pen. In these contributions there was usually something new, and the subjects he chose showed the diversity of his interests in his own branch of surgery, while the way in which he treated them illustrated the fact that he was always learning something new from his increasing experience. It is curious that he hardly wrote anything at all about the prostate and prostatic surgery, since he was particularly skilled in this branch of urology, and in his later years, after a trial of many different methods, had gone back to the simplest form of enucleation through a small incision without inspection of the cavity after enucleation.

Kidd had been elected surgeon to the London Hospital in 1917, but owing to ill-health he was compelled to resign in 1920. In addition to this appointment he was consulting surgeon to St. Paul's Hospital, and in 1921 he was made M.Ch.Camb. He was particularly skilful in using the special instruments required in his branch of surgery with the minimum of pain and discomfort to the patient. He was also a clever and dextrous surgeon, who was never disturbed or unnerved when things went badly. The only thing that upset his habitual calm during an operation was an unnecessary question or conversation between onlookers. In the immediate post-operative period he probably worried more than most surgeons, since it was his nature to visualize all the complications and disasters of any operation he had performed, even though he must have known that he had done it so skilfully that the chance of these was reduced to a minimum. There is another side to his character that has little to do with his surgical skill—this is perhaps not so widely known—and it is not surprising that his patients accorded to him a devotion not often given even to the most successful surgeon. He was a good listener, and always sympathetic with his patients, and had much of the good general practitioner's skill in curing them, even when there was no organic lesion. In the course of his practice as a urologist and specialist in venereal diseases he saw many patients with functional symptoms, and he probably has more grateful patients among this class even than among those who were cured by his surgical skill.

He was president of the Urological Section of the Royal Society of Medicine in 1927 and 1928, and was widely known in America and on the Continent, as his many academic honours show. He was a member of the International Society of Urology, a member of the Association Française d'Urologie, a corresponding member of the American Association of Genito-urinary Surgeons, an honorary member of the American Urological Association, a corresponding member of the Berliner Urologische Gesellschaft (as already mentioned), and a corresponding academician of the Royal Medical Academy of Rome.

At Winchester he was in the association football eleven, and later played hockey for the South and was reserve for England. His chief recreations were shooting and fishing. He is survived by his widow and three sons.

MEREDITH YOUNG, M.D., D.P.H.

Dr. Meredith Young, who died on May 7th, will be remembered as Cheshire's second medical officer of health. The first was Dr. Vacher, who did the spade work. Upon Meredith Young, when he "took over," fell the task of improving, modifying, stabilizing, and amplifying an already going concern. His temperament was fitted for the work, a heritage perhaps from a mixed Huguenot and Highland ancestry. He was gentle, subtle, and willing—when he might—to be all things to all men.

We sometimes used to think he would have been better understood had he been more decisive. Yet when public policy required he could be firm. Even then his views were conveyed in a manner so conciliatory that the loser lost nothing of self-respect. Public policy! It was that which was the determining factor of his actions. He was strong when he was clear upon what was the true line in the public interest. It was when he was uncertain of it that his conduct of affairs seemed hesitant. In his early days he was medical officer of health for Stockport, Crewe, Brighouse, Halifax, and Marylebone, and in 1909 he came to Chester as county medical officer of health, still a young man and full of promise. During the first lustrum, perhaps the first decade, the promise was fulfilled, but the course before him was arduous and took a heavy toll of his physique and morale. A county public health budget in 1909 of £4,000 grew in the years that followed to the present enormous total of a quarter of a million, and with it grew the complexities and anxieties of his office. His health progressively weakened, till in 1932 he felt compelled to retire. He had early clinical interests, and besides his M.D. had taken the Edinburgh Mastership of Surgery. He had considerable experience in fevers, and had written about scarlatina; and was the author of a volume on the mentally defective child. As the Cheshire staff mounted from the original number of two officers to the eventual six school medical officers, three tuberculosis officers, six school dentists, two ophthalmic surgeons, forty health visitors, and two assistant medical officers of health, he found himself sometimes at variance with the British Medical Association's views as to scale of pay. This led to his resignation from the Association. But at a later stage he concurred with the Panel Committee in the opinion that the child welfare centres should be staffed by general practitioners, a system which was accepted by the County Council and still holds the field. And in other respects his relations with the profession were often of the happiest. He was a president of the Chester and North Wales Medical Society and, in 1931, president of the Association of County Medical Officers of Health. Throughout his career he was a believer in the popular teaching of ambulance work, and his efforts were recognized; in May, 1926, he was invested at the chapter of the Order of St. John, in Clerkenwell, as an Esquire of that ancient body. He had a trained and accurate mind—he was a barrister-at-law of Lincoln's Inn—but had not the tough casing which instruments of precision require if they must stand hard wear.

L. J. P.

Dr. REGINALD LATIMER WELLINGTON GREENE died at his home at Stratford-on-Avon on May 12th after a short illness, at the age of 81. He studied at Queen's College, Belfast, and at Edinburgh, qualifying L.R.C.P. and S.Ed. in 1880. Shortly afterwards he settled in Stratford-on-Avon, and quickly took an active interest in medical and municipal affairs in the town. For over forty years he was honorary medical officer of the hospital, and in 1932 was appointed honorary consultant on his retirement, a position which he held until his death. During all these years Dr. Greene kept a lively interest in the work and welfare of the hospital; as chairman of the medical board his advice and help has been much valued by his colleagues. He was a staunch supporter of the B.M.A., and always advised his younger colleagues to become members; he had been a member for forty-nine years, and specially interested himself in the charities, being a life governor of Epsom College. He was a past chairman of the Warwick and Leamington Division of the B.M.A. In national health insurance affairs he was one of the original members of the Local Medical and Panel Committee, of which he was vice-chairman and representative on the Medical Service Subcommittee of the Warwickshire Insurance Committee. His interests were not confined only to his profession, as he was mayor of Stratford-on-Avon for

three years, a J.P., and alderman. Among his other public offices he was vice-chairman of the Executive Trustees of the Shakespeare Trust, trustee of the Municipal Charities, and a secretary of the Shakespeare Club. It was owing to his suggestion that the annual unfurling of the national flags takes place on Shakespeare's birthday. Freemasonry also had a strong hold on his activities; he was W.M. of the Swan of Avon Lodge, Prov. G.S.B., and F.P.G.W.S. From 1903 he had been charity steward. Dr. Greene held high ideals of the etiquette and ethics of the profession, and always strove to uphold these, especially for the rights of the medical practitioner. The large attendance at the funeral service, at the Holy Trinity Church, of his fellow townspeople and the many representatives of all the above-named public bodies testified to the esteem and respect with which he was held. His life may be summed up in "service to others." He is survived by his widow and daughter. His only son, who was principal medical officer at Sarawak, died at Labuan in 1919.

Dr. JAMES PATRICK FENNELL, who died on May 9th in his eighty-fourth year, belonged to the past generation of medical practitioners. He qualified from Dublin in 1878 as L.R.C.P.I., and L.M., L.R.C.S.I. before the whole outlook in the practice of medicine was revolutionized by the first bacteriological discoveries of the 'eighties; yet his knowledge of his profession was sound, as he combined his vast experience with the new developments that were constantly taking place. Commencing in the provinces, he eventually settled in the Dalston district of London; he practised there for over thirty years, retiring some ten years ago to Eastbourne, where he died. He refused to undertake national health insurance work, and was one of the very few non-insurance practitioners in his area. Dr. Fennell (writes B.H.) was a courteous and lovable man, and had endeared himself to all who came in contact with him. He was most generous to charities and to strangers, and it afforded him pleasure to give, although there was little left for himself. I shall always cherish his memory. He leaves a widow (formerly a London Hospital nurse), who devotedly nursed him during his illness.

We regret that in the obituary of Dr. Daniel Falconer Riddell, published last week (p. 924), his name was incorrectly stated.

Universities and Colleges

UNIVERSITY OF LONDON

A meeting of the Senate was held on May 16th, with the Vice-Chancellor (Professor L. N. G. Filon, D.Sc., M.A., F.R.S.) in the chair.

Dr. L. P. Garrod was appointed to the University Readership in Bacteriology at St. Bartholomew's Hospital Medical College, as from October 1st, and Dr. G. R. Cameron to the University Readership in Morbid Anatomy at University College Hospital Medical School, as from April 1st.

The degree of D.Sc. in Physiology was conferred on Dame Anne Louise McIlroy, M.D., University Professor of Obstetrics and Gynaecology at the London School of Medicine for Women.

The Dunn Exhibitions in Anatomy and Physiology for 1934 were awarded to A. Cohen (University College) and A. J. Bernfeld (Middlesex Hospital Medical School).

UNIVERSITY OF LIVERPOOL

The following awards have been made in the Faculty of Medicine: *Gold Medal for Medicine*, J. K. B. Waddington; *proxime accessit*, Margaret F. Procter. *Clinical School Exhibition (Clinical Medicine)*, A. J. McCall. *A. C. Rich Prize (Clinical Medicine)*, E. W. Jones. *Gold Medal for Surgery*, A. C. Brewer. *Derby Exhibition (Clinical Surgery)*, J. G. Sheldon. *Gold Medal for Obstetrics and Gynaecology*, A. J. McCall; *proxime accessit*, Margaret F. Procter. *Robert Gee Prize (Diseases of Children)*, V. K. Drennan. *Lyon Jones Scholarship for Anatomy and Physiology*, R. R. Hughes; *proxime accessit*, H. Hughes. *Torr Gold Medal for Anatomy and George Holl Medal for Physiology*, R. R. Hughes. *John Rankin Exhibition (Practical Anatomy)*, divided between R. R. Hughes and H. Hughes.

UNIVERSITY OF DUBLIN TRINITY COLLEGE

The fourth series of John Mallet Purser Lectures will be delivered in the Department of Physiology (Medical School) on Tuesday and Thursday, June 12th and 14th, at 5 p.m., by Professor C. U. Ariens Kappers, Sc.D. (Director of the Institute for Brain Research, Amsterdam). Professor Kappers's subject for the first lecture will be "The Differences in the Effects of Various Sensations on the Structure of the Nervous System," and for the second lecture "The So-called Semitic and Aryan Peoples in the Near East." The lectures are open to the public.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

A meeting of the Royal College of Surgeons of Edinburgh was held on May 15th, when Dr. A. H. H. Sinclair, President, was in the chair. The following candidates, having passed the requisite examinations, were admitted Fellows: P. J. Fogarty, S. J. Campbell, S. Davidson, D. J. Davies, M. D. A. Evans, J. M. Fosbrooke, K. Hunter, M. L. Kaufman, D. H. Klugman, J. Lawrie, C. R. Macdonald, D. C. Mackenzie, J. C. Mackenzie, A. I. L. Maitland, I. M. Orr, Li. C. Palmer-Jones, J. Polonsky, J. H. G. Robertson, B. P. Robinson, Dorothy M. Satur.

The Henry Arthur Dalziel Ferns Bursary was awarded, after a competitive examination in organic chemistry in its application to medicine, to J. Schlosser.

The Bathgate Memorial Prize was awarded, after a competitive examination in materia medica and therapeutics, to G. B. Drummond.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Parliament stands adjourned till May 29th.

The Finance Bill was read a second time in the House of Commons on May 16th by 290 to 55. During the debate Mr. David Grenfell said the Opposition was grateful for the Government's action in abolishing the duty on imported insulin, which would relieve nearly 250,000 persons. The Government spokesmen did not allude to this provision in the speeches. After the division a group of Conservatives gave notice that in committee they would move to delete Clause 5, which contains the proposal about the insulin duty.

The Cotton Manufacturing Industry (Temporary Provisions) Bill and the Mines (Working Facilities) Bill were read a second time by the House of Commons on May 17th.

The Royal Assent was given in the House of Lords, on May 17th, to the Marriages (Extension of Hours) Act, the Supply of Water in Bulk Act, the Firearms Act, the Registration of Births, Deaths, and Marriages (Scotland) (Amendment) Act, the Water Supplies (Exceptional Shortage Orders) Act, the Protection of Animals Act, the Cambridge University and Town Waterworks Act, and to other Acts.

The House of Commons, on May 18th, read the Birmingham United Hospitals Bill a third time.

Sir John Gilmour announced, on May 17th, that the Government had decided to introduce a Bill to enable licensing justices to grant, at their discretion, an extension of permitted hours for a part of the year only, from 10 p.m. to 10.30 p.m. The Bill would apply to Wales.

An Order extending without time limit the present import duties on iron and steel was laid on the table of the House of Commons on May 17th.

Fees for Emergency Treatment

Text of Proposed Clause in Road Traffic Bill

With Sir Francis Fremantle in the chair and Lord Luke representing King Edward's Hospital Fund, a conference of medical members of Parliament, Peers, and others at the House of Commons, on May 16th, approved a new clause which will be moved as an addition to the Road Traffic Bill in standing committee. This clause has been put down in the

names of Sir Francis Fremantle, Mr. J. C. M. Guy, Colonel Crookshank, and Mr. S. Storey. Its text is as follows.

1.—Where medical or surgical treatment or examination is immediately required as the result of bodily injury (including fatal injury) to any person caused by, or arising out of, the use of a motor vehicle on a road, or in a place to which the public have a right of access, and the treatment or examination so required (in this section referred to as "emergency treatment") is effected by a registered medical practitioner, the owner of the vehicle shall, on a claim being made in accordance with the provisions of the next succeeding section, pay to the practitioner, or, where emergency treatment is effected by more than one practitioner, to the practitioner by whom it is first effected, (a) a fee of 12s. 6d. in respect of each person in whose case the emergency treatment is effected by him; and (b) a sum, in respect of any distance in excess of two miles which he must cover in order to proceed from the place whence he is summoned to the place where the emergency treatment is carried out by him and to return to the first-mentioned place, equal to sixpence for every complete mile and additional part of a mile of that distance.

2. Where emergency treatment is carried out in a hospital (that is to say, an institution, not being an institution carried on for profit, which provides medical or surgical treatment for in-patients) the provisions of the foregoing subsection with respect to the payment of a fee shall have effect with the substitution of references to the hospital for references to a registered medical practitioner.

3. Liability incurred under this section by the owner of a vehicle shall, where the event out of which it arose was caused by the wrongful act of another person, be treated for the purposes of any claim to recover damage by reason of that wrongful act, as damage sustained by the owner.

4. A policy of insurance or a security in respect of third-party risks shall not be deemed to comply with the requirements of Part II of the principal Act unless the owner of the vehicle to which it relates is specified therein for the purposes of paragraph (b) of subsection (1) of section 36, or of section 37, of the said Act, as the case may be, and, notwithstanding anything in the proviso to paragraph (b) of subsection (1) of the said section 36, any liability which may be incurred under this section by the owner shall be deemed to be a liability to be covered under that paragraph.

Provisions as to Claims for Payment

1. A chief officer of police shall, if so requested by a person who alleges that he is entitled to claim a payment under the last foregoing section, furnish to that person any information at the disposal of the chief officer as to the name and address of the owner and the identification mark of any motor vehicle which that person alleges to be a vehicle out of the use of which the bodily injury arose.

2. A claim for a payment under the last foregoing section may, if the owner of the vehicle is present at the time when the emergency treatment is effected, be made by oral request to him, and if not so made must be made by request in writing served on the owner within (seven) days from the day on which the emergency treatment was effected.

3. A request in writing must be signed by the claimant or, in the case of a hospital, by an executive officer thereof, must state the name and address of the claimant, the circumstances in which the emergency treatment was effected, that it was effected by the claimant, or, in the case of a hospital, in the hospital, and, where it was effected by more than one practitioner, that it was effected first by the claimant.

4. A request in writing may be served by delivering it to the owner or by sending it in a prepaid (registered) letter addressed to him at his address as specified in the particulars registered in relation to the vehicle under section 6 of the *Roads Act, 1920*.

5. A sum payable under the last foregoing section shall be recoverable as if it were a simple contract debt due from the owner of the vehicle to the practitioner or the hospital.

6. A payment made under the last foregoing section to a practitioner or hospital shall operate as a discharge, to the extent of the amount paid, of any liability of the owner of the vehicle or of any other person to pay any sum in respect of the expenses or remuneration of the practitioner or hospital of or for effecting the emergency treatment.

7. A payment under the last foregoing section shall not be deemed to be a payment by an authorized insurer or owner for the purposes of subsection (2) of section 36 of the principal Act.

Tests for Motor Drivers

In Standing Committee on the Road Traffic Bill, on May 17th, Clause 5 was considered. This clause concerns "Tests of competence to drive of new applicants for licences and of offenders ordered to be tested."

Sir ERNEST GRAHAM-LITTLE moved to insert words providing that such persons should have "passed the prescribed psycho-physical examination for fitness" and subsequently the prescribed test of competence to drive." Sir Ernest said the tests he suggested had been studied and applied by the Institute of Industrial Psychology, whose president was Lord Macmillan. Experience had been gained with tests in other walks of life. Of 106,000 factory accidents in a year, 66,000 were considered by experts observing them to be due to

conditions in the personnel: Fatigue, rush hours, bad ventilation, poor lighting, and emotional states all entered into the production of accidents. What was the ratio of the human factor in accidents on the roads? Where expert examination had been made it had been conclusively shown that the same causes operated in road accidents as in factory accidents, and that the human factor was far the more important. The director of the Institute of Industrial Psychology had given Sir Ernest a proposed category of tests. The first class of tests determined the capacity of response to an emergency. The simple reaction time, tested by the person pressing on levers when lights came into view, varied from half a second to a second and a half. The second test was of reaction time confronted with distraction, which materially increased the time. The third test was of vigilance. The person tested must remember something about a film which was exhibited as well as press the lever when the lights went up. The second group of tests was for ability to make rapid and accurate judgement of the size of objects, the space between objects, and of distances and speeds, by a simple and efficient apparatus. The third class tested vision, both for acuteness and the condition of the eye muscles. He did not suggest a medical test. That would be expensive. Experience showed that gross disabilities, as of hearing, came out in the application of the physical tests. The correlation between the scores made in tests at the Institute and the accident records of persons tested had been singularly close. He pointed out how the "braking distance" of cars varied with the reaction time of the driver as well as with the velocity of the car. If the car was going thirty miles an hour, it would travel an additional thirty feet during the reaction time of the average driver. The greater part of the research on these tests had been done in the United Kingdom, but they had been more largely applied in France, the United States, and in Germany. In Paris the General Transport Company, which was responsible for trams and omnibuses, had applied tests which had decreased accidents by 30 per cent. and had saved 1,500,000 francs a year in wear-and-tear of vehicles. A professor of statistics in the University of London was of opinion that the number of accidents in this group was sufficient to indicate the trend. The Institute had other tests, but he suggested restriction to the three types of tests he had indicated, and not to apply the test for road behaviour which they did now. He proposed that the present road test should be combined with the tests he had described. They could be carried out by persons who were already drivers, who could learn the technique in a fortnight if of average intelligence. Apparatus to carry out the tests would cost about £60 in each centre.

Opinions on the Amendment

Sir JOSEPH LAMB said the committee would err in putting specific tests into an Act of Parliament. They should leave the Minister to issue regulations about such tests.

Mr. LOVAT-FRASER supported the amendment. Mr. LLEWELLYN JONES suggested that the Minister should arrange for the drivers of public service vehicles in a specified area to be subjected to the tests which had been described. The Ministry would then soon be able to say whether it was advisable to apply the same tests to all public service drivers and ultimately to all persons applying for a driver's licence.

Sir FRANCIS FREMANTLE agreed that this was a question for the regulations which were to be issued by the Minister, who should take into account the reaction factor. Sir Francis thought the tests might be worked into the regulations. Sir Ernest Graham-Little's amendment had enabled the committee to get down to the root of the trouble with which the Bill dealt—the accidents not due to maliciously careless driving. A man's reaction time made all the difference at a critical moment.

Mr. STANLEY, Minister of Transport, said he did not detract from the value of the experiments which had been carried out, nor deny possible greater advances in future, but the committee could not possibly accept this amendment. Its result would be that a man could be kept off the roads for ever without appeal against an admittedly experimental system. Mr. Stanley added that he had talked with the director of the Institute of Industrial Psychology, who definitely denied that it would be possible to institute at once a system of this kind. The experiments had shown the possibility of grading drivers, but nothing in the evidence

would enable the Ministry of Transport to determine whether, by the application of these tests, they could, before a man had ever been in a car, find out whether he would be a safe driver. Mr. Stanley said he had turned for advice to the Medical Research Council. It had carried out extensive experiments in this matter, and told him that so far as distinguishing between the good driver and the less good driver was concerned the experiments had already proved themselves. The Council also told him definitely that in respect of application of a test of this kind before a man was allowed to go on the road at all, the experiments had not revealed that this matter had reached a state of practical utility. He had told the director of the Institute that he would consider any suggestions from him about tests which might be incorporated in the ordinary test to be given to drivers under this Bill. He would watch the future of the experiments with interest, but to make the tests compulsory now would crush them in their infancy, and stop what might in future become a valuable development.

The committee rejected Sir Ernest Graham-Little's amendment without a division.

Visual and Auditory Defects

On the motion that Clause 5 stand part of the Bill, Mr. LOVAT-FRASER asked whether the Minister, in drawing up the Bill, would decide how far old age, colour-blindness, and deafness affected applicants for licences. Sir GIFFORD FOX asked if it was possible to have a test for night driving. At present nothing was done to disqualify a person whose eyes were right in the daytime but could not see at night. Mr. STANLEY said the last question was interesting, and he would consider it. He was already able to prescribe tests for physical defects, but was not entitled to say that no man who was deaf or colour-blind might have a licence. It might be impossible for some persons to pass the test owing to physical disability of that kind.

The clause was added to the Bill with slight amendments.

Oysters.—Sir HILTON YOUNG told Sir M. Sueter, on May 16th, that his attention had been drawn to a recent case before the King's Bench Division in which evidence had been given that typhoid fever had been contracted as a result of eating oysters. It was subsequently decided that the oysters as supplied by the Fishing Company were not shown to be contaminated, but he was communicating with the local authority concerned. Replying to Sir John Pybus, on May 17th, Mr. ELLIOT said he had learned with satisfaction that the cleansing of oysters at Brightlingsea had been initiated and was proceeding with excellent results. The technical officers of his Department would always be ready to advise and assist local authorities who might be disposed to follow the lead given by the Brightlingsea Urban District Council.

Infant Mortality.—Replying to Mr. Rhys Davies on May 17th, Sir HILTON YOUNG gave the following figures concerning general and infant mortality in England and Wales:

Year	General Death Rate per 1,000 Estimated Population	Infantile Mortality Rate (namely, deaths under 1 year of age per 1,000 live births)
1929	13.4	74
1930	11.4	60
1931	12.3	62
1932	12.0	65
1933	12.3	64

Animal Experiments.—In reply to Mr. Groves, on May 17th, Mr. DOUGLAS HACKING stated that the "University Medical and Scientific Departments, Edgbaston, Birmingham," were already registered for the performance therein of experiments on living animals. He had not received any communication from the university authorities on the inclusion of the new medical school buildings in the registered premises. Mr. Hacking explained that a conflicting reply given to Mr. Groves on May 17th by Sir John Gilmour was made under the impression that Mr. Groves referred to Birmingham General Hospital.

Control of Opium Traffic.—Sir JOHN SIMON told Mr. David Grenfell, on May 18th, that the Opium Committee of the League of Nations had not issued a report on the official opium monopoly alleged to be established in the north-eastern

provinces of China under Japanese occupation. The Council of the League last January adopted a recommendation of the Opium Advisory Committee that the attention of the chief producing and manufacturing countries should be drawn to the necessity of supervising strictly any application for admission of narcotics into the territory of Manchuria and Jehol. The British Government had complied with the recommendation and with its obligations under the Hague Opium Convention.

Financing of Hospital Extension.—Sir ROBERT GOWER, on May 18th, asked whether the Minister of Health proposed to provide public funds for hospital extension on the lines recommended in the report of the Voluntary Hospitals Commission. Sir HILTON YOUNG answered that he knew of the recommendation made in the report of 1925, but the situation had been altered by the Local Government Act, 1929, which conferred wide powers on county councils and county borough councils for provision of hospital accommodation, including power to make subscriptions or donations to voluntary hospitals. It was undesirable, in view of these powers, to provide assistance by direct Exchequer grant.

Antitoxin Inoculations.—Mr. GROVES asked, on May 18th, whether the Minister would stop the issue to the public by medical officers of health of statements that the substances used in inoculation of antitoxin were harmless. Mr. Groves referred to changes which were known to take place in the blood of certain people through such inoculation. Sir HILTON YOUNG replied that such changes were intended to be beneficial, and were so in fact with rare exceptions. He saw no reason for taking such steps as Mr. Groves suggested.

Medical Expenditure by Public Assistance Committees.—Sir HILTON YOUNG states that no figures are available by which he could estimate the additional expenditure incurred by public assistance committees in England and Wales for medical services and treatment, including maternity services, to unemployed persons who had ceased to be eligible for medical benefits under the National Health Insurance Acts. Replying on the same subject to Mr. David Grenfell, on May 17th, Sir HILTON YOUNG said he would communicate with public assistance authorities in Glamorganshire for information respecting that county. A general inquiry would be impossible.

Notes in Brief

The report of the Scientific Committee appointed by the Economic Advisory Council to consider the incidence of milk-borne diseases has been presented to Parliament. Mr. Baldwin stated that it would be available shortly.

The average number of casualties in receipt of poor relief in England and Wales in 1933-4 was 14,319. On January 1st, 1934, 95.9 per cent. were men, 3.7 per cent. were women, and 0.4 per cent. children under 16 years of age.

Medical News

The Bolingbroke Lecture will be delivered before the South-West London Medical Society at the Bolingbroke Hospital; Bolingbroke Grove, Wandsworth Common, S.W., on Wednesday, June 6th, at 9 p.m., by Mr. Comyns Berkeley, on "Some Things I Have Learnt." All medical practitioners are welcome.

A Chadwick Public Lecture on "Simples and Herbs" will be delivered by Mr. E. A. Bowles at Chelsea Physic Garden, Swan Walk, Chelsea, S.W., on Thursday, June 14th, at 5 p.m., when Sir William J. Collins will occupy the chair. Admission free, without ticket.

The Buckston Browne annual banquet of the Harveian Society of London will be held at the Connaught Rooms, Great Queen Street, on Thursday, June 14th, at 7.30 for 8 p.m.

The Royal Society of Tropical Medicine and Hygiene will hold a conversatione at 26, Portland Place, W., on Thursday, May 31st. Reception at 8.30 to 9 p.m. by the president, Major-General Sir Leonard Rogers, and Lady Rogers. Refreshments, music, dancing. Tickets 5s. each for Fellows and their guests, on application to the secretary, 26, Portland Place, W.1.

The annual general meeting of the London and Counties Medical Protection Society Limited will be held at Victory House, Leicester Square, W.C., on Wednesday, May 30th, at 4 p.m., to receive and adopt the annual report and balance sheet, to elect officers and auditors, to fill vacancies on the council, and to transact other business.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that Dr. Clark-Kennedy will give a lecture-demonstration on functional heart disease at 11, Chandos Street, W., on May 29th at 2.30 p.m. The next lecture, on poor circulation, will take place on June 5th. A week-end course in medicine and surgery will be given at St. Mary's Hospital, Plaistow, on Saturday and Sunday, June 2nd and 3rd. The course will consist of lectures and demonstrations and will occupy the whole of both days. On June 9th and 10th there will be a course in obstetrics at the City of London Maternity Hospital. Other forthcoming courses include two similar courses in medicine, surgery, and the specialties at the Prince of Wales's Hospital, June 11th to 23rd and June 25th to July 7th; and a week's course in proctology at St. Mark's Hospital, June 11th to 16th. On Saturday, June 9th, Mr. Hamilton Bailey will demonstrate surgical cases at the National Temperance Hospital. A debate will take place on Wednesday, May 30th, at 8.30 p.m., at 26, Portland Place, W. The motion will be, "That in the absence of complications, surgical interference in cases of gastric and duodenal ulcer is unnecessary." Lord Moyrhan will take the chair. The motion will be proposed by Dr. A. F. Hurst and seconded by Mr. Mortimer Woolf, while Dr. Robert Hutchison, seconded by Mr. Herbert Paterson, will oppose the motion. All members and associates of the Fellowship and their medical friends are cordially invited to be present at this debate.

The fourteenth annual International Neurological Congress will be held at La Salpêtrière, Paris, on June 5th and 6th, when the following subjects will be discussed: the anatomy, physiology, and pathology of the mesodiencephalic vegetative nervous system, introduced by Laruelle of Brussels (anatomy), Tournay of Paris (physiology), and André-Thomas and Lhermitte (pathology); congenital ectodermal dystrophies, by von Bogaert of Antwerp; and syphilis of the cerebellum, by Christophe of Paris. Further information can be obtained from the general secretary, Dr. Crouzon, 70 bis, Avenue de Jéna, Paris, 16E.

The National Smoke Abatement Society will hold a special conference in London on Friday, June 8th, to consider the question of smokeless fuels for open grates. The problem is to be discussed not only from the technical point of view of the fuel producer, but from the standpoint of the grate designer and the housewife. The development and marketing of smokeless solid fuels will also come under review. Those interested can obtain copies of the agenda and invitations from Mr. Arnold Marsh, general secretary of the society, 23, King Street, Manchester, 2.

The American Association for the Study of Goiter will meet this year in Cleveland, Ohio, on June 7th, 8th, and 9th, just before the annual meeting of the American Medical Association. The honorary secretary is Dr. J. R. Yung (Terre Haute, Indiana, U.S.A.). The principal subject for discussion is hyperthyroidism.

The fourth International Congress for First Aid will be held in Copenhagen from June 11th to 16th, under the patronage of H.M. The King of Denmark.

In our advertisement columns this week appears a notice inviting applications for the University Chair of Obstetrics and Gynaecology, tenable at the London (Royal Free Hospital) School of Medicine for Women. The salary is £2,000 a year, and applications (twelve copies) must reach the Academic Registrar, University of London, S.W.7, by the first post on June 19th.

Professor F. E. Tylecote, M.D., F.R.C.P., has been placed on the commission of the peace for the City of Manchester by fiat of the Chancellor of the Duchy of Lancaster, dated May 16th, 1934.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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QUERIES AND ANSWERS

Wanted: Experience in Schick and Dick Testing

"A COUNTRY G.P." (Shropshire) writes: Can any of your readers tell me where I could get practical experience in carrying out the Schick and Dick tests for diphtheria and scarlet fever?

School for Backward Child

"N. A. M." asks if any reader can recommend a school, in the North for preference, for a girl 14 years of age whose mental outlook is that of a child half her age.

Oliguria

Dr. U. W. N. MILES writes: I have a patient with the following remarkable history, and I am wondering whether anyone can give me an explanation or any suggestions for treatment. The patient, a woman of 65, has been suffering for the past two months from acute melancholia, which has gradually improved lately. About three weeks ago (May 1st) she complained of pain on micturition. She was put on an alkaline mixture, and as she passed no urine in twenty-four hours she was catheterized. The amount withdrawn was only 4 oz. She passed practically no urine normally for several days after this, and on being catheterized only a maximum of 4 to 5 oz. was obtained in any twenty-four hours. She was put on diuretin 20 grains three times a day, but this had no effect. Now, three weeks after the onset of the suppression, she feels fairly well, has no symptoms of uraemia at all, but is still passing only 2 to 4 oz. daily. She has gone as long as forty-eight hours without passing any at all. I am completely puzzled to account for the absence of uraemic symptoms. Would somebody explain. I should add that a trained nurse is in charge, so that the facts are as stated.

Income Tax

Car no Longer Required

"L. C. D." bought a car in 1931 when he was an assistant. He left that engagement and did locumtenent work until he entered a partnership in 1933. The car was handed over to a garage for sale when his assistantship ceased in 1932, and he lost £47 on it. Can he claim any deduction?

** The only claim he can make is for depreciation allowance at 20 per cent. per annum on the cost of the car (£55) for the period up to the date when his assistantship ceased. No other claim is possible, because the use of the car was restricted to that work, and the £47 was a loss of capital.

Depreciation Allowance.

"H. E." has for many years claimed the cost of renewal of his car instead of depreciation plus obsolescence, but now wishes to make a change. His last transactions were: January 1st, 1931, bought a car for £298; January 1st, 1934, sold the car for £75 and bought another for £269.

** In making his return for assessment for the current year 1934-5, which will be based on the profits of 1933, "H. E." can claim a depreciation allowance based on the written-down value of the old car as at December 31st, 1933—that is, £190 at 20 per cent. = £38. The running costs, including repairs, will, of course, be charged as in previous years. When he makes his return up for 1935-6 on the basis of his 1934 profits, he can claim as an obsolescence allowance his out-of-pocket expenditure—that is, £269 - £75 = £194 less the £38 claimed—that is, £156 net as an expense and 20 per cent. on £269 as a depreciation allowance for 1935-6.

Expense of Additional Qualification

"T. W. B." has expended about £120 during the last three years in fees in connexion with additional medical degrees or other qualifications. Are these expenses deductible for income tax purposes?

** No. There is, unfortunately, no doubt but that these expenses are not legally allowable. They are not incurred, in the carrying out of the work of the practice, but in improving the status and professional knowledge of the practitioner, and consequently are in the nature of capital expenditure.

LETTERS, NOTES, ETC.

The Cause of Hyperpiesia

Dr. C. P. DOXNISON (Cheltenham) writes: With reference to the points raised by Dr. G. Arbour Stephens (May 5th, p. 831) regarding my article, I wish to state that in matters of definition and technique I have, as stated in my previous article, been guided by Dr. Halls Dally in his book *High Blood Pressure*. The armlet of my sphygmomanometer was five inches in width. A blood pressure that was consistently above 160 mm. systolic or 100 mm. diastolic was regarded as hyperpiesia, whilst in young subjects a systolic pressure persistently above 150 mm. was included.

Open-Air Schools

The Open-Air Schools League of New Zealand, in a recent pamphlet, makes a plea for still greater recognition of the "opportunities afforded by open-air schooling." While it is admitted that the cost of education is mounting, it is held that the reforms which the League has at heart could be achieved with little or no expense. Playground classes could be instituted throughout the Dominion, and many old schools converted into semi-open-air schools at a cost which would be almost negligible. When these avenues had been explored, the pamphlet states—and new buildings were imperative—then inexpensive classrooms modelled on the Dominion's Fendalton open-air classroom should be erected.

Disclaimer

Mr. J. W. TUDOR THOMAS, M.S., F.R.C.S., writes from Cardiff: I write to disclaim all responsibility for the publicity given to my name in a professional capacity in the lay press. Recently my name appeared in a newspaper article in which the following statement appeared: "At first hand from the doctors and their patients themselves I have learned how all these astonishing operations are being performed." I have never discussed my professional work with representatives of the lay press, and have never conveyed information to them directly or by any indirect channels. Repeated requests for an interview have been made, which have been consistently refused, and I have an absolutely clear conscience on the matter.

A Correction

The discussion on the relationship of measles and whooping-cough to chronic inflammatory conditions of the chest was held by the Fever Group of the Society of Medical Officers of Health, and not, as stated in the *Journal* of May 19th (p. 916), by the society itself.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 268.

BRITISH MEDICAL JOURNAL

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DIVERTICULITIS: A CLINICAL REVIEW

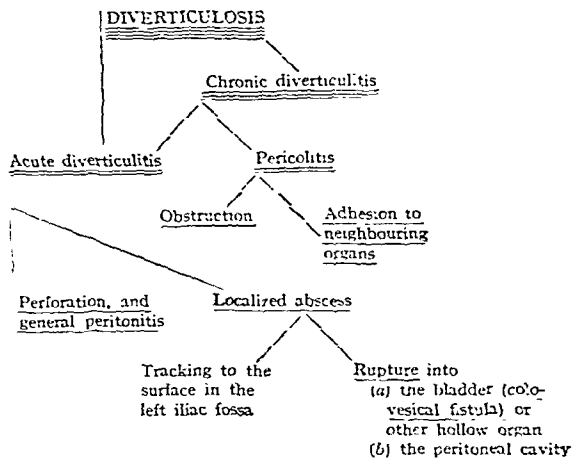
BY

HAROLD C. EDWARDS, M.S., F.R.C.S.

HUNTERIAN PROFESSOR AND JACKSONIAN ESSAYIST. ROYAL COLLEGE OF SURGEONS OF ENGLAND;
SURGEON TO KING'S COLLEGE HOSPITAL, LONDON

The circumstances of the anatomy and position of colonic diverticula predispose them to secondary pathological processes. They are bottle-necked, thin-walled sacs opening from a muscular tube, which contains faecal material rich in micro-organisms. The initiation of secondary changes depends entirely upon the retention of faecal matter within the diverticula, and it is clear that the more solid the stage which the faecal material has reached, the greater tendency there will be to retention. Hence the sigmoid colon is easily the commonest site for diverticulitis, not only because it is the commonest situation for the formation of diverticula, but because its contents are solid.

The presence of a faecal concretion may lead to a variety of secondary inflammatory changes, which are set out from the clinical standpoint in the accompanying scheme.



These changes vary from acute infection of the diverticulum, with perforation into the general peritoneal cavity, to a chronic reactionary fibrosis of the wall of the colon, extending in some cases to beyond the peritoneal covering. To such a condition the term "perisigmoiditis" is applied. Such a mass of inflammatory tissue may ultimately produce stenosis of the bowel simulating carcinoma, or cause adhesions between the colon and neighbouring organs.

Should acute diverticulitis supervene in a diverticulum walled off by fibrous tissue immediate perforation into the peritoneal cavity is improbable, and a localized abscess may form in the mass of fibrous tissue surrounding the colon. An abscess of large size may eventually rupture into a neighbouring hollow organ, such as the bladder, or into the peritoneum. Not infrequently an abscess of this kind will track along the side of the bowel to come to the surface under the parietes in the left iliac fossa.

The formation of intracolic and pericolic fibrous tissue may be due, in part, to the mechanical irritation of the faecal mass, but the main factor is probably infection from the lumen. This is due to the filtering of toxins or actual organisms through the damaged mucosa, which is stretched over the retained mass.

The Clinical Aspects

One hundred and forty-six cases, from various sources, of diverticula of the colon were investigated from the clinical standpoint. Of these, sixteen were cases of fistula into the bladder, the notes of which were loaned to me, and these will be excluded from the series for purposes of statistics. Of the remaining 130 cases, complications, due to the diverticula, occurred in nineteen, or 14.6 per cent. of the total. The complications were as follows:

	No. of Cases
Obstruction, large bowel	6
" " small bowel, from adhesions	1
Acute perforation	4
Abscess	3
Abscess with secondary perforation into the peritoneum	2
Fistula into the bladder	2
Fistula into the bladder and abscess in the pelvis	1
Total	19

This leaves 111 uncomplicated cases. In thirty-three of these other conditions were present, which were responsible for the symptoms either wholly or in part; thus seventy-eight cases of uncomplicated diverticulitis remain.

Uncomplicated Diverticulitis

Under this heading is included chronic diverticulitis with and without acute or subacute exacerbations, and this description is based on the seventy-eight cases in which neither complications nor associated abdominal disease were present. Though all these patients had diverticula of the colon, there was some difficulty in estimating the number who were suffering from diverticulitis as opposed to diverticulosis. Knowing that diverticula are present, by what criteria must one judge the presence of inflammation in them? In the more severe cases—those who are subject to acute or subacute exacerbations, or who have a palpable tender swelling—no doubt will exist, but in the greater number the symptoms are vague. While it is true that inflammation of mild degree may give rise to pain in the left iliac fossa, one must not lose sight of the fact that pain may arise from that disordered action of the bowel of which diverticula are the outcome.

The physical signs of thickening of the colon felt per abdomen must be accepted as evidence in favour of inflammation, but many of the patients are so obese that any such thickening cannot be felt. Mere tenderness over the colon is not an absolute sign, as it is frequently present in spastic constipation when x-ray examination

has proved the absence of diverticula. Involuntary spasm of the abdominal muscles is an absolute sign of subjacent inflammation, but if the colon is tender to palpation voluntary rigidity is also present, and may in some cases be very difficult to distinguish from reflex rigidity. X-ray examination may demonstrate spasm of the colon, but this may not be the result of inflammation in the diverticula; it may be the irregular action which is the prelude to their formation.

It will be conceded, therefore, that on the history, the physical examination, and the x-ray findings, it may be impossible to distinguish diverticulitis from diverticulosis, except in the severer cases, and I have failed in my attempt to estimate the percentage of cases of diverticulosis in which inflammation occurs. Rankin and Brown, in 1,300 cases in which diverticula were found in the colon, state that 17 per cent. were suffering from diverticulitis. If pain is regarded as a criterion of inflammation, then the following analysis of the symptoms will show that in the present series the percentage incidence is infinitely greater than this.

Analysis of Symptoms

In sixty-nine of the seventy-eight cases there were symptoms referable to the large intestine. The most constant of these was pain, which was present in fifty-four. This varied considerably in character; in some it was a dull ache, and in others it came in colicky attacks. Sometimes it was brought on by attempts at defaecation, but in others it was unaffected by this act. In forty-one of the fifty-four cases it was situated in the left iliac fossa. Other distributions were as follows: right iliac fossa, five cases; lower abdomen, four; umbilicus, one; and epigastrium, five, in two of which there was also pain in the left iliac fossa, and in the other three it was related to food. The site of the pain did not always correspond with the segment of the colon most affected by diverticulosis, as indicated by x-ray examination. In fifteen cases pain in the back was also complained of, but in the majority of these it may have been the result simply of constipation. There was no actual pain in fifteen cases, but the patients complained of disturbances of a more vague character, chiefly on the left side of the abdomen. These disturbances were variously described as rumbling noises, windy spasms, flatulence, soreness, and fullness of the stomach, and were felt more during defaecation, or when the patient was more than ordinarily constipated.

Constipation.—The bowel history was known in seventy-one of the seventy-eight cases. Only nine patients claimed to be normal in their bowel action. Forty-eight were constipated, and in thirty-three of these the constipation was of long standing and was severe. In thirteen it was of recent origin, and in two it was stated to be slight. There was a definite history of irregularity in six. The bowels were loose in three, and in five there was constipation alternating with diarrhoea; in three of these the bowel had previously been constipated. The latter condition must be regarded as significant of obstruction, but this is not always present, for the attacks of diarrhoea sometimes coincide with, and are due to, recurrent exacerbations of inflammation.

Blood and Mucus.—These were present together in three cases, and in three there was blood alone. Of these, one had severe cardiac disease and another had piles of moderate severity, but in the remainder no other cause for bleeding could be found. In a further series of twelve cases the test for occult blood was negative. Bleeding should not, therefore, be regarded as a characteristic of the condition. In the rare cases in which it is present it is probably due to associated colitis. Mucus was passed with stools in nine cases; this is a common accompaniment of severe constipation, however, and is not of special significance.

Bladder Symptoms.—Symptoms arising from the bladder were present in eight cases. Increased frequency and pain on micturition either together or alone were complained of on seven occasions, and in one case there was incontinence. It is difficult to say how far these urinary symptoms were directly due to the diverticula. In one case the patient

complained of frequency, pain, and a little difficulty. The urine was foul. The prostate was not enlarged, and the symptoms suggested that the formation of a fistula from the colon into the bladder was imminent. In two other cases the urinary symptoms were increased during attacks of abdominal pain.

Physical Signs.—Of sixty-four patients, thirty, or less than half, were obese. Of the remainder, twenty-five were regarded as of medium build, and nine as thin. In forty-four of the seventy-eight cases abdominal tenderness was present, in most instances in the left iliac fossa. This varied considerably in degree, from pain on deep palpation to severe pain on light palpation, with spasm of the overlying abdominal muscles. In twenty-four cases the sigmoid colon could be felt, and in five of these it appeared to be thickened. In eleven cases a definite lump was present, but in not all of these was the lump due to inflammatory thickening. In one patient, for example, a very large mass could be felt under the liver on the right side. It was diagnosed as a growth at first, but it disappeared with enemata, and subsequent x-ray examination showed diverticula in the distal part of the transverse and the sigmoid colon.

Clinical Diagnosis

Though the above analysis suggests that the clinical findings are for the most part vague, the diagnosis of diverticulitis is by no means a difficult one to make on clinical examination. The symptoms, taken in sequence as has been done above, do not furnish the true clinical picture, which is a characteristic one. Study of the case records shows the justification for this statement. A patient over the age of 45 complains of mild attacks of pain situated chiefly in the left iliac fossa. During the past few years he has noticed an increasing tendency to constipation. He feels a fullness on the left side, and puts his hand over the left iliac fossa and complains of tenderness there. The similarity to early malignant disease is patent, and one is not justified in accepting the clinical diagnosis of diverticulitis without excluding the possibility of growth—which not infrequently coexists—by x-ray examination.

Diverticula can occasionally be seen through the sigmoidoscope. In eleven examinations they were seen on two occasions. Sigmoidoscopy cannot be relied upon to any great extent for the diagnosis, however, which is far more readily made, and with less discomfort to the patient, by radiography.

Treatment of Uncomplicated Cases

The main treatment of uncomplicated cases of chronic diverticulitis is to avoid complications. Colonic lavage should be insisted upon, and every hospital which deals with this type of case should be equipped with facilities for this treatment in the out-patient department. The object is to wash away any retained products in the colon, and not to disinfect it, and it therefore matters little what lotion is used. Ordinary tapwater is probably as useful as any antiseptic solution, though one would not dispute the value of the natural waters at Bath and other spas.

The wash-out should be at body temperature, and the two details which must be insisted upon are: (1) not more than two pints should be used; and (2) the head of water should not exceed eighteen inches. This errs, perhaps, on the conservative side, but no one will deny the power for harm that lies in over-distension of the colon, especially the colon which has departed from the normal.

The diet should be mainly vegetarian; it need not be strictly so, but excess of cellulose should be avoided. The latter is an important item. The colon is not fitted to be a receptacle of the quantity of cellulose recommended by faddist societies, and to load the inflamed colon with undigested cellulose is clearly not to be desired.

Operative Treatment

The role of the surgeon in the treatment of diverticulitis is largely confined to the treatment of its complications. The nature of the disease and its irresistible tendency to adhesions make cases where local excision is possible very few and far between. In this series a radical operation was performed in five cases: there were three resections of gut, and in two the Mikulicz operation was performed. In only one case—a comparatively mild one—was the procedure limited to one operation. Though this patient remains in reasonable health to-day, six years after the operation, I regard the operation, in the light of additional experience, as unjustifiable, and a case of this low degree of diverticulitis I should now treat by medical means. The other four cases were progressing dangerously towards one of the complications, and it is only in such cases—one might almost say at this stage of the disease—that operation is justifiable. The difficulties that may be encountered, which make the decision to operate a weighty one, are well illustrated by one of my cases. The patient is now alive and well, but he underwent no fewer than five operations. The condition encountered at laparotomy did not justify an attempt to excise the mass, and hence the peritoneum on the left of the intestine was incised and the affected bowel mobilized and brought on to the surface of the abdomen.

Though the technique is difficult, when circumstances make it possible—that is, when the condition is localized—there is no doubt that the radical procedure in these borderline cases is the best line of treatment that can be offered. The alternative is an attempt to rest the diseased portion of the bowel by simple colostomy, with a promise to the patient that this will be closed at a later date. Such a method, however, not infrequently falls short of expectation.

Temporary colostomy—merely creating a fistula between the bowel and the abdomen—is doomed to failure. Such an operation only partially drains the bowel and does not allow of that degree of rest which is a *sine qua non* of recovery of the inflamed portion. The same applies with greater force to caecostomy, which is to be condemned except as a possible prelude to the radical operation. Apart from the distress it causes the patient, caecostomy gives only very imperfect drainage to the colon, and has a very limited effect upon the inflamed distal portion. This is clearly shown in one patient who suffered an acute recurrent attack of diverticulitis fourteen days after caecostomy had been performed as a preliminary to the radical operation.

It is essential, therefore, for the colostomy to be of permanent type if the patient is to derive any benefit. The question will arise, How long should the colostomy be allowed to remain? The question is unanswerable. There is no guarantee that symptoms will not recur after the colostomy has been closed by operation, even though all symptoms have subsided. A minimum period of at least twelve months must be insisted upon. The closure of a permanent colostomy is not unattended by risk to the patient, even if one of the ingenious extraperitoneal methods are used. And for such an operation, successfully achieved, to be followed at a later date by a recurrence of symptoms is a grave disappointment to both patient and surgeon. If such a recurrence is severe, and the danger of complication appears imminent, the only operation possible is a second colostomy, for the previous operation would in all probability make the task of excision a difficult one.

The following guiding lines for treatment are therefore submitted: (1) Uncomplicated mild diverticulitis—medical treatment. (2) Severe recurrent diverticulitis, in which complications appear to be imminent—laparotomy with a

view to determining the possibilities of excision, and if this be thought possible, a preliminary transverse colostomy or caecostomy. Operation should be postponed to an interval between the attacks. If the condition met with appears unsuited to radical treatment, a permanent type colostomy, made as near as possible to the inflamed area, and left open for a minimum period of twelve months.

Diverticulitis with Obstruction

Six cases of chronic fibrous obstruction of the large bowel due to diverticulitis appear in my series. The complication is therefore not uncommon. The similarity, both in history and in physical signs, and even on naked-eye examination, between this condition and carcinoma of the bowel is well and widely recognized. In one case the nature of the condition was only revealed by microscopical examination after the mass had been resected at operation, which was successfully performed in one stage. In a second case the patient had been admitted a year previously and treated by colon wash-outs. She was well on discharge, but neglected to continue with the treatment, and was readmitted with acute obstruction. A Mikulicz many-stage operation was satisfactorily performed. The sigmoid colon had become obstructed in a third case by a band passing from an inflamed diverticulum to the left Fallopian tube, while in a fourth a caecostomy had been performed, but, two years later, x-ray examination demonstrated that the condition of the colon had not improved sufficiently to warrant closure. In two further cases the patients, who were both over 70, refused operation.

The difficulty in distinguishing, both clinically and at operation, between obstruction due to diverticulitis and that due to growth makes it imperative to remove the mass, either by resection or by the Mikulicz method. Radiography cannot always be relied on to differentiate between them, although the method of dual exposure, devised by my colleague Dr. Graham Hodgson, may be of help in many cases. The presence of diverticula elsewhere in the colon is no criterion whatsoever that the mass is inflammatory, as diverticula and growth frequently coexist. (Six cases out of 130.)

Obstruction of the small intestine as a result of adhesions to a portion of the sigmoid affected by the diverticulitis is perhaps the most serious of the complications. It was accompanied in one case by chronic obstruction of the colon itself. The left iliac fossa was filled with a mass of fibrous tissue, to which a coil of the ileum had become firmly adherent. The ileum above the obstruction was dilated and its wall thickened. The surgical treatment here is a problem of considerable difficulty. It is manifestly useless to attempt to separate the adherent ileum from the colon, for recurrence is certain, and the obstruction must be short-circuited either by ileo-ileostomy or ileo-transverse-colostomy. In addition the obstruction to the colon must be treated. In the case in the present series the ileal obstruction was a chronic one situated about three feet from the ileo-caecal valve. An ileo-ileostomy was made around the obstruction, and a transverse colostomy performed. The patient died three days later from ileus.

Acute Perforative Diverticulitis

This complication is, fortunately, rarer than might be expected. Diverticulitis is usually an insidious disease, and the diverticula are walled off by the formation of fibrous tissue. It occurred in four cases in the present series.

The history and pathological process are similar to that of perforation of the appendix into the general peritoneal

cavity, except, of course, that the early pain and the physical signs are on the left side of the body. There is usually a history of vague pain preceding the acute onset, but on occasion this is absent, the acute condition appearing with dramatic suddenness. Perforation may follow some strain, or occur during a prolonged attempt to defaecate. An important sign not obtained in perforation of the appendix is an early distension of the abdomen, with a tympanitic note on percussion due to the presence of gas.

It goes without saying that immediate operation should be performed in these cases. The conduct of the operation, once the abdomen is opened, will depend entirely upon whether the perforated diverticulum can be found or not. In one case this was possible. The diverticulum, which was at the upper end of the rectum, was excised, the opening in the bowel closed by a purse-string suture, and a temporary caecostomy used to relieve the distension of the large bowel. A drainage tube was placed down to the site of the opening into the bowel.

If the site of perforation cannot be determined, or the opening be buried in a mass of fibrous tissue so that it cannot be closed by any plastic operation upon the bowel, the great omentum is brought down and fixed over the area with one or two stitches, and a colostomy performed as close to the area of diverticulitis as possible, and the abdomen drained.

Though the prognosis of the former class of case is relatively good, that of the latter is poor. In the present series the one patient in the latter class personally operated upon succumbed.

Abscess with Diverticulitis

The formation of a localized abscess is a not uncommon sequel to diverticulitis. In the majority of cases its formation is accompanied by an attack of acute diverticulitis, with a high temperature, and, not infrequently, diarrhoea. The acute inflammatory condition may subside suddenly when the abscess ruptures into a neighbouring organ, such as the small intestine, rectum, vagina, or bladder. In three cases the abscess ruptured into the peritoneal cavity, and terminated fatally.

The appearance of a collection of pus under the abdominal wall may be accompanied by only the mildest symptoms, but a history of an acute attack of abdominal pain preceding the formation of the swelling is usual. The insidious manner in which the swelling appears may mislead one as to its true nature. In one such case a woman patient had a fluctuating swelling in the left iliac fossa, with no inflammatory signs, and only a small evening rise in temperature. The condition was regarded as tuberculous until investigation of the contents revealed its true nature.

From examination of one specimen, in which there is a small abscess cavity in the centre of the pericolic mass of fibrous tissue, it seems probable that a small abscess around a diverticulum buried in fibrous tissue may be absorbed, without having given any indication of its presence. Indeed, it is probable that such abscesses are frequently formed during an attack of acute diverticulitis.

If it is clear that an abscess associated with diverticulitis is present, it should be opened. Whether or not at the same time colostomy should be performed depends very much on the condition found. Generally speaking, a conservative policy, confined to dealing with the needs of the moment, is wisest. The abscess should be drained, and the inflammatory condition allowed to subside, before deciding upon the line of treatment to be adopted for the underlying diverticulitis. In one case so treated a small faecal fistula developed through the operation incision in the left iliac fossa. This persisted for four years, during

which time the patient was free from symptoms. At the end of this period, however, the fistula suddenly closed, and another peridiverticular abscess developed, which was opened, and a colostomy performed. The latter is still present, and the patient remains well.

Colo-vesical Fistula

Though rarely of itself a cause of death, colo-vesical fistula is one of the most dreaded complications that may follow upon inflammation of diverticula of the colon. Of nineteen cases of colo-vesical fistula due to diverticulitis sixteen were in men and only three in women. The oldest was 69 and the youngest 44; the average age at onset was 54. The characteristic symptom of the condition is the passage of air and faecal material per urethram. In all cases there was a history, varying from thirteen years to one month, of acute pain in the abdomen. The average duration, in fifteen cases, of abdominal symptoms before the onset of the passage of air and faeces was three years and nine months. In most of the cases the onset of urinary symptoms corresponded with an acute attack of abdominal pain accompanied by fever. On occasion urinary symptoms might suddenly abate. Thus in one case pus suddenly appeared in the urine during an attack of acute pain, which had lasted for a few days, and on the appearance of the pus the pain rapidly subsided. This was unquestionably due to the rupture of a perisigmoid abscess into the bladder. It may take some little time before a fistulous track from the colon into the bladder is established in consequence of this rupture, so that the passage of air and faeces per urethram may not follow the first appearance of pyuria for some days. In one case the interval between the onset of pyuria and the appearance of faeces in the urine was ten days; the latter followed a dose of castor oil taken to disperse the lump in the left iliac fossa. In another case the interval was two years, and in a third frequency of micturition heralded the onset of pneumaturia.

The quantity of both air and faeces passed once the fistula is established varies considerably. In some cases it appears only at intervals, and there is considerable improvement in between. In two cases faeces were passed, but the patient was never conscious of the passage of air. One of these was a man and one a woman. In a third case, in which this symptom was absent, a colostomy had been performed before the fistula developed.

The bladder nearly always becomes inflamed, especially in the early stages, and frequency of micturition both by day and by night is common. One of the most notable features, however, is the apparent immunity to infection by the faeces which the bladder ultimately develops. In these cases, except during the periods when faecal material is passed in considerable quantity, the urine is clear, and the patient relatively free from bladder symptoms. Cystoscopy reveals a healthy bladder mucosa.

Ascending infection from the bladder to the kidneys is of relatively rare occurrence, owing, presumably, to the acquired immunity of the bladder mucous membrane, and this customary freedom from attacks of pyelitis must be borne in mind when deciding upon the treatment to be carried out in each case. In this series only one patient suffered symptoms of pyelitis, and this was limited to one attack. Haematuria occurred in three cases; in one it preceded by a month the passage of air through the urethra. In one or two cases the patient has been troubled at intervals by the passage of large quantities of mucus per urethram. A phosphate stone

subsequently developed in the bladder in two of the cases, in one of which a colostomy had been performed previously to relieve the condition. The onset of symptoms due to the stone was six months after this operation.

The diagnosis of colo-vesical fistula is readily made from the clinical history. X-ray examination is of little assistance, except to exclude the possibility of a malignant fistula. The barium does not readily enter the fistulous track, and it is a matter for comment that in radiographs of some of the cases the bowel does not appear to be grossly affected by diverticulosis. The clinical diagnosis is confirmed by cystoscopy, which will reveal the opening into the bladder. In the majority of cases this is situated near the apex on the postero-superior wall to the left of the midline, though in one case the opening was to the right of the midline. In some cases the opening may be masked because of the oedema of the wall consequent upon infection, and owing to the ease with which faeces pass through the fistula it becomes difficult to obtain a clear medium in the bladder through which an adequate inspection can be made. In such cases a preliminary course of bladder lavage must be instituted, and an attempt must be made to keep the bowels constipated for a few days prior to the cystoscopic examination.

Treatment of Colo-vesical Fistula

The ease of diagnosis is but a poor compensation for the difficult problem which confronts one as to the wisest treatment to adopt for colo-vesical fistula. The histories of the nineteen cases were as follows: colostomy, three cases; radical operation, one; radical operation and colostomy, three; no operative treatment, twelve; colostomy advised but refused, five; and spontaneous healing, one.

Colostomy.—The results obtained in three patients indicate that the case for colostomy is not a strong one. In one patient a fistula formed a year after colostomy had been done for diverticulitis. One should not lose sight of the fact that a colostomy is not the most desirable thing for the patient to live with, and the patient should not be made to pay the price of a permanent colostomy without any guarantee of reward in the alleviation of the bladder symptoms. In five cases in which colostomy was suggested the patients, probably wisely, turned it down, preferring to put up with the inconvenience of a fistula into the bladder than of one on to the abdominal wall. It must be remembered also that the bladder frequently becomes tolerant to the infection, and attacks of pyelitis are rare. The diverticulitis abscess has ruptured, and is draining into the bladder, so that which colostomy aims to do by operation has been achieved naturally. Moreover, there seems to be just as much liability to the development of a secondary abscess with the bowel draining on to the abdominal wall as with the bowel draining into the bladder. In one case urine actually leaked through the lower colostomy wound when the patient passed water. On this evidence colostomy is not a sound line of treatment, and certainly should not be undertaken without the patient being fully alive (a) to the discomfort of a colostomy, and (b) to the absence of any guarantee of cure of the bladder symptoms.

Radical Operation.—In the one case in which the radical operation was performed in one stage the fistula recurred after four months. The one-stage operation is unsuited to the condition, and I do not now give it any place in the treatment; in my view it should be abandoned.

Radical Operation with Colostomy.—Of the three cases in which radical operation was combined with colostomy one patient has been lost sight of. In the successful case

a first attempt at closure failed. The essential difference between this and the second and successful attempt was that in the latter the suture lines in the bladder and colon were separated by interposing the omentum. Though all three patients survived their operations, reference to the literature shows that the operation carries a relatively high mortality. It is difficult of accomplishment, and the subjects are nearly all poor operative risks. Suitable cases in which operation is justifiable are therefore few and far between, and if doubt exists discretion will be the better part. So far the case for operation is not a strong one. Colostomy alone is disappointing, and the operation for closure is only justifiable in a small proportion of cases.

What is the result of non-operative treatment? One patient in this series apparently underwent a spontaneous cure. Ten of the remainder continued in fair health. Not one of them suffered the stormy incidents that figured in some of the operated cases. In nearly all of them the attacks of abdominal pain were less frequent and less severe after the fistula had formed than before. The colon had acquired a natural safety-valve. This, in conjunction with the high degree of bladder tolerance and freedom from pyelitis, already commented upon, allowed the patients to lead a comparatively happy existence. At least five of them preferred the fistula to a colostomy.

A great deal can be done to alleviate the bladder condition by frequent bladder wash-outs, either in a course or at regular weekly intervals. The technique is simple, and the patients have little difficulty in acquiring it themselves. Dilute antiseptics, such as 1 in 20,000 oxycyanide of mercury, should be employed.

Conclusions as to Treatment.—Owing to the extreme difficulty of operation, the lack of guarantee of success, the high mortality, and the poor operative risk, an attempt to close the fistula at operation should only be undertaken when the patient is comparatively young and the fistula of recent occurrence. The operation should be preceded by a preliminary colostomy.

I wish to thank the Council of the Royal College of Surgeons for permission to use material from the Jacksonian Prize Essay, 1932, in preparation of this review, and my medical and surgical colleagues at King's College Hospital for permission to utilize their cases. I also wish to thank Sir John Thomson-Walker for his very kind loan of the clinical notes of some of his cases of fistula into the bladder.

BIBLIOGRAPHY

- Edwards, H. C.: *Lancet*, 1934, i, 221.
 Fifield, L. R.: *Ibid.*, 1927, i, 277.
 McGrath, B. F.: *Surg., Gynecol. and Obstet.*, 1912, xv, 429.
 Mailer, R.: *Glasgow Med. Journ.*, 1928, cx, 193.
 Mayo, W. J.: *Ann. of Surg.*, 1930, xcii, 739.
 Rankin, F. W., and Brown, P. W.: *Surg., Gynecol. and Obstet.*, 1930, i, 836.

The fourth conference of the International Association of Preventive Paediatrics (medical section of the Save the Children International Union) will be held this year at Lyons on September 27th and 28th. The subjects to be discussed and the names of the rapporteurs are: (1) "The Prophylaxis of Malaria in Children," by Professors Cacace (Naples) and Gillot (Algiers), with whom will be associated Dr. Larrouy (a British rapporteur will be named later); (2) "The Prophylaxis of Rickets and Convulsions," by Professors Adam (Dantzig) and Monrad (Copenhagen). Those who desire to be present at the conference, as well as to take part in the discussions following on the reports, are requested to communicate with the secretary of the I.A.P.P., 15, Rue Lévrier, Geneva, Switzerland.

EPHEDRINE AND PSEUDO-EPHEDRINE IN ASTHMA, BRONCHIAL ASTHMA, AND ENURESIS*

BY

J. B. CHRISTOPHERSON, C.B.E., M.D., F.R.C.P.
F.R.C.S.CONSULTING PHYSICIAN TO THE CITY OF LONDON HOSPITAL FOR
DISEASES OF THE HEART AND LUNGS; PHYSICIAN (TROPICAL),
ROYAL MASONIC HOSPITAL, LONDON

AND

MARJORIE BROADBENT, M.R.C.S., L.R.C.P.
D.P.H.CLINICAL ASSISTANT, CITY OF LONDON HOSPITAL FOR DISEASES OF THE
HEART AND LUNGS

The work here described was part of an inquiry arranged by the Therapeutic Trials Committee into the relative values of ephedrine and pseudo-ephedrine. The ephedrine and pseudo-ephedrine hydrochloride used in the tests were supplied to the committee by Messrs. Burroughs Wellcome and Co., who also provided a quantity of inert tablets for use as controls.

The comparative pharmacology of ephedrine and pseudo-ephedrine is discussed in detail elsewhere in a paper by Dimson.¹ The two alkaloids occur together in varying proportions in the several species of *Ephedra* used commercially for the manufacture of ephedrine. They have the same chemical structure—namely, $C_6H_5.CHOH.CH(NH.CH_3).CH_3$. There is, however, a physical distinction between the two, ephedrine being laevorotatory and pseudo-ephedrine dextrorotatory. On the basis of the findings with regard to other optical isomers, such as *l*- and *dl*-hyoscyamine, it might be expected that ephedrine and pseudo-ephedrine would have similar qualitative actions but would differ quantitatively. Clinical evidence may be said generally to support this view.

Before the trials were begun the actions of ephedrine and pseudo-ephedrine had been compared in India by Chopra, Krishna, and Ghose,² who reached the following main conclusions:

1. Both ephedrine and pseudo-ephedrine have a pressor action, the former being more powerful than the latter.
2. Pseudo-ephedrine is less toxic than ephedrine.
3. The dilator action of pseudo-ephedrine on the bronchioles is nearly as marked as that of ephedrine; and so is its constricting action on the mucous membrane of the nose. Both ephedrine and pseudo-ephedrine are useful in asthma, the latter having the advantage of producing fewer "side-effects."
4. Pseudo-ephedrine is more powerfully diuretic than ephedrine.

Apart from observations on a few ambulant cases of asthma, the blood pressures in which were subnormal, we have not explored the pressor action of these drugs. They have recently been carefully compared in patients by Dimson¹ and by Monro.³ The findings of these workers, and our own so far as they go, support the conclusions of other investigators that the pressor action of pseudo-ephedrine is much less than that of ephedrine.

Our inquiry has been directed mainly to the action of ephedrine and pseudo-ephedrine in asthma, in "chronic bronchitis," and in enuresis. In the course of this work we have naturally had an opportunity of comparing the toxicity of the two isomers, and of observing incidentally their supposed diuretic actions. It may be said at once, however, that, although we have not used pseudo-ephedrine intentionally as a diuretic where such was indicated, we have obtained no evidence in our inquiry

that it acts in this way in patients with normal cardiovascular systems. None of our patients has complained of increased frequency of micturition when taking it; in fact, the converse has, in a sense, been true, for pseudo-ephedrine has been used with success in the treatment of enuresis in children.

Comparative Tests in Spasmodic and in Bronchial Asthma

For the purposes of this study we have classified our asthmatic patients on the basis of symptoms and routine clinical examination into: (a) "spasmodic" cases—that is, cases without gross evidence of bronchitis, etc.; and (b) "bronchial" cases—that is, cases with gross evidence of bronchitis, etc.

SPASMODIC ASTHMA

Twenty-four cases of this type were treated successively with ephedrine and pseudo-ephedrine, with an interval between the two drugs, during which the patients were treated with inert tablets made to resemble those previously given. Ten of the patients were under the age of 10. Both ephedrine and pseudo-ephedrine were ordinarily given at bedtime in doses of 1/4 to 2 grains, according to the age of the patient and the reactions obtained: when necessary, however, the same dose was repeated in the morning on waking, or later in the day. The results may be summarized as follows: Five had no bad attacks during the whole period of observation. Fifteen were relieved of wheezing and dyspnoea both by ephedrine and by pseudo-ephedrine, but pseudo-ephedrine was less effective than ephedrine in relieving definite attacks. Four were relieved of wheezing and dyspnoea by taking pseudo-ephedrine every night. In these, pseudo-ephedrine was also effective in the attacks when they appeared, but less promptly than ephedrine in the same dosage.

BRONCHIAL ASTHMA*

The results in thirty-seven cases of this type were as follows. In eight, pseudo-ephedrine was not effective for acute attacks, though useful for chronic dyspnoea and wheezing. In nine, pseudo-ephedrine, in addition to its use in preventing attacks, was also effective in relieving slight attacks. Twenty patients had no severe attacks, and in fifteen of these pseudo-ephedrine, taken regularly, relieved nocturnal dyspnoea and wheezing.

It should be mentioned, incidentally, that thirty-two of our cases of spasmodic and bronchial asthma were also under treatment with sodium iodide throughout the inquiry. We have found this drug of definite value in the prophylaxis of asthmatic attacks. Our usual procedure is to give 30 grains at 6 p.m. and at bedtime. To more obstinate cases we also give 30 grains sodium iodide intravenously once a week. Complete immunity from severe attacks may be obtained for many months with this medication, but, in our experience, most patients need an additional safeguard in order to obtain freedom from nocturnal wheezing and dyspnoea. We have found both ephedrine and pseudo-ephedrine useful for this purpose, pseudo-ephedrine being frequently the more satisfactory on account of its lower toxicity. Of nineteen cases which gave a definite response to pseudo-ephedrine and were not under the influence of sodium iodide, twelve had relief from nocturnal dyspnoea when taking pseudo-ephedrine 1/2 grain regularly at bedtime; the remainder required 1 to 2 grains, according to the severity of their symptoms.

* In this group we have included, as stated, all the cases under observation in which asthmatic attacks were associated with gross evidence of chronic bronchitis. But, in the view of one of us (J. B. C., *Amer. Journ. Med. Sci.*, 1933, clxxxvi, 504), the disorder known as "chronic bronchitis" itself needs reviewing and reclassifying in relation to modern knowledge. For the accurate sorting out of the different conditions at present labelled "chronic bronchitis" on clinical grounds, a lipiodol examination of the lungs is necessary.

* A report to the Therapeutic Trials Committee of the Medical Research Council. One of the authors (J. B. C.) received a grant towards the expenses of this work from the Science Committee of the British Medical Association.

It may be said generally that pseudo-ephedrine is useful in any case of wheezing and dyspnoea due to spasmodic constriction in the bronchial tree. We have also found it of value in the chronic "exertion" dyspnoea associated with severe fibrosis of the lung, as in tubercle or bronchiectasis.

Toxic Effects of Ephedrine and Pseudo-Ephedrine Compared

Toxic reaction to ephedrine in small doses is more frequent than is perhaps generally realized. It leads many patients to delay taking the drug until the asthmatic attack actually appears—when ephedrine, compared with asthma, is regarded as the lesser of two evils. This reluctance to take ephedrine as a prophylactic is unfortunate, since experience shows that the greatest value of this drug is as a preventive. If, therefore, pseudo-ephedrine could be shown to be nearly as good as ephedrine in this respect, while being less toxic, it would have obvious clinical value in the routine treatment of asthma.

We found that the toxic symptoms produced by ephedrine and by pseudo-ephedrine were similar in nature, but differed in frequency of occurrence and in the dosage necessary to induce them. Thus in sixty-one asthmatic or bronchitic patients treated with both drugs thirty-two showed hypersensitivity to ephedrine, sixteen to pseudo-ephedrine, and thirteen to both. Of the thirty-two cases which showed hypersensitivity to ephedrine three had toxic symptoms with doses of 1/4 grain, twenty-three with 1/2 grain, and six with 1 grain. Of the sixteen cases which were hypersensitive to pseudo-ephedrine one had toxic symptoms with doses of 1/4 grain, eleven with 1/2 grain, and four with 1 grain.

Palpitation of the heart was the most frequent unpleasant reaction both with ephedrine and with pseudo-ephedrine. After that came insomnia or restlessness during sleep. Nausea or gastric pain was the most frequent unpleasant reaction in children under 14. Then came certain nervous symptoms: "queer head," giddiness, trembling, sweating, "cold and sleepy feeling," "cramp" in fingers, tingling feeling in skin.

In fifteen cases pseudo-ephedrine seemed to have had an equal physiological effect with ephedrine in the same dosage. Of these, seven showed slight toxic or unpleasant reactions, distributed as follows: four with ephedrine, three with both ephedrine and pseudo-ephedrine, none with pseudo-ephedrine only. The common dosage in these cases was: in ten cases, 1/2 grain, in five cases 1 grain. One of the fifteen had toxic symptoms at first after ephedrine, but after a course of pseudo-ephedrine toxic symptoms seemed to be less marked with ephedrine. In fourteen cases ephedrine was more effective than pseudo-ephedrine, but produced more unpleasant reactions. In these the doses of pseudo-ephedrine were double those of ephedrine, and one patient, a boy of 6, had slight toxic reaction (restless night) after pseudo-ephedrine 1/2 grain. There is no doubt that in order to get the same physiological effect pseudo-ephedrine must ordinarily be used in larger doses than ephedrine. As a general rule 1/2 grain is a usual dose of ephedrine for an adult, whereas 1 or 2 grains of pseudo-ephedrine has to be given to produce a corresponding physiological effect.

Four cases appeared to be resistant to pseudo-ephedrine though they responded well enough to ephedrine. In one of these pseudo-ephedrine produced unpleasant reactions. Forty-four cases of the total were definitely responsive to pseudo-ephedrine in doses of 1/2 to 2 grains, but only in fifteen could it be maintained that pseudo-ephedrine had an equal physiological effect to ephedrine, and seven of these had slight toxic symptoms with one or both drugs. In nine cases where pseudo-ephedrine was effective but less so than ephedrine no toxic or unpleasant reactions occurred with either drug.

Ephedrine and Pseudo-Ephedrine in Enuresis

We have recently treated cases of enuresis with ephedrine, either alone or in conjunction with an alkaline belladonna mixture, and have obtained very satisfactory results. Our attention was first called to this treatment by a letter in the *British Medical Journal* by L. E. Parkhurst.⁴ He gave ephedrine 1/2 grain at bedtime to children aged 10 to 12, and claimed that the treatment was "almost specific." In view of the response to pseudo-ephedrine in the majority of our cases of asthma it seemed of interest to determine whether this isomer was also effective in enuresis.

Our experiments with pseudo-ephedrine were carried out on children varying in age from 3 to 13, all of whom were attending a hospital out-patient department. Altogether twelve patients were treated during periods varying from one to four months. Of these cases eight were controlled by ephedrine 1/4 grain given at bedtime without other treatment, and four were more severe and needed ephedrine 1/2 grain at bedtime with an alkaline belladonna mixture by day. One of these four appeared to depend more upon the belladonna mixture than upon the ephedrine, though the giving of ephedrine 1/2 grain at bedtime seemed definitely to increase the power of control; the same applied when pseudo-ephedrine 1 grain was given at night.

Speaking generally, the substitution of pseudo-ephedrine for ephedrine in the same dosage slightly decreased the extent of control, maintaining it at a somewhat lower level. Thus in seven of the eight cases controlled by ephedrine 1/4 grain pseudo-ephedrine had to be given in doses of 1/2 grain to produce a satisfactory result. Only one of these responded to 1/4 grain of pseudo-ephedrine. Similarly, of the four cases on ephedrine 1/2 grain plus the alkaline belladonna mixture, two required 1 grain of pseudo-ephedrine plus the mixture; the other two kept well on 1/2 grain. One patient to whom no ephedrine had previously been given improved at once with pseudo-ephedrine 1/4 grain at night and responded completely to 1/2 grain. In three patients, who had incontinence by day as well as by night, an additional dose of ephedrine or pseudo-ephedrine was given in the morning with benefit. No symptoms suggesting intolerance were complained of by these patients or noticed by their parents after either drug. It appears, therefore, that effective doses may be given to children quite confidently, and pseudo-ephedrine may be considered a useful addition to the somewhat limited therapeutics of enuresis.

Conclusions

1. Pseudo-ephedrine is valuable as a gentle bronchial sympathetic stimulant sufficiently active to give relief in chronic cases of wheezing and dyspnoea.
2. It is a useful prophylactic against the nocturnal dyspnoea of asthma and against the dyspnoea of exertion in chronic bronchitis.
3. It does not effectively take the place of ephedrine, still less of adrenaline in acute attacks of asthma.
4. It is non-cumulative in its action, and produces fewer "side-effects" than ephedrine in the same or rather larger dosage.
5. Generally speaking, though not always, about double the dosage of pseudo-ephedrine is required to produce the equivalent physiological effect of a given dose of ephedrine.
6. In cases of enuresis in children pseudo-ephedrine is also useful, though perhaps not quite equal to ephedrine, which we consider to have high value in this condition.

REFERENCES

- ¹ Dimson, S. B.: *Quart. Journ. Pharmacol.*, 1934, vii, 23.
- ² Chopra, R. N., Krishna, S., and Ghose, T. P.: *Indian Journ. Med. Research*, 1931, xix, 177.
- ³ Monro, J. E.: *Quart. Journ. Pharmacol.*, 1934, vii, 32.
- ⁴ Parkhurst, L. E.: *British Medical Journal*, 1930, ii, 1103.

A NOTE ON THE TREATMENT OF ACUTE INFECTIVE ARTHRITIS OF THE KNEE-JOINT

BY

T. B. MOUAT, M.D., M.Ch.Ed., F.R.C.S.

HONORARY SURGEON, THE ROYAL INFIRMARY, SHEFFIELD

When a case of acute infective arthritis of the knee-joint is progressing unfavourably, in spite of repeated aspirations of the joint fluid and immobilization of the limb with effective extension, arthrotomy is usually performed. Arthrotomy on the ordinary lines—by antero-lateral and postero-lateral incisions—frequently fails to arrest the spread of infection, and it then becomes necessary to sacrifice the limb to save the patient's life.

During the performance of amputation through the thigh for this condition many surgeons, and particularly



FIG. 1.

those who had experience of surgery during the war, must have been impressed by the frequency with which an abscess is found to have spread up the thigh, from the subcrureus pouch to the cellular plane in front of the femur, deep to the quadriceps extensor muscles. The resemblance to the spread up the forearm in pyogenic infections of the common flexor sheath is striking. Kanavel described this, and the method of treatment he introduced, by prompt and early drainage of the infected sheath and of the cellular plane deep to the flexor muscles by the lateral incisions he described, which effectively drain the cellular space lying in front of the pronator quadratus and interosseous membrane, has completely altered the prognosis of that serious lesion.

In acute infective arthritis of the knee-joint the deep extension of infection to the subcrureus pouch and thence to the cellular plane in front of the femur is comparable with the line of spread of infection in the forearm, and early treatment on similar lines is advocated: by early drainage of the subcrureus pouch through lateral incisions, the outer of which is continued freely upwards through the vastus externus down to the bone, to drain the cellular space above the subcrureus pouch in front of the lower third of the femur.

The opportunity of making a complete dissection of the limb occurred some three years ago, at a necropsy in which death was due to septicaemia following infection of the knee-joint through a small wound from the point of a pick. The involvement of the joint was not originally suspected, and the acute infective arthritis which super-

vened had not been arrested by the incisions which were made a week later through the capsule of the joint. At the necropsy little pus was found in the joint itself, but a huge abscess, which contained over a pint of stinking pus, was found to extend upwards from the subcrureus pouch, in front of the lower half of the femur, deep to the extensor muscles. I was impressed by the resemblance to the spread of pyogenic infections of the flexor sheath up the forearm, and resolved to try the effect of treatment on similar lines at the first opportunity, which curiously enough arose the same night, in the following case:

A. B., male, collier aged 59, admitted to the Royal Infirmary, December 25th, 1931. He had been struck on the front of the right knee by a sharp corner of a steel plate, ten days earlier. The small lacerated wound on the outer side and above the patella became infected, and three days before admission he developed an acute infection of the knee-joint with rigors, and became seriously ill. On admission, pus spurted from the sinus on movement of the limb and on pressure over the swollen joint. A moderate amount of pus



FIG. 2.

was evacuated when the joint capsule was opened by lateral incisions. The outer incision was prolonged up the thigh through the vastus externus down to the femur. Some ounces of pus escaped from the subcrureus pouch, and a large abscess cavity, which extended up the lower third of the thigh, in front of the femur, was opened by the free upward extension of the incision. The infected subcrureus pouch, and the large abscess which ran from it up the thigh, were drained with strips of dental rubber. The infection gradually subsided, and the patient left the Infirmary at the end of three months with a stiff knee-joint but a useful limb, and resumed light work three months later.

Since then similar treatment has been employed, with success, in the following cases:

C. D., female aged 3½, admitted to the Sheffield Royal Infirmary on July 25th, 1932, with a history of three days' illness. The right knee-joint and lower thigh were swollen, with some redness of the skin, fixation of the knee-joint, and great tenderness over the lower end of the femur. Temperature 103.5°; pulse 135. Radiograms showed no evidence of any focus of infection in the bone. Pus was found in the joint on aspiration (*Streptococcus haemolyticus*). The capsule of the joint was opened by lateral incisions below the patella, and drains inserted down to the capsule, by the resident surgical officer. The temperature and swelling persisted, and on August 11th the subcrureus pouch and an extension abscess up the thigh, in front of the femur, were freely opened by lateral incisions, and drained with strips of dental rubber. The temperature thereafter remained down and the general and local condition slowly improved. The ultimate result was excellent, and the photographs of the case show that the range of movement is practically normal (Figs. 1 and 2).

E. F., male aged 31, on December 5th, 1932, ran a narrow chisel into the left knee-joint just above the patella. He thought it was merely a flesh wound, and applied pink lint and a bandage. The knee became very painful and swollen during the night, and on the following day the local condition was worse and he had several rigors. On admission to the Royal Infirmary on December 7th, the joint was distended with the skin inflamed around the small punctured wound, with streaks of lymphangitis up the thigh. Pus was aspirated from the joint (*Streptococcus haemolyticus*), and ether, introduced through the needle, bubbled out through the punctured wound, which had penetrated the subcrureus pouch. The subcrureus pouch, which was distended with pus, was emptied and drained through lateral incisions, the outer of which was carried upwards down to the femur. The drains were removed on the third day, and the discharge from the incisions and the joint reaction gradually subsided. Immobilization with weight extension was continued for three weeks, and he left hospital at the end of six weeks. He attended the massage department for four months, and when discharged had regained 45 degrees of flexion movement at the joint.

G. H., female aged 55, admitted to the Royal Infirmary, March 6th, 1933, diabetic, developed acute infective arthritis of the left knee-joint following extensive cellulitis of the leg. Haemolytic streptococci and *B. coli* were grown on culture of

the pus aspirated from the joint. The joint infection slowly subsided after transverse drainage of the subcrureus pouch and of the cellular space under the quadriceps through upward extension of the lateral incision. The limb was slung with weight extension, but the ultimate result was complete ankylosis of the joint with a fairly useful limb.

In the treatment of punctured wounds about the knee, when there is doubt as to whether or not the joint cavity has been penetrated, 2 or 3 c.cm. of ether should immediately be injected into the joint. Where the wound has involved the joint, the ether blows out from the external orifice, and immediate excision of the whole wound tract is indicated. The reaction set up by the ether in the synovial membrane appears to stimulate its resistance to infection.

Immobilization with suspension of the limb and weight extension and, if need be, repeated aspirations of the joint exudate are carried out. Where, however, acute infective arthritis of the joint develops or is already established when the patient comes under observation, the further steps described in the above article, on the lines of the Kanavel treatment of infections spreading up the forearm from pyogenic infection of the common flexor sheath, are recommended.

RENAL GLYCOSURIA MISTAKEN FOR DIABETES MELLITUS

BY

R. D. LAWRENCE, M.D., F.R.C.P.

AND

R. A. McCANCE, M.D., Ph.D.

THE DIABETIC CLINIC, KING'S COLLEGE HOSPITAL

It is over thirty years since Klemperer first drew attention to a harmless form of glycosuria, now generally known as renal glycosuria, but our clinical experience shows that it is still a frequent cause of diagnostic error. In this condition glucose appears in the urine at normal blood sugar concentrations because the renal threshold is low (under 0.17 per cent.), and not because hyperglycaemia exceeds a normal threshold, as in diabetes. The latter is particularly liable to be confused with cases of renal glycosuria in which the leak point is very low (under 0.100 per cent.) and the sugar excretion consequently heavy. Other reasons, too, contribute to mistakes in diagnosis, and unpleasant impositions of unnecessary treatment, as the following cases show.

CASE I

Mr. B., aged 47, underwent a complete examination before going abroad on an aeroplane expedition, for which perfect fitness was essential. Sugar was found in the urine, and a blood sugar curve was carried out, with the following result:

Time	Blood Sugar	Urine Sugar
Fasting: 50 grams glucose	Per cent. 0.037	Per cent. nil
1 hour after	0.053	0.4
1½ hours after	0.077	nil
2½ hours after	0.071	0.5

The subject was so anxious to go abroad, and the response to glucose was so unusual, that the man was suspected of having taken a dose of insulin before the test was made. When we repeated the curve (see table below) its general features were confirmed, showing a combination of an extremely high carbohydrate tolerance with a very low renal threshold.

Time	Blood Sugar	Urine	
		Sugar	Ketones
Fasting: 50 grams glucose	Per cent. 0.095	Per cent. 0.2	0
25 minutes after	0.125	0.8	0
40 minutes after	0.065	1.1	0
1½ hours after	0.111	0.4	0
2 hours after	0.118	0.5	0

CASE II

Mr. O., aged 30. Sugar was found in the urine during a routine examination when the patient had pityriasis rosea. He was at once put on a strict diet of 9 Lines—that was, 45 grams carbohydrate, 67 grams protein, and 135 grams fat—and, since the urine still contained sugar after six weeks, a blood sugar curve was performed, with the following results:

Time	Blood Sugar	Urine Sugar
Fasting: 51 grams glucose	Per cent. 0.116	
32 minutes after	0.175	+
64 minutes after	0.133	+
120 minutes after	0.143	-

No record of acetone in the urine was made, but the curve was held to be definitely diabetic, as hyperglycaemia persisted after two hours, and diet was again prescribed. When first seen by one of us, after four months of rigid diet, the blood sugar was normal at 0.099 per cent. two hours after breakfast, and slight glycosuria was present, which suggested a low threshold. Full diet was then prescribed, and one month later the following absolutely normal, though irregular, curve was obtained.

Time	Blood Sugar	Urine	
		Sugar	Acetone (Rothera)
Fasting: 50 grams glucose	Per cent. 0.115	Per cent. slight trace	very light trace
1 hour after	0.087	trace	slight trace
1½ hours after	0.137	1.5	0
2½ hours after	0.077	slight trace	0

It is probable that the first slightly abnormal curve was the result of the previous carbohydrate starvation, which produces *per se* a diabetic type of curve in a normal individual.

CASE III

Mrs. P. This woman had complained to her doctor of thirst and polyuria, and on examination large quantities of sugar were found, and a diet of about 100 grams carbohydrate a day was prescribed. After some weeks the thirst and polyuria improved, but the glycosuria persisted and a blood sugar curve was carried out.

Time	Blood Sugar	Urine	
		Sugar	Ketones
Fasting: 50 grams glucose	Per cent. 0.131	+	0
½ hour after	0.67	+	0
1 hour after	0.155	+	0
1½ hours after	0.076	+	0
2 hours after	0.037	+	0

This curve was taken to be abnormal on the strength of the fasting level. No reference was made to the renal glycosuria, but shortly afterwards the patient was referred to the diabetic clinic at King's College Hospital for treatment. When first seen her blood sugar was 0.1 per cent., and her urine contained about 2 per cent. of sugar. Full diet was prescribed, and a few days later a blood sugar curve was obtained (see below), which showed a response to glucose approaching the "lag storage" type, with an unusually low threshold. The patient was discharged on full diet, and has since been untroubled by symptoms.

Time	Blood Sugar	Urine	
		Sugar	Ketones
Fasting: 50 grams glucose	Per cent. 0.097	3	0
½ hour after	0.200	3	0
1 hour after	0.161	3	0
1½ hours after	0.089	3	0
2 hours after	0.085	2	0
2½ hours after	0.059	3	0

CASE IV

Miss C., aged 24, a nurse in a provincial hospital, was discovered, during a routine examination, to have sugar in her urine. The test was repeated and diet prescribed. Later a blood sugar curve was done:

Time	Blood Sugar	Urine Sugar
	Per cent.	Per cent.
Fasting: 50 grams glucose	0.100	1.8
1 hour after	0.200	4.0
2 hours after	0.180	5.0

Here again the renal element was neglected, and the curve was taken to be abnormal because the effect of a period of previous carbohydrate restriction was neglected (see Case II). Treatment for diabetes was recommended, and a month later insulin was felt to be necessary, as the glycosuria persisted. Small doses were given at first, but later—as the urine was never free from sugar—larger doses were thought to be necessary, and the girl was finally discharged on 20 units b.d. After a year of treatment, with continuous glycosuria and frequent overdoses of insulin, she was admitted to King's College Hospital for investigation. Her diet, which had been 55 grams carbohydrate a day, was raised to 100 grams, and 34 units of insulin in the morning and 24 units in the evening were prescribed. It was appreciated next day that a low renal threshold must be present, as a heavy glycosuria was found with low normal blood sugars. Insulin was discon-

tinued, and as a normal blood sugar level continued for three days a full diet was prescribed. (It is of interest that a strongly positive Rothera's test for ketone bodies was obtained on this patient for two or three days after insulin was omitted, but never at any other time.) After a week of full diet a blood sugar curve gave the following result.

Time	Blood Sugar	Urine	
		Sugar	Ketones
Fasting: 50 grams glucose	Per cent. 0.098	5.2	0
½ hour after	0.123	5.2	0
1 hour after	0.151	5.6	0
1½ hours after	0.142	6.4	0
2 hours after	0.142	7.9	0
2½ hours after	0.115	—	0

The patient was discharged on full diet and has remained perfectly well. Six months later the blood sugar curve never rose above 0.12 per cent.

CASE V

Male, aged 31. This patient is a perfect example of how renal glycosuria may be confused with diabetes. Towards the end of a very hot summer he complained of lassitude, slight loss of weight, thirst, and irritation of the penis. His country practitioner found over 5 per cent. of sugar in the urine. Treatment for diabetes was commenced without a blood sugar estimation. Starvation did not remove the glycosuria, and the patient was referred to one of us as a severe diabetic for insulin treatment. The urine was found to contain 3 per cent. of glucose and a high excretion of ketone bodies (strongly positive FeCl test), but the first blood sugar estimation gave a low normal figure of 0.082 per cent., and at this figure 2.5 per cent. of glucose was excreted. After two days' very full diet the following blood and urinary figures were obtained after 50 grams of glucose.

Time	Blood Sugar	Urine	
		Sugar	Ketones
Fasting: 50 grams glucose	Per cent. 0.085	2.5	No ketonuria
½ hour after	0.161	9.8	
1 hour after	0.166	7.1	
1½ hours after	0.150	7.1	
2 hours after	0.093	7.1	

The slight delay in the return to the fasting level, caused presumably by recent ketosis from dieting, was neglected in view of the otherwise normal curve. Full diet was prescribed, and perfect health has been maintained for five years, in spite of heavy and permanent glycosuria. The previous slight irritation of the penis has been prevented by frequent cleansing.

Discussion

Little discussion is necessary. All five cases illustrate very well the difficulties that may arise if the possibility of a low leak point is not considered in every case of glycosuria without typical symptoms of diabetes. Cases II and IV show the advisability of prescribing full diet for some days before a diagnostic blood sugar curve is done, and Cases III and V the dangers of treating diabetics without adequate blood sugar control. Even without blood sugars, suspicion should have been aroused in these cases, for glycosuria without symptoms and without acetonuria in a young adult is always suggestive of renal glycosuria, and is seldom found in diabetes mellitus.

Summary

Five cases of renal glycosuria are described which, for various reasons, had been diagnosed as diabetes mellitus.

A CASE OF ACUTE BILATERAL MASTOIDITIS

BY

HERBERT V. O'SHEA, M.D., M.Ch., D.L.O.

ASSISTANT SURGEON, METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL;
SENIOR SURGEON TO THE INVALID CHILDREN'S HOSPITAL,
PLAISTOW; ASSISTANT SURGEON TO THE LONDON
COUNTY COUNCIL

The following case of bilateral acute mastoiditis, complicating acute fronto-maxillary sinusitis due to the *Streptococcus haemolyticus*, is, I think, worthy of publication because recovery ensued in spite of the fact that, in addition to the above complications, the infection spread to the base of the left lung and the wrist-joint of the same side.

Case Report

A married woman when eight months pregnant developed an ordinary cold. Being a strong, healthy person she gave little attention to this, which was considered a trivial matter; nevertheless it left her with an irritable cough and a certain stuffiness of the nose. Three weeks later a septic spot developed on her chin; this was eventually opened and had entirely healed before labour set in. The latter was quite normal, and in due course the patient left the nursing home.

Almost from the beginning the patient complained of face-ache on the left side; this grew worse and gradually spread until the entire left half of the face became very tender and could not bear pressure. The temperature began to rise at night, and the cough became more troublesome. On January 16th, 1934, three weeks after the confinement, I was asked to see the patient.

EXAMINATION

Pus was coming from the left frontal and maxillary sinuses. The middle and inferior turbinal bones on the same side were swollen and inflamed. Acute inflammation of both sinuses was diagnosed, and an exploratory puncture of the left maxillary antrum was made under nitrous oxide anaesthesia. I found the sinus full of thick, foul-smelling pus. I ordered menthol inhalations and hot fomentations for the frontal condition, and when I saw the patient two days later the pain and tenderness had considerably decreased. I again washed out the antrum, which now contained thin, watery, blood-stained pus.

OPERATION ON RIGHT EAR

The patient complained of earache on the opposite side—namely, the right. Inspection of the drum showed attic suppuration. The membrane was inflamed and bulging in the upper part, while it was more or less normal in the lower. Paracentesis was performed, and the patient was removed to a nursing home, as there was marked tenderness over the mastoid tip and I anticipated an extension of the disease into the bone itself. This proved to be correct, for the next morning the skin behind the ear was red and oedematous and exquisitely tender.

A conservative mastoid operation was performed. The bone was very thick, and contained abnormally large cells full of pus. I found it necessary to expose a large portion of the dura, the lateral sinus from well behind the genu, and the bulb. The posterior wall of the external auditory canal was removed down to the bridge, leaving the latter structure. The post-aural incision was closed, and the cavity drained through the meatus. At the same time I did an endonasal anastomy. Some of the pus from both cavities was collected and sent for a pathological examination.

The following day, January 22nd, the condition of the right ear had considerably improved, but I was informed that the patient had had no sleep owing to the pain which had suddenly developed during the night in the left ear. This necessitated a hypodermic injection of morphine. Examination of the ear revealed acute attic suppuration. The appearances were exactly similar to those seen in the first instance, when the disease started in the right ear.

It was then that I received the following report from the pathologist.

EXAMINATION OF PUS FROM ANTRUM

The specimen was much admixed with blood, but direct films showed the presence of some pus cells (polymorphs) in addition to the blood cells, and a number of Gram-positive micrococci, mostly in pairs, but some of them in chains, were also to be seen. Pure growths of haemolytic streptococci of the *pyogenes* type have developed.

Opinion.—A heavy infection with haemolytic streptococci of the *pyogenes* type is present.

MASTOIDECTOMY ON LEFT EAR

This report, together with the rapid spread of the disease to the other ear, indicated the seriousness of the case. I performed a paracentesis on the left side that afternoon. Pus mixed with gas escaped under pressure, and the hissing noise made by the latter as it came away could be heard by those around. A large dose of anti-streptococcal serum was given at the same time. This was repeated on the following evening, and a third dose was administered three days later.

On January 23rd the patient's condition was worse. There was marked tenderness over the left mastoid, and on the following day I performed a mastoidectomy on the left ear. The condition found was similar to that on the right side, but much more advanced. The mucous lining of the mastoid cells had assumed a polypoid appearance, and as each cavity was opened the diseased membrane shot out like peas from a pod. The tegmen was entirely eaten through, and watery pus bathed the dura. It was necessary to expose a considerable area of the meninges to rule out an extradural abscess. The lateral sinus and bulb were also laid bare. In this case the radical operation had to be performed as the structures in the tympanic cavity were destroyed. The post-aural incision was closed and the ear drained through the meatus.

Immediately after the first operation it was noticed that the cough seemed to get worse. The sputum was blood-stained and contained pus. The report from the pathologist showed that the same organism, the haemolytic streptococcus, was present. Examination of the chest disclosed that the base of the left lung was affected, but the disease tended to be localized. This cleared up in about a fortnight, and the patient appeared to be none the worse for it. When I saw her in the first instance the left wrist was very inflamed, painful, and swollen. There was complete loss of power in it, and the forearm had to be kept in a sling. After the antrum was opened and drained this subsided. It is now quite normal, except for a little shooting pain at times.

Convalescence was uneventful and recovery rapid. The maxillary antrum was the only thing that caused any inconvenience. A viscid blood-stained discharge continued in spite of repeated washings and instillations of various antiseptics. I had this examined again, and it was found to contain the haemolytic streptococcus. It was, only after an autogenous vaccine had been made from the discharge and a course of injections given that the antrum cleared up. The patient now enjoys perfect health, and with the exception of a slight diminution of hearing on the left side, on which the radical operation was performed, she suffered no inconvenience whatever.

A blood count was twice made. The first, immediately after the second operation, was as follows: red cells, 2,700,000 per c.mm.; leucocytes, 10,160 per c.mm., of which 80 per cent. were polymorphs; haemoglobin, 46 per cent. The second, taken ten days later, showed: red cells, 3,720,000 per c.mm.; leucocytes, 8,040 per c.mm., of which 70 per cent. were polymorphs; haemoglobin, 65 per cent.

The anaesthetic given in the first operation was evipan sodium by intravenous injection, and in the second nitrous oxide and oxygen. Dr. M. Hudson administered the anaesthetic on both occasions.

I wish to thank Dr. John Oliver for his reports on the pathology of the case, and also Dr. Saxby Willis and Mr. Buckland Jones for their advice.

THE RADIOLOGY OF LIVING ANATOMY*

BY

JAMES F. BRAILSFORD, M.D.

RADIOLOGICAL DEMONSTRATOR IN LIVING ANATOMY, UNIVERSITY
OF BIRMINGHAM; HONORARY RADIOLOGIST, THE QUEEN'S
HOSPITAL AND THE ROYAL CRIPPLES HOSPITALS,
BIRMINGHAM

Sir George Newman's speech at the opening of the Annual Congress of the British Institute of Radiology in 1932 contained the following statement:

"When I was trained as a medical student, a great many years ago, I had to learn my anatomy on the dead body. But we may now, by means of *x* rays, learn in the ideal way (which we thought of in those far-off days as impossible to reach) of the anatomy of the living body; ideal, because all the tissues of the human frame are different in the dead body from what they are in the living. The *x* ray has, therefore, real weight in the study of human anatomy, of anatomy, not as it lies in dust and ashes, but as a living entity, the crown and summit of nature, the greatest thing as far as we know that has been created, on this planet at all events, if not in the whole universe."

Radiological study of the living body has contributed considerably to our knowledge of anatomy, but such knowledge must be regarded as supplementary to that which can be obtained in the dissecting room only. It is dependent on the relative density of the tissues or organs and their contents to *x* rays, and is in fact a study of shadows. While in the case of radiographs of the bones or of the lungs detail of the delicate structure can be portrayed, in most cases we have to base our knowledge on the internal or external contour of the organ. By the aid of substances of a lesser or greater density than the surrounding tissues we are able to show the outline of the interior of every tubular viscus. Finally, by the aid of the fluorescent screen, the movements of the viscera and skeleton can be followed.

Since radiology is now recognized as an essential method of examination, the extent and usefulness of which increases with improved technique each week, it becomes imperative for the medical student to appreciate the radiographic appearance of the normal anatomy. Unless the student or clinician has made himself familiar with the radiographic appearances, no matter how intimate his knowledge of dissecting room or surgical anatomy may be, he will be liable seriously to misinterpret the shadows produced by *x* rays. It is not suggested that the student should have an extensive course in radiology added to the already crammed curriculum. That it would have to be an extensive course if the whole subject were taught becomes obvious when we see how radiology has spread its tentacles into every branch of clinical medicine. So vast is the data already collected, and so rapidly are further advances being made, that it is certain radiologists of the future will have to specialize in the study of one system only if progress is to continue.

Radiology of the living anatomy may be learnt from: (1) radiographs taken in standard positions of patients of known age and sex; (2) serial radiographs taken at intervals of fractions of a second, minutes, days, weeks, or months to show development; (3) fluoroscopic examination; (4) cine-radiography. The student must first confine himself to a study of radiographs of normal structures at different age periods from infancy to old age, taken in standard positions. The variations to be seen in these, of the skeletal system alone, will indicate the extent of the knowledge required for correct interpretation. In no part are the variations of form more apparent than in the skull, in which we never see the

same radiographic appearance in two individuals, a factor which would be infallible for criminal records.

Obviously it will be impossible to give a very extensive account of the variations met with, and I shall confine myself to a demonstration of a few of the radiographic appearances of normal structures which have led to serious misinterpretation.

Radiography of the Skull

Radiographs of the skull must be taken with the central ray in the sagittal plane; the slightest obliquity of the skull respective to the central ray may result in the production of a radiograph in which the dense structure of the base obscures the normal accessory sinuses on one side, and this may lead to the error of diagnosing that the sinus is occluded. The dense shadow of the petrous portion of the temporal bone may be projected through the plane of the antrum, and its straight upper surface may be misinterpreted as a fluid level. The most serious results have followed the misinterpretation of shadows of pathological processes of the maxilla and mandible as the normal maxillary antrum or foramina. Examples have been published of septic foci which have been so missed in spite of repeated *x*-ray examinations, and in some instances the health of the patients has been seriously affected.

An unusual instance of misinterpretation of the normal was submitted to me three years ago. A child with a swelling at the angle of the mandible was *x*-rayed, and the radiograph was misinterpreted as showing a sarcoma. A surgeon was consulted, and resection of the involved bone was decided upon. Immediately before the operation the surgeon asked me if I could give him an indication of the boundary of the tumour, so that he could gauge what length of bone he must remove from the crest of the ilium to form a graft. It was demonstrated to him that the radiograph showed normal structures only; the shadow of the hyoid bone, which was projected against the mandible, had been taken for that of a sarcoma. It was discovered a few days later that the swelling was due to mumps.

When I was recently confronted by a dental surgeon's misinterpretation of the shadow of the pharynx as an abscess cavity with a sinus (the shadow due to the epiglottis) tracking forwards, I realized how necessary it was for the individual using *x* rays to learn the radiological anatomy of the normal before attempting to interpret pathology.

The Thorax

When radiographs of the thorax in inspiration and expiration are carefully compared it becomes apparent at once that radiographs must always be made in the same phase of respiration if they are to be compared one with the other. Radiographs of the thorax also indicate another important feature—namely, that those structures which are in close contact with the radiographic film appear denser than the surrounding tissues (owing to the fact that this area is, in this way, screened from secondary radiation), and often show a fairly well defined periphery. The significance of this fact is illustrated in the following case.

A patient was radiographed at a tuberculosis clinic, and a diagnosis of bilateral spontaneous pneumothorax was made. Later, when my opinion was sought, I suggested that further radiographs should be taken: one with reduced pressure against the breasts, and another with the film barely touching the patient. These proved that the abnormal shadows were due to the contact cutting out secondary radiations and consequently reducing the density of the protected part.

Contact of the male genital organs with the film results in the appearance of well-defined opacities on the radiograph, and these shadows have been misinterpreted as stones. Irregular calcification in the thyroid,

* Abstract of paper read to the Rugby and District Medical Society, and illustrated throughout by lantern slides.

cricoid, and costal cartilages also results in the appearance of opacities on the radiograph, which have been misinterpreted as evidence of tuberculosis, or, in the case of the lower costal cartilages, of stones in the gall-bladder or kidney. It is not unusual to hear that the normal appearance of the acromio-clavicular joint has been misinterpreted as showing a fracture. The importance of adopting standard positions in which the whole of the structure can be projected on the radiograph is illustrated by radiographs of the wrist or hip-joint, in which severe fractures may be masked by the overlapping of shadows of other structures.

Alimentary Canal

Little can be learnt of the anatomy of the alimentary canal by the plain radiograph. The lumen of the structures must be filled with some media, the density of which is less or more than that of the surrounding structures. It is the common practice to use a dense medium, such as barium. It is essential, however, before an opaque medium is introduced into any part of the body that a preliminary radiographic examination should be made, so as to be quite sure that no abnormal shadows exist which might be completely obscured by the opaque material. The essential part of the examination of the alimentary canal involves fluoroscopy, of which a brief account is given later. The gall-bladder can be visualized by absorption or injection into the portal circulation of such substances as sodium tetraiodophenolphthalein, which, being excreted by the liver in the bile, make the latter denser than the surrounding structures, it can therefore be shown on the radiograph. In this examination we are dependent in some cases on so-called negative shadows—that is, gall-stones less in density than the dye-containing bile. Such negative shadows may be simulated by the shadows of bubbles of gas in the duodenum being projected into the gall-bladder shadow.

Serial Radiographs

A single radiographic examination may, in health or disease, demonstrate clearly the outline of the structures under observation, but more information of the structures can be obtained by taking a series of radiographs with an interval of time (depending upon the nature of the examination) between each. If we are studying the movements of the heart, stomach, or small intestine, the interval between each radiograph must be very short, but if we are concerned with the development of the skeleton an interval of a month would suffice. The influence of sex, food, medications, ill-health, and endocrine disorders in the growth of the skeleton can be determined in this way. In the study of pathology this method of examination is invaluable, and provides evidence which cannot otherwise be obtained. Too often further radiography is neglected if the first examination has not revealed any abnormality.

Fluoroscopic Examination

When the student has made himself familiar with the radiographic appearance of the normal anatomy he will be in a position to appreciate the more quickly the shadows projected on the fluorescent screen. The time allowed for screen examination is necessarily limited, owing to the danger of exposure of the operator and patient to the x rays. The interest shown by students in the screen examination of their colleagues is sufficient testimony of the value of this method for bringing further stimulation to the study of anatomy.

Many of the features learnt from a study of radiographs will be readily noted by the student during the screening, but it is the observation of movement of the viscera and their contents which excites the greatest interest. Such

examinations teach the student the position of the viscera in the erect, supine, or prone position. The movements of opaque meals through the alimentary canal produce a living picture, which is of the greatest contrast to that exhibited in the dissecting room, and cannot fail to impress him.

Cine-radiography

The very limited time permissible during screening, and the limited area which the observer can watch, make this method of demonstration by no means ideal for teaching purposes. What we need is a carefully edited cine-radiographic film study of the viscera, an ideal which we are rapidly approaching. The desirability of this method of demonstration was recognized by Dr. John MacIntyre of Glasgow as early as 1896—that is, a few months after Röntgen had discovered x rays. He exhibited a cine-radiograph film 40 feet in length, showing the movements of the bones of a frog's leg, to a meeting of the Glasgow Philosophical Society in that year. In the *Archives of Skiagraphy* of April, 1897, he described his experiments with direct and indirect cine-radiography. This pioneer work has been followed up by other workers in different countries.

In this country Dr. Russell Reynolds contributed a paper in 1925 describing his experiments with indirect cine-radiography. (Since writing this Dr. Russell Reynolds has informed me that he has continued his experiments and now has a reliable technique which is relatively inexpensive.) More recently Robert Janker at Bonn advanced the method to such an extent that we reasonably expect soon to use cine-radiography in teaching the radiology of living anatomy. Briefly the two methods are as follows.

Direct Cine-radiography.—The patient is placed in front of an x-ray tube and against a leaded screen containing a window opposite the area to be radiographed. Behind the screen a large roll film of the necessary size is fixed on rollers, and the timing of exposure so devised that at least sixteen exposures per second can be made on the rapidly changing film surface. From the film obtained reduced films, capable of fitting into a cine-projector, would have to be made. The large contact films permit one to study the changes in form perhaps rather better than the small films obtained in the indirect method, but the cost is very considerable, and while the method may be used for the production of standard teaching films it can never come into general use in radiographic examination. Simpler devices have been made which enable us to take a dozen or more exposures within a short time, and these are useful in the examination of the stomach and duodenum. A modification of this direct method for recording the movements of the heart was described by Robert Knox in 1925.

The Indirect Method.—This method depends on a cine-photographic record of the images produced on the fluorescent screen. The screen image must be sharply defined, and there must be no afterglow. By this method Janker has been able to make cine-radiographic films which are little inferior to those obtained by the direct method but at a trifle of the cost. The intervals between each exposure will determine the rapidity (when shown in the cine-projector) of the movements of the structures examined. We may compare the cine-photography of growing flowers—in which there may be an interval of several hours or days between each exposure, but when projected the growth, which has taken several weeks and which was imperceptible to the eye, is completed in a few minutes—with the cine-photography of the horse-race during which many exposures per second are made, but when projected at the normal film rate appear as a slow-motion picture in which even the muscular contractions can be followed.

Both these methods may be applied to cine-radiography of the human body, and should solve many of the problems of visceral movement. The movements of the heart in diastole and systole during expiration and inspiration could be so analysed. The peristalsis of the alimentary canal could be determined with greater accuracy and films obtained which would be preferable to fluoroscopic screen demonstration for the teaching of students. By this means the movements of joints can be studied better than in any other way. Two years ago Professor Lockhart, Fowler, and I conspired together to show the movements of the spine. Our efforts are to be seen in Film No. 238 of the Kodak Medical Film Library. We determined, in this manner, that extension of the spine is greater than flexion, and that the greatest range of movement takes place in the lumbar area, the least in the dorsal. This was demonstrated in a girl who was able to bend backwards and place her head between her thighs. The extraordinary mobility of the lumbo-sacral joint was also demonstrated. In a woman, aged 34, I showed that, while with flexion of the spine the anterior surface of the sacrum formed an angle of 170 degrees, with the line of the anterior surface of the lumbar vertebrae with extension the angle had been diminished to 100 degrees.

Clinical Memoranda

TREATMENT OF PANCREATIC CYSTS

I recently published¹ an account of a case in which, in a male patient, I successfully anastomosed a persisting sinus, following external drainage of a pancreatic cyst, with the anterior surface of the stomach. This operation was rendered necessary on account of the excoriation of the skin of the anterior abdominal wall by the active pancreatic fluid discharging from the sinus. The result was so satisfactory that when I encountered my next case I decided to make an anastomosis between the cyst and the stomach at the first operation, and so save the patient several weeks or even months of discomfort resulting from that constant discharge of irritating fluid over the abdominal wall which invariably follows external drainage. The result exceeded my expectations. The abdominal incision healed by first intention, and the patient left hospital in three weeks. She has been seen several times since, and on October 30th, 1933, she was examined clinically and by radiography, but no sign of the cyst could be made out.

A woman, aged 50, was admitted into the Cardiff Royal Infirmary with a history of intermittent attacks of indigestion for four to five years. On July 11th, 1933, she had sudden severe pain in the upper abdomen lasting from two to three days. Examination revealed a large tense swelling in the upper abdomen, with the stomach and transverse colon running across its anterior surface.

The abdomen was opened through a right paramedian incision, and the cyst exposed by a two-inch incision in the gastrocolic omentum. An incision half an inch long was made in the cyst, and a catheter quickly introduced and secured by a purse-string suture previously inserted. The cyst was emptied and repeatedly washed with saline, through the catheter. The fluid first drained from the cyst contained altered blood from a recent haemorrhage, and this may have accounted for the severe attack of pain on July 11th. The catheter was then removed and the anastomosis made between the cyst and the anterior surface of the stomach near the greater curvature. A clamp was used on the stomach, but not on the cyst. The actual operation was performed in the same way as a gastro-enterostomy. To avoid the possibility of obliterating the opening during the suturing two devices were employed: (1) the sutures were

interrupted in three or four places; and (2) a piece of rubber tubing one inch long and a quarter of an inch in diameter was inserted into the two openings, after putting in the posterior halves of the sutures. When the sutures were completed the tube was pushed into the stomach. The abdomen was closed without drainage.

As the posterior surface of the stomach is adherent either to a true or to a pseudo-cyst of the pancreas, it might be suggested that it would be easier to make an opening in the stomach anteriorly, and then to make a stab opening through the adherent walls of the stomach and cyst. The same procedure might be carried out in the opposite direction after opening the cyst. There are, however, at least two theoretical objections to these modifications of the operation actually performed: (1) the stomach contents might enter the cyst and possibly give rise to complications; and (2) they resemble a perforation of the gastric ulcer into the lesser sac too closely to be undertaken without serious consideration, in view of the apparent safety of an anterior anastomosis.

I am indebted to Dr. Owen Rhys, radiologist to the Royal Infirmary, for the taking of the radiographs.

D. J. HARRIES, M.D., D.Sc., F.R.C.S.,
Surgeon, Cardiff Royal Infirmary.

INJURY TO THE CERVICAL REGION

The following case of injury to the cervical region presents some unusual features.

A man aged 24 was brought into hospital at 11.45 p.m. on August 30th, 1933, having been run into by a motor cyclist about half an hour earlier while helping to mend a puncture, his own machine lying close by. He landed with the three machines on top of him. There was no loss of consciousness, and the only apparent injury was a compound fracture of the right tibia and fibula, and some bruising of the left arm. The actual wound was half an inch long, and was bleeding freely; this was dressed, and the patient was put to bed with his leg on a back splint. The following day his general condition was good, but his temperature was 101.6° F. He said he felt well. He had no headache, his pupils were equal and reacted briskly to light, the tendon reflexes of his arms were present and equal, and those of his left leg were normal. The condition of his leg was quite satisfactory, and a stitch was put in the wound.

On September 1st, having slept well, he ate a good breakfast and appeared quite fit, except that his temperature was 100.4°. At about 10.30 a.m. he became strange in his manner. He answered questions as though not quite sure of what was being said, and he was found sitting in bed hanging his sound leg over the side. His expression appeared vacant. He said he had no pain or headache. His face was very flushed; his pupils were equal and reacted briskly to light, but were moderately dilated. By 12 noon he was only semi-conscious, and was incontinent of urine; by 2 p.m., thirty-nine hours after the accident, he was quite unconscious, lying on his back with his arms flexed across his chest. At 7 p.m. a crop of petechial haemorrhages was first noticed, symmetrically distributed on both shoulders, from first below the clavicle in front to the spine of the scapula behind, just encroaching on the upper arm; there was also a superficial haematoma spreading up the back of the neck to the occiput. The patient was sweating profusely on his face and neck; his temperature was 100.8°, his respirations stertorous and increased to 30, and his pulse 120, with volume and tension good. He was incontinent of urine, his bladder not being distended. He could not be roused, but he would take drinks. He was still lying with his arms flexed across his chest.

On September 2nd he did not seem to be so deeply comatose. His breathing had been Cheyne-Stokes in character at times during the night, but was now regular again, though stertorous. There were a few more petechial haemorrhages, still limited to the same area; there was no stiffness of the neck. The following day his condition was much the same. A lumbar puncture was performed, the fluid being quite clear and under normal pressure. On September 5th his general condition was much weaker. He would only drink at times, and was obviously dying. A

¹ British Medical Journal, April 15th, 1933.

further lumbar puncture was performed; the pressure of the fluid was slightly increased, and the analysis was: total protein, 45 mg.; total cells, 30 to 35 per c.mm.; dextrose content normal; culture sterile. The patient died on September 6th, seven days after the accident, having been unconscious for five and a half days.

A post-mortem examination showed the following: abdominal organs and heart normal; lungs congested; brain normal, no haemorrhage into its substance, and no extradural haemorrhage. It was noticed that the dura bulged just where the brain stem entered the cervical canal. On further investigation a blood clot was found between the bone and the dura mater in the upper cervical region laterally, not extending to the base of the skull. The lower limit was not investigated. The cervical vertebrae were exposed posteriorly, but no gross fracture was seen. The fracture of the leg bones was quite healthy. The interesting features of this case were: the petechial rash, sweating, temperature, and unconsciousness.

CAUSE OF DEATH

The anatomy of the region may help to show the cause of death. The vertebral arteries run up one on each side of the vertebral foramina from the sixth cervical to the axis. They then turn upwards to the foramina in the atlas. After passing through these they run backwards, piercing the posterior occipito-atlantoid ligaments and the dura mater to enter the cranium through the foramen magnum. In the vertebral foramina they are surrounded by a plexus of veins and branches of the sympathetic, and lie in front of the cervical nerves. The lateral spinal branches run through the intervertebral foramina into the vertebral canal and divide into (a) spinal branches ramifying on the backs of the vertebral bodies, and (b) medullary branches to the cord and membranes. The dura mater of the cervical canal is loosely adherent to the bony wall by areola tissue, and is not so firmly attached as inside the cranium. The position in which the patient lay with his arms flexed across his chest points to irritation of the sixth cervical nerve. The blood clot was seen at the level of the first cervical nerve, and so presumably extended down from C1 to C6. The petechial rash, occurring in the cutaneous distribution of C3 and C4, was probably due to irritation of these nerve roots, and this phenomenon has been observed in compression of the cervical cord. The sweating was mainly confined to the face and neck, and the pupils were moderately dilated; both were due to irritation of the cervical sympathetic.

Hyperpyrexia is known to occur in fractures and fracture dislocation of the cervical region. This is far removed from the recognized heat-regulating centre of the corpus striatum and the pons, and is also too low for the medulla to play any part in its production. An animal from which the sympathetics in the neck have been removed is unable to adapt itself to changes of temperature, so that irritation of the cervical sympathetic may have been the cause of the pyrexia. The only explanation I can offer of the cause of the mental changes and of the unconsciousness, which were present for six days before death, is that the vertebral arteries themselves were compressed by the haematoma either in the atlanto-occipital ligaments or within the cervical canal, giving rise to cerebral anaemia.

Death was due to haemorrhage from a medullary or spinal branch of the vertebral artery compressing the spinal cord above C4 and so paralysing the phrenic nerves.

BIBLIOGRAPHY

- Cunningham's Anatomy, 1931, p. 914.
Bailey, Hamilton: *Physical Signs in Clinical Surgery*, 1933, p. 254.
Speed: *Fractures and Dislocations*, second edition, 1928, p. 199.

H. HADAWAY, M.R.C.S., L.R.C.P.,
Resident Medical Officer, Woking and
District Victoria Hospital.

Reviews

THE ANAEMIAS SURVEYED

Dr. JANET VAUGHAN describes her book on *The Anaemias*¹ as an attempt to review the present position of knowledge as regards anaemia. She has been fortunate in having the assistance of Professor H. M. Turnbull, who has written the descriptions of the normal and pathological anatomy of blood formation. Only those who have essayed a similar task will appreciate the amount of study, of thought, and of personal research which have gone to the making of this short book. It is a compact, critical, and up-to-date survey, which will be welcomed by the large and increasing number of workers who are interested in the advancement of knowledge in diseases of the blood.

In the bibliography reference is made to between three and four hundred papers, the great majority of which have appeared during the last ten years. This has been a period of revolutionary change in haematology, but though there may be disagreement about details, there will be general agreement with the main plan sketched out by Dr. Vaughan. In the opening chapter normal erythropoiesis is discussed, and the normal values of red cells and haemoglobin and other haematological data are summarized, special attention being paid to the size and haemoglobin content of the red cells. The anaemias are then classified into (1) the dyshaemopoietic anaemias due to failure or abnormality in blood production, (2) the post-haemorrhagic anaemias due to abnormal loss of blood, and (3) the haemolytic anaemias due to excessive destruction of blood in the organism. In the large section of the book devoted to the analysis and description of the anaemias due to deficiency of substances essential to the nutrition of the bone marrow we traverse what has now become familiar ground. Less familiar, and for that reason perhaps less convincing, are the suggestions that the severe anaemia sometimes associated with metastases in the bone marrow may be a deficiency anaemia, the cancer depriving the haemopoietic cells of necessary food factors; or that acholuric familial jaundice may be due primarily to some disturbance in the metabolism or nutrition of the red cells.

The book is not intended to be a primer on haematology, and conditions such as leukaemia and the haemorrhagic states are discussed only in so far as they involve the erythron. It is a monograph for the research worker, the pathologist, and the consultant physician, who will find in it a mine of carefully documented information, which is presented clearly and interestingly, and which cannot fail to stimulate haematological research.

LATENT SYPHILIS

Essays on Chronic and Familial Syphilis,² by GRIFFITH EVANS, should cause a considerable flutter in medical dovecotes, for the author has the courage to tell us that we are constantly missing the diagnosis of syphilis through being so hidebound and blind. He points out that the disease is one of the lymphatic system first and last, and that consideration of this fact will explain many of those obscure signs and symptoms which puzzle us so often and which he ascribes to latent syphilis.

Starting on the assumption that there is a cycle in the life of the *Treponema pallidum*, he considers that many of

¹ *The Anaemias*. By Janet M. Vaughan, D.M., M.R.C.P. With Notes on Normal and Pathological Erythropoiesis by Hubert M. Turnbull, D.M., F.R.C.P. London: H. Milford, Oxford University Press, 1934. (Pp. 248. 12s. 6d. net.)

² *Essays on Chronic and Familial Syphilis*. By Griffith Evans, M.A., D.M., F.R.C.S. Bristol: J. Wright and Sons Ltd.; London: Simpkin Marshall Ltd. 1934. (Pp. 91; 13 figures. 7s. 6d. net.)

the so-called meta- and para-syphilitic manifestations are due to the "granules," and that latent syphilis is the cause of many chronic complaints, the diagnosis of which is frequently missed, and quotes as examples nervous dysphagia, basal congestion of the lungs, various forms of glossitis, and the "chronic abdomen." The evidence that these are attributable to syphilis is often weak, because the Wassermann reaction may be negative, the *Treponema pallidum* not demonstrable, and no pathognomonic lesions evident, but it is the therapeutic response which matters and which is of such importance to the general practitioner.

On the subject of the Wassermann reaction the author has some very wise remarks to make: this test has become a "master" and not a "servant"; many people think a negative reaction excludes syphilis; and "the diagnosis of syphilis is more often missed because a Wassermann reaction is negative than made because the reaction is positive." One way of approaching the problem of the diagnosis of latent syphilis is to observe the signs and symptoms in those who have it, and to argue from these its presence in those who may have it.

This little book is composed of matter that is largely of a highly controversial nature, and many of the opinions expressed are revolutionary; but it is refreshing to read the work of a man who has evidently given much thought and observation to his subject. Not all that is written must be taken for "gospel"—one might be led to believe that most of us are syphilized—for many of the arguments are rather unconvincing, while some of the deductions are made on what appear to be doubtful premisses. But at least we are given food for thought, and if a few bismuth injections or some mercury and potassium iodide will clear up the symptoms the practitioner will gain the gratitude of his patient, and if he fails he will have done no harm; we are not told much about failures. The author, like the Russian Socialists, may be ahead of his time, but perhaps he will help to lift some out of the "slough of despond."

ORAL SURGERY

Professor MEAD'S *Oral Surgery*³ has been compiled as the complement of his treatise, *Diseases of the Mouth*. That dealt with diagnosis; this deals with the actual surgery. The book is intended for everyday dentists and for students, and very wisely the author limits himself almost entirely to the minor surgery of the mouth. (Most pertinently he notes in his preface that, strictly, there is no such thing as *minor surgery*.)

At first sight, with its 1,000-odd pages and forty-seven chapters, it appears a formidable tome, and one wonders whether oral surgery, major and minor together, can possibly be stretched to such lengths. Apprehension on this score, however, soon vanishes; indeed, one often wishes the author had been more expansive, for the book is a record of wide experience by an acute observer. The first 300 pages are devoted to diagnosis, surgical anatomy, choice of anaesthetic, preoperative preparation, sterilization (in this chapter the author points out that, since spores have no means of attaching themselves to anything, scrubbing in running water may be relied on to remove them, while the actual vegetating organism is as easily killed as any other organism) inflammation, surgical bacteriology, and kindred subjects. All are treated in a clear, practical fashion. The remaining 700 pages deal with oral surgery proper and, with the exception perhaps of cleft-lip and cleft-palate and bone-grafting, with conditions any dentist in "general" practice may be called upon to treat. It is interesting to note the author's qualified approval of such operations as

replantations and apicectomy, and his not quite convincing defence of alveolectomy. The chapter on removal of foreign bodies should be read by all who are likely to be called on to remove broken hypodermic needles from the jaws. That on fractures gives, we think, almost too hopeful a view of the fate of alveolar fragments carrying teeth. Necrosis receives but short notice, though its precursor, acute osteomyelitis, is fully dealt with; and rightly so, since a necrotic termination may sometimes be averted and often minimized. We agree with the author that there is no ground for incriminating extraction during the acute stage as a cause of subsequent necrosis. He seems to imply that *Staphylococcus pyogenes aureus* is the most frequent causative organism, but this is contrary to our experience.

The chapter on "Periodontal Disease" gives a reasoned summary of the various methods of surgical treatment of this disease, with perhaps too little appreciation of the *vis medicatrix naturae*. In a note on osteomalacia Professor Mead states that there may be "a softening or disintegration of tooth structure" in this disease: it would be of great interest to have this observation confirmed. The explanation of the aetiology of protrusion of the mandible offered on page 753 seems to us very open to question, as also is the claim that syphilis and tetanus are the chief causes of macroglossia (page 49). Under the heading "urinalysis" we should like to see a notice of acetone. The illustrations are numerous and to the point, though there are some (for example, on pages 493 and 956) which seem to need more explanation. But this is a big work, and contains a large amount of valuable information.

POISONOUS PLANTS OF SOUTH AFRICA

The Toxicology of Plants in South Africa. Together with a Consideration of Poisonous Foodstuffs and Fungi,⁴ by Dr. DOUW G. STEYN of the Onderstepoort Laboratories (Transvaal) gives a general review of stock poisoning and a comprehensive account of the researches on this subject that have been prosecuted for many years at the Veterinary Institute at Onderstepoort.

South Africa is afflicted with a wide variety of stock poisons, which constitute a serious problem in agriculture. One species alone is credited with the death of a million sheep in two years, while certain species of *Senecio* have made horse-breeding impossible in certain areas. Consequently a large amount of time and money has been devoted to the investigation of stock poisons. Fortunately these poisons are rarely the cause of human death or disease, but the extensive and elaborate toxicological investigations carried out at Onderstepoort have provided much information of general interest to pharmacology and toxicology. For example, the powerful actions of ergot (*Claviceps purpurea*) are familiar in human therapeutics, but it is interesting to learn that for practical purposes all fungus-infected foodstuffs must be considered poisonous until the contrary has been proved, since it would appear that a host of unknown active principles are produced by other fungi.

The bulk of the volume is occupied by the botanical description of toxic plants, together with an account of their effects. Some of these actions are of much general interest. Thus there are instances of delayed poisoning, such as stagger-weed, which gives rise to symptoms after a latent period of three to eight weeks. Some plants are noteworthy because they induce photo-sensitization. Another plant, when eaten by pregnant goats, causes alopecia in the kids, but when given directly to newborn

⁴ *The Toxicology of Plants in South Africa. Together with a Consideration of Poisonous Foodstuffs and Fungi*. By Douw G. Steyn, B.Sc., Dr. Med. Vet. (Vienna), D.V.Sc. South Africa. Central News Agency Ltd.; London: Gordon and Gotch Ltd. 1934. (Pp. xii + 631; 135 figures. £2 7s. 6d.)

³ *Oral Surgery*. By Sterling V. Mead, D.D.S., M.S., B.S. London: H. Kimpton. 1933. (Pp. 1087; 403 figures. 63s. net)

kids it does not produce poisoning. Perusal of the book reveals a most remarkable variety of toxic actions. Though he is particularly concerned with South African stock poisonings, the author has made a general review of the literature, and provides a bibliography of some twenty-eight pages. The publishers are to be congratulated on the get-up of the volume, and in particular on the excellence of the numerous illustrations.

ESSAYS ON SURGICAL TECHNIQUE

HENRY DELAGENIÈRE was born in Paris in 1858. He came from an old Protestant family, and was a direct descendant of Pierre de la Gelière, a friend of Ambroise Paré and Admiral de Coligny. After a brilliant career in Paris, where he was the house-surgeon of Lucas Championnière and of Terrier, he boldly left Paris and settled down at Mans. It was at the instigation of Terrier that he decided to develop in the French provinces a centre for the study of aseptic surgery, which was then in its infancy, and in that development Terrier himself showed very practical interest.

The volume, entitled *Cinquante Techniques Chirurgicales*,³ records the personal observations of a surgeon of brilliant originality, who entered surgery at the commencement of a new technique, to become, ultimately, one of its greatest masters. It consists of a series of studies which range over the whole of surgery, from gastrectomy to the transplantation of the ureters, and from Caesarean section to suture of a fractured patella. In every case the problem is attacked from an original standpoint, and there is evident in every instance the vast experience of a master of his art. Almost every study is well illustrated, and the quality of the illustrations and the minute care with which technical details are elaborated show an appreciation of technique for its own sake which to-day is only too rare.

It is not to be expected that one should agree with all the methods described, but we venture to think that there is no surgeon so experienced that he will not learn something from a perusal of every single one of these studies. To the experienced surgeon who wishes to improve his technique we would most strongly recommend it as one of the most stimulating series of essays we have met for some time.

DINOSAURS AND THEIR DISEASES

The story of the dinosaurs, so far as it is known at present, has been excellently told by Dr. W. E. SWINTON,⁴ who is a member of the geological staff of the British Museum. No doubt the interest which the public is now taking in the possible survival of Mesozoic monsters may have suggested the appearance of the work, but the purpose served is certainly not ephemeral. Dinosaurs began to appear in the world at the beginning of the Mesozoic (Secondary) period, some 180 million years ago, and after flourishing in all parts of the world, and assuming an infinity of forms, mysteriously vanished as mammalian forms began to appear at the end of the Mesozoic. The Dinosaur order, which sprang from that reptilian stem which gave rise to crocodiles on the one hand and birds on the other, came to an end after an existence of 120 millions of years. Dr. Swinton discusses very fully the possible causes of their extinction, favouring that which attributes the final catastrophe to over-specialization, with a complete loss of all power to

undergo structural and physiological adaptation to changes in environment. The bigger dinosaurs had a body as large as that of an elephant, but their brains were no greater in size than that of a kitten. Possibly a fuller understanding of the part played by hormones in the evolution of new forms of life will explain certain aspects of the great dinosaur tragedy which are now obscure to us. Dr. Swinton devotes a chapter to the bone diseases of the dinosaurs, drawing on the descriptions of pathological specimens published by Dr. Roy Moodie, as well as upon his own observations.

Notes on Books

Manometric Methods,⁷ by Dr. MALCOLM DIXON, is a short laboratory handbook giving precise details of the methods devised for the measurement of cell respiration. Sir F. Gowland Hopkins, in a foreword, points out the significance of the results that have been attained from the development, by Warburg and others, of methods for measuring the respiration of micro-organisms and of small pieces of tissue. These delicate micro-methods have provided results of great importance in an exceptionally wide field, for they are used by biochemists, physiologists, bacteriologists, pathologists, and zoologists. The disadvantage of these methods is that the results are valueless unless scrupulous attention is paid to technical details. Dr. Dixon has a large experience in the use of micro-manometric methods, and his handbook provides an excellent guide for those wishing to master this difficult technique, and it will be of great value to research workers in many fields of experimental science.

Dr. PINEY, a recognized writer on haematology, has summarized in a clearly written "pocket-monograph" modern knowledge in *Blood Diseases in General Practice*.⁸ The forms of anaemia, especially those in the young, have recently been so elaborated that the general practitioner will find this a useful guide not only in explaining the new nomenclature but also in employing suitable treatment. As an example of the up-to-date character of this small volume attention may be specially drawn to the account and treatment of agranulocytosis in the last chapter.

In his essay on *Social and Personal Factors in Chronic Alcoholism*,⁹ which forms the third instalment of the series of psychiatric and neurological monographs emanating from the Neurological Clinic of the Charité Hospital of Berlin, Dr. KURT POHLISCH gives an interesting picture of the attitude towards the drink question at the present day among the various classes of society in Germany. In the first place, the change in the political situation has had a favourable effect on the decline of alcoholism, especially among the labouring classes, the students, and, to some degree, the Army. Other factors in the decline in alcoholism in Germany are the cinema and interest in athletics. With regard to the personal factors which are responsible for alcoholism Dr. Pohlisch brings forward statistics for the Charité Hospital, Berlin, for the period 1919-31, showing that 75 per cent. of chronic alcoholic subjects have some form of psychopathy, while most of the normal are of cyclothymic temperament.

The first edition of LANGERON'S *Précis de Microscopie* was published twenty years ago. It has gradually grown in size and in usefulness, and the fifth edition,¹⁰ which has now appeared, contains much new matter. Labora-

⁷ *Manometric Methods*. By M. Dixon, M.A., Ph.D., Sc.D. With a foreword by Sir F. G. Hopkins. London: Cambridge University Press, 1934. (Pp. 122, 5s. net.)

⁸ *Blood Diseases in General Practice*. By A. Piney, M.D. M.R.C.P. Pocket-Monographs on Practical Medicine. London: John Bale, Sons and Danielsson, Ltd., 1934. (Pp. 52, 2s. 6d. net.)

⁹ *Soziale und Persönliche Bedingungen des Chronischen Alkoholismus*. By Dr. Kurt Pohlisch. Leipzig: Georg Thieme, 1933. (Pp. 52, RM.5.20.)

¹⁰ *Précis de Microscopie*. Par M. Langeron. Fifth edition. Paris: Masson et Cie, 1934. (Pp. 1,208; 355 figures. Broché, 86 fr.; cartonné toile, 100 fr.)

³ *Cinquante Techniques Chirurgicales de Henry Delagenière*. Collected and edited by Yves Delagenière. Paris: Masson et Cie, 1933. (Pp. 316; 63 figures, 50 fr.)

⁴ *The Dinosaurs. A Short History of a Great Group of Extinct Reptiles*. By W. E. Swinton, Ph.D., F.R.S.E. London: Thomas Murby and Co, 1934. (Pp. 233; 20 figures, 25 plates, 15s. net.)

tory workers in all parts of the world have come to regard Langeron's handbook of microscopical technique as an indispensable reference book, in which one is very likely to find the odd little bit of information which one has searched for through other books in vain.

We have received the fifth volume (1933) of the *Annals of the Clinic for Mental and Nervous Diseases of the Royal University of Palermo*,¹¹ an institution under the direction of Professor Colella Rosolino, which has recently acquired new and larger accommodation after an existence of some thirty years. The compilation includes forty-four articles relating to original work undertaken in the clinic, and dealing with such diverse topics as goitre-producing waters, alterations in the cerebro-spinal fluid, extrapyramidal syndromes, diathermy in neurological diseases, traumatic neurosis, the pathogenesis of multiple sclerosis, and serotherapy in infantile paralysis. These articles are bound

¹¹ Palermo: Industrie Riunite Editoriali Siciliane. 1933.

together, and several are illustrated by plates and diagrams, the whole forming an admirable indication of the work in progress at a pioneer institution in the fields of neurology and psychiatry.

The eleventh issue of the *Proceedings of the University of Otago Medical School* is dated 1934, and has been edited by Professor D. W. CARMALT JONES. It contains a series of scientific publications by members of that University which have appeared in various periodicals, and an account of the British Medical Association in New Zealand, contributed to the *Canadian Medical Association Journal* in 1932. The volume opens with the George Adlington Syme Oration for 1933, which was delivered by Professor Gordon Bell, and was the second of the series. It deals mainly with the hospital problems and the education of the surgeon. Ten out of the dozen articles deal with topics of clinical interest, three relating to radium therapy.

Preparations and Appliances

MINIATURE PNEUMOTHORAX APPARATUS

Dr. JAMES MAXWELL (London, W.1) writes:

This instrument has been constructed for me by the Genito-Urinary Manufacturing Company, and has been in routine use for the past six months, during which time it has given satisfactory results.

The apparatus consists of four essential parts—the pump, the regulating valve, the aneroid manometer, and the filter. These parts are contained in a cabinet 7 in. by 4 in. by 8 in., and the total weight is 6 lb. The pump has a capacity of 200 c.cm., and is made entirely of metal. The combined weight of the piston, piston-rod, and two-way cock is calculated to produce a gas pressure equal to a column of water of 35 cm.

The piston-rod is hollow, and is fitted with a two-way cock of convenient shape to act as a handle by which the piston is pulled up. One end of this cock terminates in a screw cap for the purpose of holding a cotton-wool filter for the aspirated atmospheric air. The opposite end is bent downward, and is joined to the regulating valve by rubber tubing. By means of this valve the rate of flow of the air to the pleura can be controlled with great ease and accuracy within wide limits, or it can be cut off entirely. From the outlet port of the regulating valve the tube divides into two branches. One leads via the filter to the patient, and the other to an aneroid manometer. The quantity of air which has passed to the chest is indicated on the outside of the piston-rod by a double scale graduated by 20 c.cm. from 0 to 200 c.cm. The filter is a little more elaborate in design than is usual with existing apparatus, but the frequent and convenient change of the cotton-wool packing which is possible justifies the elaboration. It resembles the Record syringe, and consists of a glass tube with a metal cone at one end and a screw cap at the other. The ground metal cone fits into a counterpart, which is part of the "T" junction connecting the manometer and filter to the regulating valve. When the wool is to be changed the filter is removed from the clip which holds it to the wall of the cabinet, and is then disconnected from the "T" piece. The

cap is then unscrewed and the wool changed. The whole process is carried out without disturbing the rubber tubing.

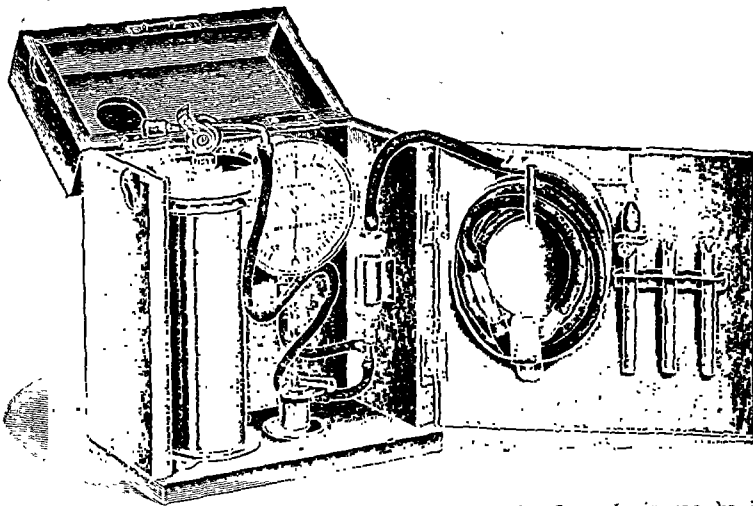
The manometer is specially constructed, and has been subjected to severe tests extending over two years in order to ascertain its constant accuracy. The scale is well spaced, and the pressures can be read easily; the instrument appears to be more sensitive than the water manometer. A suitable winder for the rubber tubing and a detachable rack for the needles are fixed inside the door of the cabinet. The most suitable lubricant for the piston has been found to be ordinary medicinal castor oil.

The advantages claimed for this instrument are that it

is readily portable, there is little likelihood of accidental damage, it is always ready for use, and the difficulties inseparable from the use of liquid in the manometer are obviated. When used for a refill the instrument is placed upright, the cylinder is filled with atmospheric air, and the flow to the chest is regulated by the special valve, so that any desired pressure can be maintained; the pressure is constantly indicated by the manometer, and the flow of air can be instantly stopped by closing the valve.

For the induction of a pneumothorax, in which case it is necessary that the first part of the air should be drawn into the chest by the suction of the collapsing lung, the instrument is placed on its back so that the cylinder is horizontal. It has been found that a negative pressure of only 3 or 4 cm. of water is sufficient to move the piston, and so draw air into the chest. For the withdrawal of air from the chest the reverse process must be carried out, the air being drawn from the chest to the cylinder by suction. The filter must, of course, always be changed before the instrument is again employed for refills.

It is a pleasure to express my thanks to Mr. R. Schranz of the Genito-Urinary Company for the very great help which he has given me with the details of the design of the model, as well as the care and skill which he has devoted to its construction.



CLASSIFICATION OF MENTAL DISORDERS

BY

G. W. T. H. FLEMING, M.R.C.S., D.P.M.ENG.
HONORARY SECRETARY, CLINICAL PSYCHIATRY SUBCOMMITTEE,
ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

In 1929 the Clinical Psychiatry Subcommittee¹ of the Royal Medico-Psychological Association began the revision of the existing official classification. This revision has been completed and accepted by the Royal Medico-Psychological Association as its official classification, and is here presented.

The scheme consists of two parts, intended to be used in conjunction with each other. Part I contains the actual classification and Part II the aetiological factors, or associated factors, as some may care to call them.

The revision of the aetiological factors has enabled the subcommittee to limit Part I as far as possible to a purely clinical classification—that is, one presenting clinical pictures or types of mental disorder with which all psychiatrists are familiar. Except in a very few well-defined instances, referred to later, terms with an aetiological connotation have been excluded from Part I. Further, an attempt has been made to make the classification sufficiently elastic to allow of future developments. For this reason the table consists of a limited number of broad headings, rather than an exhaustive inventory of syndromes and subgroups. Where, however, a patient is found to be suffering from a particular syndrome which is not adequately described under a group-heading, it is stipulated that this is to be specified. For instance, a case of Korsakov's syndrome should be returned as "confusional state (Korsakov's syndrome)," and if the condition is deemed to be due to alcohol, the complete classification, expressed in symbols for statistical purposes, would be F (Korsakov's syndrome) S A a.

The headings under which such subtypes are likely to occur, or should be specified, have been indicated by an asterisk. Similarly, a number of the headings in Part II have been marked with an asterisk, and in these cases the precise aetiological factor is to be specified, when known. Thus a psychosis due to cerebral tumour should appear as I 10 (cerebral tumour); a case of depression following influenza and associated with a family history of manic-depressive psychosis would appear as E a ii. S B c & 1 a (manic-depressive).

CLASSIFICATION OF MENTAL DISORDERS—PART I
To be Used in Conjunction with Part II
(The Aetiological Factors)

- A. Oligophrenia (amentia, mental deficiency).
 - (a) Idiocy.
 - (b) Imbecility.
 - (c) Feeble-mindedness (moron).
 - (d) Moral deficiency.
- B. Neuroses and psychoneuroses.
 - (a) Exhaustion states (including neurasthenia).
 - (b) Anxiety states.
 - (c) Compulsions, obsessions, and phobias.
 - (d) Hysteria.
 - * (e) Mixed and other forms.
- C. Schizophrenic psychoses.
 - (a) Dementia praecox.
 - (i) Simple. (ii) Hebephrenic. (iii) Katatonic. (iv) Paranoid.
 - (b) Paraphrenia.
 - * (c) Other forms.
- D. Psychopathic constitution (including paranoia).
- E. Affective psychoses.
 - (a) Manic-depressive psychosis (cyclothymia).
 - (i) Elation. (ii) Depression. (iii) Stupor.
 - (b) Involutional melancholia.
- * F. Confusional states.
- G. Epileptic psychoses.
- H. General paralysis.
- * I. Other psychoses associated with organic brain disease.
- * J. Dementia.
- * K. Undetermined types.

¹ Specify type when possible—for example, Korsakov's syndrome.

CLASSIFICATION OF MENTAL DISORDERS—PART II

1. Heredity.
 - * (a) Psychotic.
 - (b) Epileptic.
 - * (c) Neurotic.
 - (d) Alcoholic.
 - * (e) Various organic nervous diseases.
 - * (f) Endocrine disease.
 - (g) Tuberculous.
2. Deprivation of special sense.
 - (a) Sight.
 - (b) Hearing.
3. Critical periods.
 - (a) Puberty.
 - (b) Adolescence.
 - (c) Climacteric.
 - (d) Senility.
4. Child-bearing.
 - (a) Pregnancy.
 - (b) Puerperium (not septic).
 - (c) Lactation.
5. Mental factors.
 - (a) Previous attacks of mental disorder.
 - * (b) Sudden stress.
 - * (c) Maladjustments of—
 - (i) Social life.
 - (ii) Sex life.
6. Physiological disturbances.
 - (a) Malnutrition.
 - (b) Privation.
 - * (c) Exhaustion.
7. Trauma.
 - * (a) Injuries.
 - * (b) Operations.
 - (c) Sun- or heat-stroke.
 - (d) Electric shock.
8. Toxic factors.
 - A. Chemical.
 - (a) Alcohol.
 - * (b) Narcotic drugs.
 - * (c) Mineral poisons.
 - * (d) Other poisons.
 - B. Infective.
 - (a) Syphilis.
 - (i) Congenital.
 - (ii) Acquired.
 - (b) Puerperal fever.
 - (c) Influenza.
 - * (d) The specific fevers.
 - (e) Tuberculosis.
 - * (f) Focal sepsis.
 - * (g) Other infections.
 - * C. Metabolic.
- * 9. Deficiency diseases (pellagra, beri-beri, etc.).
- * 10. Diseases of the nervous system.
11. Diseases of other systems.
 - * (a) Haemopoietic system.
 - * (b) Cardiovascular system.
 - * (c) Respiratory system.
 - * (d) Gastro-intestinal system.
 - * (e) Genito-urinary system.
 - * (f) Endocrine system.
12. No factor ascertained.
13. No history obtained.

Additional Notes

The following definitions and explanatory notes have also been adopted for the guidance of those using the classification.

A. *Oligophrenia (Mental Deficiency)*.—A condition of arrested or incomplete development of mind, whether arising from inherent causes or induced by disease or injury.

B. *Neuroses and Psychoneuroses*.—No differentiation is here made between the two conditions.

* To be specified.

(a) This should designate abnormal mental states characterized essentially by mental or motor fatigability and irritability.

(b) This includes the symptoms commonly exhibited by generalized fear.

(c) In this group should be included phobias, where the anxiety is attached to some definite object or situation.

(d) Is a faulty reaction to environment characterized by a variety of (1) motor symptoms, (2) sensory symptoms, (3) mental symptoms.

c. *Schizophrenic Psychoses*.—This syndrome includes cases which show remissions, and even recoveries, in addition to cases which show progressive deterioration.

(a) *Dementia praecox*.

(i) Simple: Cases characterized by defects of interest, gradual development of an apathetic state, often with peculiar behaviour, but without expression of delusions or hallucinations.

(ii) Hebephrenic: Cases showing prominently a tendency to silly laughter, grimacing, mannerisms, together with grotesque ideas and erratic behaviour.

(iii) Katatonic: Cases in which there is a prominence of negativistic reaction or peculiarity of conduct, with phases of stupor or excitement, sometimes characterized by impulsive or stereotyped behaviour, and usually hallucinations.

(iv) Paranoid: Cases characterized by unsystematized delusions, usually of persecution or grandeur, hallucinations in various fields, and a tendency to early dementia.

(b) *Paraphrenia*: Cases in which emotional and volitional disorder is slight. Delusions and hallucinations generally grandiose and fantastic, but with little effect on ordinary conduct.

d. *Psychopathic Constitution*.—This group includes a large group of pathological personalities such as are found among criminals, tramps, sex perverts, drug addicts, mattoids, agitators, etc. The true prison psychoses should be included in this group. *Paranoia*: A delusional syndrome of insidious development. Hallucinations are absent, and there is no deterioration.

e. *Affective Psychoses*.—Involuntary melancholia comprises the slowly developing depressions of middle life and later years characterized by worry, insomnia, uneasiness, and agitation. States of depression in arteriosclerosis should be excluded.

g. *Epileptic Psychoses*.—This group includes only what is known as essential epilepsy. Cases of organic brain disease, with seizures of any kind, are not to be included.

h. *General Paralysis*.—Cases of cerebral syphilis are excluded.

j. *Dementia*.—This group does not include the dementias where the original condition is known. The arteriosclerotic and presenile dementias are to be included in Group i.

Commentary

Some of the items dealt with above call for further comment.

A. *Oligophrenia*: The term "amentia" is open to very grave objections. In the first place, few of the cases included present an "absence of mind," so that it is an inaccurate term. The word was first introduced by Meynert as a name for a condition which we to-day call "confusional insanity." It is used in this sense in the Norwegian and Dutch classifications. The Italians use "amenza" as one of their subdivisions of "tossinfettioni ed autointossicazioni," and divide it into "allucinatoria, apatica, lieve (pazzia sistematizzata acuta), gravissima (delirio acuto)." The clinics of Pilcz and Wagner-Jauregg in Vienna both used the word in the confusional sense. Shaw-Bolton used the word to correspond with "dementia" (meaning "out of the mind"), his amentia being defined as "the mental condition of patients suffering from deficient neuronic development." The Greek word "oligophrenia," meaning "small mind," was adopted by Bleuler, and is also in the Dutch classification. This term is certainly not used in any other sense than for all classes of mental defectives. It is hoped that medical men will encourage the use of the word, and that the inaccurate and ambiguous "amentia"

will be dropped. "Amentia" is retained in brackets simply as a guide in the meantime.

B. The terms, "neuroses" and "psychoneuroses" were preferred to the expression "minor psychoses."

(a) The word "neurasthenia," for which many confess a liking, was rejected, as it was so very loosely used during the war as a dumping-ground for all sorts and conditions of mental disorders. Freud also uses the word in a restricted sense in connexion with masturbation. The expression "exhaustion states" was thought to convey a very definite meaning, and to indicate a fairly clear-cut clinical condition.

(c) Phobias have been separated from the anxiety states on the grounds of a fundamental difference between the vaguer, more indefinite and generalized fears of the latter and the definite attachment of fear to an object in the former.

(b) and (d) call for no special comment.

c. The word "schizophrenia" has come to occupy a permanent place in our vocabulary. The paraphrenic conditions, it was thought, ought to be separated from what we are used to calling dementia praecox. The time-honoured division into simple, hebephrenic, katatonic, and paranoid types was adhered to.

d. The paranoiac conditions which do not end in intellectual impairment should, it was thought, be sharply separated from the schizophrenic psychoses.

e. This section does not call for much comment. It was thought that the involutional states were more closely allied to manic-depressive insanity than to the schizophrenic conditions.

Section g is an unsatisfactory group, and will undoubtedly be subdivided as knowledge advances, but in the meantime it is retained to correspond to what is called "essential" epilepsy with psychosis. Obviously, however, an epileptic may remain sane, or may develop some other form of insanity, such as manic-depressive psychosis.

Section h (general paralysis) is a recognized clinical group, although purists may not agree with the diagnosis, as sometimes made. Here again our knowledge is not sufficiently advanced to permit of any alteration.

i. The expression "the psychoses associated with organic brain disease" was intended to correspond with the present "insanity with gross brain lesion." It was felt that there was no need to separate off more than the syphilitic conditions.

k. The last division was left for conditions which could not be classified under any of the divisions a to j.

I cannot close these notes on the work of the subcommittee without expressing indebtedness to the late Dr. J. R. Lord. No one who has not had the pleasure of working with him can appreciate the extraordinary amount of work he did, or the help and encouragement he gave to the younger men. Although he did not live to see the completion of this classification, his was the moving spirit in the last two years' work.

REFERENCE

¹ This subcommittee at the time the classification was finally adopted consisted of the following members: Sir Hubert Bond (Emeritus Lecturer on Psychiatry, Middlesex Hospital), J. Brander, L. C. F. Chevens, K. K. Drury, W. Norwood East (Prison Commissioner), F. L. Golla, W. McCartan, Professor D. K. Henderson (Professor of Psychiatry, Edinburgh University), P. K. McCowan (Lecturer in Mental Diseases, Welsh National School of Medicine), D. McRae, W. F. Menzies, J. E. Nicole, W. D. Nicol (Lecturer on Psychiatry, London School of Medicine for Women), A. A. W. Petrie (Lecturer on Mental Diseases, Charing Cross Hospital and West London Post-Graduate College), M. Hamblin Smith, W. H. B. Stoddart, W. S. J. Shaw, B. H. Shaw, A. Walk, H. Yellowless (Lecturer on Psychological Medicine, St. Thomas's Hospital), and the Honorary Secretary.

F. Bamatter (*Arch. f. Kinderheilk.*, March 31st, 1934) states that, whereas up to September, 1932, isolated cases of facial paralysis were rare, and actual bulbar paralysis was unknown, during the subsequent twelve months six sporadic cases of the bulbo-pontine form of infantile paralysis were observed in the University Children's Clinic at Zürich. There was, moreover, a simultaneous increase in sporadic cases of encephalitis and aseptic meningitis. In two very acute cases of bulbar paralysis the diagnosis was confirmed by inoculation of monkeys.

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SOVIET MEDICINE AGAIN

It is very difficult for people in this country to keep an open mind about the course of events and of ideas in the Red Republics; without comprehensive first-hand knowledge we grope in the dark. Prejudice—if not propaganda—for or against the Soviet regime seems to run through almost every book and article on the subject. During August and part of September, 1932, Sir Arthur Newsholme and Dr. John Kingsbury, secretary of the Milbank Memorial Fund, travelled in Soviet Russia. Equipped with letters of introduction from Lord Passfield and Senator Borah they entered Soviet territory from Poland, and, moving by way of Moscow and Nijni Novgorod to the Volga, steamed down that river for four days. After visiting Tiflis they came to the Black Sea at Batum, took steamer from there to the Crimea, and returned by rail through the Ukraine to Moscow. In the course of their journey they saw much, and, though unacquainted with the Russian language, received much information. They have presented their impressions in a work entitled *Red Medicine*,¹ one half of which is mainly devoted to an exposition of Russian Communism, while the other half deals more specifically with the subject of the title.

In approaching the investigation of health conditions in Russia the authors take the view that the present-day framework of Russian society closely concerns the subject of their inquiry, just as it concerns every other human activity within the circuit of the seven Republics. They show how each Republic possesses in varying stages an electoral system, the chief utility of which is to divert the minds of the factory hands and peasants with engrossing but ineffective discussion. All power is in the grasp of the Communist party, working centrally through a dictatorship and locally through a secret police organization which tries, condemns, and executes at discretion. No person can join the party unless he renounces his religious faith. Owing to the intense overcrowding in houses, together with the facility of divorce and the ample provision of crèches for children, family ties are obsolescent. It is the aim to displace the family, and to substitute the factory as the focal point of communal life, providing thus, on a self-contained basis, for work, rest, and cultural development, as well as for hygiene and medical treatment at an attached health centre. The authors cite as an instance of an "admirably controlled" establishment of this kind the Selmashstroy factory at Rostov-on-Don, which is made up of eighteen works, each employing about a thousand people. Workers there

are systematically examined by the works doctors, and according to their needs are relegated for treatment to a dispensary, polyclinic, specialist clinic, general or special hospital, venereal disease hospital, tuberculosis sanatorium, or night sanatorium, the last being a dormitory for those who, though able to do some work, stand in need of special care. The Unitary Dispensary at Rostov, the authors say, is an exemplary institution: it is described by them as admirably equipped in all special departments of medicine. At Kharkov they viewed the Third Labour Polyclinic, a "magnificent new building," with special departments for a wide range of clinical work, and "admirably equipped" for research as well. They thought that the hospital for railway employees at Tiflis, in the obstetric division of which there are special rooms for confinement, was "splendidly organized." They were astonished at the "vast provision," along the Black Sea coast and elsewhere, of rest-houses, convalescent homes, and sanatoria, once the palaces of Russian nobles.

The Soviet rulers, given time, could doubtless, like Trajan, build their world over, this task having been simplified at the outset by the adaptation to medical uses of many handsome existing structures no longer claimed by their owners. Their enterprise, their determination, and their vision for health in Russia were under notice in these columns last December, when we commented on a brochure by Dr. A. Roubakine of Moscow. In point of organization and equipment Sir Arthur Newsholme and Dr. Kingsbury confirm what Dr. Roubakine had already told us. They recount also as an example of Soviet efficiency that the entire population of the town of Kazan, numbering 179,000 persons, were vaccinated or revaccinated in June, 1932, following the occurrence of fifteen cases of small-pox in the previous winter. Buildings, equipment, and organization, however, are but the outward seeming of a medical service: its substance, content, and inspiration cannot be appraised by these externals, but only by the inherent quality of the medical work of which they are the setting. On this inherent quality, which is the true soul of medicine, the authors in dealing with Soviet Russia are not convincing. It may be that the genial flower of medicine blooms with difficulty in the stark and rigorous atmosphere of Communism. It may be that in the time at their disposal the travellers had not the opportunity to explore closely the effective content of medical practice in the various towns they visited.

But any uncertainty as to the medical standards would have been appreciably dispelled had the authors been able to supply pertinent information regarding the medical curriculum now or lately engaged in by Soviet students of medicine. The ranks of the profession in Russia as elsewhere must be presumed to be recruited from the medical schools, and the ideals of the schools should in consequence set the pace for the practising doctor. But here again the authors are reticent. Medical teaching is lightly touched on, and what little is said mainly relates to such incidentals as

¹ *Red Medicine: Socialized Health in Soviet Russia*. By Sir Arthur Newsholme, K.C.B., M.D., and John Adams Kingsbury, LL.D. London: William Heinemann (Medical Books) Ltd. 1934. (10s. 6d. net.)

the manner in which candidates are selected to begin study. The note that during his first year the student "assists in minor medical and surgical work, including cleaning up after the work is completed" is not reassuring. Dr. Roubakine, above referred to, is more communicative. Medicine, he says, is tripartite in Russia. It is studied under three specialisms. The courses last from three and a half to four years, with a further year of probationer service, and besides medicine include social science, economics, and the Marxian philosophy, military training, and the acquisition of materialistic views. Whatever the medical content of the curriculum the student is apparently not at liberty to devote his undivided attention to it. The conclusion seems warranted that the young Russian doctor at the present time is less well trained in medicine than his contemporaries in Western Europe, and that the medical services of the Union must in consequence be affected prejudicially. The Soviet Government, which controls all medical teaching, will no doubt effect reform in this field also, but the task will not prove quite so easy as the equipment of buildings and the organization of services.

The authors claim that in making their investigations they had no previous bias, "except some measure of scepticism as to the possibility of the Western world deriving useful lessons from Eurasia." Some examples of their lavish praise of Soviet undertakings have been quoted above. In one passage elsewhere they strongly deprecate the class hatred systematically instilled into the mind of the young Russian; but in sundry other matters where Soviet conduct has outraged Western feeling they assume an air of detachment which will surprise most English readers. Whether a polity under which there is nothing for a man to worship but the material things his own hands have made, does or does not carry within it some inevitable seeds of decay, the Soviet Government in the meantime has achieved much in health organization, and may be expected to achieve more, even to the extent of establishing throughout a great part of its territory medical services which, though ranking below Western standards, will be competently mass-productive of physical efficiency. In this way it will further the plan of the despotic Communist Party, which is to provide for labour and defence—the two key words of Communist teaching—from the kindergartens onwards.

ALLERGY AND IMMUNITY IN TUBERCULOSIS

Discussion on the relative parts played by allergy and immunity in the defence mechanism of the host against tuberculosis is reminiscent of the old controversy which raged between the protagonists of the humoral and those of the cellular theory of immunity. The present conception of immunity to infection rests on both a cellular and a humoral basis. The preliminary sensitization, mechanical clumping, and some-

times lysis of the bacteria appear to be dependent on antibodies which are either free in the circulation or are concentrated on the surface of the tissue cells, while the ingestion of the bacteria, their removal from the circulation, and their subsequent disintegration are accomplished mainly by phagocytic cells of various types. Generally speaking, the presence of a high content of circulating antibody is indicative of a considerable degree of immunity, while when the antibodies are present in just sufficient quantity to satisfy the demands of the cells the immunity is of a lower grade. There is evidence to suggest that the meeting of antigen and antibody on the surface of the cells is often accompanied by a severe reaction of anaphylactic type, while when the union occurs in the circulation this type of reaction is forestalled.

There seems to be no valid reason for excluding resistance to tuberculosis from this general picture. The evidence so far accumulated seems to be compatible with the view that allergy represents a stage in the development of immunity when the antibodies are concentrated mainly on the surface of the cells, whereas so-called immunity is a stage further on, when there is some free antibody in the circulation, and the local disturbances caused by the meeting of antigen and antibody in the tissues are therefore less severe. This conception, however, does not seem to be in the minds of many of those who are working experimentally on tuberculosis. Largely owing to the views put forward by Rich, attempts are now being made to dissociate allergy from immunity. One of the methods of doing this is described by H. Rothschild, J. S. Friedenwald, and C. Bernstein¹ in a study of tuberculous infection in guinea-pigs, and consists in desensitizing the allergic animals with increasing and ultimately massive doses of tuberculin. The general procedure of these workers was to inoculate a number of guinea-pigs with the R₁ strain of tubercle bacillus, which set up a mild and non-progressive type of infection; to leave them till skin hypersensitiveness had become well established; to divide them then into two groups; and to desensitize one group with tuberculin, leaving the other allergic. Both groups were subsequently inoculated, along with a control group of non-tuberculous animals, with virulent tubercle bacilli, and their behaviour studied. This experiment, though performed on a fairly large scale, was unsatisfactory in many respects, mainly because the mortality from intercurrent disease was so high that insufficient animals survived to allow really comparable figures to be obtained. It was found, however, that by continued inoculation of tuberculin after infection, daily doses of 2,000 mg. being given subcutaneously, the animals could be kept in a desensitized condition, and evidence was obtained that these desensitized animals were just as resistant as the non-desensitized group. The argument is therefore that immunity is independent of allergy. This method of experiment is open to serious criticism. It is surely unjustifiable to assume that animals whose

¹ *Bull. Johns Hopkins Hosp.*, 1934, liv, 232.

antibodies are being continuously neutralized with massive doses of antigen are no longer allergic. It would be almost as justifiable to assume that an anaesthetized man who was being continuously given whiffs of chloroform was dead because he showed no signs of resuming activity. If it is to be shown that allergy and immunity are entirely dissociated some better type of experiment must be devised.

More illuminating are the results described by H. Sewall, E. de Savitsch, and C. P. Butler,¹ who, by superinfecting guinea-pigs at varying times after the first infection, obtained evidence that immunity was more or less inversely proportional to the degree of skin hypersensitiveness. Animals superinfected after seventy-four days were apparently more resistant than those superinfected after fifty-three days, the former group of animals having a rather lower degree of allergy than the latter. These results suggest that allergy gradually passes into immunity. If this conception is true, it explains why allergy may be present without any marked increase in resistance to infection, and why immunity may be present without any allergic manifestations.

A SYMPOSIUM ON GASTRIC BLEEDING

Two years ago E. Meulengracht² started feeding up instead of starving his patients with haematemesis and melaena, after noticing that some died exhausted after the old-fashioned treatment had been carried through most conscientiously, and that persistent haemorrhage was apt to cease as soon as food was given. These and other observations made him ask why a patient suffering from shock after haemorrhage should precisely at this stage be robbed of calories and vitamins whose withdrawal could hardly be expected to promote the processes of healing. Between July, 1931, and August, 1933, he let the 119 patients treated for haematemesis and melaena at his hospital eat as much as they liked. What he calls a *puré* diet was supplemented by a teaspoonful of an alkaline powder with hyoscyamus, and 7 grains of iron lactate, thrice a day. Tea and bread-and-butter were given at 6 a.m., oatmeal porridge with milk and bread-and-butter at 9 a.m., and at 1 o'clock a dinner which might include several items of an imposingly long and varied menu on which meat, fish, eggs, vegetables, and fruit were presented. Cocoa was served at 3 p.m., and sandwiches with tea at 6 p.m. Of the five deaths among these 119 cases, two were associated with cancer of the stomach and one with Banti's disease. Only two deaths were traceable to the haemorrhage itself, and in one of these cases the 50-year-old patient was already moribund when admitted to hospital. The surviving 114 patients recovered with a surprising facility, and the medical and nursing staff found their patients much easier to handle. Some of them had been treated before for the same condition on the old system of starvation or semi-starvation, and were most appreciative in their comparisons. Systematic examinations of the faeces for blood showed that on the average the benzidine reaction became negative in about ten days. In 1928, 1929, and 1930 Meulen-

gracht treated seventy-five cases on the old-fashioned lines, and twelve of them ended fatally. Among the sixty-three survivors, the average time taken for the benzidine reaction to become negative was about thirteen days. T. E. Hess Thaysen³ argues that Meulengracht's dietary must entail the irrigation of the bleeding ulcer with acid gastric juice and food, some of which is acid. To arrest haemorrhage from an ulcer, he says, it is desirable: (1) to reduce the pressure in the arteries in the area involved, and (2) to make the stomach contract. The first objective is attained by absolute rest; the second by starvation, which reduces the output of acid and the circulation of the blood. Hess Thaysen refuses to be cajoled into the abandonment of treatment by starvation, observing that many a new remedy achieves wonderful successes at the outset. He also suggests that one of Meulengracht's patients, who died of perforation of an ulcer after six days' treatment, might have escaped perforation had he been starved. Oline Christensen⁴ criticizes Hess Thaysen's criticisms and refers to gastrographic investigations of the human stomach which she made in 1931. They showed that an empty or nearly empty stomach is alternately at rest and powerfully contracted, whereas a fairly well filled stomach is all the time relatively at rest, the continuous contraction waves being much weaker than those of the starving, empty stomach. Her gastrographic records of cases of juxta-pyloric ulcers and pyloric gastritis have convinced her that it is a mistake to assume that a gastric ulcer will be given rest and made to heal by starving the patient. In her opinion, the maximum of rest for the stomach can be assured by giving the patient eggs in milk in quantities and at intervals which will prevent hunger pains. While she admits that there is something to be said, from the point of view of publicity, for the doctrine which encourages a patient to wipe the blood off his mouth and forthwith eat a beef steak, a safer course for the time being would be to give eggs in milk in quantities and at intervals which would prevent pain, and, from the third or fourth day, also to give fresh orange juice in sugared water. A. Faber⁵ characterizes Meulengracht's doctrine as the outcome of the craving, from which every new generation suffers, to upset the teachings of the past, preferably by paradoxes.

NUTRITIVE VALUE OF PASTEURIZED MILK

At a time when there is a growing opinion among members of the medical profession that milk cannot be recommended for human consumption in the raw state it may be apposite to ask whether children brought up on heated milk do, in fact, thrive as well as those brought up on raw milk. Two large-scale investigations have been made to answer this question. The first was carried out in Lanarkshire in 1930. For four months in certain schools 5,000 children of 5 to 12 years of age were given three-quarters of a pint of raw Grade A (T.T.) milk a day, and 5,000 children in the same schools were selected to act as a control series. In a second set of schools 5,000 children were given three-quarters of a pint of the same milk pasteurized, and another 5,000 children in the same schools were selected to act as controls. The children were measured and

¹ Amer. Rev. Tuberculosis, 1934, xxix, 373.

² Ugeskrift for Læger, November 23rd, 1933, p. 1257.

³ Ugeskrift for Læger, December 21st, 1933, p. 1365.

⁴ Ibid., January 4th, 1934, p. 14.

⁵ Ibid., January 4th, 1934, p. 13.

weighed at the beginning and end of the experiment. It was found that the children receiving extra milk grew more rapidly than the controls, and that the effects of raw and of pasteurized milk were, so far as it was possible to judge, equal. Owing to criticism from certain quarters of the technical analysis of the results, all the figures were submitted to University College, London, for re-examination by an independent authority. Dr. Ethel Elderton,¹ who conducted this fresh statistical inquiry, has now come to substantially the same conclusions as those originally reached. "There is no evidence that raw milk has an advantage over pasteurized or pasteurized over raw in increasing growth when the two are directly compared on this selected material. Thus the question of the value of pasteurization turns practically on the elimination of possible sources of disease, or on determining whether cases of certain diseases are less frequent when pasteurized rather than raw milk is taken." The second investigation was undertaken in the United States of America, and was reported in 1932.² It consisted of an extensive field study of the height and weight, at ages from 10 months to 6 years, of two groups of children, one of which had consumed raw milk and the other heated milk. Altogether over 3,000 children were studied. Since the number of those who had received no heated milk at all was practically negligible, it was decided to place in the raw milk group the children who had received raw milk for more than half their lives, and in the heated milk group those who had received heated milk for more than half their lives. The results showed that the average weight of the raw milk group was 36 lb., as compared with a figure of 36.3 lb. for the children who had received heated milk. The average height in the raw milk group was 37.4 inches, and in the heated milk group 37.5. No evidence was therefore obtained to suggest that the growth-promoting capacity of heated milk, plus the supplementary diet received by the average American child, was measurably less than that of raw milk, plus the usual supplementary diet. It is of interest, however, in view of Dr. Elderton's conclusion, to notice that the children receiving mainly raw milk had apparently suffered more from diphtheria, scarlet fever, intestinal disturbances, and rickets than the children who had received heated milk only.

AMOEBC DYSENTERY

Those who read the article on amoebic dysentery in the *Journal* of April 14th (p. 672) dealing with the recent occurrence of some cases in Chicago will welcome a note³ by the distinguished director of the United States Public Health Service, Dr. G. W. McCoy, who thinks that the facts at present at the disposal of health officers do not afford sufficient basis for the drastic measures which are being put into execution. He lends his support to the orthodox point of view, and doubts if the Chicago cases have led to much spread of the infection elsewhere: he is also of the opinion that there is no clear evidence that carriers, even among food-handlers, are an important source of infection, and that there is no need for the isolation of carriers or of contacts of either clinical cases or

carriers. Perhaps, all things considered, it would not be a disadvantage from the administrative point of view to revert to the state of affairs that existed prior to the Chicago epidemic. Dr. McCoy further calls the attention of physicians to the importance of recognizing cases of dysentery and to the general necessity for personal cleanliness among food-handlers, particularly in the washing of hands after defaecation; he also warns against the contamination of drinking supplies, and announces that research is being carried on by the Public Health Service into obscure features of amoebic dysentery. That a high incidence of *Entamoeba histolytica* infections may exist under certain conditions without any definite intestinal disturbance, let alone amoebic dysentery, is well illustrated by the figures which have been given⁴ for a group of Indian children in Wyoming. It was found that 26.5 per cent. were carriers of this organism. Again, in another paper in the same journal⁵ three cases of acute intestinal disorder which occurred in one family after visiting Chicago in August, 1933, are described. Dysentery bacilli were found in all, as well as *E. histolytica*, the latter only sixty days after the onset of the acute symptoms, which were relieved by treatment with vaccine prepared from the isolated dysentery bacillus. It is evident, therefore, that much has yet to be learned concerning the many obscure features of amoebic dysentery, as the director of the United States Public Health Service has so clearly indicated.

THE "ONE-PIPE" IN ST. MARYLEBONE

Two papers on the "one-pipe" system of drainage, one of them by Dr. Charles Porter, medical officer of health for St. Marylebone, and the other by Mr. W. H. Draper, sanitary inspector for that borough, which formed part of a symposium in the autumn series of Chadwick Lectures in 1933, have been reprinted in pamphlet form from the pages of *Public Health*. We noticed Dr. Porter's contribution at the time it was made,⁶ and the action of the London County Council in amending its by-laws to permit of the installation, under conditions, of the one-pipe system, was the subject of a more recent note.⁴ There is no need to describe again, therefore, the one-pipe system and its economical advantages; it is the standard system, according to Dr. Porter, in many other countries, but has found somewhat tardy application in Great Britain. He emphasizes the part which his own borough has played in bringing about sanitary reform. Limitations of space in St. Marylebone, and the nature and construction of the modern buildings which have arisen there, have seemed to necessitate departures from by-laws relating to sanitation. A considerable proportion of the residents have always desired sanitary arrangements in advance of anything provided in the regulations, and a progressive borough council has been ready to move with the times—or in advance of the times so far as the rest of London is concerned. St. Marylebone, by the way, is the authority which, following the American plan, places the division of sanitation in the public health department under the charge of the medical officer of health, who often finds himself called upon to submit reports upon applications

¹ Elderton, Ethel M.: *Annals of Eugenics*, 1933, v. 226.

² Frank, L. C., et al.: *Public Health Reports*, Washington, 1932, xlvii, 1951.

³ *Public Health Reports*, 1934, xlix, 359.

⁴ *Journ. Amer. Med. Assoc.*, March 24th, 1934, p. 913.

⁵ *Ibid.*, March 24th, 1934, p. 916.

⁶ *British Medical Journal*, December 2nd, 1933, p. 1043.

⁷ *Ibid.*, April 7th, 1934, p. 632.

for permission to modify by-law requirements. At Broadcasting House, which is in St. Marylebone, the liberty to have completely internal closets and soil-pipes had been anticipated, with the approval of the borough council, some years before the L.C.C. made provision for such an arrangement. It is in St. Marylebone, too, that a new hotel with a phenomenal number of bedrooms has lately been erected, and here it was desired that each bedroom should be provided with a separate completely fitted bathroom. When the scheme was first mooted the picture which came to mind was of a building hidden by a forest of pipes, but a scheme along modern lines was prepared and permission granted by the borough council. Dr. Porter says that St. Marylebone seemed suddenly to erupt buildings suitable for the one-pipe system and builders anxious to introduce it. Wherever there appeared to be good grounds for acceding to requests for special treatment the borough council permitted departure from the by-laws; but he does not think that, even with the amendments and additions which the L.C.C. has now made, reform in this direction is complete. He foresees yet greater simplification and progress, and without danger to public health. In Germany a one-pipe system was adopted some time ago, and in Berlin, in buildings of all classes, but particularly in blocks of flats, soil-pipes, which act as the sole ventilators of the system, serve as the main waste-pipes as well, and receive the discharges from baths, sinks, and lavatory basins; no detrimental effect upon the Berlin population has so far been evident. Dr. Porter is not embarrassed by too great a respect for by-laws, especially in matters relating to drainage. Some day, he hopes, the possibility will occur to all and sundry, following at a distance the confident strides of St. Marylebone, of so dealing with by-laws that they become less obstructive of progress in sanitary matters. Mr. W. H. Draper's contribution is also interesting as dealing with the more technical aspects of one-pipe construction.

LINKS WITH LISTER

Mr. C. J. S. Thompson has written a small and handy volume entitled *Lord Lister*,¹ which conveys to the reader in small space an adequate idea of the life and work of its eponymous hero. As the technical parts of the subject are treated in popular language there should be no difficulty in the way of its being understood. At the same time, the reader is put in possession of all that it is necessary to know in order to appreciate the greatness of the man and the world-wide and undying importance of his achievements. When the book comes to be reprinted, as probably it soon will be, in a new edition, no doubt the names of von Graefe, Timothy Holmes, William MacCormac, and Sir William (not Edward) Jenner will be correctly quoted. The comparatively slow acceptance of the Listerian gospel is well illustrated in some manuscript notes of lectures to nurses, which Dr. G. Francis Smith, late of Carlisle and now of Folkestone, has been so obliging as to show us. Lister's first experience with compound fracture occurred in 1865, and in the succeeding twenty years he published several notable papers on the subject of antiseptics. Nevertheless in

1885, when Dr. Francis Smith delivered his lectures, he was still not quite convinced by antiseptic doctrine, and laid more stress on "cleanliness" than on the exclusion of pathogenic organisms. Yet Koch's discovery of the *Bacillus tuberculosis* was already three years old, and the principles of bacteriology well established. Dr. Francis Smith rightly instructed his nurses that the greatest principle of all is cleanliness, and he pointed out the danger of contamination of wounds from the carelessness of assistants, nurses, and others who had not grasped the principles of the antiseptic or aseptic methods. Many of the senior surgeons were too old to learn, and it was not till younger men came into the control of wards and theatres that Listerism got a fair chance.

WELFARE OF THE BLIND

In 1927 the Ministry of Health published a most useful handbook on the welfare of the blind in England and Wales²: this has now been issued in revised form. The aim of the work is not to stimulate interest on behalf of the blind, for that is assumed to exist; it is to supply those interested with the facts relating to blindness and the assistance of the blind, so that they may be able to take an intelligent part in any work they do for the blind. The handbook is a necessity to every ophthalmic surgeon, medical officer of health, and school medical officer, and it would be of value to many social workers. Since 1927 there have been many changes, chiefly due to the Local Government Act of 1929 and the consequent altered relation of the statutory authorities to the blind societies. The latter now have no direct access to the Ministry, but come under the local authorities. This change has considerably modified methods whereby the blind may be helped, so that a new handbook was greatly needed. Attention is drawn to the statutory definition of blindness and the explanation thereof suggested for the help of those who have to use that measure. It is truly stated that certification of blindness is often a difficult matter, and consequently the Minister has indicated that it was

"desirable to make arrangements for securing that before a person's name is added to the register he is examined by a medical practitioner with *special experience in ophthalmology*. It appears to the Minister that the necessary expenditure for this would be clearly justified by the consequent avoidance of registration of persons who are not blind within the meaning of the Blind Persons Act, and the saving of expenditure which might otherwise have been incurred in respect of such persons."

The latest returns of the numbers of blind persons on the registers on March 31st, 1932, were 62,079, and on the same date in 1929 52,727. The increase is believed to be due mainly to the improvement of the machinery for registration. But it may also to some extent be the result of the substantial benefits now available to the blind, and to the consequent inducement for persons (some of whom may not be blind within the meaning of the Blind Persons Act) who were not previously registered to apply for and obtain registration as blind persons. This consideration reinforces what has been said on the great importance of the proper certification of blindness. Over 77.3 per cent. of the total number

¹ *Handbook on the Welfare of the Blind in England and Wales*. Revised edition. London: H.M. Stationery Office, 1934. (1s. net.)

² *Lord Lister, The Discoverer of Antiseptic Surgery*. By C. J. S. Thompson, M.B.E. London: J. Bale, Sons and Danielsson, Ltd. 1934. (Pp. 19. 5s. net.)

of the blind are classed as unemployable. This is explained when the age factor is taken into consideration, for seven out of every ten are over 50 years of age. There has been a material diminution of the number of blind children owing to the prevention of ophthalmia neonatorum; consequently the increase in the proportion of blindness in the higher ages of life, when the possibility of work is small, becomes evident. The unemployed blind fall into two categories—those who are capable of being employed and those who are not. It is important to distinguish between them, for there is provision in all schemes for aid in training anyone who is capable of being trained and usefully employed. Nearly 87 per cent. of the blind between 50 and 70 are in receipt of old age pensions. Formerly institutions for the blind were a necessity for many; now, when incomes are made up to one pound a week or more, it becomes possible and better for them to live at home or with friends. It is more desirable for the blind to be members of a sighted household if they are properly cared for. The new handbook deals with the varied needs of the blind, and indicates what means there are for putting them into as satisfactory a position as their capabilities will allow. The section on the prevention of blindness should be read by all employers of labour, for loss of sight due to accident is a material factor in adding to the tale of the blind.

THE DANGERS OF CARBON BISULPHIDE

Carbon bisulphide is used in various industries, such as the manufacture of artificial silk and rubber goods, and it is very dangerous because of its poisonous and volatile nature. The Factory Department of the Home Office has therefore issued a memorandum¹ explaining the precautions which should be taken in order to minimize the risks of poisoning, fire, and explosion. It points out that the vapour of carbon bisulphide is toxic even in low concentrations, and has a profound effect on the nervous system. A concentration of about 600 parts per million produces serious disturbance if inhaled for an hour, whilst double this concentration is dangerous in thirty minutes. The usual effects in workers exposed to the vapour are nausea, indigestion, headache, and giddiness, sometimes accompanied by emotional disturbances of a hysterical character. With continued exposure the mental disturbance increases, and is accompanied by impairment of memory and mental depression. There may be muscular weakness due to toxic neuritis, especially of the facial muscles and flexor muscles of the forearms, and ultimately the affected person may become almost completely paralysed. Slow recovery usually takes place after removal from the toxic vapour, but in advanced cases permanent effects may remain. Cases of industrial carbon bisulphide poisoning have to be notified to the Factory Department, and since 1925 they have numbered only eighteen in all, but they might easily increase unless the suggested precautions are taken. These consist of efficient exhaust ventilation, and periodical transference of the exposed workers to other processes where carbon bisulphide is not employed.

¹ Form 836, Factory Department, Home Office. Memorandum on Precautions against Dangers of Poisoning, Fire, and Explosion in Connection with the Use of Carbon Bisulphide in Artificial Silk, India Rubber, and other Works. London: H.M. Stationery Office. 1934. (3s. net.)

Nova et Vetera

A HISTORY OF NURSING

Pride in one's art or craft must be connected with the consciousness that it is good work, but there may be added to this a pride that one is doing work that has a long and honourable history behind it. For the nurse there is this double pride. In addition, she may be proud of the great advance made in nursing within known memory. A *General History of Nursing*,¹ by Miss Seymer, might well be a treasured possession of every nurse, for therein is told, and told most effectively, the history and recent growth of nursing services.

Ancient India has the honour of possessing the earliest certain record of a nursing service. In the *Sushruta-Samhita*, dating from about the fourth century B.C., there is evidence that each village had its doctors and hospitals. There is this remarkable passage:

"That person alone is fit to nurse or to attend the bedside of a patient who is cool-headed and pleasant in demeanour, does not speak ill of anybody, is strong and attentive to the requirements of the sick, and strictly and indefatigably follows the instructions of the physician."

It has never been satisfactorily explained how this great Hindu civilization met such swift and complete decay; conquest by less civilized peoples may be held accountable. Much earlier records than this suggest that nursing was done, probably by members of the household. The Egyptians in the temples of Imhotep practised incubation; this implies attendants. The public health laws of the Jews were strict on the hygiene of women after childbirth, and on the diagnosis, quarantine, and cleansing of leprosy. Houses for strangers were provided, but whether they were inns or hospitals is a moot point. There is evidence that in early Greece there was a practice of medicine other than by the priesthood. Homer describes the doctor as "a man worth many others," and the fair-haired Agamemnon knew as many drugs as the wide-earth nourishes. We are bound to assume, however, from the absence of all records to the contrary, that in Hellenic and Hellenistic times real nursing by efficient women was practically unknown. Rome developed a system of military hospitals; Vegetius, late fourth century A.D., gives an account of the organization of these soldiers' hospitals, and speaks of the prefect of the camp as being in charge of the "sick who are in tents and the doctors by whom they are healed." But there does not appear to have been any public hospital where the poor were treated until Christian times, for St. Jerome says that Fabiola built the first hospital in Rome. Early records describe women "deaconesses," who seem to have served as nurses. Certainly they are referred to in the third century as "assisting the women visited with sickness."

EARLY NURSING ORDERS

The first Christian hospitals combined hostel, infirmary, and orphanage, for the sick, the old, and the destitute were gathered there. With the growth of, and gradual control by, the monastic orders these infirmaries became ecclesiastical rather than medical; care rather than cure became their aim. There were nursing orders, such as the Knight Hospitallers, the Teutonic Knights, and the Lazarists; in the second of these there were lay sisters, who were admitted "because services to cattle and to sick persons in hospital are better performed by the female sex." With the Reformation such hospitals as survived came under the control of laymen—St. Bartholomew's, St. Thomas's, Bridewell, and others in England, and the Hôtel-Dieu in Paris. Early in the seventeenth century St. Vincent de Paul founded that famous nursing order known as the Sisters of Charity. The sisters had on no account to be called "religious"; in this St. Vincent ran counter to all the traditions of the Roman Church. He said:

¹ A *General History of Nursing*. By Lucy Ridgely Seymer. M.A. Oxon., S.R.N. London: Faber and Faber, Ltd. (12s. 6d. net.)

"The Sisters of Charity shall have for monastery the houses of the sick, for chapel the parish church, for cell a hired room, for cloisters obedience, for grille the fear of God, and for veil holy modesty."

From the end of the seventeenth century to the middle of the nineteenth little or no progress was made in the art of nursing; in some places there was actual deterioration. In England, at the time of the Great Plague, the so-called nurses were "dirty, ugly, unwholesome hags." Even in European countries the religious sisters, despite their discipline and devotion, were, as science advanced, increasingly hampered by antiquated routine.

Although there was much hospital building in England in the eighteenth century the nursing was mean. Sometimes the qualification of the nurse chosen was merely that she had been a patient. In America the "nurses" were "ten-day" women detailed from the penitentiary. A faint desire to remedy bad conditions by better pay appears in the records of the Middlesex Hospital, London, in 1838:

"The committee are, however, of opinion that a hope may be entertained by raising the wages . . . of procuring and retaining the better description of nurses—women who will take more interest in their duties, their character, and appearance."

One of the most important factors in the regeneration of nursing was the Deaconess Institution at Kaiserswerth, set up by Pastor Theodor Fliedner. In 1836 he revived the ancient order of church deaconesses. Elizabeth Fry paid a visit to Kaiserswerth in 1840, and in recording the visit her niece wrote:

"Pastor Fliedner . . . has also instituted Protestant Sisters of Charity whom he terms Deaconesses. They are all dressed alike in blue print gowns and neat white caps. They wait entirely on the patients, go out to visit the poor, and are sent to any parts of the Kingdom."

NINETEENTH CENTURY REFORMS

About this time the need for nursing reform attracted the attention of far-sighted women in England, Ireland, and Germany, and several "sisterhoods," both lay and clerical, were founded. Some of these took over the nursing services of large London hospitals. Impetus was given to the movement by the vivid pen of Charles Dickens, whose portraits of "Mrs. Sairey Gamp" and "Mrs. Betsy Prig" depict the depths to which the ordinary professional nurse had sunk. Of all these nineteenth century attempts to improve nursing the most original is the foundation, one year before the Nightingale School, of "La Source," at Lausanne, by the Comtesse Agénor de Gasparin. She founded this institution as a protest against the "motherhouse" system, which she felt to be definitely wrong. Her opposition to it was based on two main principles: first, that the personal liberty of each individual was of paramount importance; and, secondly, that women should be salaried, and not bound by vows. She called it a training school because she thought piety was not enough, and students should be systematically and thoroughly trained by doctors.

The work of Florence Nightingale is too well known to need elaboration. It is certain that she early had a personal bent for nursing, and this was stimulated by visits to hospitals abroad, and particularly by a visit to Kaiserswerth. Her first undertaking was the superintendence of the "Establishment for Gentlewomen during Illness" at 1, Upper Harley Street. She was there a full year, broken by holidays and a short term of service at the Middlesex Hospital during a cholera epidemic. The Crimean war gave Florence Nightingale her opportunity. She and Sidney Herbert, then Secretary at War, encouraged by an awakened spirit at home, as evidenced by "The Times Fund," rode roughshod over military red tape. To have women nurses with the British Army! It was immodest, unthinkable, revolutionary! And yet this was the epoch-making idea that Sidney Herbert not only suggested, but carried into effect. If Florence Nightingale was the foundress of modern nursing, Sidney Herbert must rank as its patron.

THE NEED OF TRAINING

In the general field what differentiated Florence Nightingale's ideas from the opinions of her contemporaries was her insistence on the necessity of training for work. She said.

"Three-quarters of the whole mischief in women's lives arises from their excepting themselves from the rules of training considered needful for men." And again: "An uneducated man who practises physic is justly called a quack, perhaps an impostor. Why are not uneducated nurses called quacks and impostors? Simply I suppose because there are few who think a man can understand medicine and surgery by instinct. But till the last ten or twenty years people in England thought that every woman was a nurse by instinct."

With appropriate training the nurse has become a professional woman—competent, trustworthy, and highly valued. The wide range of her services can be judged by the several chapters of this book which deal with the Red Cross, the growth of training schools, and public health nursing, including maternity and child welfare. There are useful accounts of State registration systems throughout the world, of insurance and pension schemes for nurses, of nursing journals, and of organizations that are maintained by nurses for the honour and interest of their profession. Miss Seymer appends a useful bibliography, and there are some thirty-seven illustrations of great general interest.

FORTHCOMING ANTHROPOLOGICAL CONGRESS

Last year, at a meeting at Basel, convened by the Royal Anthropological Institute of Great Britain, it was agreed by representatives of anthropology and ethnology from nine countries to establish an international congress on these sciences and to hold a session every four years, the first to be in London in 1934. Accordingly the congress is to meet at University College, London, and the neighbouring Wellcome Historical Medical Museum during the week beginning July 30th. At the inaugural meeting the Duke of York will welcome the delegates of Governments, academies, universities, and other societies and institutions, and the Earl of Onslow, the president of the congress, will deliver an address.

The main work will be done in eight sections, each with a British chairman. The section of anatomy and physical anthropology will be presided over by Professor G. Elliot Smith, that of psychology by Professor F. C. Bartlett, and that of demography and population problems by Professor C. B. Fawcett. The other sections deal with ethnography, African and American, arts and crafts, sociology, religions, and language and writing. An ambitious programme is mapped out for the five or six meetings of the section of anatomy and physical anthropology, whose central theme will be man's place among the primates. The principal subjects will be anthropological aspects of blood grouping, human and comparative; the comparative anatomy of the brain; diathesis or bodily habitus in relation to physical anthropometry, including a survey of asthmatic and rheumatic children and a study of racial features in the growth of the jaws; the growth pattern in children, with special reference to the skeletal, neural, lymphoid, and urogenital systems; special work on the role of the endocrines in growth; the study of sex and behaviour, including the menstrual cycle in man and primates and also lactation; various aspects of dentition; the localization of function, and the standardization of methods of measurements. Some of the subjects, such as regional anthropology and fossil anthropology, may be discussed in subsections. The section of psychology will consider the aims and methods of social psychology, psychological problems arising from contact of races, in particular the nervous strain and reactions arising from the impact of alien cultures, the social significance of modern developments in psychology, such as the application of psychological tests, and the significance of present-day trends in government, education, and physical and biological sciences. The section

or demography is to discuss the methods and technique of census-taking, also the relations of racial characteristics to internal distributions within populations, such characteristics, for example, as eye colour and visual acuity, physical race characters and occupations, and race and caste. The section of languages and writing includes in its programme the study of the use of speech and voice mechanism among different races, speech pathology, psychological evidence bearing on the existence of the word as a separate entity, the development of speech habits among children, and the difference between the motor and the auditory aspects of speech.

In addition to the sectional discussions there are to be a number of evening discourses, including a Huxley Memorial Lecture by Sir Aurel Stein, the great authority on Indian and Central Asian archaeology, and a discourse by Professor J. B. S. Haldane on the growth and tendency of anthropological and ethnological studies. A reception is to be given by the Government at Lancaster House, by the Royal College of Surgeons at Lincoln's Inn Fields, and by various museum authorities, and in the week following the congress visits will be paid to Oxford and Cambridge and to certain provincial cities. The list of vice-presidents includes the names of Sir Arthur Keith, Sir Humphry Rolleston, and the presidents of the various societies which touch on the subjects coming before the congress.

It should be made plain that the new congress will always meet at two years' interval between the international congress of prehistoric and protohistoric sciences, which was held first in London in 1932, and meets again at Oslo in 1936. The congress has also been arranged so that its meetings will fall in the same years as the Americanist Congress in Europe. That congress meets in Seville later in the present year, and it is hoped that workers in the American field may be able to attend both. The forthcoming event in London is being organized from the offices of the Royal Anthropological Institute, at 52, Upper Bedford Place, W.C.

THE BRITISH RED CROSS IN PEACE

The activities of the British Red Cross Society, as recorded in the annual report for 1933,¹ show continued growth in all departments. The number of voluntary aid detachments reached a total of 831, with a personnel of 21,486 members. The first two air ambulance detachments were registered in 1933. Reference has lately been made in these columns to the work of the Society's clinic for rheumatism, where 94,256 attendances were made last year, as against 86,929 in 1932, and the range of treatment and investigation has been widened. The blood transfusion service received the record number of 3,017 calls in the London area—an increase of 575 over the previous year; the number of donors on the roll is now 1,536.

The junior branch of the Society now numbers 370 "links," with a total membership of over 25,000 boys and girls. The usefulness of this movement as an educational instrument is increasingly recognized, while the senior branch benefits by the accession of numbers of young people brought up in sympathy with the traditions and ideals of the Red Cross.

The county branches of the Society have continued to develop their voluntary services to the public. They have provided 374 first-aid posts and patrols on the roads and sea beaches, and 603 emergency first-aid stations at large gatherings. Assistance is also given at hospitals, clinics, and welfare centres. Medical supply depots for the loan of surgical and nursing equipment to necessitous cases are established throughout the country, and now number 109.

The fifth Congress of French-Speaking Dermatologists and Syphiligraphers will be held at Lyons from July 19th to 21st of this year, under the presidency of Professor Nicolas of Lyons, when the exclusive subjects for discussion will be the etiology and treatment of lupus erythematosus, diagnosis of chancreoid bubo, and cutaneous complications of anti-syphilitic treatment. The membership subscription is 150 francs, which should be sent to the secretary of the Congress, 24 Rue Saint Hélène, Lyons.

¹ Report of the British Red Cross Society for the Year 1933. Published at Headquarters: 14, Grosvenor Crescent, London, S.W.1.

Reports of Societies

RELATION OF MORTALITY TO HOUSING DENSITY

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine, held on May 25th, Dr. J. D. ROLLESTON presiding, a paper was read by Dr. PERCY STOCKS, medical statistical officer of the General Register Office, on "The Association between Mortality and Density of Housing."

Dr. Stocks, whose paper was largely occupied with tables and graphs, and a description of his statistical method, first compared the relation of child mortality to density per acre in a period before the Public Health Act (1861-70) with that for 1930-2, taking groups of urban and rural districts and county boroughs. At densities of less than one person per acre, into which category fell most rural aggregates, the present mortality rate for ages 0 to 5 was only 29 per cent. of what it was in the earlier period, and at a higher density—namely, five to ten per acre—comprising the present urban districts in the main, the relative mortality was lower still, being only 20 per cent. of the early figure. The crowding of houses together up to an average density of ten persons per acre had no apparent effect on the mortality of children, but in densities of over twenty per acre—that is, in most of the present county boroughs—there was the same relative excess in child mortality as compared with less dense populations which was apparent sixty-five years ago, although, of course, the actual mortality in dense and less dense areas alike had greatly diminished.

It had often been stated that the mortality risk increased with movement northwards in each class of area, the implication being that this was due to colder climate, more smoke, more occupations dangerous to health, or a combination of these. But if Great Britain were divided into successive zones of latitude (omitting London, the case of which must be separately considered), it would be found that, moving northwards, there was a progressive increase in the mean density per room until the Scottish industrial area was reached, while the density per acre was at its highest level in the zone which included the industrial area of Yorkshire and Lancashire, and then steadily declined on passing further north. The behaviour of the mortality rate for children under 5 bore a much closer resemblance to the trend of average density per room than to the trend of density per acre. The well-known north-to-south gradation of mortality rates seemed likely to arise from the gradation of overcrowding within the houses, and climatic differences between the latitudes had little effect on mortality. Dr. Stocks had set himself to disentangle the relations of mortality to the three factors of latitude, urbanization, and crowding within houses. The fact was established, he said, from a number of researches that within a given town the mortality risk, particularly in early childhood, was greater for occupants of more crowded houses than for occupants of less crowded ones, but this had been variously attributed to the direct effects of crowding, unfavourable industrial conditions associated with crowded areas, the poverty of which crowding was often a symptom, or the gravitation of the less fit into unsatisfactory conditions of housing, so that it was little wonder if the advantages predicted from housing improvement *per se* ranged from the utmost optimism to the utmost pessimism. The broad conclusion to be drawn from his own figures was that at ages over 5 it was not necessary to suppose that mortality from all causes combined was appreciably affected by climatic differences dependent on latitude within the limits of England and Wales, and probably Great Britain. The mortality of children under 5 from respiratory disease showed an increase on passing from the South Coast to the industrial North of England amounting to 42 per cent., even after allowance had been made for the effects of increasing density and of crowding per room, but there was a decline in this respect on passing still further north. Dr. Stocks's curves also brought out the advantage in respect of sunshine in the eastern part of England (except at a latitude which included the industrial area of

Yorkshire, where the effect of the smoke blanket from industrial towns to the west was observed), but apart from the effect of diminished sunshine in predisposing to rickets, which in its turn contributed heavily to bronchitis and pneumonia in young children and lowered resistance to infectious diseases, he was not convinced that there was any real evidence that the differences in average mortality experience between different parts of Great Britain had anything to do with climate.

Dr. Stocks also set himself to determine whether, with improved sanitation of towns, the crowding of people within their houses had assumed a greater importance in association with mortality than the crowding of houses together. London mortality was uniformly lower than that of the rest of England and Wales when districts of the same density per acre were compared, and this was also true, although the advantage was not so great, when districts of the same density per room were compared. The advantage of London, so far as mortality at ages under 5 was concerned, must derive partly from its southern situation, with consequent greater amount of annual sunshine. At ages over 5, although the climatic factor seemed to be unimportant, yet for some reason London again had in general an advantage, amounting to between one-fifth and one-third, over other parts of the country of the same density per acre or per room. At ages over 45, however, this advantage became less perceptible. Dr. Stocks confessed himself unable to explain the advantage of London. Was the greater triumph over environment by people living in the metropolis due to selective migration of the healthiest young adults to London, to a greater immunity against certain diseases afforded by living in the middle of a vast herd, to the better protection from the rigors of winter afforded by London amenities, to better facilities for medical treatment and more advanced public health, or to all of these? In the metropolitan boroughs infant mortality from congenital causes had no association with either measure of density, but from other causes the rate showed an increase at densities of over fifty per acre, and rose with increasing density per room. At school ages there was little relation with density per acre, but the rate rose with crowding from 0.92 persons per room upwards. For women the death rates from phthisis were actually highest at low densities per acre, but increased with room crowding. At later ages for all persons the effect of density seemed slight, and at ages over 65 scarcely appreciable. In England and Wales, excluding London, the corrected ratio for infant mortality from congenital causes showed, as in London, no association with density per acre, but rose with crowding per room. At school age densities of over thirty per acre had slightly higher rates, but the rise in the rate was more pronounced with crowding per room; and, again, at the other end of life, the effect of density by either measure was slight.

Dr. Stocks's general conclusion was that up to middle life the importance of crowding per room as a factor in mortality was now almost double that of density per acre. The results of overcrowding were far and away most serious at the pre-school ages, and it was here that the greatest benefits might be expected as a result of housing improvements in the future.

GENERAL DISCUSSION

Sir WILLIAM HAMER mentioned that, three-quarters of a century ago, William Farr made the confident statement that large towns would never become so healthy as the country, but that prophecy had not been borne out. One possible cause for the marked decline in infant mortality since the early part of the present century was the Education Act, 1870, which meant the appearance in due time of a generation of mothers who had passed through the elementary schools and were able to take a more intelligent interest in the welfare of their children.

Professor MYJOR GREENWOOD said that, apart from his discussion with regard to the special effects of diminished sunshine, Dr. Stocks's general thesis was that for practical purposes mortality was not in this country a function of climate. He himself remembered trying this out many years ago, the special subject being the mortality from respiratory diseases. The incidence of pneumonia and

bronchitis was found to be enormously high in the North of England, but taking the figures for 1901-10, and the deaths from these diseases at ages 65-75, while the rate for England and Wales as a whole was 7.4 per 1,000 living, and that for Lancashire 12.6, the rate for the contiguous counties of Cumberland and Westmorland, where the same climatic influences operated, was only 4.8. This was completely explained by the great difference in housing density, but it illustrated the negligibility of the climatic factor.

Dr. J. D. ROLLESTON mentioned that he had recently received a work by Professor Robert Debré, a member of the League of Nations Committee of Health Experts on *Infant Welfare in Europe*, in which, with two colleagues, he had made a study of infant mortality in France and some other European countries, in urban and country districts. One of his most important conclusions was that the outstanding factor in infant mortality was the density per room and the various unhygienic conditions associated therewith. That was particularly well shown in a working class district of Paris, where, in spite of progress in other respects, living conditions in rooms were really deplorable. Dr. F. C. SHURBSALL suggested that the true criterion was the hours of ventilation. In London tenements young children on the higher floors, though they got more fresh air in their rooms, were often kept in, whereas those on the ground floor were turned out, so that the latter, although they might have a worse time at night, enjoyed more hours of sunshine and ventilation during the day. Dr. E. W. GOODALL asked some questions with regard to the relation of mortality from measles and whooping-cough to housing density.

Dr. Stocks, in reply, said that the relations of whooping-cough mortality to crowding were rather complex. Whooping-cough seemed to differ in this respect from measles, and he did not think that case mortality would necessarily follow the same rules as the actual mortality per 1,000 children in parts densely and not densely populated respectively.

RECENT WORK ON LEPTOSPIROSIS (WEIL'S DISEASE)

At a meeting of the Royal Society of Tropical Medicine and Hygiene, held at Manson House on May 17th, with the president, Sir LEONARD ROGERS, in the chair, Professor W. SCHÜFFNER read a paper on recent work on leptospirosis.

In his introductory remarks Professor Schüffner said that Holland enjoyed the doubtful privilege of harbouring two diseases which in other countries were supposed to be rare. One was post-vaccinal encephalitis, claiming numerous victims among children, the other was Weil's disease, or leptospirosis, which had come to the fore during the past ten or twelve years both in Holland and in her East Indian colonies. The incidence in Holland was greatest in the western coastal part of the country—an area situated below sea-level and much of it covered with water. Of 234 patients diagnosed in his own laboratory twenty-seven had died, giving a case fatality of 11.5 per cent., but fortunately the total number of deaths was small, only sixteen patients dying in 1932 and eleven in 1933 in Holland. Cases occurred throughout the whole year, but epidemic exacerbation appeared from July to October. Forty-five per cent. of the adult sewer rats in Holland carried leptospirae, and there were certain occupations (such as bargemen, fishermen, and slaughterhouse employees) in which the incidence was higher. "Water accidents" definitely predisposed, and here the lecturer had found that canal water polluted with refuse where the banks teemed with rats was particularly dangerous because of its leptospiral content. It had been found that guinea-pigs immersed in such water occasionally acquire the disease, provided the skin be slightly scarified, but culture of the leptospirae from naturally infected water had not been successful. The mucous membranes were probably also important avenues of infection, and diving, and swimming by the crawl stroke, enhanced this risk. The pH and salinity of infected water were important factors controlling the growth of leptospirae. The average incubation period

equalled 10.3 days, and a history of a "water accident" in the previous week or two was an important factor in the diagnosis; the alarming symptoms at onset also helped. Often there were distressing muscular pains, a heavily furred tongue, a leucocytosis with shift to the left, albuminuria, meningeal symptoms, and peculiar flushed conjunctivae or "red eyes." The latter feature was present in half of the cases of Weil's disease occurring without icterus, and under such circumstances the diagnosis was exceedingly difficult and needed confirmation in the laboratory. No such cases were ever fatal.

For brevity Professor Schüffner omitted further reference to the clinical diagnosis, but pointed out that the final decision of Weil's or no Weil's disease rested with the bacteriologist, whose diagnosis was based on (a) demonstration of leptospirae in the blood, (b) cultivation, (c) serological reactions. Leptospirae were readily demonstrated in the blood of infected guinea-pigs by dark-ground illumination, but this procedure was rarely successful in man. Centrifugalization was often of value, provided the plasma be separated from the precipitated corpuscles and examined in a thick layer. Before direct cultivation of blood for leptospirae preliminary passage through a guinea-pig was desirable. The coagulum should be triturated and injected into the peritoneal cavity, where the leptospirae might be detected as early as the third day. Leptospirae were most commonly isolated from the blood during the first three or four days of the disease, but in severe cases they might persist until the tenth day; examination of the urine was sometimes successful in the later stages, long after leptospirae had disappeared from the peripheral circulation. Agglutination tests were best carried out by formalized cultures of leptospirae, since such extracts were not dangerous to handle, they constituted potent antigens, and lysis of leptospirae, such as was sometimes encountered with living cultures, was avoided. After formalization "matting" of leptospirae due to acid agglutination sometimes occurred, but this could be prevented by using 1/2 per cent. instead of 2 per cent. formalin. Absorption tests could also be applied, thereby distinguishing between specific and cross agglutination. Clinical, serological, and epidemiological facts combined to show that there were three European leptospirae: (1) the cosmopolitan *Leptospira icterohaemorrhagiae* in rat and dog, the cause of classical Weil's disease; (2) *L. grippotyphosa*, the infecting agent of swamp fever in Europe, the reservoir host of which is unknown; (3) *L. canicola*, causing a specific canine disease.

GENERAL DISCUSSION

Dr. W. FLETCHER commented on the fact that 40 per cent. of cases of leptospirosis in Holland were of mild type unassociated with jaundice; in the Malay States the percentage with jaundice was even less. There he and his colleagues had found six different races of leptospirae classified by means of agglutination tests and by Pfeiffer reactions in young pigs. Guinea-pigs, however, which had recovered from infection with one strain had a considerable immunity to infection with other races. He suggested that the leptospirae of Holland might have resulted from the importation of strains from the Orient. Dr. E. HINDLÉ was not prepared to accept serological strains as distinct species, because of the overlap in serological reactions. In conjunction with Dr. Bruce White he had recently been able to isolate a specific soluble substance from spirochaetes which gave a precipitate with high dilutions of antiserum derived from animals infected with homologous spirochaetes. While there were many different water strains, the various human and rat strains all reacted to specific soluble substances isolated from rat strains, which included one from Malay. Major BROWN referred to results obtained by the adhesion test, which consisted of putting up serum, leptospirae, and a suspension of micro-organisms; if the serum was specific the bacteria would adhere to the leptospirae. By means of this reaction he had no difficulty in separating *hebdomidis* from *icterohaemorrhagiae* or from the water strains. Regarding acid agglutination in formalized cultures, he wondered whether the neutralization of formalin by pyridin, as recently recommended by Burke,

would be of help. From a clinical viewpoint "red eyes" could not be considered pathognomonic of leptospirosis; he had noted it with great frequency in other forms of epidemic jaundice.

Dr. FINDLAY referred to epidemics of jaundice in England, Norway, and Sweden, where leptospirae were absent; these were sometimes associated with subacute yellow atrophy of the liver, and occasionally terminated in cirrhosis. He asked whether any patients with Weil's disease who had not shown jaundice had died with these complications. Dr. C. M. WENYON referred to the early observations made by Brown and himself indicating the identity of *Leptospira icteroides* with *L. icterohaemorrhagiae*, and asked Professor Schüffner about the leptospiral haemoglobinuria which he had described in Sumatra.

Dr. MANSON-BAHR referred to the difficulty of diagnosis now that clinicians had to recognize Weil's disease without jaundice, and were no longer able to regard "pink eyes" as pathognomonic of leptospirosis. Since his discovery of the disease in London in 1922 he had never met a case. He asked for more information regarding the use of antileptospiral serum in Holland. Dr. PARISH spoke on the subject of active immunization, and asked if a vaccine prepared against the true virus strain protected animals against the curious dog strains which Professor Schüffner had described. Professor WARRINGTON YORKE discussed the dangers of differentiating species merely on serological grounds, illustrating his remarks with reference to trypanosomes.

In reply, Professor SCHÜFFNER reviewed the evidence whereby the three different European strains were differentiated, and confirmed that there was a form of haemoglobinuria associated with leptospirosis; slides of microscopical sections were then shown, demonstrating leptospirae in the kidneys of such cases. Regarding specific serum treatment, he cited a case of a laboratory-acquired infection in which leptospirae were found in the blood after the first few hours of illness; five hours from onset serum therapy was instituted, with remarkably satisfactory results.

TROPICAL MACROCYTIC ANAEMIA

At a meeting of the London Association of the Medical Women's Federation, held at B.M.A. House on May 22nd, Dr. LUCY WILLS spoke on tropical macrocytic anaemia.

Dr. Wills gave an account of her work on this subject during the last five years. In 1928 this condition was described in pregnant women under the title "pernicious anaemia of pregnancy," and was a serious cause of maternal and foetal mortality in the large cities of India. The blood picture resembled that of true pernicious anaemia, but the condition could be distinguished from idiopathic pernicious anaemia by the following characteristics: (1) earlier age incidence and the association with pregnancy; (2) absence of natural remissions except after delivery; (3) the presence of free hydrochloric acid in normal amounts in the gastric content of the majority of cases; (4) absence of a raised indirect van den Bergh reaction, or an increase in urinary urobilin; (5) absence of nervous involvement; and (6) slight differences in the blood picture—for example, less poikilocytosis and polychromasia and higher white cell counts. The cases were frequently febrile, but no evidence could be obtained of an infective or toxic origin. The general course of the disease and the response to adequate doses of liver or liver extracts suggested a nutritional origin. Further study showed that an identical form of anaemia also occurred among men and non-pregnant women, which also supported the view that the disease was a deficiency state, the higher incidence and the greater severity in pregnant women being due to the added demands on the organism during pregnancy. A dietetic survey among the hospital classes in Bombay revealed a deplorable state of multiple deficiencies, with no significant difference in the diet of sufferers from this anaemia. All the diets were particularly low in vitamins A and C. Experiments with rats fed on diets based on those in common use among sufferers from this anaemia resulted in the production of a macrocytic anaemia, which, however, was

associated with the multiplication of *Bartonella* organisms in the blood stream. A search for similar organisms in the patients gave negative results, and large doses of vitamins A and C had no curative effect. Similar experiments with monkeys (*Bartonella*-free) again led to the production of a macrocytic anaemia, but in both the control animals, which were receiving additional rations of vitamins A and C, and the experimental animals, when the ration of the vitamin B complex was increased by the addition of marmite to the diet the anaemia was rapidly cured. The trial of marmite in human cases was equally successful, 15 to 30 grams of marmite daily resulting in a maximal response and a rapid rise in the red cell count in both pregnant and non-pregnant cases. At this time Castle and his co-workers were publishing their work on the factors, intrinsic and extrinsic, necessary for the formation of the haemopoietic factor in liver. As the tropical cases has apparently normal gastric secretion it was assumed that the intrinsic factor was present, but that the missing dietetic factor was Castle's extrinsic factor. After the publication by Dr. Wills of her results with marmite the Boston workers tried a similar autolysed yeast extract, and found that, though inactive alone, when incubated with normal gastric juice it was highly active in the cure of idiopathic pernicious anaemia. These workers postulated vitamin B₁₂, or some factor closely associated with it, as the extrinsic factor in pernicious anaemia.

At this time, Dr. Wills said, further work with standardized vitamin and yeast preparations in relation to tropical macrocytic anaemia had already been started by her, with the help of Miss H. Chick. For the test of these preparations uncomplicated cases under controlled conditions were used, and the activity of a preparation was judged by the height of the reticulocyte peak and the subsequent rate of blood regeneration. Vitamins B₁, B₂, and B₆ were inactive curatively when given in the purest available form—that is, as acid clay and extract of egg white, or of watery yeast extract of known vitamin potency; further, preparations of marmite free from these vitamins were still active curatively. The vitamin B complex was therefore excluded as the haemopoietic factor in marmite curative in tropical macrocytic anaemia, and also presumably as the extrinsic factor in pernicious anaemia. Further experiments showed that the haemopoietic factor in marmite was heat-stable, and was neither precipitated nor inactivated by 80 per cent. alcohol. Whole yeast was inactive, but Dr. Wills suggested that this might be due to the fact that yeast cells were resistant to gastric digestion, rather than to the absence of the haemopoietic factor. She summed up the present position as follows. Tropical macrocytic anaemia is a deficiency dyshaemopoietic anaemia due to the lack of the haemopoietic factor in the liver, known as the pernicious anaemia factor. The disease is distinct from idiopathic pernicious anaemia, and is not necessarily associated with the other causes of macrocytic anaemia—diarrhoea, defective gastric secretion, or pregnancy. The deficiency was, in her opinion, due to a dietetic lack of some substance, present in marmite, which is not one of the known B vitamins, but which is probably identical with the extrinsic factor described by Castle for idiopathic pernicious anaemia. The tropical anaemia is cured by the administration of the missing factor, as marmite, or of the pernicious anaemia factor present in liver.

Dr. HELEN MACKAY asked if there was any explanation of the absence of nervous symptoms and natural remissions, and of the fact that there was no record of the disease in children, who were normally more susceptible to deficiency diseases than adults. Dr. WILLS, in reply, said that as regards nerve changes there was possibly not time enough for these to develop in the young patients, but it seemed more likely, in view of the age of some of the non-pregnant patients, that the nerve lesions of true pernicious anaemia were associated with the gastric lesion rather than with the absence of the haemopoietic factor, which would explain the absence of nerve lesions in the tropical form. She thought that further study might show that remission did occur in exceptional cases, but had no explanation of the absence of recorded cases in children.

CORRESPONDENCE

Lister and Chemical Antiseptics

SIR.—Although far away from the close friendship of Sir Watson Cheyne and the relationship of Sir Rickman Godlee with Lord Lister, I had the privilege of being his last assistant in his private practice, and when he ceased clinical work he left private and hospital patients under my care. Consequently I often heard from his lips many of his thoughts and of the different kinds of opposition against which he had to contend in the early days of his practical application of Pasteur's discoveries to medicine and surgery.

Among other things, it does not appear to be generally known that one of Lister's sayings was that he "at once recognized that boiling water is the best antiseptic in existence," and in his earliest experiments he proved it to his own satisfaction. In spite of this fact he always maintained that it was a safer, an easier, and a more fool-proof method—as matters then stood—to keep everything connected with a wound in constant contact with a chemical antiseptic. He believed that in those days the employment of heat alone required more detailed care in its application than lotions, and also far greater experience and education in bacteriological knowledge than was then attainable. From the methods I saw employed in the last twenty years of the nineteenth century I have no doubt he was right. The reasons that made carbolic acid his earliest selection would occupy too much of your space to describe. It was chosen after a careful comparison with heat and other antiseptics in their relations to practice. Among the many qualities that led to its adoption there remain many that have not been surpassed in value by the antiseptics of to-day.—I am, etc.,

London, W.1, May 22nd.

G. LENTHAL CHEATLE.

The Medical Charities

SIR.—With Dr. Arnold Gregory's plea for the charities all those who have worked for them will heartily sympathize. His diagnosis of the situation, set forth in his three numbered paragraphs, is only too correct. That the incomes of the charities are incommensurate with the calls made upon them is not the fault of the British Medical Association, whose Council and whose *Journal* have long and often dinned this into the ears of Branches, Divisions, and members. In my view the charities need an assured subscription income at least double that which is now collected for them by their own local secretaries and through the B.M.A. Bridge drives, concerts, dances, etc., as proposed by Dr. Gregory, may with luck bring in enough in any one year to justify the effort expended on them, but they are palliatives merely, and they tend to be supported mainly by those who already do their duty by subscribing, not by the others; further, they can seldom be repeated annually with continued success. These methods are suitable for charities which appeal to large sections of the public, not for such limited communities as the members of our profession in a given area.

Dr. Gregory's idea of an endowment fund is sound enough, though £25,000 is of little use (the income would be under £900 a year); £250,000 would not be too much. This sum cannot be expected from any feasible "campaign," however "intensive"; but it can be obtained by the investment of all legacies, a policy which both the leading charities would like to put in practice, but are not able to. Last year, for instance, Epsom College spent about three-quarters of the legacies received, and

was able to invest only the remainder; this year, I understand, the prospects are much better, owing to good fortune with bequests, and I fancy the same is true for the Royal Medical Benevolent Fund. If these charities had sufficient subscription incomes all legacies could be funded, as of course they ought to be. Few practitioners who are in a position to leave charitable bequests think of the Benevolent Fund and Epsom College. If they did, the accumulation of ample endowment funds would not take very many years. You, Sir, and the Editor of the *Lancet*, have both done your share in trying to make medical testators realize this.

Dr. Gregory's suggestion for enlisting the wives of doctors appears to ignore the work of the R.M.B.F. Guild, which is run entirely by these ladies, and very well run too. I agree with him that personal canvassing is far more valuable than letter writing—but it takes up a lot of time. I trust that he will not think I am being unhelpful in deprecating his feverish week of bridge tournaments and sales of work; I wish him all success in his efforts to rouse the profession, but I feel sure that the two things to concentrate upon are annual subscriptions and legacies.—I am, etc.,

London, S.W.7, May 26th.

HENRY ROBINSON.

The Cancer Problem

SIR,—It is curious to read letters from people of such eminence as Mr. Hastings Gifford, whom I regard as among the most learned in Britain on the subject of cancer, and Mr. Lockhart-Mummery, one of the foremost of our clinicians, which take diametrically opposite views as to whether civilization has caused an increase in the incidence of cancer. In spite of the admirable reasoning from Mr. Gifford, the case can never be proved until the uncivilized are sophisticated enough to have a registrar-general's report on the causes of death, which in itself would make them so civilized as to destroy its value. We do know, however, that wild animals, including birds and fish, suffer from cancer, though most diseased animals are soon killed by their natural enemies. The evidence of missionary doctors is that cancer is common among natives; indeed, cancer of the buccal cavity, owing to betel chewing, is a commoner form of cancer in India than elsewhere in the world, though statistics as regards the total population may not be available. I have seen cancer in South African natives and the Zulus, who are chiefly vegetarians, and also among the Samoyedes in the Arctic Circle, a meat-eating race, who never see a green leaf.

Civilization has progressed to such a degree that we should expect that if cancer had existed in the remote past—as we must suppose it did, for we regard it as disordered life, and therefore it probably is as old as life itself—it ought to be more prevalent at the present time, for we must presume that the Bronze Age spoke of itself as civilized as compared with the Stone Age, the Iron Age with that of the Bronze, and so on with each succeeding advance up to the present time. There is, however, one method by which civilization influences the cancer rate which I have never seen referred to. If there are, let us suppose, one hundred causes of death, and civilization eliminates twenty of these, the same number of people will die, because they cannot live indefinitely, but now their deaths must be divided among the eighty remaining causes. This will enable the unscientific statistician, among whom most of us must be classed, to look with astonishment at the increase in the ratio of certain diseases. We have decreased the death rate from small-pox, typhoid, diphtheria, tubercle, and all surgical diseases to such an extent that increase in those

that remain must be marked, cancer among them. Whether Mr. Hastings Gifford will seize on this to support his argument or not I don't know.—I am, etc.,

London, W.1, May 23rd. DUNCAN C. L. FITZWILLIAMS.

Toxins and Emulsions

SIR,—Since Dr. G. Norman Myers's letter in the *Journal* of March 17th (p. 504), to which we replied on March 24th (p. 557), we have been waiting for the publication of the results of his investigations, which appeared in your issue of May 26th.

The general conclusions arrived at by Dr. Myers with regard to the non-toxicity of super-lethal doses of toxin when mixed with emulsion upon subcutaneous injection confirm our findings in great detail. We commented in our letter of March 24th upon a number of points in connexion with Dr. Myers's experiments. In his paper he appears to have altered the description of his technique from "the oils and fats when mixed with aqueous solutions of lethal doses of toxins so as to form emulsions," to "aqueous solutions of the toxins were mixed with the emulsions (already formed) immediately prior to injection." This alteration is of considerable importance for, after all, these points of technique are of the essence of the problem.

Dr. Myers concludes from his experiments on injecting the layers after centrifugalization that "the toxin has a greater solubility or affinity for water than for oil," yet it is clear from his own experiments that the question of solubility in oil does not arise, and this because such solubility could not be in any way influenced by the degree of emulsification. The only change which such a fine degree of emulsification could bring about would be an increase in the rate of solution, but no alteration in the partition coefficient. Thus we can safely eliminate the solubility explanation when, from the discussion at the phenomenon necessary to explain these results. It is indeed strange that Dr. Myers should return to this solubility explanation, when, from the discussion at the end of his paper, he himself would appear to have adopted our suggestion that the phenomenon is one of adsorption.

Finally, Dr. Myers, in his original letter, wrote that he began his investigations three years ago; in his paper he has antedated it by two years; we would be interested to know if we may regard this date as now fixed.—We are, etc.,

Physiology Department, St. Mary's
Hospital Medical School,
May 23rd.

V. G. WALSH.
A. C. FRAZER.

Strangulated Hernia

SIR,—I confess to a feeling of disappointment with Mr. Wood Power. After writing what was in many respects an excellent paper, seriously marred only by the unaccountable priority which he gave to taxis over the far more scientific postural treatment in the hope of reducing an apparently early case of strangulated hernia, he now definitely states that he sees no objection to the general practitioner employing taxis in early cases. He gives the chief causes of difficulty in reduction quite correctly as "increasing oedema and distension of the bowel due to venous stasis; and secondly, the contraction of the abdominal muscles." Quite so. Provided the constriction is not too tight, postural treatment is the scientific method of relieving venous obstruction. The spasm of the abdominal muscles in the early cases is due to pain, and morphine and locally applied warmth are the correct means of relieving this, when the spasm will relax. On

the other hand, pressure, even not unduly strong, over any part of the strangulation will increase the pain, and inevitably increase the muscle spasm. So it was in the bad old days (not so very long ago) that world-celebrated surgeons advised that taxis, if done at all, should always be done under a general anaesthetic.¹ I suppose Mr. Power would not advocate this.

But quite apart from these considerations there are so many other possible things that might conceivably mislead a man not very well versed in surgery into errors—they are all somewhat uncommon, but are fully described in many old textbooks. I am not going to discuss them here.

Mr. Power himself, in his original paper, says: "The general practitioner, as a rule, has a limited experience in dealing with such cases; it is far safer to leave the attempt to the surgeon, who is generally better fitted to judge whether taxis is advisable or not." And after this he goes on to make his unaccountable lapse, which he emphasizes and makes more definite in his letter in your issue of May 26th. Now his avowed and admirable intention in writing the original paper was to suggest methods by which "strangulated hernia should become a tragedy of the past." These are his own words. If this object was attained nothing else obviously need be said. But further on he proceeds to describe means by which Vick's mortality rate of 18 per cent. in 11,000 yearly cases might be reduced. He then gives his own mortality of 17.94 per cent. in seventy-eight cases. So Mr. Power has managed to reduce the mortality by 0.06 per cent.! We may take it for granted that Mr. Power is a skilful surgeon, and, moreover, his use of local analgesia is wholly admirable. Therefore the cause must be delay, possibly associated with injudicious outside attempts at taxis.

In many cases the patient with a hernia is quite used to it "coming down," and feels quite unconcerned about periodically replacing it himself. This fact alone should provoke thought. Then the day comes when he cannot "get it back." He has a really good "go" at it. Bad pain comes on, perhaps with vomiting. The other members of the family have a good "go" at it, and, finally, the poor general practitioner has a "go" at it, possibly without the adjective "good" in front of it. Then the surgeon sees the case—God knows how long after the onset! Consequently the mortality rate continues to be an apparent reproach to modern surgery. The rest of Mr. Power's letter does not call for comment.—I am, etc.,

London, May 27th.

ROY HUCKELL.

SIR,—On the question of taxis Mr. R. Wood Power (May 5th, p. 787) invites the opinion of the general practitioner.

I have had a long experience of country practice, in which strangulated hernia is not infrequent. I always attempted taxis, and have succeeded in all cases where seen early, with six exceptions. These six patients were placed on the inclined plane, given a dose of opium, and heat was applied to the part. After a sleep of a few hours the patient, on waking up, found the hernia in each case gone. I do not understand the objection to trying taxis in strangulated femoral hernia. In all the cases I have seen I have found it successful.

Looking back on over forty years of practice I can only recall one of my cases in which it was thought necessary to operate, and this was first seen by me on the second day.—I am, etc.,

W. H. LEWIS, M.B., B.Sc.

Llanantfrid, Mont., May 28th.

¹ Cheyne and Burghard: *Manual of Surgical Treatment*, 1913, vol. iv, p. 471.

Concealed Incision of Interval Appendicectomy

SIR,—Mr. Ernest Cowell will find the incision he writes about (May 26th, p. 947) described in the second edition of Comyns Berkeley's and my *Textbook of Gynaecological Surgery*. It is known as the Küstner-Rapin incision, and was first described in 1896. I have employed it for a great number of years in certain cases, and have very frequently removed the appendix through it. The proceeding is, as a rule, very easy, but there are occasions when it is not—namely, when the appendix is retrocolic, lying high and adherent along its whole length to the colon. The skin incision should be slightly curved with the concavity upwards, not downwards, so as to correspond with the natural creases of the part. It is not necessary to incise under the rectus muscle—a central incision will do as well.

A most important step from the point of view of future concealment is to suture the subcutaneous fat; for if this is not done the skin adheres to the aponeurosis, and when the patient stands up an ugly gutter appears, which the indrawn hair renders very conspicuous. It is also essential to keep the wound strongly compressed by a pad for several days, for otherwise a very troublesome haematoma may form in the dead space under the skin.—I am, etc.,

London, W.1, May 28th.

VICTOR BONNEY.

Criticism of Ante-Natal Work

SIR,—Although in retirement I still take an interest in the *Journal*, and especially in articles on obstetrics, and so I read Mr. A. J. Wrigley's "Criticism of Ante-natal Work" (*Journal*, May 19th, p. 891) with more care than usual. I have often thought of offering some criticism of the many articles and addresses on obstetrical subjects which have appeared during the last ten or twelve years, but I did not like to pit my limited experience as a general practitioner against that of the various male and female professors, lecturers, and specialists who were giving their experience for our benefit. And now comes Mr. Wrigley's lecture, with its exposure of some of the ante-natal work. For some years I examined all the women who engaged me, but always used the knowledge gained as a guide for the labour, and as I had not the technical skill I never attempted to correct any malpositions or think of induction. Now it seems that, quite unconsciously, I was following the correct practice.

Mr. Wrigley says: "Good work is being done by ante-natal supervision in the detection and treatment of various conditions that have been complicated by the pregnancy—for example, chronic heart disease." Some years ago, while I was talking to Dr. Archibald Donald of Manchester on ante-natal work, he said that if a pregnant woman has heart disease she'll not need to go to an ante-natal clinic to have it found out; and I agree with him. It is probable that murmurs are detected and treated, and possibly with the same results as the "malpositions" and "disproportions."

From January, 1883, to June, 1885, I was assistant to Dr. Farquharson in Coatbridge. There were over 200 confinements in the practice every year. Dr. Farquharson was a fine obstetrician who never hurried a confinement. During these two and a half years there was one woman who was ill, and she recovered. Dr. Farquharson said he had had only two or three cases of puerperal fever in his twenty-one years' practice in Coatbridge, and no deaths. (He attributed the recoveries to the administration of chlorate of potash, as recommended by the great Simpson.) Eclampsia was unknown. I remember that all the patients had an abundant vaginal secretion, which stuck to the fingers. The children were fat and healthy, and one patient after another would say, "Aye, it was

fed on tatties and soor milk." These women lived largely on porridge and milk, with tea and bread-and-butter for breakfast; potatoes and sour milk, or Scotch broth, or potatoes and herring, for dinner; tea, bread-and-butter at tea-time; and perhaps more porridge, or peas brose, and buttermilk for supper. Beef and mutton were at a minimum. That is, their diet was laxative and diuretic, and did not irritate either the heart or the kidneys, and the kidneys could easily excrete any poisons generated in the foetus or the mother. Is the secret for the prevention of eclampsia and some of the puerperal fever not to be found in a plain, non-irritating diet? Buttermilk (sour milk) can be obtained in only a few districts, but ordinary milk could be skimmed and made into koumiss.

It would be difficult to get women to feed on the Coatbridge diet, and, alas, for the Scotch broth, vegetables are very dear, and herrings are now dear and scarce; formerly vegetables and herring were abundant and cheap. On the other hand, we still have eclampsia and puerperal sepsis in our midst, and the labours are dry, with hardly any vaginal secretion to protect the mucous membrane. It would be interesting to know how midwifery practice is in Coatbridge to-day. If this letter should meet the eye of any doctor practising in the Gartsherrie Rows (the Lang Raw, Cornish Raw, Wee Square), Ellis's Buildings, perhaps he will record his experience for our benefit.—I am, etc.,

Dunblane, Perthshire, May 24th.

JAMES GARDNER.

SIR,—Which are we tending to foster nowadays—care of maternity or scare of it?—I am, etc.,

May 26th.

E. L. C.

Capacity for Work after Fracture of Spine

SIR,—Dr. Owen L. Rhys, in his most interesting paper, published on April 14th (which, owing to mischance, I have only just seen), states that twelve out of 270 patients with fractured spine were able to return to their ordinary work. He does not differentiate here between cases where the bodies were crushed and cases where only transverse processes were fractured. Would he very kindly state exactly how many men in his series with crushed vertebral bodies were able to return to their full work, as I am collecting statistics on this point. My own experience is that very few of such cases are ever able to do their full work again.—I am, etc.,

PAUL BERNARD ROTH, F.R.C.S.

Newcastle, Staffs, May 26th.

Medical Referees

SIR,—Dr. R. M. B. MacKenna (May 26th, p. 965) calls attention to a question of the first importance—the semi-divine powers delegated to medical referees. It seems that the written opinion of a referee, based upon whatever evidence, is held sacred (officially) for all time: that it may not be questioned, no matter how mistaken and prejudicial it may be. It is no exaggeration to assert that if a medical referee, having gone mad or colour-blind, or merely pig-headed, decrees that a white man is black, that white man is black (officially), and must continue to be regarded as black. I put this to a medical referee the other day. He agreed wholeheartedly.

If there be any who question the assertion I shall be happy to supply evidence based upon cases that have come within my personal knowledge.—I am, etc.,

Walsall, May 28th.

FRANK G. LAYTON.

Nutrition

SIR,—Dr. Campbell Watt, in his letter of February 17th, after sincerely congratulating "the English working classes on the variety and quality and quantity of their diet," and upon the fact that they do themselves uncommonly well, modified this slightly in his letter of April 28th by stating that statistics show that "most, except the lowest-paid classes, consume more than their requirements." He thus gives the impression that it is only a small minority of the English who suffer from malnutrition.

Dr. Campbell Watt advocated, on February 17th, a practical study of the problem, examining individuals in their everyday life. This is done every year by medical officers of health and various Commissions, who have the necessary experience not to confuse the effects produced by malnutrition with the effects due to "ill-health, heredity, congenital defect, or to physiological or psychological reactions to environment other than food."

The M.O.H. for Bethnal Green in his report for 1932 states: "A large proportion of the population are living at an extremely low level." The M.O.H. for Birmingham—1932: "Owing to the long-continued and widespread unemployment in the district many of the children were not thriving, through lack of proper nourishment." The M.O.H. for Wolverhampton—1932: "There is a distinct increase in malnutrition figures of school children. It is doubtful whether the figures represent the whole picture. There appears to be established here a definite link between unemployment and the malnutrition of children." The Social Survey Committee of the Hull Community Council published a report in the middle of 1933, stating: "The diet of unemployed men's children showed a serious omission of nutrition foods, and cannot but result in continuous ill-health." A special committee of the Save the Children Fund came to the following conclusions: "There are many thousands of children within the danger zone of impairment of physique and health, and there was a residuum whose health is already impaired and whose future as citizens and as parents is being imperilled by the conditions under which they are now compelled to live." Dr. E. H. T. Nash, at the B.M.A.'s 101st Annual Meeting, said: "There was a serious increase in mortality among young adults of slum population, as a result of poor nutrition due to poverty."

These reports, if space permitted, could be multiplied tenfold, but I think that they should convince Dr. Campbell Watt that the English as a whole do not do themselves so well. He may, however, assert that it is not due to underfeeding, but simply to a faulty balance in the rations consumed. In practical life one must realize that the amount and quality of rations consumed is largely an economic question, and depends upon the income of the family. We have already seen in these reports that it is this factor, and not a faulty balance, that causes malnutrition. Let us, however, take a few English families' budgets as instances:

In the Finsbury (London) M.O.H. report, 1932, several are listed, of which these are representative: Ten persons living in two rooms, 14s. 6d. wages, 17s. 6d. relief; eight persons in one room, wages £1, relief 18s.; nine persons in two rooms, transitional benefit £1 17s. 6d.; nine persons in two rooms, wages £1 10s. Hammersmith (London) M.O.H. report, 1932: Husband, wife (expectant mother), three children, 10, 8, and 5, net income after deduction of rent 19s. 3d. The dietary of this family is listed in full. The meat (5 lb. of target mutton) is bought in the market on Saturday night for 1s. Stale bread only is used, etc.

After deducting such items as "rent, coal, clothing, beer, tobacco, artificial silk stockings, dances, cinemas, and football matches" from these typical family budgets I am sure that Dr. Campbell Watt will easily compile a dietary which is sufficient in quantity and quality.

As for the B.M.A. diets, Dr. McGonigle, honorary secretary of the B.M.A. Nutrition Committee, in a letter

to the *British Medical Journal* of July 29th, 1933, stated that "there exists to-day no generally accepted, standardized, or satisfactory method of assessing the nutritional state of individuals"; also "there exists considerable doubt as to the possibility of assessing with any degree of accuracy the true nutritional condition of any given individual" by the means of a formula combining in various ways height, weight, and age. So that any dietary at our present stage of knowledge, purporting to maintain a hypothetical normal nutritional state, must of necessity be unscientific and unreliable. Apart from the fact that, owing to economic conditions, many English families are not even receiving the B.M.A. standard dietary, it appears as if it would be rather difficult for any adult male to maintain normal health on 10d. a day for meals, an average of about 3½d. per meal, even if he had a balanced diet.

Dr. H. A. Jardine, in her letter of February 24th, shows clearly how abundant food stores, ironically termed "surplus," are being destroyed. In addition, import duties and restriction quotas raise the prices and tend to place the food still further out of the grasp of our undernourished countrymen. Famine does not exist; a large proportion of food stores is either lying idle or is being destroyed; a large proportion of the population is suffering from the effects of malnutrition. The remedy to humanitarian scientists is obvious. The compilation of diets that to some extent justifies these conditions does not conform to the purpose of our profession.—I am, etc.,

London, E.5, May 23rd.

S. LEFF, M.B., B.S.

The Control of Obesity

SIR,—For those who may also be struggling against the temptation of the flesh in the shape of fat, starch, pastry, bacon, and potatoes, may I be permitted to give another personal experience of Dr. Douthwaite's No. 1 diet, to cheer up those who may be depressed by the experience of "M.D." (May 19th, p. 919).

Beginning on April 22nd, and adhering to the diet, but with almost complete substitution of bread or toast by "energen" or "ryvita," my results are as follows:

April 22nd,	weight	12 st. 8 lb. (in pyjamas)
		(normal for height, 10 st. 8 lb.)
" 29th,	"	12 st. 5 lb.
May 6th,	"	12 st.
" 13th,	"	12 st.
" 20th,	"	11 st. 11 lb.
" 27th,	"	11st. 10 lb. (result of a little butter and scones).

While the self-denial of butter and potatoes, in particular, cannot be described as "pleasant," and though one rises from the table still hungry—as all good physicians say one should—I cannot honestly say there has been any real distress beyond an annoyance at seeing others at table gorging themselves on cheese, boiled puddings, and pastry. The sleeplessness is common to both "M.D.'s" and my experience, and was notable in my case, as I am a very sound sleeper, but it passed off in the third week entirely. Physical fatigue was perhaps undue in the third week, but mental concentration was never impaired, and during this fourth week was particularly tested.

I agree with "M.D." that fat and sugar are probably the prime causes of obesity, and it is just the butter and bacon that one misses. I fancy the physical fatigue may be due to the limiting of carbohydrate. But personally I intend to "stick it" to below 11 st., and my main reason is because I have no trace of a heretofore constant flatulent indigestion, and because of the entire disappearance of "rheumatic" pains and of a beautiful lessening of "embonpoint."

I cannot agree that to diet is to be miserable, and, whilst to be fat may cause one to laugh, it is also apt to

be a cause of laughter in others. One great point of this diet is that it does not interfere with one's working. Personally I have considerable intellectual work and forty or fifty miles motor driving daily, and at no stage have I felt unfit for it.—I am, etc.,

May 22nd.

"SLIMMER."

Alleged Poisoning by Oysters

SIR,—The case of Mr. Charles Frederick Wimble against the Royal Victoria Hotel, St. Leonards, for supplying him with oysters which were held by the jury to have brought about an attack of typhoid fever is of very great importance, as it raises the question whether our existing laws as applied to such cases merit revision.

Here we have a case of a man who goes to a hotel where he partakes of a meal which, among other things, consists of a dozen or so of oysters. Some time later he is found to be suffering from typhoid, and he thereupon concludes that the oysters which he had eaten were solely responsible. He sues the hotel proprietors for damages, and a sympathetic special jury find that the oysters were the actual and only cause of the attack of typhoid and award £25 in damages. Apparently from the report published there was no evidence whatever that either the oysters in question, or any other oysters sold in that neighbourhood, had been contaminated with typhoid bacilli, and apparently also no attempt was made to find out if there was a typhoid carrier handling Mr. Wimble's food in his own home or elsewhere. In October there are still numbers of flies which are quite capable of carrying *B. typhosus* from any exposed excreta on to Mr. Wimble's milk-jug, cheese, cold meat, etc., and I now suggest that it is infinitely more probable that the disease in question was communicated in this way. It has been clearly demonstrated some time ago that oysters which were artificially contaminated with pure cultures of *B. typhosus* when placed in fresh sea-water were able to free themselves from the germs completely in twelve hours. In other words, the common oyster has a wonderful power of rapidly freeing itself from infective germs by means of an excellent mechanism of its own. I consequently think that it is highly undesirable that a decision such as this should be allowed to go by unchallenged.

Should the question be permitted to pass without being fully and properly sifted, discredit will be placed on the character of a very excellent and desirable article of human food, and an important industry, which has been seriously neglected in the past and for which strong efforts are now being made to help it to revive, will have its future seriously prejudiced.

I now beg to give it as my opinion that cases such as this, where questions of a highly technical nature are at issue, should not be submitted to the decisions of juries of laymen, but, on the contrary, should only be put before juries of men who have had thorough scientific training.—I am, etc.,

Kirk Michael, May 26th.

E. G. FENTON.

SIR,—The success plaintiffs have had in recent years in actions for negligence should not pass unnoticed. To the cases of fur dermatitis must be added the many instances of food-poisoning and the present example of typhoid. If the inference drawn from daily observations be correct, the incidence of gastric influenza, to which food-poisoning, paratyphoid, typhoid, typhus, and dysentery belong, is steadily rising, and much injustice will be caused by upholding the present procedure. As evidence points to our having entered, in 1930, into a long era of gastric influenza, both law and medicine would do well to pay immediate attention to the susceptibility of the individual and to re-sift the present-day knowledge of epidemics. That a new inquiry is urgently needed is

shown by the omission in this case of any reference to the fact that the epidemic of typhoid in Hastings coincided exactly with the epidemics in Yorkshire, the Midland counties, and the Balkans. In Yorkshire the epidemic began in a town where the water supply was above reproach. It spread to another town where the water supply contained typhoid bacilli years before the epidemic began, and still does after the epidemic has vanished. These facts, to which must be added the most important one of all, that epidemics are cyclical, disprove the view that infections begin through outside contamination. Even carriers do not play the part accredited to them. Indeed, the evidence points to most epidemics arising within the individual at the instance of climate.

For an infection to become full-blown it is necessary for the bacteria responsible to have undergone a series of mutations, and herein lies the explanation of susceptibility. Climate causes certain mutations to occur, and the steps are more quickly trodden in diseased than healthy subjects. Taking any collection of individuals an outside factor having no connexion whatever with any bacterial body may so lower the resistance of one or more as to enable the final mutation to occur. In others it may advance the mutation a few steps only, and in a third class, where there are no pathogenic micro-organisms, may have no influence. This explains why in an epidemic the manifestations of disease vary and different micro-organisms are found.

The Hastings epidemic was no different from any other, and as cases of typhoid occurred where no oysters were taken and others who partook of the supposedly contaminated fish failed to get typhoid, the only just inference to draw is that any factor might have precipitated the infection in the plaintiff. Even a pure article of food at a certain time may precipitate the common cold and the respiratory form of influenza, but it would not be fair to allow an action to be brought against the purveyor.

Epidemics of so-called food-poisoning were particularly rife during the last quarter of 1933, and such large sums of money have been paid to complainants to avoid the publicity of a court of law as to make one fearful of speculative legal actions. Of course, no effort should be spared to render food as natural and pure as possible, but if any success is to be achieved in reducing the incidence of these infections it is to be obtained only by making the individual healthier.—I am, etc.,

London, W.1, May 23rd. J. E. R. McDONAGH, F.R.C.S.

Poisoning by Ground Ivy

SIR,—I have read with interest the letter by Dr. W. G. Aitchison Robertson in your issue of May 12th (p. 872), and also that by Dr. F. William Cock (May 19th, p. 922).

In the first place, may I raise the question as to why Dr. Robertson fails to use scientific botanical nomenclature in his letter, for in "one fell swoop" he appears to confound three natural orders of plants by his use of the term "ground ivy" and the subsequently appended remarks. May I be permitted to refer to these three orders?

1. Ground ivy, as such, is the recognized popular term for a plant of the order Labiataceae, a small purple-mauve flower of bitter aromatic smell, and used by the ancients to flavour beer—verily a neglected, common, not unagreeable, harmless hedgerow plant.

2. Dr. Robertson may have been referring to some member of the *Hedera* genus, possibly a variant on our *Hedera helix* or common ivy. This plant is a member of the Auraliaceae. It is bitter in flavour, but carries abundant yellow-green flowers, eagerly sought by late-flying moths, etc. Later it bears crops of nutritious black berries, which are consumed with avidity by various wild birds. This plant is certainly devoid of ill effects on the

large majority of people; but it is quite conceivable, as Dr. Cock states, that certain people may possess an idiosyncrasy to it.

3. Then there is the well-known "poison ivy or oak," *Rhus toxicodendron*, an American immigrant to this country, and one which is justly infamous as a contact poison plant.

I can bear out Dr. Cock's statement that the "tea" from the leaves of *Hedera helix* has a country reputation as an anodyne in carcinoma. In conclusion, may I plead for the more common use of scientific terminology in describing botanical subjects in connexion with medical science, for unfortunately—as can be seen from this correspondence—Dr. Robertson's letter, while being interesting, leaves considerable doubt in the mind as to what plant really causes the symptoms he describes.—I am, etc.,

London, S.W.1, May 22nd.

DAVID H. HALER.

SIR,—I thought that I had made it plain that it was that very common variety of ivy which grows over banks and under trees in almost every garden, and which was known to the older botanists as "ground ivy" or *Hedera terrestris* (Sowerby). It is still almost universally known in country districts by this name, and has not the slightest relation to the labiate, *Nepeta glechoma*, either in appearance, scent, or habitat. The latter grows on hedgerows or in open pastures, impoverishing the ground, and so could not in the remotest degree be confounded with the creeping ivy to which I refer.

My object was merely to draw attention to the danger of handling this very common plant, and to help in the recognition of a painful condition, the cause of which might be easily overlooked. My impression is that the idiosyncrasy to this plant is not so infrequent as might be imagined. One correspondent informs me that he obtained some relief from frequent applications of calamine lotion and sedative doses of potassium bromide and valerian. The dermatitis which this variety of ivy gives rise to is very similar to that produced by toxicodendrol, lobinol, or paraphenylenediamine.—I am, etc.,

Bournemouth, May 29th. W. G. AITCHISON ROBERTSON.

Industrial Cancer and Blood Pressure

SIR,—Your excellently concise summary of present knowledge regarding cancer and chemical stimuli prompts me to point out that, as the result of some research work I have done in connexion with workers who are liable to pitch cancer, I find predisposition is closely associated with a modification of the basic (diastolic) blood pressure. When this is increased there is an increased pressure on the blood in the arteries, with the result that the movements of the blood cells are modified, and the red cells are unable to carry their full complement of oxygen to the tissues, which are consequently lowered in vitality.

A prolonged exposure over some years to small quantities of carbon monoxide gas tends to reduce the oxygen-carrying capacity of the blood, whilst raising its basic blood pressure. It follows that a man who starts work in a pitch or fuel works with his blood below par is already predisposed, and similarly a man of 60 who hitherto has escaped pitch warts becomes more and more liable to them as senile anaemia sets in. In both of these types the basic blood pressure is raised and an adequate supply of blood fails to reach the tissues.

Workers in fuel works may be classified as: (a) good health, houses, and homes; (b) indifferent health, houses, and homes; (c) poor health, houses, and homes. It will be found that the age at which these three grades develop pitch warts is somewhat as follows: (a) 50 to 60; (b) 35 to 50; (c) 20 to 35. A hereditary tendency is always closely associated with the blood group and with its oxygen-carrying

capacity, whilst a family tendency to right or wrong feeding simply accentuates the association.

When the oxygen supplied to the tissues is reduced in quantity the cells divide rapidly in order to increase the area of absorbing surface. This is shown in hyperpiesia in the form of arteriosclerosis, when the raised basic pressure, by compressing the openings of the vasa vasorum, prevents an adequate supply of oxygen being carried to the tissue cells of the arterial walls. It is also well to note that a large percentage of these patients die from cancer. In parasitic tissues the parasite demands oxygen, which it derives from the tissue cells; these cells consequently are deprived of oxygen, and divide rapidly in the hope of obtaining more, the superfluous division forming a "growth." In patients whose blood is affected by animal parasites, as in syphilis, as well as in those whose blood is stated to be affected by a "virus," one finds that the basic blood pressure is always raised, and consequently the carriage of oxygen to the tissues is reduced.

In patients suffering from industrial cancer there are two constant factors present—namely, a prolonged exposure to CO gas and a raised basic pressure, both of which tend to reduce the supply of oxygen to the tissues. The introduction of poisons or toxins into the system tends to raise the pressure.—I am, etc.,

Swansea, May 27th.

G. ARBOUR STEPHENS.

A Case of Abortus Infection

SIR,—An unmarried woman, aged 39, developed a rise of temperature in March last, diagnosed provisionally as due to influenza. The temperature subsided within fourteen days. In the fourth week a pronounced rise led to further investigation, the Clinical Research Association reporting that the blood agglutinated *Brucella abortus* in 1 in 1,000 dilution. The interesting feature about this case is that apart from a mild headache the only physical sign was a very severe inflammation of both nipples, lasting a few days in the week of relapse (fourth week). Prior to this the nipples were very undeveloped. No further relapse has occurred at the end of nine weeks.—I am, etc.,

Crewe, May 15th.

W. L. ENGLISH.

Reflex Inhibition

SIR,—The existence of an element of reflex action in epilepsy is well known (examples are given by Kinnier Wilson). For example, a flick on the nose of one patient would produce a fit. No less instructive are cases where a particular stimulus or act will prevent an attack. The following case illustrates this.

A male patient, 21 years of age, has suffered from occasional fits since childhood. He can always tell when a fit is coming by a tingling sensation in his left leg. He then calls out to whoever is in the house for help. This help, as described by his mother, consists in immobilizing his left leg, by kneeling on his toe (while he is sitting down), and pressing downwards on the knee. If she "gets to him in time" the fit can always be prevented in this way.

A possible explanation of this phenomenon is that the general abnormal cortical excitation, which apparently occurs in a fit, in such cases can commence only from a particular area of the cortex. We may suppose that for the cortical excitation to commence and spread, the chain of events—aura, localized muscular movement (of the leg in this case), unconsciousness, and general muscular movement (convulsions)—must proceed uninterruptedly, if at all. If this chain of events be interrupted by preventing the onset of localized muscular movement (of the leg here), general abnormal excitation of the cortical area concerned is prevented (or perhaps its abnormal spread is prevented). An analogy would be the prevention of general cortical

inhibition (of sleep—Pavlov) by some external stimulus or act (for example, preventing a person sleeping by shaking his shoulder).—I am, etc.,

Perivale, Middlesex, May 15th.

R. L. WORRALL.

Extra-Licentiate of the College of Physicians

SIR,—In his interesting review of Dr. Hobhouse's edition of Claver Morris's diary Sir D'Arcy Power repeated in your last issue a not uncommon misconception of the nature of the extra-licence of the Royal College of Physicians of London.

The extra-licentiate could practise anywhere in England save within London and the circuit of seven miles. This licence was first granted in 1660 under the new Charter of Charles II, after examination by the President and the elects—not, as in the case of the licence to practise *intra urbem*, by the Censors Board. In 1859, after the passage of the Medical Registration Act of 1858, the College of Physicians made a new by-law enabling their extra-licentiate, on payment of five guineas, to become licentiate, with the right to practise in London.

Claver Morris became an extra-licentiate in 1683 because he wished to practise in the provinces as a physician. The degree of D.M. would entitle him to do this, but could not be granted at Oxford until eleven years had elapsed from his baccalaureate—that is, in 1691.—I am, etc.,

London, W.1, May 28th.

CECIL WALL.

Chemical Factors in Germinal Impairment

SIR,—It is amusing that Dr. W. Spencer Badger did not, in his letter (May 26th, p. 965), advocate that the State should forbid the distribution of literature which recommends chemical contraceptives but merely the "sale" of such literature. However, proof has not yet arrived that a chemical contraceptive can cause the birth of a defective individual. And if it comes to be proved that the use of chemical contraceptives can cause the production of a serious number of defectives, the better policy should be followed of taking a restrictive law off the statutes instead of putting another one on. Practically all the birth control and eugenic problems would be entirely, or very largely, solved by my formula: Sterilization and abortion should be available to any person with two children, and no woman of the poorest classes should have more than two confinements.—I am, etc.,

London, S.W.7, May 26th.

B. DUNSTON.

Osteopathy

SIR,—Mr. A. S. Blundell Bankart, referring to the Osteopaths Registration Bill (in his letter to the *Journal* of May 19th), says he thinks "that medical men at least should be acquainted with the truth about this movement." His attempts to make plain the truth about osteopathy are sadly misleading to those who know little about the subject, and are rather amazing to those of us who are familiar with osteopathic work. To say that "osteopathy has nothing whatever to do with 'bone-setting' or with manipulative surgery or the therapeutic manipulation of stiff joints," is a statement which Mr. Bankart would find very hard to substantiate, and to follow that statement immediately with the information that "manipulative surgery is now a recognized branch of orthodox practice" would suggest to his unbiased readers that, as surgeons are now beginning to use manipulation as part of orthodox surgical practice, there is no room for the osteopath in this line of work.

Mr. Bankart would have us believe that osteopathic work is concerned with displacements of the spinal

vertebrae and that these displacements cause direct pressure on the blood vessels and nerves leaving the intervertebral foramina. I believe this to be an entirely erroneous interpretation of present-day osteopathic principles. Certainly the osteopath is concerned with even the least disturbance of blood and nerve supply to any part of the body, and he is trained to recognize abnormalities in the spinal column or elsewhere which give rise directly or indirectly to interference with the circulation and nerve stimuli. As I understand it, these spinal displacements, which Mr. Bankart describes as imaginary, are, in the main, static fixations of articulations which have been carried beyond the normal range of movement, and held in abnormal positions by sustained unequal tension of ligaments, muscles, and surrounding soft tissues. If the abnormal condition of the joint and surrounding tissue is allowed to continue it eventually gives rise to either a local anaemia or congestion. This in turn results inevitably in disturbance of function in that part of the body, "remote" or otherwise, which is dependent on the blood and nerve supply from the affected area. Owing to the highly cultivated tactile sense, which can only be developed by years of special training, the osteopath is able to detect these fine deviations from the normal, vertebral or otherwise, which are usually not apparent to the surgeon.

Mr. Bankart classes osteopaths with chiropractors, and dismisses them both as an American "stunt." As I know nothing about chiropractic work I must not express an opinion, but I am sure that many medical practitioners who make use of osteopathy will agree with me that the work is based on simple and sound pathological teaching, and the results achieved by a good osteopath may be safely left to speak for themselves. I am, etc.,

DOROTHY WOOD, M.R.C.S., L.R.C.P.

London, W.1, May 23rd.

The Services

COMMISSIONS IN THE R.A.M.C.

The War Office announces that applications are invited from medical men for appointment to commissions in the Royal Army Medical Corps under the new conditions announced recently.

Candidates will be selected for commissions without competitive examination, and will be required to present themselves in London for interview and physical examination on or about June 6th, 1934. They must be registered under the Medical Acts, and normally must not be over the age of 28 years.

Successful candidates will in the first instance be given short-service commissions for five years, at the end of which period they may either retire with a gratuity of £1,000 or apply for a permanent commission. Permanent commissions will be given to officers selected from among those who wish to make the Army their permanent career.

Full particulars of the conditions of service and emoluments, also forms of application, may be obtained on application, either by letter or in person, to the Assistant Director-General, Army Medical Services, the War Office, London, S.W.1.

THE I.M.S. DINNER

The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, London, on Wednesday, June 20th, at 7.15 p.m. Major-General Sir Leonard Rogers, K.C.S.I., C.I.E., F.R.S., will preside. Tickets and all particulars may be had from the joint honorary secretary, Sir Thomas Carey Evans, Hammersmith Hospital, Duane Road, W.12.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Convocation to be held in the Sheldonian Theatre on Wednesday, June 20th, at noon, it will be proposed to confer the degree of D.Sc., *honoris causa*, upon Professor Archibald Vivian Hill, F.R.S., M.A., Sc.D. (Cambridge), nominated by the Chancellor on the occasion of the Encaenia following his installation.

The President and Fellows of Magdalen College have elected John Carew Eccles, M.A., D.Phil., Staines Medical Fellow of Exeter College and formerly Rhodes Scholar of Magdalen College, to an official Fellowship and Tutorship of the College in Natural Science. Dr. Eccles, who will take up his new duties on October 1st, 1934, is a graduate in medicine of the University of Melbourne, obtained first-class honours in the Oxford Final School of Natural Science (Physiology), and was awarded in 1927 the Christopher Welch Scholarship and in 1932 the Rolleston Memorial Prize.

UNIVERSITY OF CAMBRIDGE

Dr. G. Norman Myers (Sidney Sussex College) has been appointed, university demonstrator in pharmacology for a period of three years, and Dr. H. A. Krebs of Hamburg university demonstrator in biochemistry for the same period.

Dr. Ffrangcon Roberts has been appointed an examiner for the Diploma in Medical Radiology and Electrology, 1934, Part II, in the room of the late Dr. Stanley Melville. Mr. G. Stead, M.A., and Professor Sidney Russ, D.Sc., have been appointed examiners for this diploma, Part I, 1935; and Dr. A. E. Barclay, Dr. G. H. Orton, and Dr. E. P. Cumberbatch examiners for Part II, 1935.

At a congregation held on May 26th the following medical degrees were conferred:

M.D.—The Hon. W. S. Maclay, M. D. Nosworthy, R. W. Windle, J. B. S. Lewis.
M.B.; B.Chir.—G. W. Whittall, E. R. Hargreaves.
M.B.—J. Glyn Jones.
B. Chir.—C. M. Barker.

Fearnside's Scholarship

The E. G. Fearnside's Scholarship, which is for clinical research on the organic diseases of the nervous system, is open to members of the University or of Girton or Newnham Colleges who are graduates or titular graduates in medicine, or to graduates or titular graduates in arts who have passed Part II of the Natural Sciences Tripos. Applications must be sent to the Registry of the University before June 27th, 1934.

UNIVERSITY OF LONDON

GUY'S HOSPITAL MEDICAL SCHOOL

The following awards have been made for 1934:

Entrance Scholarship in Arts (value £100): H. F. Lunn. War Memorial Scholarship in Science (value £200) and Entrance Scholarship in Science (value £100): Divided between A. Bloom and A. R. Bradley. Confined Scholarship in Science (value £100): Divided between D. Tumrasvin and H. Wormald.

UNIVERSITY OF LIVERPOOL

The Council has appointed Henry Cohen, M.D., F.R.C.P., lecturer in medicine in the University, to the chair of medicine, as from October 1st, 1934, in succession to Professor John Hay, who retires at the end of the current academic session.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—P. E. Cresswell, M. T. Curran, R. Fleming, S. Kay, S. Klein, R. Sugerman, C. E. Wetherall, W. E. White.
MEDICINE.—P. C. Alexander, C. N. Chowdary, G. W. Hardy, C. C. Joannides, S. Kay, A. G. Manley, J. Mason, S. E. Roberts, E. C. Rowlands.
FORENSIC MEDICINE.—P. C. Alexander, F. M. Chalkley, M. V. Matthew, M. A. Walsh Conway.
MIDWIFERY.—A. E. Ginn, L. A. Lewis, H. Paroulakis.

The diploma of the Society has been granted to P. C. Alexander, A. E. Ginn, G. W. Hardy, S. E. Roberts, E. C. Rowlands, R. Sugerman, and C. E. Wetherall.

Obituary

ANDREW FULLERTON, C.B., C.M.G.
M.D., M.Ch., F.R.C.S.I., F.A.C.S.

Ex-President, Royal College of Surgeons in Ireland; Emeritus Professor of Surgery, the Queen's University of Belfast; Consulting Surgeon, Royal Victoria Hospital, Belfast, and Belfast Hospital for Sick Children; Colonel A.M.S.

We announced in our last issue, with deep regret, the death on May 22nd of Professor Andrew Fullerton, which, while not unexpected, has filled the hearts of his colleagues in the Belfast Medical School with a sense of irreparable loss. He was born in 1868, the son of the Rev. Alexander Fullerton of the Methodist Church in Ireland, and received his education in Lurgan College and the Queen's College, Belfast. Already distinguished as an undergraduate, he obtained first-class honours in the M.B. examination of the Royal University of Ireland in 1890, and the M.D. degree in 1893. In 1901 he became a Fellow of the Royal College of Surgeons in Ireland, and in 1913 he proceeded to the M.Ch. degree of the Queen's University of Belfast. Some four years after obtaining his qualification he spent in the West Kent Hospital, Maidstone, and the Miller Hospital, Greenwich; returning to Belfast, he commenced practice in 1894. He was for a time engaged in general practice, but, as an honorary demonstrator of anatomy under the late Professor Symington, was acquiring the accurate and detailed knowledge which was the basis of his surgery.

His first hospital appointment was to the surgical staff of the Belfast Hospital for Sick Children, and shortly afterwards, in 1902, he was appointed an assistant surgeon to the Royal Victoria Hospital. He served these institutions with unwearied energy and skill for over thirty years, and gained for himself the affection of his colleagues and the unshaken confidence of all who knew him. In 1915 he had the honour of being invited to become a consulting surgeon to the British Expeditionary Force in France with the rank of Colonel A.M.S., and his record of service there not only confirmed the wisdom of this appointment, but brought a wider recognition of the Belfast school of surgery. He was gazetted C.M.G. in 1916, C.B. in 1919, and was three times mentioned in dispatches.

In 1922 he was elected an Honorary Fellow of the American College of Surgeons, and in 1924 he succeeded Professor Thomas Sinclair in the chair of surgery in the Queen's University of Belfast. In 1928 he became President of the Royal College of Surgeons in Ireland, being the first surgeon resident outside Dublin to hold this office. In 1931 he was president of the Association of Surgeons of Great Britain and Ireland. He was also a past-president of the Ulster Branch of the British Medical

Association, of the Ulster Medical Society, of the Belfast Medical Students' Association, and of the Queen's University Services Club. He had joined the British Medical Association in January, 1893, and was a member of the Representative Body in 1906 (Toronto), 1907 (Exeter), 1908 (Sheffield), and 1909 (Belfast). On the last of these occasions he also served as honorary secretary of the Section of Diseases of Children, becoming vice-president of that Section at the Annual Meeting at Aberdeen in 1914. When the Association met at Cardiff in 1928 he was vice-president of the Section of Surgery.

Professor Fullerton was a prolific writer on surgical subjects, and published some seventy papers in various journals. His most important contribution was the article on "Gunshot Wounds of Kidney, Ureter, and Bladder" in the *Medical History of the War*. As a urologist he established for himself an international

reputation: he made many original observations of importance, being the first to note the significance of unilateral diuresis, and to employ the retroperitoneal exposure of ureters in the early diagnosis of renal tuberculosis. In 1930 he delivered the Campbell Oration, taking as his subject "Progress in Urology." His patience and care were apparent in his case-taking, in which no relevant detail was too minute to escape record. A rapid and skilful operator, his fertile mind was continually employed in the evolution of some improvement of technique by which the surgical risk to his patient might be lessened or his comfort enhanced. He loved his teaching because he loved his subject and he loved his students. His own energy and enthusiasm seemed to have endowed him with enduring youth, and attracted to him the unstinted devotion of his pupils. He was profoundly moved when, on his resignation last October from the professorship of



surgery in the Queen's University of Belfast, he was made the recipient of a silver salver from his class.

Andrew Fullerton was a man of singular directness. His inherent simplicity and honesty, rendered him incapable of guile. He had the gift of making friends, and with him friendship was lifelong. His principal recreation was golf, and it was a source of pride to him to have been elected captain of the Royal County Down Golf Club at Newcastle. He was a Past Master of the Queen's University Masonic Lodge, and was a Prince Mason.

He was twice married; his first wife, who died in 1926, was Caroline, daughter of the late Mr. Thornton Bulloch; the children of this marriage are two sons and a daughter. He is survived by Mrs. Fullerton, who is the daughter of the late Rev. R. D. French and the widow of the late Mr. Randall Cooney, F.R.C.S.I. Her unremitting care did all that was possible to mitigate the suffering of a long and painful illness, borne with magnificent courage and fortitude.

[The photograph reproduced is by Messrs. Lafayette.]

Mr. GEOFFREY JEFFERSON writes:

The death of Andrew Fullerton robs not only the Belfast school of one of its most distinguished members, but many others of a friend whose sincerity and steadfastness will keep his memory green. Private friendship is not a subject for public parade, but I must add my meed of praise for those qualities which to me did him most honour. Chief among these were his complete honesty and integrity, next his application and his industry, then his pride in his university and his city. For Belfast and its medical school, and for Queen's University as a whole, he had the greatest love. He believed in their importance implicitly, as well he might, but he knew that a university must deserve respect, not merely claim it. He knew that corporate virtue is won only by the untiring efforts of individual men, and he was primarily, all for work. He won many honours, but he thought of them chiefly in relation to his university rather than as personal gains. Eventually he learned also how to play, and certainly his captaincy of the Newcastle Golf Club, County Down, was almost, of all his later honours, that which most greatly pleased him. Like many people with definite and individual personalities he could not hope to please everybody, nor did he wish. But he knew when to make concessions, and the affection and respect of his juniors, as well as of his peers, were the return of what he gave to them. Personally I mourn the loss of a friend who is, as all true friends must be, quite irreplaceable.

DAVID OGILVY, M.D.

Medical Superintendent, L.C.C. Mental Hospital, Epsom

We had to announce, with much regret, in our last issue the death, on May 13th, of Dr. David Ogilvy, medical superintendent of the London County Mental Hospital, Long Grove, Epsom. Dr. Ogilvy was educated at Trinity College, Dublin, where he distinguished himself in surgery in his final examination, and took his M.D. degree in 1899. He was a good Rugby football player, and played for his university. He held the post of surgical resident at the Jervis Street Hospital, Dublin, and was for a time medical assistant at the Central Criminal Asylum, Dundrum.

In 1899 he began his career in psychiatry, and came under the influence at Wakefield of that distinguished physician Professor Bevan Lewis. He proceeded thence to Banstead Mental Hospital in the London County Council service, where he rose to the position of third assistant medical officer under Dr. Claye Shaw. In 1902, on the opening of Horton Mental Hospital, he was transferred as second assistant, and two years later was promoted to senior assistant medical officer. At this well-known hospital he was later brought into association with the late Dr. J. R. Lord, whose keenness and interest no doubt influenced Ogilvy's outlook.

In March, 1912, he was promoted to be medical superintendent of Long Grove Mental Hospital, in succession to Sir Hubert Bond, on the latter's appointment to be a Commissioner of the Board of Control. He realized that he had entered at this hospital on a distinguished heritage, and he faithfully devoted the remaining twenty-two years of his life to its welfare. His was perhaps a conservative mind, but it was never closed to new ideas and impressions. In this respect one may instance the interest he took in the development, on progressive lines, of occupational therapy in both male and female wards, and the fact that to his persistent advocacy was due the employment of a male occupations therapist for the prosecution of helpful occupations among male patients in fuller measure than could, in his judgement, be secured by confining the initiation of such work to women officers, as

was the case in other London mental hospitals. He also took a deep and helpful interest in the work of the Mental After-Care Association for discharged patients, and he served on the council of that association.

Dr. Ogilvy was held in esteem and affection alike by his medical colleagues, his staff, and his patients. His devotion to duty, his sense of justice, his outspoken cheerfulness, endeared him to all who came into contact with him. No difference of opinion left one in doubt as to his genuine honesty of purpose. He was a candid friend to those who gained his confidence, and concealed beneath a certain genial bluntness of manner one was ever conscious of an essentially humane and lovable personality. All who knew him will desire to express their deepest sympathy with his widow and three children.

F. N. G. STARR, C.B.E., M.D., F.R.C.S.

Professor Emeritus of Clinical Surgery, Toronto; Vice-President, British Medical Association

Widespread regret has been expressed in this country at the loss sustained by general medicine, as well as surgery, in consequence of the death last month of Professor F. N. G. Starr after a week's illness. An outstanding diagnostician and surgeon, as well as a successful teacher and educational pioneer in the University of Toronto, he was also for many years a driving force in the development of the Canadian Medical Association.

Frederick Newton Gisborne Starr was born at Thorold in 1867, and received his early education in Ontario public and high schools, from whence he entered Victoria College, Toronto. In 1889 he graduated M.B., C.M., and subsequently proceeded M.D. After a long period of post-graduate work in England, France, and Germany he returned to Canada and commenced practice in Toronto. He became general secretary of the Canadian Medical Association in 1893, and held the post until 1901, remaining a member of its executive council, and holding the post of president in 1927. The influence of his wise guidance and stimulating encouragement was most marked; the inevitable difficulties of such an organization in the widely separated townships in a vast Dominion were steadily overcome, and the beneficent activities of the association were increasingly widely appreciated. The British Medical Association paid tribute to his devoted work and great success by electing him a vice-president.

His surgical skill was early apparent, and he held appointments at the Toronto General Hospital, the Toronto Western Hospital, the Hospital for Sick Children, St. John's Hospital, and the Women's Cottage Hospital. He was later appointed consulting surgeon to each of these institutions. He devoted himself also to the advancement of the growing University of Toronto, was a member of the board of governors, and held the rank of emeritus professor of clinical surgery. He was largely responsible for the founding of the Royal College of Physicians and Surgeons of Canada, was a councillor from 1907 to 1911, and was the first surgeon to become its president, a post he held from 1931 to 1933. He had been president of the Academy of Medicine, Toronto, in 1926. Very highly esteemed also in the United States, he was elected in 1932 a Fellow and first vice-president of the American Surgical Association. He was also a Fellow and past vice-president of the American College of Surgeons. With all his many obligations he never forsook his deep interest in student life: from its inauguration in Toronto he had been closely associated with the Nu Sigma Nu Medical Fraternity, and had acted as an adviser to the student members of the Toronto Chapter. He was also a member of the Alpha Omega Alpha Honor Medical Fraternity.

During the war Dr. Starr held a commission as major with the R.A.M.C. in France, and was twice mentioned

in dispatches. The C.B.E. was subsequently conferred upon him. He was a Fellow of the Royal Geographical Society. He retained an active interest in athletic and sporting pursuits, and was a member of two golf clubs, the Toronto Hunt and Jockey Clubs, the Royal Canadian Yacht Club, and the Royal Canadian Institute. He is survived by his widow and three brothers. His uncle, Frederic Newton Gisborne, was the originator and first manufacturer of the earliest submarine telegraph, and connected Cape Breton and Newfoundland by nearly ninety miles of cable.

The death of Dr. WILLIAM BROGDON PATERSON at his home at Aigburth on May 11th takes from Liverpool a practitioner who was widely known and respected by a large circle of colleagues, patients, and friends. For the last four years he had struggled against serious illness; and when, a few months ago, the inevitable end became clear to him and to those who were looking after him, he met it with quiet courage. He was born in 1865, his father being minister of Tranent, East Lothian. He was schooled in medicine at Edinburgh, where he qualified M.B., C.M. in 1887, afterwards becoming resident physician at the Cowgate Dispensary, Edinburgh. Later he came to Liverpool as house-surgeon to the Royal Southern Hospital. For some time he was medical officer to the Liverpool Medical Mission, and afterwards he became a partner of the late Dr. John Grimes of Grassendale, with whom he remained until 1903. Until a few years ago he was associated in partnership with Dr. H. R. Hurter of Cressington. His colleagues honoured him at various times by electing him first librarian and later vice-president of the Liverpool Medical Institution. His small stocky figure, with bright and kindly eyes shining from behind rather shaggy eyebrows, became well known to the men and women of all walks of life who made up the field of his large and widely extended family practice. His skill as a practitioner kept pace with the rapid advances of medicine, and to his professional duties he brought a discipline and integrity of purpose which left him with neither time nor inclination to waste words or energy on small talk or trivialities. At times life had hit him hard, but he emerged out of disappointment and sorrow to a fine sensitivity and sympathy, which was all the stronger for his reticence. His love of the beautiful in life brought him delight in art, in the engaging loveliness of children, and most of all in the contacts of his daily work. He possessed that austere sense of fitness and restraint which is associated with the classical Greek spirit, but with it were fused a serene kindness and an unusual power of feeling. A man's relations with children are a revealing touchstone of its quality; I had the intimate privilege of seeing how, busy as he was, he treated children with winning dignity and seriousness, so that they loved him and regretted he could not stay longer on his visits. I learned too his power not only of saying the right thing but of giving that rare sympathy which has an astringent and strengthening quality in it. He leaves a widow, whose comradeship and courage supported him always, especially in the last years. To her his colleagues offer their sympathy.

ROBERT COORE.

Dr. WILLIAM RUTHERFORD WOOD, who died at the age of 33, on May 17th, of septicaemia following the removal of tonsils, was one of the most promising of the younger practitioners in the Oxford district. The son of a medical man, he was educated at Queen Mary's Grammar School, Walsall, and after matriculation served with the R.F.C. during 1917 and 1918. After the war he went up to Pembroke College, Oxford, and in 1923 took second class honours in natural science (physiology). Proceeding to St. Thomas's Hospital, he qualified M.R.C.S., L.R.C.P. and B.M., B.Ch. in 1926, and completed his training with a year as resident at the Radcliffe Infirmary. He then entered general practice in Oxford. In 1929 he married Elnor, the daughter of Mr. and Mrs.

Smith-Hill of Braithwaite, Cumberland; she, with two daughters, survives him. Although never robust of physique, Wood enjoyed all outdoor pursuits, and was never happier than when boating or swimming in his beloved Thames, or floundering in Alpine snows to improve his considerable prowess on skis. He lies buried at Thornthwaite, surrounded by the hills which were his spiritual home. Shy by nature, and always diffident of his own powers, "Bill" Wood was no showman. Medicine has lost a conscientious servant, and humanity a loyal and sympathetic friend.

H. N. B.

The death took place on May 23rd at his residence, 73, Murrayfield Gardens, Edinburgh, of Dr. H. C. GIBSON, who was well known in connexion with the neurological activities of the Ministry of Pensions. After a medical course at Edinburgh University, Hugh Craigie Gibson graduated M.B., C.M. in 1904. During the war he served as a major in the Royal Army Medical Corps, and after doing duty for some time at the Edinburgh War Hospital, Bangour, was placed in command of the special Neurological War Hospital at Glen Lomond Sanatorium. He afterwards became director of the Ministry of Pensions neurological clinic, Glasgow, and was attached to its neurological clinic in Edinburgh. Dr. Gibson was a member of the British Psychological Society and of the British Medical Association, which he joined in 1906.

We regret to announce the death, on May 16th, of Dr. RICHARD HENRY CYRIL GOMPERTZ of Barnstaple, at the age of 57. He was educated at Bedford Grammar School, King's College, London, and King's College Hospital, where he had a distinguished student career, gaining the junior and senior Clothworkers' scholarships and the Sambrooke scholarship. He obtained the M.R.C.S. and L.R.C.P. diplomas in 1904, and, after graduating in 1907 as B.Sc. M.B., B.S. (gold medal, with honours in medicine and surgery), was appointed demonstrator in physiology at King's College and surgical registrar to the hospital. He served throughout the war, mainly in France, with a temporary commission in the R.A.M.C., and was mentioned in dispatches. After a few years as medical officer to Berkhamsted School, Dr. Gompertz went to Barnstaple in 1923, joining a partnership there, and was appointed honorary medical officer to the North Devon Infirmary, with charge of the x-ray department. At Barnstaple he continued his close interest in the first-aid movement, and was medical officer to the local Voluntary Aid Detachment. Dr. Gompertz was a man with intellectual gifts beyond the ordinary, and found time to cultivate varied tastes outside the work of a busy general practitioner.

The following well-known foreign medical men have recently died: Dr. MAX VON KRYGER, emeritus professor of surgery, Erlangen, aged 72; San.-Rat Dr. HANS AXMANN, an Erfurt dermatologist, aged 72; Dr. ANTON LIEVEN of Aix-la-Chapelle, a prominent syphilologist; Professor ROBERTO NOVOA SANTOS, professor of general pathology at Madrid, aged 49; Dr. FRANCISCO FABRÉ GAS y MAS, ex-president of the Academy of Catalonia; Professor PIETRO LIGABUE, dean of the Faculty of Medicine of Florence; Professor THEODOR GÖTT, professor of children's diseases at Bonn, aged 53; Dr. RODRIGUEZ CADARZO, rector and professor of anatomy at the University of Santiago de Compostello; Dr. SCHREVE, formerly secretary of the Dutch Society of Medicine, aged 66; Dr. K. A. IORDINE, director of the ophthalmological clinic at Saratov University and organizer of the anti-trachoma institute on the Lower Volga; Dr. BOUSQUET, emeritus professor of surgery and director of the medical school at Clermont-Ferrand and national correspondent of the Académie de Médecine; Dr. HEINRICH HAKE, extraordinary professor of etiology at Berlin, aged 70; and Geh. Rat Professor ALBERT SIEFEL, an eminent Frankfurt gynaecologist, aged 83.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons reassembled on May 29th and the House of Lords next day. The business of the week in the Commons included a debate on the Ministry of Education Estimates, and the committee stage of the money resolution relating to the milk marketing scheme.

On May 29th the Statutory Salaries Restoration Money Resolution was taken by the House of Commons in committee. Mr. Chamberlain, Chancellor of the Exchequer, in moving the resolution, said that abatements which were made in salaries and allowances in 1931 would be restored by one-half by administrative action where that was possible. Certain salaries, however, were fixed by statute, which required legislation to restore abatements. The resolution was moved to enable that legislation to be introduced; the first paragraph went further than was necessary to restore half the abatements made in 1931, and would authorize a Bill to restore the other and second portion of the abatements at some future time, if it was thought desirable to do so, without further legislation. The resolution was accepted.

Diphtheria and Enteric Inoculation in the Army.—On May 29th Mr. GROVES asked the Financial Secretary to the War Office if instructions of any kind had been issued to Army Medical Services or any other department of the Army in connexion with inoculation against diphtheria and enteric. Mr. DUFF COOPER replied in the affirmative. Immunization by means of protective inoculation against diphtheria and typhoid fever was on a voluntary basis in the Army. All ranks, with few exceptions, took advantage of these preventive measures in their own interests.

Fatal Road Accidents to Children.—On May 29th Sir HILTON YOUNG informed Mr. Groves that figures of the number of fatal accidents occasioned to children in the United Kingdom last year were not yet available. In 1932 the approximate number of persons in Great Britain under 15 who died as a result of accidents was 3,700. Of these deaths approximately 1,450 were due to road accidents. The other principal causes were burns and scalds, suffocation, drowning, falls, and inattention at birth.

Import Duty on Publications of Learned Societies.—On May 29th Captain CUNNINGHAM-REID asked if the Government would consider excluding from the operation of the Additional Import Duties (No. 6) Order, 1934, the publications of learned and scientific societies. Mr. HORE-BELISHA answered that this question was one in the first instance for the consideration of the Import Duties Advisory Committee, to whom representations should be made by the parties concerned.

Medical News

The Prosser White Oration before the St. John's Hospital Dermatological Society will be delivered by Dr. William Allen Pusey of Chicago on Wednesday, June 27th, at 5 p.m., at the Royal Society of Medicine, by permission of the president and council of the society. Dr. Pusey's subject will be "Disease, Gadfly of the Mind. Especially the Stimulus of Disease in the Development of the Mind."

Lord Moynihan will open the new private ward block of the East Suffolk and Ipswich Hospital, and the new ear, throat and nose, and x-ray departments, on Thursday, June 7th, at 3 p.m.

The Committee Against Malnutrition will hold a public meeting at 8 p.m. on Wednesday, June 13th, at 34, Red Lion Square, Southampton Row, W.C.1. The chair will be taken by Sir Frederick Gowland Hopkins, P.R.S., and Dr. Stella Churchill, Professor J. B. S. Haldane, Dr. R. D. Lawrence, and Dr. R. A. Lyster will be among

the speakers. Tickets (1s.) can be obtained from the honorary secretary, 19c, Eagle Street, Holborn, W.C.1.

A short course of lectures, on the approach to the psychoneuroses (for practitioners and medical students), will be given at the Institute of Medical Psychology, Malet Place, W.C., beginning June 18th. The fee for the course is £2 2s. for medical graduates and 10s. 6d. for medical students.

The British Waterworks Association will hold its twenty-third annual general meeting, and conference in Edinburgh, from June 26th to 30th. The subjects of "The Drought and its Lessons" and "Freshwater Biological Research and Water Supply" will be open for discussion arising out of the report of the Executive Committee, and papers will be read on "The Policy and Practice of Chlorination of Water Supplies," by Colonel P. S. Lelean, professor of public health, Edinburgh University, and on "Consumption, Misuse, and Waste of Water," by Mr. John Bowman.

The Joint Tuberculosis Council has arranged a post-graduate course, to be given by the medical and surgical staff of the Royal Chest Hospital, City Road, E.C., for one week from June 18th. The fee for the course is £3 3s. All inquiries should be addressed to the honorary secretary for post-graduate courses, Joint Tuberculosis Council, Pembury, The Drive, Rickmansworth, Herts.

The Fellowship of Medicine (1, Wimpole Street, W.1) announces further medical lectures at 11, Chandos Street, W., on June 5th and 12th, at 2.30 p.m.; also on June 9th, at 3 p.m., a surgical lecture-demonstration at the National Temperance Hospital. On June 9th and 10th there will be a week-end course in obstetrics at the City of London Maternity Hospital; from June 11th to June 23rd a course in medicine, surgery, and the specialties at the Prince of Wales's Hospital; and from June 11th to 16th a course in proctology at St. Mark's Hospital. Other forthcoming courses include cardiology at the National Heart Hospital, June 25th to July 7th; diseases of children at the Children's Clinic, June 25th to July 7th; ophthalmology at the Central London Ophthalmic Hospital, July 2nd to July 28th; a week-end course in medicine and surgery at the Metropolitan Hospital, June 30th and July 1st. Particulars are given each week in the diary column of our Supplement.

We are informed that the formal opening of the Voluntary Hospitals Conference by the Prince of Wales in the Guildhall on Wednesday, June 13th, will take place at 11.30 a.m., and not at 10 a.m. as previously announced.

A post-graduate course on tuberculosis will be held at the Hôpital Broussais, Paris, under the direction of Professor Emile Sergent, from June 11th to July 7th.

The National Birth Control Association (with which is incorporated the Birth Control Investigation Committee) has arranged a conference on birth control, for general nurses, public health workers, and midwives, to be held at the College of Nursing, Henrietta Street, London, W.1, on Friday, June 15th. At the morning session, with Lord Horder in the chair, Mr. Claude Mullins, metropolitan stipendiary magistrate, will lecture on "The Ethics of Birth Control," and Mrs. Stocks, J.P., on "Birth Control and the Public Health Service." In the afternoon, with Lady Denman in the chair, Dr. Helena Wright will lecture on "The Technique of Birth Control," and Mr. Cedric Lane-Roberts, F.R.C.S., on "The Contribution of the Nursing Profession." There will be time for discussion after each lecture. Tickets (price 2s. 6d.), admitting to both sessions, can be obtained from the secretary, N.B.C.A., 26, Eccleston Street, S.W.1.

The sixth international medical post-graduate course arranged by the Tomarkin Foundation will be held at St. Moritz (Grisons, Switzerland) from August 5th to 18th. The subject-matter to be dealt with is grouped over the following special branches: heart diseases, diseases of children, balneology, nutrition problems, gastro-intestinal diseases, and social medicine. Particulars may be had from the secretary, Tomarkin Foundation, Via Marco Minghetti 17, Rome.

The June number of *Great Thoughts* includes a well-informed and well-written article, over the signature "Note-Taker," on the public career of Sir Henry Brackenbury, Chairman of Council of the British Medical Association.

The ninth International Congress of Dermatology and Syphilology will be held at Budapest, under the presidency of Professor Louis Nekam, from September 15th to 21st, 1935. Dr. A. M. H. Gray of 69, Harley Street, W.1, the national secretary for this country, will be glad to receive short papers before the end of 1934, or at the latest by the end of January, 1935.

The twentieth International Congress on Alcoholism will be held at the Imperial Institute, South Kensington, from July 30th to August 3rd, under the presidency of Lord Astor. The aim of the congress is to secure a comprehensive world picture of the present position concerning alcoholism in its various ramifications in social life. Further information can be obtained from the convener, Dr. C. C. Weeks, 33, Bedford Place, W.C.2.

The annual congress known as the Journées Médicales Belges will be held in Brussels under the presidency of Professor Edgard Zunz from June 23rd to 27th, when the subject for discussion will be the physiology and pathology of the endocrine glands. The opening address will be delivered by Professor Loeser of Paris.

The London County Council, in an advertisement published this week, invites applications for the post of director of the radiological department of the Hammer-smith Hospital and British Post-Graduate School, Duane Road, W., and consulting radiologist to the Council's hospitals. The salary is £1,500 a year, and application forms, containing full particulars, may be obtained from the Clerk of the Council, County Hall, S.E.1, and are returnable by June 18th.

Dr. B. Holroyd of Pannal, near Harrogate, has, for the fourth successive year, been elected chairman of the Claro Guardians Committee of the West Riding County Council.

Professor Max Neuburger, having reached the age of 65, is retiring from the chair of medical history in the University of Vienna. He will continue his directorship of the Medico-Historical Institute.

The eightieth birthday of Professor Johann Horbaczewski, who was appointed the first Minister of Health in Austria in June, 1917, was celebrated on May 15th in the Ukrainian Free University of Prague. As a young assistant of Professor E. Ludwig in 1882 he had carried out the artificial preparation of uric acid.

Dr. John A. Hartwell has been nominated president of the New York Academy of Medicine.

Included in the will of the late Dr. Edward J. Cave of Bath, who left £49,679, is a bequest of £6,000 to St. Bartholomew's Hospital, London, for an entrance scholarship to be known as the "Helen Cave Memorial Scholarship."

The late Mr. Ernest White of Clanfield bequeathed £1,000 to the Radcliffe Infirmary, Oxford, to endow a bed to be used as far as may be for patients from Clanfield, and in the event of his net estate being more than £30,000, a further £1,000 to the Radcliffe Infirmary for general purposes. The net personalty of Mr. White's estate was £66,600.

The following appointments have recently been made in foreign faculties of medicine: Dr. L. Melanowski, professor of ophthalmology at Warsaw; Dr. Popoviciu, professor of physiology at Cluj, in succession to Professor Nitzescu, who has been appointed to the chair of physiology at Bucarest; Dr. Max Baur, rector of Marburg University, professor of pharmacology at Frankfurt; Dr. Mario Aresu, professor of clinical medicine at Cagliari; and Dr. H. A. Tschernogabow, professor and director of the Dermatological Clinic of the Second University, Moscow, in succession to Professor Arthur Jordan.

The supplement to the *Paris Medical* of May 12th contains a complete list of the medical staff of the various Paris hospitals.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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QUERIES AND ANSWERS

? Bed-sore: Diagnosis Wanted

Dr. R. STEVENSON DOIG (Stornoway, Isle of Lewis) writes: I should be greatly obliged if some expert surgeon would give me his opinion on whether the condition described below is or is not a bed-sore. I had a woman in the hospital with an osteomyelitis of the symphysis pubis. This was operated upon on November 13th last after the patient—a very sturdy, well-built woman—had been in bed for a month. There was no sign of anything wrong with her back on the day of operation. However, the day after, when I turned her over on her face to allow the wound to drain, I discovered a red, inflamed area the size of my hand over the sacrum: it had a raised edge and a "root," while in the centre was an elliptical spot the size of a pigeon's egg, which was black and without sensation. Thinking of erysipelas, I painted around with iodine and applied ichthylol and glycerin over it. After two days serum oozed out, and the black portion began to separate. Hot boric fomentations were now applied, and two days later a huge slough came away right down to the sacrum, while pockets of pus were all around the central opening, and extended beneath the skin for two to three inches, and in parts a probe went in two and a half inches deep. The root was exquisitely tender. A bacteriological examination on December 2nd, 1933, revealed staphylococci. (The only organism present in the osteomyelitis was *B. coli*.) The lesion gradually became more widespread, and did not heal up until the beginning of April this year. The Wassermann reaction was negative. The opening was situated on the left buttock, but the undermining extended for three inches past the middle line to the right buttock. A surgeon who exposed the sacrum found it healthy. There has been divergence of opinion as to whether it was a bed-sore, and I would be grateful for help as to the nature of the initial condition in November.

Persistent Epistaxis

"W. D. C." (Alloa) has a patient who suffers from severe epistaxis. Examination of urine, blood pressure, heart, and blood has failed to reveal anything abnormal, and there is nothing in the nose of an unusual nature, though the mucous membrane is very congested. Local treatment has been tried—weak caustic, bland ointments, and cautery; internally, calcium lactate and ammonium carbonate have been given. The patient states that the condition came on after a prolonged period of nursing, with heavy lifting. "W. D. C." would like to know of any further treatment which might prove beneficial.

Wanted: G.P. Laboratory Equipment

"Q. R. S." asks for information as to the setting up of a cheap bacteriological laboratory in connexion with a surgery, and where such could be procured, as well as media, etc.

Pruritus Ani

Dr. CALEB JOYCE (Melbourne) writes, in answer to "M. O." in the *Journal* of March 3rd: I agree regarding diet as a cause; another cause is personal idiosyncrasy as to some article of food, the most important being the smear of faecal matter left after defaecation and imperfect cleansing by means of paper. I have found the solution of the trouble in many cases to consist in the use of a damp cloth following the use of paper.

"Oliguria"

Lieut.-Colonel EDWARD GOWLAND, M.B. (Commandant, Star and Garter Home for Disabled Sailors and Soldiers, Richmond, Surrey), writes: There are under my care a number of cases of paraplegia following wounds of spine, etc., who occasionally have attacks similar to the patient described in Dr. Miles's letter—that is to say, the patients pass practically no urine for several days, and on catheterization a maximum amount of some 4 to 5 oz. is obtained during twenty-four hours. I have tried all ordinary remedies, but have come to the conclusion that nephritin tablets (Coates and Cooper) solve the difficulty more quickly and satisfactorily than any other treatment. These tablets are made of kidney substance and have to be given in large doses—namely, twenty to thirty tablets a day. The proof of the pudding is in the eating, and I can only say that all who have been treated in the way indicated frequently ask for a repetition of a course of these tablets when they find the amount of urine becoming scanty.

"R. B. G." writes, in answer to Dr. Miles in last week's issue (p. 972): Has he considered the possibility of his patient getting rid of her urine, secretly, in a hot-water bottle in the bathroom? I read of a somewhat similar case lately—I forget where, and in a nursing home to boot! But there is no end to deceptions, especially in a mental case like Dr. Miles's.

*Income Tax**Substitute During Leave*

"A. W. B." holds an appointment, and his council granted him leave for special study on condition that he provided a locumtenent. Can he deduct the cost—twenty-four guineas—in making his return?

** We fear not. If the council had granted him leave without pay and had provided the locumtenent, the position so far as "A. W. B." is concerned would have been similar in common sense but different in law. As it was he received the emoluments in full, and the question is whether he can claim that what he paid was expended in carrying out his duties. In fact they were incurred in enabling him to do something else, and do not seem to fall within the very restrictively defined scope of the deductions.

LETTERS, NOTES, ETC.

Fistula-in-ano

Dr. R. YOUNG KENNY (New Malden) writes: The aetiology of fistula-in-ano is briefly dismissed by nearly all authors of our surgical textbooks with practically the same words, which are so welcome to the medical student for examination purposes on account of the brevity of the statement—"fistula is always the result of abscess." One invites condemnation for ever questioning the accuracy of so useful and time-honoured a solution of the problem. I have been led to doubt the accuracy of this brief statement, and to place emphasis on the mechanism of rectal flatus as a primary aetiological factor. Observe what happens when a tyre with a weak outer cover is overcharged. The elastic lining bulges through the weak places. This, I think, is a picture of what occurs in the production of fistula. Near the sphincters, where general expansion is restricted, the gas pushes the elastic lining in the line of least resistance, and under the high pressure which sometimes obtains forms, at first, a dimple. High pressure recurs and the dimple deepens to a small crypt, and then to a fairly deep cul-de-sac. This advancing channel may be obstructed by a more resisting band of tissue and turned aside, or even made to branch in its course, following lines of least resistance. Such a channel may readily harbour infection which will produce an abscess or may go on growing till, under great strain and with much pain, it bursts to make an outlet. The practical reasons for bringing up this question are: that the treatment of fistula should commence before the fistula develops, and it takes it out of the domain of

the surgeon to that of the physician: provided the latter starts treatment in time. Since constipation with much gas is the aetiological factor, this must be treated and not neglected if fistula is to be prevented.

Planning a House for the Tropics

Engineer I. VICK, writing from Java to the *Arch. f. Schiffbau. Tropen-Hygiene* last year, proposed a scheme for building in the Tropics the most comfortable sort of house. In the Tropics, it must be remembered, the sun will appear at every point of the compass at some time in the year, so that houses are much the same all round; there is not the difference between front and back that is seen at home, and their first function is to protect from sun and rain. The characters of the tropical climate are, he says, high temperature, high humidity, little cooling at night, and stillness of the air. Nowadays men make less money in the Tropics than formerly. Hence they have to live there longer than of old, and require all the better housing, while one of the great needs in their houses is ventilation to cool them. The author's first approximation to the ideal tropical home has a plan roughly square, a veranda at each end connected by a central lobby or hall through which there will generally be a draught, and on each side of it two square sleeping rooms, side by side, with a window on the outer wall. But in his final plan he has the good idea to turn the rooms of each pair outwards through half a right angle, thus making the house octagonal in plan, somewhat rosette-shaped. Thus he is able to put a window into each side wall of the room, and beyond the end wall is an annexe, containing the bathroom and latrine, which shelters the living room from the direct rays of the sun. These rooms in the Tropics should never measure less than 13 ft. by 13 ft., and 9½ ft. high (1,600 cubic feet). A damp-proof course should not be forgotten; the walls are to be of porous or honeycomb cement (itself an insulator), faced outside with white glazed tiles. The floor, too, is tiled, and there is a 3 ft. by 3 ft. opening in the ceiling, communicating with the space under the octagonal roof. This opening in the ceiling and the small ventilators under the windows are protected against insects by wire gauze, even if this does halve the effective apertures. The octagonal roof is of corrugated iron, and so the air under it is heated and escapes through louvres, being replaced by cooler air from the ventilators through the ceilings. To prevent the warm air under the roof from heating the rooms below it the ceilings are covered on the upper side with aluminium foil, cheap and lasting, and sure to reflect radiant heat. Sun-blinds hang from the eaves of the roof, so are never just in front of the windows, and do not impede ventilation.

Rapid Labour

Dr. ERIC KENDERDINE (Coventry) writes: I attended two rapid confinements last week, which seem of interest. A lady with her second baby began pains at 20.30 o'clock, the birth occurring at 20.55. The second case was a primipara. She had a hot bath on the Sunday at 23 o'clock, and noticed a slight "show." She went to bed and awoke at 1 o'clock. She defaecated normally, but "had to support herself in front." A feeling of weight at the rectum sent her in to see the nurse, sleeping in the next room, at 2.20, when the first real pain occurred. This made her stand first on one leg and then on the other. The nurse was surprised to see the head crowned, and hurried her on the bed, where birth took place at once. The patient then started laughing, as she did not think it could be so easy. Both of these mothers had calcium-vitamin therapy, and both babies were of normal size.

Medical Golf

The spring meeting of the Sussex Medical and Dental Golfing Society was held on the links of the West Sussex Golf Club on Sunday, May 27th. In the morning the competition for the Rolls-Hoare Cup, 18 holes medal play, was won by A. R. Ferguson, 74 - 2 = 72; C. Guy Whorlow, 92 - 15 = 77, being second. In the afternoon foursomes resulted in a tie at 1 up between H. Butcher and G. Thwaites, F. Graham Bonnalie and J. H. Raymond, and A. R. Ferguson and R. H. Barron.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 41, 42, 43, 44, 45, 48, and 49 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 46 and 47.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 216.

BRITISH MEDICAL JOURNAL

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PREVENTION OF PUERPERAL SEPSIS IN GENERAL PRACTICE*

BY

W. H. F. OXLEY, M.R.C.S., L.R.C.P., F.C.O.G.

HONORARY MEDICAL OFFICER AND LECTURER IN MIDWIFERY, EAST END MATERNITY HOSPITAL

In spite of the large amount of research work which has been undertaken and the numerous papers which have been written in the last ten years on the causation of puerperal sepsis, the position shows no improvement, but rather grows worse. Twenty years ago the death rate from puerperal sepsis was 1.42 per 1,000 live births; last year it was 1.61.¹

If we turn back to the days before the introduction of antiseptics into midwifery practice we find little upon which to congratulate ourselves. The Registrar-General's figures before the year 1892 are not quite comparable with those of to-day, since some of the maternal deaths from sepsis were entered under erysipelas and other septic diseases instead of under puerperal fever. Nevertheless, it is interesting to note that in 1862 the rate calculated from these returns was 1.3; in 1872, 1.8; and in 1882, 2.9. When the assignment of all deaths from puerperal sepsis to that heading was made there was a slight fall to 2.6. These figures at least suggest that the deaths from sepsis did not reach such an appalling height as we frequently suppose.

More reliable information has been presented to us by James Young,² who found from the records of the Edinburgh General Hospital that during the years 1826-57 the death rate from sepsis was 2 per 1,000. Further, most of the deaths occurred in epidemics, so that in some years there were large numbers and in others none at all. Collins reported that during his mastership of the Dublin Lying-in Hospital (1826-33) there were eighty-eight deaths from sepsis in the first three years and none at all in the last four, during which time 8,000 women had been delivered. The serious epidemics which broke out from time to time in all maternity hospitals, and which contributed so largely to the total number of deaths from sepsis, are now almost things of the past. The Departmental Committee on Maternal Mortality and Morbidity, which investigated the circumstances of 5,805 maternal deaths spread over a period of about three years, reported that

"the majority of deaths from sepsis seem to have occurred as isolated cases in the practice of an individual or hospital, and the committee has been unable to find any convincing evidence of direct spread from patient to patient as an important factor in maintaining the high and increasing death rate from puerperal fever."³

If the epidemics have disappeared and the death rate remains about the same, it follows that the number of deaths from isolated cases of puerperal sepsis has risen since the introduction of antiseptics into the practice of midwifery. That is in this country, but in the Scandinavian countries, which have not altered their statistical methods to any material extent during the last

fifty years, we find a definite drop synchronizing with the introduction of antiseptics.⁴ Thus in Denmark the puerperal sepsis death rate remained almost steady at 2.6 per 1,000 from 1856 until 1900-4, when it dropped to 1.5, and has since shown no tendency to rise.

Intervention in Normal Labour and Puerperal Sepsis

It would seem that the good effect of antiseptic precautions which is apparent in Scandinavia has been masked in this country by some change in our midwifery practice. Those of us who can look back forty years know that during that time there has been a great increase in obstetrical interference with the course of labour, and this is confirmed by the records of many hospitals. At Guy's Hospital in the years 1863-75 there was intervention in 1.35 per cent. of all labours, whereas in 1928 the rate was 18.6—fourteen times as much.⁵ Has any change in the women made this increase necessary? Rickety deformity of the pelvis is one of the commonest legitimate reasons for artificial intervention, yet it is very uncommon in London, and is probably less common now than fifty years ago. Women to-day are more anxious to have their labours terminated by forceps, but that applies far more to the upper than to the working classes. Is it not more likely that the change is in the doctors? Since the development of pelvic surgery few obstetricians limit their practice to obstetrics; they have all become operating gynaecologists, and I suggest that the surgical bias which this has given to their minds has swept them away from the sound foundations of midwifery laid down by Smellie and his successors. Their pupils, worried by the exigencies of private practice, have all too readily followed in their footsteps. Many general practitioners use forceps in 60 per cent. of their cases. Simpson found it necessary only once in 472.⁶

No similar increase of the intervention rate has occurred in the Scandinavian countries; in Utrecht, Holland, the forceps rate over a number of years was 0.6 per cent.; in Copenhagen, 0.8 per cent.; and in Gothenburg, Sweden, 0.4 per cent.; and the intervention for other reasons was also low. This is very significant, for Holland has the smallest death rate from sepsis in the world—namely, 0.99 per 1,000. (There is doubt as to the comparability of the figures from the other countries with our own.)

The close connexion between low intervention and low death rate from sepsis is pointed out by Munro Kerr.⁷ He picks out two London maternity hospitals as having almost reached the irreducible minimum for maternal deaths, and in both of them the forceps rate is under 3 per cent. Further light is thrown upon this question by the investigations of the Maternal Mortality Committee, which found that the number of deaths from sepsis after abnormal labour was equal to that following

* A British Medical Association Lecture delivered before the Mid-Cheshire Division on November 17th, 1933.

normal labour, although abnormal labours amount to only about 5 per cent. of the whole. The following table, compiled from a series of cases attended by the East End Maternity Hospital, shows an incidence of non-fatal sepsis over twenty times as high after abnormal as after normal labour.

	Confinements	Pyrexia	Percentage
Normal ...	8,010	15	0.18
Abnormal ...	476	20	4.20
	(5.6 per cent.)		

Consideration of all these points leads to the inevitable conclusion that a low sepsis rate in any practice depends upon success in securing spontaneous labour and in avoiding intervention.

Abnormal Labour Followed by Sepsis

It is of great practical importance to know the kind of abnormal condition which is likely to be followed by sepsis. In seven out of the twenty cases referred to above the hand was introduced into the uterus during or after the third stage of labour. This should be considered the most dangerous operation in the whole realm of midwifery, and should always be avoided if possible. There are three types of case in which it is commonly performed:

1. Cases in which the contraction and retraction of the uterus are unsatisfactory on account of the retention of small pieces of placenta or membranes; they can be much reduced in number by waiting patiently and allowing the uterus to expel the placenta into the vagina, instead of keeping up a continual massage of the uterus, which irritates it to contract before the whole of the placenta is separated.

2. Those in which, after the delivery of the child, there is such severe haemorrhage as to necessitate immediate manual removal of the placenta; they occur after prolonged labour, probably terminated by difficult forceps and chloroform anaesthesia, and can be avoided by careful examination and treatment before and during labour.

3. Cases in which the placenta is long retained without serious bleeding, and cannot be expressed by Credé's method; the injection of four ounces of glycerin into the umbilical vein will almost always cause a violent contraction of the uterus and expulsion of the placenta.

Ten of the twenty cases followed ante-partum haemorrhage, prolonged labour, or extensive trauma. Ante-partum haemorrhage cannot always be avoided, but the well-proved connexion between toxæmia and accidental haemorrhage, and the liability of placenta prævia to give rise to warning haemorrhages during the last few weeks of pregnancy, give us a guide to the steps which we may take towards their reduction. Prolonged labour and exhaustion are frequently due to disproportion between the head and the pelvis or to a posterior position, and can often be obviated by ante-natal care and attention during the first stage of labour, while the usual cause of severe trauma of the cervix and the vaginal walls is premature application of forceps. The ante-natal diagnosis of severe degrees of contraction is so easy that there is no excuse for unforeseen Caesarean sections late in labour, with their death rate of 265 per 1,000, mostly from sepsis.⁹ Forceps, used with proper antiseptic precautions merely to draw the head through the vulval orifice, do not increase the incidence of sepsis, and the only objection to their use for this purpose is that the very ease with which delivery can be accomplished is likely to lead to their misuse in cases which turn out to be difficult. We use them in only 2.6 per cent. of our cases.

Predisposing Factors

Although difficult to show by figures, it is within our knowledge that both chlorosis and pyelitis of pregnancy are factors predisposing to sepsis; toxæmia has no such connexion. A uterus left with placenta or blood clot

inside it must be guarded against, and free drainage must be encouraged by seeing that the mother moves about and is allowed to sit up in bed on the second day. It is almost universally stated that insanitary surroundings predispose to sepsis, but in a long series of normal cases we found that the incidence of septic infection was the same whether the confinement took place in hospital or in the slums. All serious abnormalities are brought into hospital because it is impossible to carry out the necessary obstetric treatment and nursing care in the poor homes of the patients.

I have been led to dwell upon the so-called predisposing causes of sepsis because by eradicating them general practitioners can halve their mortality from sepsis without even considering the bacteriological aspect of the subject. Trousseau,¹⁰ speaking of the causation of puerperal purulent infection in 1868, said: "Every disease has two elements; there is the cause, properly so called; and the state of the economy recipient of the morbid impression. These two elements are always present; the first to follow out its results; and the second to combat the cause." In the attempt to prevent the access of the first of these elements the second is often neglected, whereas both are of equal importance. Tissues, if healthy, can deal with a few pathogenic germs, or there would be no women alive to-day. I am convinced that the aim of the bacteriologists to prevent the access of germs to the genital canal from any source whatever is difficult, if not impossible, of attainment in actual practice, and that even if it be accomplished the germs which are always present in the vagina before labour begins, and which are harmless to healthy tissues, are able to attack those which have had their resistance lowered by the predisposing causes we have described. If not, why should a difficult forceps case, carried out under the strictest antiseptic ritual, so often become septic? The means which suffice to prevent sepsis after normal labour will not prevent it following abnormal labour.

Nothing I have said must be taken as implying that we may neglect antiseptic precautions, either in abnormal or normal labour; on the contrary, the fact that one-half the deaths from sepsis follow normal labour¹¹ shows that they are inadequate. I do not intend to enter into speculations from a bacteriological point of view as to what constitute adequate antiseptic precautions, for I am not competent to do so, but I will give an outline of those we use and the result we obtain, and draw what conclusions we may from them.

The routine is as follows. The patients in hospital are given a bath before labour. All are given an enema; the vulva is well washed with soap and water, the hair is clipped short with scissors, the vulva is re-washed, swabbed with clean water, and finally with perchloride of mercury 1 in 2,000. Attendants scrub their hands and forearms with soap and water, rinse in clean water, and scrub with perchloride of mercury 1 in 1,000. These processes are repeated frequently during labour, so that the hands of the attendants and the vulva of the patient are always damp with perchloride. Since the hospital is a training school, of necessity many vaginal examinations are made by the pupil midwives, but always under the direction of the sister in charge of the case. No gloves or masks are used. Silence or quiet speaking is enjoined in the labour ward, but I have no means of finding out whether this rule is observed in the absence of the doctor or matron. A douche is given after labour to hospital patients, again for teaching purposes, but not to those confined in their own homes. There is nothing new or startling in these precautions, but as they are made under supervision we know that they are carried out. It will be appreciated that for such a routine to be properly performed in private practice the help of a midwife or

trained nurse is necessary, and it is therefore important that the practice of attending midwifery cases without such help should be discontinued.

Now for the results. During the last ten years 20,705 cases were attended—12,505 in the hospital and 8,200 in their own homes. The number of deaths from sepsis was five, giving a rate of 0.24 per 1,000, and they all followed abnormal labour. As the number of cases and the time over which they were spread are more than sufficient to eliminate chance errors, we may fairly draw the following conclusions: (1) that death from endogenous infection after normal labour is an uncommon occurrence; (2) that the antiseptic precautions used were effective in preventing deaths from exogenous infection following normal labour; and (3) it is doubtful whether these measures are carried out to their full extent throughout England and Wales. The results also exemplify what I have already said, that measures which are effective in preventing death from sepsis after normal labour will not prevent it after abnormal labour.

In this series of cases there was no evidence of spray infection. This might have been a matter of chance, for none of our midwives might have been carriers of *Streptococcus haemolyticus*. To meet this possibility Dr. Leonard Colebrook examined swabs taken from the throat and nose of every pupil midwife when she began her month on the district. From October, 1932, to April, 1933, forty-five district pupils and sisters were examined, and haemolytic streptococci were found in five, which I am told is about the proportion in the general population. The first of these five wore a mask during her month, but the rest carried on their duties without special precautions. To discover if there was any streptococcal infection of our mothers a swab was taken from the cervix of every woman delivered between June, 1932, and May, 1933, who developed a temperature of 100° F. or more, unless a definite extragenital cause for the rise was found. One gave a positive result, but the throats were probably not the cause, for one of the children sleeping with the patient had impetigo, which, on culture, yielded a haemolytic streptococcus. Although typing failed to identify it, the presumption is that it was the source of the mother's infection. In view of this evidence it appears likely that the person who is usually stigmatized as a carrier is a perfectly harmless individual. At the same time, I am not prepared to say that anyone with active disease of the nose or throat is not a danger to the mothers, and as a matter of precaution we preclude any such person from practising midwifery until the disease has cleared up.

A few words are necessary upon our attitude towards gloves. We have tried them and found that they have certain disadvantages: (1) they are expensive; (2) the pupil midwives who wear them are unable to find out whether the os is fully dilated or the membranes ruptured, two very important practical points; and (3) the pupil midwives are inclined to be less careful in washing their hands, and find it difficult to manage the wrists of the gloves without getting them contaminated. I am also satisfied that doctors wearing gloves find it more difficult to perform intrauterine manipulations. For these reasons we have discarded their use, and our results show that we have not needed the added margin of safety that they are said to give. In my opinion it is probable that a simple routine such as has been described here will be more faithfully carried out than a more complicated one, and so in actual practice will ensure a greater degree of safety to a greater number of mothers.

We will now collect in the form of axioms the conclusions at which we have arrived, being confident that if general practitioners would base their methods of midwifery upon them they would effect a very definite

diminution in the number and the severity of their cases of puerperal sepsis.

Summary

1. A low sepsis rate in any practice depends upon success in securing spontaneous labour and in avoiding intervention.
2. Efficient care of the patient during pregnancy and labour will reduce the predisposing causes of sepsis to a minimum.
3. The practice of attending midwifery cases without the help of a trained midwife or nurse is dangerous, and should be discontinued.
4. A simple routine for antiseptic precautions is more likely to be faithfully carried out than a more complicated one, and so in actual practice will ensure a greater degree of safety to a greater number of mothers.

REFERENCES

1. Annual Report of the Chief Medical Officer to the Ministry of Health, 1932, p. 78.
2. Young, James: *British Medical Journal*, 1928, i, 967.
3. Interim Report of Maternal Mortality Committee, p. 15.
4. Final Report of Maternal Mortality Committee, p. 83.
5. Gibberd: *Lancet*, September 14th, 1929.
6. Young: *Loc. cit.*
7. Final Report of Maternal Mortality Committee, p. 83.
8. Munro Kerr: *Maternal Mortality and Morbidity*, 1933, p. 241.
9. Eden and Holland: *Manual of Midwifery*, 1925, p. 660.
10. Trousdale: *Clinical Medicine*, 1872, v, 252.
11. Final Report of Maternal Mortality Committee, p. 14.

SOME OBSERVATIONS ON THE ACUTE ABDOMEN*

BY

T. G. ILLTYD JAMES, M.Ch., F.R.C.S.
CENTRAL MIDDLESEX COUNTY HOSPITAL

Acute abdominal conditions still loom largely on the horizon of medical practice. Their frequency does not appear to be abating, and the mortality rates of such examples as intestinal obstruction and perforated peptic ulcer still indicate the need for earlier treatment. In many instances a careful history and a complete clinical examination will indicate the correct diagnosis. Those conditions which may simulate an acute abdomen can usually be excluded, if the possibility of their occurrence is borne in mind and confirmatory evidence sought; such, for instance, as pneumonia with its referred pain, uraemia with its vomiting and abdominal distension, lead poisoning with its colic, or pregnancy and the various complications associated with it. Again, the history, the clinical signs, and an analysis of the character of the pain will usually serve to indicate those cases which do not necessitate an immediate operation—for example, renal or biliary colic.

The picture presented by many acute abdominal conditions necessitating urgent surgical treatment may be so typical that a diagnosis is readily made. Certain circumstances, however, may alter the local and general appearances and cause considerable difficulty. This paper is concerned with some of these conditions, and certain points in their diagnosis will be discussed.

The Influence of Old Age

The aged are subject to the same abdominal catastrophes that beset those of lesser years, and in many of them the manifestations may differ but little from those usually encountered. It is characteristic of old age, however, that the mental and physical response to stimuli tends to become sluggish, and this slow response is not

* Delivered to the Willesden Branch of the British Medical Association.

uncommonly illustrated by acute abdominal conditions of an inflammatory nature—notably acute appendicitis. Pain may not obtrude itself upon the patient until the local condition has advanced to the stage of peritonitis; the atrophied abdominal muscles may allow considerable distension to occur, but they are incapable of much rigidity, which is therefore slight or entirely absent. As one would expect, the temperature is often normal or but little raised, and constipation is usually present.

The senile patient thus frequently comes under observation late in the course of the malady, and the clinical picture is such that a diagnosis of intestinal obstruction may be made. One patient, a man of 80, suffering from appendicitis with peritonitis, presented such a marked degree of abdominal distension that a pre-operative diagnosis of volvulus of the sigmoid colon was made. It is not very uncommon for some of these patients to be submitted to operation—a blind caecostomy being intended for a supposed large bowel obstruction—but when the abdomen is opened appendicitis with peritonitis is found. At operation it is frequently discovered that a considerable degree of ptosis is present, the caecum and appendix being found in the pelvis. This may account, in part, for some of the anomalous features presented by these patients.

If the possibility of this departure from the normal is borne in mind confusion is less likely to occur. Tenderness over the lower abdomen and tenderness on rectal examination are seldom absent, and, as Lewin¹ has pointed out, the vomiting is much less than one would expect in an intestinal obstruction with a corresponding degree of distension. In any doubtful case auscultation of the abdomen and the radiological appearances would be valuable diagnostic aids. It is proposed to deal with these methods in detail later.

The sluggish response of the aged is again shown in the tendency to severe constipation, which not infrequently advances to the stage of faecal impaction with intestinal obstruction. Indeed, this is one of the commonest causes of obstructive symptoms in senile patients, and its importance lies in the ease with which the cause can be detected and removed.

Peritonitis Complicating Labour or Abortion

The peritonitis that may follow abortion or labour complicated by sepsis frequently presents anomalous features. It was not uncommon at operation for a large quantity of purulent fluid to be found in the peritoneal cavity when the clinical signs were but few. Abdominal pain may be only slight, and rigidity of the abdominal wall is often absent. No doubt the stress and strain on the abdominal muscles due to pregnancy and labour bring about an alteration of the usual reflexes, while the accompanying toxæmia or septicaemia will help to mask many of the local features.

In this type of peritonitis abdominal distension is frequently marked, and there is usually tenderness of the hypogastrium. Diarrhoea may be a prominent feature.² The preceding history, the temperature, and the character of the pulse will be useful guides. Pyrah and Oldfield,³ in an admirable survey of thirty-six cases, have shown that in sepsis following labour, so frequently streptococcal in nature, any abdominal pain and tenderness, especially if associated with abdominal distension, should be regarded with grave suspicion, for they usually indicate the presence of peritonitis. Similar features were presented by several cases of peritonitis following abortion that have come under observation. Abdominal pain and tenderness, however, were more prominent than in the preceding group, but rigidity of the abdominal wall was seldom a marked feature. The pallor presented by some of these patients was in keeping with the virulent nature of the infecting organism.

Perforation of Peptic Ulcers

Acute perforation of peptic ulcers is another condition that may cause difficulty in diagnosis. The typical features—the sudden onset of severe abdominal pain with prostration, and general rigidity and tenderness of the abdomen—are too well known to need amplification. But when the perforation is minute the picture may not be so clear, unless the case is seen early. This type is not uncommon, for, in the last eighty perforations observed, it has been present in six. It usually occurs when the stomach is empty and the small hole is rapidly covered by lymph.

The onset resembles the ordinary perforations, but the intensity of the pain may not be quite so severe; the initial signs and symptoms, however, rapidly abate, and become localized to the upper part or to the right side of the abdomen, simulating acute cholecystitis, acute appendicitis, or acute diseases of the chest. Shoulder pain, if present, or the absence of liver dullness, in conjunction with the local findings and the history of previous dyspeptic disturbance, would be strong presumptive evidence of the nature of the condition. In the absence of these helpful signs and symptoms, however, the diagnosis may be in doubt. The temperature in the early stages of perforated peptic ulcer is usually normal or subnormal, and this is a useful differential feature from acute affections of the chest. If the means are at hand, the demonstration of free gas in the peritoneal cavity by x-ray examination is conclusive evidence of perforation. It is possible, by means of a portable apparatus, to undertake this procedure with little or no discomfort to the patient.

The value of this method in a difficult case is illustrated in the following example. A male patient, aged 55, was brought to hospital five hours after the onset of acute abdominal pain, which had occurred in the City, and morphine had been given to relieve it. There was some tenderness and rigidity of the upper abdomen, but the clinical picture strongly suggested an early pneumonia; the respirations were rapid, shallow, and thoracic, and there were crepitations at the base of the right lung. An x-ray picture, however, revealed the typical sickle-shaped areas of free gas under the diaphragm, making the diagnosis of perforated peptic ulcer definite. Auscultation of the abdomen in this case presented absolute silence except for the transmission of heart sounds. When there is doubt this finding is strongly in favour of a perforation.

The Value of Auscultation

The stethoscope has long established itself as an indispensable aid in the diagnosis of diseases of the chest. Its use in acute abdominal conditions, however, is but little known and infrequently practised. In an obscure case its value may be very great. If we exclude those sounds associated with the pregnant uterus, and those sometimes transmitted when an organ like the stomach is distended, normally, on listening to any part of the abdomen, a medley of sounds is heard due to peristaltic activity. These sounds range from soft rustling noises to loud rumbling gurgles, and their number and variety may at first be confusing. Over the lower abdomen this confusion is less, and for practical purposes auscultation in this region suffices, concentrating on the sounds produced by the small intestine. It is the actual presence of these sounds rather than their nature that is important from the clinical point of view. After a little experience a certain amount of rhythm may be noted, the sounds rising and falling in intensity every ten or twenty seconds or so. It is advisable to listen for a few moments and to repeat the process, for the sounds may vary from time to time, often subsiding into silence to reappear in abundance.

It is clear that any mechanical obstruction causing retention of intestinal contents and increased peristalsis will lead to an augmentation in the number, the frequency, and the volume of these sounds; and, conversely, any condition diminishing peristaltic activity, such as paralytic ileus or peritonitis, will lead to a corresponding diminution. In intestinal obstruction the increase in the number and intensity of the sounds is easily elicited, and they give one the impression of metallic resonance in hollow caverns, often interspersed with loud and long gurgles as if gas were passing through narrow channels. They are very characteristic and, once heard, are readily recognized. In addition, the accumulation of fluid and gas often allows a splashing sound to be elicited when there is small-gut obstruction—by dipping the fingers quickly on the abdomen—a very useful sign when positive. These auscultatory signs are of most value in those cases of obstruction of the small intestine where little or no distension is present, not an uncommon finding in cases due to bands or adhesions.

In contrast with these findings we have the absolute silence presented by the abdomen in general peritonitis or paralytic ileus. Distension may be considerable in these conditions, and the clinical picture may resemble mechanical obstruction. Auscultation thus affords a ready means of differential diagnosis. A silent abdomen is also presented by most cases of perforation of the intestinal tract, even before peritonitis is established, but while peristaltic sounds are absent, transmitted heart sounds may sometimes be heard almost as loudly over the abdomen as over the praecordium. This sign was described long ago by Claybrook¹ as an indication of a rupture of the intestine following an abdominal injury. It may be positive, however, in any condition where there is a combination of free fluid and gas in the peritoneal cavity, and when elicited is suggestive of a perforation somewhere in the intestinal tract. These auscultatory signs have been found of considerable value in a doubtful case, and especially in atypical perforations of peptic ulcer. Abdominal auscultation may occasionally be of help in the differentiation from acute lesions of the chest, for in the latter conditions the sounds are rarely absent.

It is important to bear in mind that in acute inflammation of individual organs, such as the appendix or Fallopian tubes, so long as the inflammatory process remains confined to that particular viscus the sounds will be normal, perhaps a little diminished in their frequency and intensity. It is only when the inflammation becomes more general that the abdomen is reduced to silence. Confusion is not likely to arise from the coarse rubs that may sometimes be heard over inflamed organs like the gall-bladder; these are more readily detected by palpation.

To recapitulate, on auscultation of the abdomen it has been found that in mechanical obstruction of the intestine the number, the frequency, and the intensity of the normal peristaltic sounds are increased. General peritonitis and paralytic ileus reduce the abdomen to silence, while in perforations of the intestinal tract this peristaltic silence is frequently associated with the transmission of heart sounds, a combination of great diagnostic significance.

Radiology in Intestinal Obstruction

A method which often allows a definite diagnosis to be made in a suspected case of intestinal obstruction is that obtained by means of radiology. The mortality from obstruction is still high, and rises with each hour of delay. Earlier diagnosis and treatment are essential if mortality is to be reduced. The diagnosis may not be in doubt in many cases presenting typical features, for instance, the intussusception of children, strangulated external hernia,

or the acute obstruction that supervenes upon chronic occlusion of the large gut; but obstruction of the small intestine by bands or adhesions, especially those occurring soon after an abdominal operation, may present considerable difficulty. Distension of the abdomen is frequently absent in the early stages, and may be only slight even later if the obstruction is high.

It is particularly in this group that radiological evidence may be definite while clinical signs are equivocal. Radiological signs may be positive as early as two hours after the initial onset, and are earlier in strangulated than in simple obstructions.² This method, therefore, is useful as a complementary diagnostic aid to auscultation, when the means are at hand. No preparation is necessary, and there is no discomfort to the patient; if a portable apparatus is available the picture may be taken while he sits in bed. A lateral picture will often show a degree of distension much greater than that visible on clinical examination.

Under normal conditions in adults gas in demonstrable form is absent from the small intestine. In the large gut its presence is a matter of everyday observation. When obstruction occurs gas and fluid accumulate in the small gut, the junction of the two being shown by straight fluid levels in vertical or lateral radiographs, which are very characteristic. When the small intestine is affected the distended coils, with their feathered appearance, are readily seen, while gas is absent from the colon. Gas in the colon, in fact, would be strong evidence against obstruction of the small intestine.

By this method, therefore, it is possible to differentiate between obstruction of the large and of the small intestine, and in the former the exact site of the block may often be demonstrated by the abrupt termination of the gas shadow. This is of very great value in planning the type of operation. It will be seen that when the large intestine is involved the high gas columns are in marked contrast to the numerous shallow columns of small-gut obstructions. Paralytic ileus may present the same radiological features as mechanical obstruction, but the silence of the abdomen serves to differentiate this condition.

It is not to be inferred that radiology is necessary in the diagnosis of all acute obstructions; it is of value in the cases that are clinically doubtful; but even in those cases where the diagnosis is clear, a plain radiograph will often serve to demonstrate the site of the block.

REFERENCES

- ¹ Lewin, J.: *Brit. Journ. Surg.*, 1931-2, xix, 63.
- ² Rivett, L. C.: *British Medical Journal*, 1933, ii, 726.
- ³ Pyrah, L. N., and Oldfield, C.: *Journ. Obstet. and Gynaecol.*, 1933, xl, 3.
- ⁴ Claybrook, E. B.: *Surg., Gynecol. and Obstet.*, 1914, xviii, 105.
- ⁵ Ochsner, A.: *Ibid.*, 1933, lvi, 719.

W. A. Riley and C. H. Scheisley (*Journ. Amer. Med. Assoc.*, April 14th, 1934, p. 1217) maintain that trichinosis in man is far from rare in the United States, as a large number of serious cases come to the attention of the medical practitioner or pathologist, and a diagnosis of typhoid fever, rheumatism, or malaria is frequently made when the condition is really one of trichinosis. On examination of 117 cadavers at Minneapolis these writers found twenty cases of trichinosis in subjects who had never shown any symptoms of the disease. E. R. Pund and R. Mosteller (*ibid.*, p. 1220) report a fatal case of trichinosis in a negro boy, aged 11, who developed encephalitis three weeks after vaccination. There was no diarrhoea and no eosinophilia, but examination of the blood showed sickle-cell anaemia. Sections from the cortex, basal ganglia, medulla, and cerebellum showed minute inflammatory foci, in many of which embryos of *Trichina spiralis* were found.

POISONING BY CAUSTIC SODA

BY

STANLEY G. WILLIMOTT, PH.D. CANTAB. AND LIVERP.,
B.Sc.

GOVERNMENT ANALYST, CYPRUS

AND

MINNIE GOSDEN, M.B., B.S. LOND., D.T.M. AND H.
GOVERNMENT BACTERIOLOGIST, CYPRUS

(With Special Plate)

Fortunately poisoning by the fixed caustic alkalis is comparatively rare in England, although in Europe fatal cases appear to be not uncommon. Balázs,¹ for example, records in three years 754 alkali poisonings, of which 163, or 21.6 per cent., were fatal; and further statistics are given in the works of Popper² and Leschke.³ In England ammonia is more frequently employed as a fatal poison, and, according to the Registrar-General's returns⁴ for the three years 1930 to 1932, it accounted for ninety-two deaths, of which seventy-eight were suicidal and the remainder accidental.

It is therefore somewhat remarkable that in a period covering little more than one year no fewer than eight cases of poisoning by caustic soda should have occurred in Cyprus, an island with a population of only 348,000. In England poisoning by the fixed alkalis has nearly always been the result of accident or negligence, and exceptionally of suicide, but in the cases in Cyprus, of which the available data are summarized in the table, half were accidental and half suicidal, the former occurring in children and the latter in adults. A number of typical cases of poisoning by caustic soda or caustic potash and their effects are discussed in the well-known works of Taylor,⁵ Glaister,⁶ and Wynter Blyth,⁷ so that little need be said here; while details of certain cases occurring in Central Europe are given in the texts of Popper and Leschke, already referred to. The majority of such cases appear to fall into two distinct groups: (a) those ending fatally within a few days, and (b) those ending fatally some months or years afterwards.⁸

Source of Caustic Soda

The use of caustic soda locally has greatly increased during the last few years, and it would appear that its misuse has increased correspondingly. Caustic soda is used in small quantities by the Cypriot community for domestic washing purposes, and is cheap and freely available. It has always been the practice in washing clothes to add some form of alkali in order to soften the generally prevailing hard waters of the plains of Cyprus. Formerly the alkali used consisted exclusively of wood ashes supplied from domestic sources. It is perhaps noteworthy that plant ashes, according to Mariti,⁹ were at one time produced in certain villages of Cyprus for export for industrial purposes. Within recent years, however, this has given place to washing soda ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$), and during the last two or three years, in its turn, to caustic soda. The reasons given for this change are the cheapness and availability of caustic soda, and, it is claimed, the better results in the wash. In all these cases in Cyprus the alkali was obtained in this way, and its ready availability under the conditions prevailing constituted a serious problem. Practically the whole amount of the caustic soda imported from Europe is absorbed in the local soap industry, but, in view of recent experience, it was considered desirable to restrict its general domestic use. Accordingly it was advised that caustic soda and caustic potash should be placed on

the Poisons Schedule, and this recommendation was adopted by Government in February, 1934. A similar situation appears to have existed in Hungary,¹ where poisoning by caustic alkalis was common. There the difficulty was overcome in 1926 by subjecting the sale of caustic alkalis to restrictions.

The caustic soda as sold was in the form of broken fused lumps, and analysis showed an average content of 77 per cent. NaOH with 10 per cent. sodium carbonate. This latter impurity usually accompanies commercial grades. For washing purposes it is usual to dissolve about 50 grams in a little water, and to add this to about 120 litres of water.

General Features of Poisoning

In the table are summarized the available data of known cases of poisoning by caustic soda occurring since December, 1932, although there are possibly others unknown to the authorities. In spite of the difficulties of obtaining reliable data, especially in regard to the amount of alkali taken, it has been possible to study four of this series (Nos. 1, 4, 7, and 8), all affecting adults, in some detail. Starkenstein¹⁰ regards 10 to 20 grams of solid caustic alkali as the fatal dose, but it is clear from our own experience (see table) that a quantity less than 10 grams can be lethal. The fatal dose is unknown, but it is noteworthy that 2.6 grams (40 grains) of caustic potash have proved fatal (Taylor⁵).

Cases of Poisoning by Caustic Soda

Case	Patient	Age	Cause	Dose (grams)	Symptoms	Result
1	Turkish woman	33	Suicide	60	Burning pains in mouth, throat, and stomach; vomiting and exhaustion	Died 29½ hours after ingestion
2	Turkish child	13	Accident	?	Lips, tongue, and palate burnt	Died 25 hours after ingestion
3	Greek child	3	Accident	Sucked a lump of NaOH	Mouth, lips, and tongue burnt	Recovery in 3 days
4	Turkish woman	20	Suicide	8.5	Burning of mouth and palate; vomiting blood; shock	Died in 11 days
5	Turkish child	3	Accident	?	Oesophageal stricture; unable to swallow any liquid	Gastrostomy; recovering
6	Greek child	5	Accident	?	Emaciation; oesophageal stricture	Gastrostomy; died
7	Turkish girl	16	Suicide	5	Stricture of oesophagus and pylorus	Palliative jejunostomy. Died after 7½ days
8	Turkish girl	15	Suicide	?	Burning of lips, tongue, pharynx; vomiting; shock	Died 26 hours after

The immediate effect of swallowing caustic alkali is to produce excoriation and destruction of the mucous membrane, which gives rise to intense pain, often extending from the mouth to the abdomen. The severity of the lesions depends upon the concentration of the alkali, the stomach contents, and the interval elapsing before treatment. Alkali corrosions are usually oedematous and unctuous as compared with those from acids, which are dry and hard. The alkali extracts water from the tissues with which it comes into contact, and attacks the protein, forming alkali-albuminate, which becomes gelatinous, swells, and in the presence of much water commences to dissolve—a process termed "colligation." Because of this, alkali burns penetrate deeply into the tissues, although cases of perforation are few compared with those which develop stricture later on.

Treatment follows the accepted lines of avoidance of stomach lavage, and the administration of organic acids and liquids in order to reduce the concentration of the alkali. The use of the bougie at the proper time is regarded as being very important, especially in Continental practice, in order to avoid later complications of oesophageal stricture.

Details of some Medical Cases

The first case of this series, which occurred in December, 1932, was one of determined suicide.

First Example.—A Turkish woman of Nicosia, a mother of five children, swallowed apparently no less than 60 grams (925 grains) of caustic soda dissolved in about 120 c.cm. of water. Symptoms of distress came on almost immediately, with vomiting and burning pains in the mouth, throat, and stomach, and with great exhaustion and collapse. It was observed that the buccal cavity, tonsils, and pharynx were soft and oedematous, and of the deep chocolate colour suggestive of recent burning by alkali, while the lips and tongue were red and swollen. The mouth gave a strong reaction to litmus paper, and the vomited matter consisted of a brownish liquid, due to the presence of blood, and contained portions of detached mucous membrane. This liquid gave a strongly alkaline reaction to litmus, which on analysis proved to be due to the presence of 1.6 per cent. of free caustic soda. The patient was allowed lemon juice *ad lib.*, but, although she appeared to have recovered from shock, her condition had deteriorated by next morning, and death took place twenty-nine and a half hours after ingestion of the poison. Unfortunately it was not possible to carry out a post-mortem examination, but it was considered that death had resulted probably from perforation of the stomach. A more detailed account of this case has been published elsewhere.⁶

Second Example.—The second case of interest (No. 4) again concerned a Turkish woman, a domestic servant, who, at 9 p.m. on August 31st, 1933, swallowed about 8.5 grams (123.4 grains) of caustic soda dissolved in a little water, to which had been added some rosewater in order to mask the burning taste. From the woman's statement the alkali had not completely dissolved, and apparently some was swallowed solid, a fact which may account for the oesophageal perforations found after death. The amount of caustic soda taken was more than three times the known fatal dose of caustic potash (40 grains).

The same symptoms as previously observed—that is, burning pains extending from the mouth to the stomach—came on immediately, with, later, vomiting of blood and mucus. On arrival at hospital, one and a half hours later, the patient was conscious, but suffering from shock, with the extremities very cold. Burning of the surface of the buccal cavity, however, was not so severe as that observed in the first case. Vomiting of blood persisted, and the vomitus gave a marked reaction to red litmus. The patient complained of severe pain in the throat and stomach. The temperature was 97° F., and the pulse rate 90, and during the eleven days of observation the temperature varied from 97° to 101°, the pulse rate between 84 and 130, and the respiration rate between 28 and 36. The patient recovered from shock, but swelling of the tissues which had been in contact with the alkali—especially the lips and tongue—was marked. By the fifth day the tongue was healing, though red, but no liquids could be swallowed, and feeding was carried out with liquid glucose per rectum. After the first week it was clear that the patient was not progressing, although the burned parts appeared to have healed, and to be covered with shiny mucous membrane. Later, signs of bronchopneumonia were observed, and the patient died on September 11th—that is, eleven days after swallowing the poison. In view of the amount of destruction of tissue in the oesophagus and stomach the length of survival appears remarkable. The coroner's finding at inquest was that death was due to exhaustion and bronchopneumonia resulting from suicide by swallowing corrosive poison.

Some interesting conditions were seen at necropsy, which was carried out five hours after death. Externally there were no unusual appearances. The lips were covered with smooth and somewhat shining mucous membrane, and the skin and mucous membranes were generally pale. Rigor mortis was present in all parts, and post-mortem staining in the dependent parts. The anterior half of the tongue was covered with smooth, shining mucous membrane, and at the back of the tongue the papillae were well marked. The mucous membrane in the upper part of the oesophagus was again smooth and shining, while the tip of the epiglottis was absent. At a point 9 cm. below the latter the walls of the

oesophagus were very soft and adherent to the vertebral bodies, and at this level an oval perforation, with smooth edges, 1.5 cm. long, was found between the oesophagus and the trachea. One centimetre below this there was a second circular perforation 1.1 cm. in diameter, also leading into the trachea (Fig. 1 on Special Plate). From the site of these perforations to the pylorus the mucous membrane of the oesophagus and stomach was very soft and pulpy, but the muscular wall was firm and intact. From the level of the lower perforation extending to the pylorus, a dark red, lightly adherent slough was found forming a complete cast of the oesophagus and stomach (Fig. 1 on Plate). The stomach was filled with a dark brown fluid, which gave an alkaline reaction. The mucous membrane of the duodenum was deeply injected, but below the pylorus there was no erosion. The trachea was filled with purulent material, and the left lung exhibited patches of aspiration bronchopneumonia. The liver showed cloudy swelling, and the kidneys were injected with pinpoint haemorrhages. Sections from the liver, kidney, and stomach near the cardiac end were prepared and examined. It was found that the stomach wall near the cardiac end exhibited remains of highly oedematous and necrotic mucous membrane, in which remnants of glands were recognizable. The muscular wall was little affected (Fig. 2 on Plate). Degeneration and desquamation of the tubular epithelium were seen in the kidney, with area of complete necrosis containing blood pigment (Fig. 3 on Plate). In the liver there were again areas of slight focal necrosis (Fig. 4 on Plate). The presence of such areas in the liver and kidney does not appear to have been observed in the recorded cases of poisoning by the fixed alkalis.

Third Example.—Case 8 was again one of suicide, in which a Turkish girl, aged 15, bought caustic soda, and made a concentrated solution with water. She swallowed a mouthful at 5.30 p.m. on April 2nd, 1934, and came to hospital an hour later vomiting and in a collapsed condition. She was treated by gastric lavage and lemon juice *ad lib.*, but swallowing was difficult and painful. During the next twenty-four hours there was a purulent exudate from the nose and mouth, increasing pulse rate, pain, and collapse, and death occurred twenty-six hours after taking the poison. A post-mortem examination, performed fifteen hours after death, showed burning of the tip and back of the tongue, the inner surface of the lips, and all over the tonsils and pharynx. The burnt areas were covered with a soft, brown slough. The oesophagus was deeply injected, but the mucous membrane was not eroded. In the stomach a burnt area, 15 cm. by 10 cm., and deep brown in colour, was found extending over the centre of the greater curvature. The mucous membrane was soft, but the wall of the stomach under the burnt area was firmer than the surrounding wall. The stomach contents consisted of a yellow fluid of slightly acid reaction. There was oedema of the lungs, but no consolidation. The liver exhibited cloudy swelling and the kidney congestion. The thymus was large and glandular, and all the lymphatic glands, especially in the neck, were large, soft, and dark red in colour.

Surgical Cases

The remainder consisted of a group of surgical cases under the care of Dr. C. H. Cuff, to whom we are indebted for certain clinical data. Stricture having developed, it was necessary to resort to gastrostomy in two instances and jejunostomy in another. It is interesting to note that stricture of the oesophagus was successfully treated by operation (gastrostomy), for the first time in 1885, by Loretta,¹¹ in the case of a patient of 24, who had swallowed caustic alkali. Since then surgical treatment had been resorted to with considerable benefit. In cases of non-malignant strictures of this nature, Grey Turner¹² has recently recorded striking success with the operation of oesophago-gastrostomy.

In the first of these cases (No. 6) gastrostomy, by Frank's method, was successfully performed, but the patient, aged 5, died the next day from peritonitis.

The second of this group (No. 5) was that of a Turkish girl, aged 3, who accidentally swallowed a little caustic soda solution on July 3rd, 1933, the exact amount being unknown.

The usual symptoms came on, and some burning of the face, lips, and tongue with oedema were observed on arrival at hospital shortly after. This appeared to be a mild case, and after two days the parents removed the child against medical advice. The subsequent history illustrates the necessity for continued observation and treatment in subjects which appear at first sight to be mild cases of alkali poisoning. On December 18th, 1933, the patient re-entered hospital unable to swallow any liquid, and it was impossible to pass any kind of sound through the stricture of the oesophagus which had developed. Radioscopic examination revealed oesophageal stenosis opposite the third costal cartilage, and gastrostomy was performed on December 21st. During three months the patient has made uninterrupted progress on a diet consisting of soup, eggs and milk, dried milk preparations, orange juice, etc., given at four-hourly intervals.

The last case of this group (No. 7) concerned a Turkish girl, aged 16, who attempted suicide on January 19th, 1934, by taking about 5 grams (77.2 grains) of strong caustic soda solution. On arrival at hospital within the hour the patient was suffering from shock, and complained of burning pain in the mouth and stomach. There was also purging and much vomiting of blood. The body temperature was subnormal, varying between 97° and 98° F. It was possible to pass a small sound, and lemon juice was given freely. The patient recovered from shock and appeared to be definitely improving when the relatives removed her after she had been one week in hospital. On February 12th she returned to hospital—this time unable to swallow even liquids—and was, in consequence, much emaciated. Radioscopy revealed a stricture of the oesophagus opposite the fifth costal cartilage. The patient continued to lose strength, and it was suspected that the pylorus also was stenosed. On operation this was found to be the case, and palliative jejunostomy was carried out (March 2nd). The patient was afterwards maintained on a diet of citrated milk, eggs, soup, meat extracts, olive oil, liquid glucose, etc., but the emaciation was progressive, and death took place on April 2nd.

Conclusions

Poisoning by caustic alkali in Cyprus has increased remarkably during the last year, and has justified Government action in restricting its free use for domestic purposes. In all the cases studied the poison was obtained in this way. Of these the suicides were among the adults and the accidental cases among the children. The fatal dose of caustic soda is less than 10 grams, and a quantity of 5 grams, in solution, has produced the most serious complications of stricture. There was perforation of the oesophagus in one fatal case, and possibly perforation of the stomach in another, while in another three cases stricture developed. Among the pathological conditions found post mortem, areas of necrosis in the liver and kidney have been observed (Case 4). It is evident from a study of these cases that the prognosis in alkali poisoning is doubtful, and that even in what appear to be mild cases the need for long-continued observation and treatment is essential.

We are indebted to Dr. C. H. Cuff, acting director of health, for permission to publish the results of this investigation.

REFERENCES

- 1 Popper: *Klinik und Therapie Akuter Vergiftungen*, Leipzig und Wien, 1933, p. 33.
- 2 Leschke: *Die wichtigsten Vergiftungen*, München, 1933, p. 87.
- 3 Balazs: Quoted in Popper, op. cit. (ref. 1), p. 33.
- 4 Registrar-General's Returns, 1930, 1931, 1932, London.
- 5 Taylor's *Principles and Practice of Medical Jurisprudence*, London, 1928, ii, 407.
- 6 Glaister: *Medical Jurisprudence and Toxicology*, Edinburgh, 1931, p. 640.
- 7 Blyth, Wynter: *Poisons, Their Effects and Detection*, London, 1920, p. 128.
- 8 Willmott: *Lancet*, 1933, ii, 413.
- 9 Cobham: *Martin's Travels in the Island of Cyprus*, Cambridge, 1909, p. 118.
- 10 Starkenstein, Post, Pohl: *Toxicologie*, Berlin, 1929, p. 81.
- 11 Loretta: Quoted in Rowlands and Turner's *Operations of Surgery*, London, 1927, ii, 101.
- 12 Turner, Grey: *New England Journ. Med.*, 1931, ccv, 657. Quoted in *Post-Graduate Med. Journ.*, November, 1933.

IMPORTANCE OF LOCAL FACTORS IN THE ONSET OF PULMONARY TUBERCULOSIS

BY

W. PAGEL, M.D.

RESIDENT PATHOLOGIST, PAPWORTH VILLAGE SETTLEMENT
(From the Laboratory of Papworth Village Settlement)

(With Special Plate)

The problem of the origin of recent tuberculous infiltrations of the lung ("Fruhinfiltrate," "Rundherde") is still unsolved. One group of authorities emphasizes exogenous reinfection, whereas other investigators direct their attention to the possibility of an endogenous development of the isolated pulmonary lesion of the adult. The importance of local factors in the location of recent tuberculous foci is perhaps not sufficiently recognized. Thus it may be of interest to publish the two following cases.

History of Case 1

The patient, a male aged 30, was in the Army (R.A.S.C.) for seven years, from 1922 to 1929. He was said to have been a heavy drinker until married. There was a family history of tuberculosis. The illness began with a gradual loss of weight and cough. For three months before admission there was blood staining of sputum and also morning vomiting.

POST-MORTEM EXAMINATION

Necropsy revealed carcinoma of the pancreas with metastases in the liver, spleen, kidneys, suprarenals, thyroid, right lung, and lymphatic glands all over the body.

Both upper lobes of the lung showed groups of miliary tubercles with areas of slight fibrosis and emphysema. The left lower lobe was normal, except for small groups of miliary tubercles at the apex and an old calcified focus in one of the lymphatic glands at the bifurcation of the bronchus. The right lower lobe contained a solid mass, of about the size of a tennis ball, close to the hilum: the tissue was firm and yellow, and resembled that of the enlarged mediastinal and abdominal lymphatic glands. The centre of this mass contained some anthracotic lymphatic glands with foci the size of a pea (carcinomatous metastases). Around the large mass was a group of small nodes with distinct walls, some of them liquefied (tuberculous foci) (Plate, Fig. 1). The pleura was thickened and adherent over the right lower lobe.

HISTOLOGICAL EXAMINATION

The tumour in the pancreas, and the secondary nodes in liver, spleen, suprarenals, kidneys, and lymph glands, showed on section solid carcinoma, partially adenocarcinoma.

In the upper lobe of the right lung there was fibrosis, with emphysema; proliferating tuberculous foci in the nature of miliary tubercles, rich in connective tissue and with many giant cells in various places; and caseous endarteritis of smaller vessels.

In the right lower lobe the big node close to the hilum was a solid carcinoma. In the foci surrounding this node caseous tissue with partial liquefaction was found. There were numerous tubercle bacilli in several foci, especially those made up of leucocytes; there were fewer bacilli in the large caseous foci.

Further examination revealed recent, partially liquefying, round tuberculous foci in this lobe. The foci resembled those described as early round infiltrations giving rise to the isolated pulmonary tuberculosis of the adult (so-called "Rundherde"). Such foci in a multiple form were first described by R. von Jaksch-Wartenhorst¹ as pseudo-tuberculous cysticercosis of the lung, later by Lachmann² as atypical tuberculosis resembling tumour metastasis—and recently by Alb. Fraenkel,³ A. Albert,⁴ and Straub. In this case these foci were found in one part of the lung only (the right lower lobe), where they occurred in the neighbourhood of a large carcinomatous metastasis. The pleura was thickened.

As regards other tuberculous foci there was a miliary distribution in both upper lobes, which were partially transformed into small fibrosing areas. No evidence was forthcoming to show that aspiration accounted for the recent infiltration in the right lower lobe.

Discussion

The condition of the lungs as a whole, and the presence of endarteritis in several vessels, point to the conclusion that the foci in the lower lobe were haematogenous tuberculous metastases. This was also suggested by the obvious haematogenous miliary tubercles in the upper lobes. Thus the case shows: (1) the haematogenous origin of recent tuberculous caseous circular foci of the lung; (2) a discrete spread of miliary tuberculosis preceding the development of the early caseous infiltrations; (3) that the distribution not only of miliary but also of larger caseous foci may be haemic in origin; (4) the importance of local conditions in the occurrence and growth of recent tuberculous foci; and (5) the difficulty of the differential diagnosis between carcinomatous and tuberculous infiltrations of the lung, both being present.

In this case there are two important features: (a) the presence of a large carcinomatous metastasis, by diminishing the resistance of certain areas, favoured the development of tuberculous foci from blood-borne tubercle bacilli; (b) the pleuritic thickening was probably responsible for the localization of the carcinomatous metastasis and so, indirectly, for the development of the recent adjacent tuberculous foci in this part of the lung.

History of Case II

The patient, a male aged 36, walked to a hospital outpatient department four days before death. X-ray examination disclosed a unilateral miliary condition of the lung. The patient died of bulbar paralysis.

POST-MORTEM EXAMINATION

Necropsy revealed a tuberculous meningitis, with some small conglomerate tubercles in the brain and cerebellum. There was also right-sided caseous epididymitis; caseous transformation of the right vesicular seminalis; caseous nodules in the right side of the prostate; and generalized miliary tuberculosis of the spleen, liver, and kidneys—especially the right. The left lung was adherent, with plastic fibrinous exudate over the pulmonary pleura: there were no miliary tubercles on the pleura, and no effusion. The right pleura, including the diaphragmatic reflection, was covered with miliary tubercles, which were also present in the right lung. The left lung was atelectatic, with a very few tubercles confined to the apex (Plate, Fig. 2).

HISTOLOGICAL EXAMINATION

There was an exudative meningitis of the brain, conglomerate tubercles being surrounded by plasma cells and lymphocytes, with an evident increase of connective tissue. Miliary tubercles, with many giant cells and proliferating connective tissue, were present in the spleen, liver, and lymphatic glands, with caseous centres only in the right lung (Plate, Fig. 3). A considerable number of tubercle bacilli were seen in all tissues examined. There was caseous proliferation of the thoracic duct.

In various sections of the left lung only one or two very small tubercles were found in the apical region, adjacent to the walls of a small vessel and differing from those in the right lung by containing nothing more than giant and epithelioid cells (Plate, Fig. 4). There was no sign of caseation or of tubercle bacilli. Chronic collapse of the alveoli, with fibrosis of the walls and thickening of the covering pleura, with scattered caseous foci and several giant cells, were also observed.

Discussion

This case of acute generalized miliary tuberculosis presents the following points of interest:

(a) The first is the extremely short clinical course (four days). An acute meningitis and cortico-encephalitis were

the cause of death, the fundamental miliary tuberculosis of the lung and the caseous tuberculosis of the urogenital organs being completely latent. From the histological picture, which showed numerous plasma cells and a considerable amount of connective tissue, the development of the tubercles in the brain must have commenced some weeks, if not months, before death. The fibrosis around the tuberculous foci in the spleen and lung suggests a lengthy duration of the miliary condition.

(b) The second point is the unilateral localization of the miliary outspread of the lung (involving difficulties in the clinical diagnosis); the freedom of one side of the chest from miliary tubercles was probably due to its chronic atelectatic condition, caused by an old and recent partially exudative pleurisy. The occurrence of unilateral miliary involvement of the lung was observed by Schmorl and Schottmüller,³ the latter of whom pointed out its importance as an indication for artificial pneumothorax. Artificial pneumothorax should therefore be performed not only in order to keep the present foci undisturbed, but also, in producing atelectasis, to prevent the formation of new foci. There is no doubt that changes in the condition of the blood circulation are responsible for such events; this is demonstrated by cases of syphilis of the pulmonary artery, in which there is unilateral contraction of its branches and tuberculosis is limited to the same side (Hebb,⁶ Pagel⁷), as well as by recent experimental observations (E. K. Wolff and Rob. Klopstock,⁸ A. F. Vorwald⁹).

Summary

The first case demonstrates the haematogenous development of the early tuberculous, caseous, circular infiltrations known as the introduction of the isolated pulmonary tuberculosis of adult life ("Frühinfiltrate," "Rundherde"). Both these show the importance of local factors in the development and localization of tuberculous foci.

REFERENCES

- ¹ Jaksch-Wartenhorst, R.: Pseudozysticercosis vorgetäuscht durch Lungentuberkulose, *Fortschr. Röntgenstrahl.*, 1929, xxix, 6; *Med. Klin.*, 1923-4, 19-20.
- ² Lachmann: Atypische Tuberkulose Lungenmetastasen vortäuschend, *Fortschr. Röntgenstrahl.*, 1929, xliii, 407.
- ³ Fraenkel, Alb.: *Krankheitsanfänge bei chronischen Leiden*, Leipzig, Thieme, 1932, p. 124.
- ⁴ Albert, A.: *Beitr. Klinik. Tuberk.*, 1931, lxxviii, 647.
- ⁵ Schottmüller: *Munch. med. Woch.*, 1929, xlvii, 1646.
- ⁶ Hebb: *Trans. Path. Soc. Lond.*, 1893, xlv, 45.
- ⁷ Pagel: *Berlin. pathol. Gesellsch.*, 1929; *Klin. Woch.*, 1929; and *Lungentuberk. Handb. spez. pathol. Anatomie v. Henke*, Lubarsch, 1930, iii, 2, p. 441.
- ⁸ Wolff, E. K., and Klopstock, Robert: *Klin. Woch.*, 1933, xii, 41.
- ⁹ Vorwald, A. F.: *Arch. of Path.*, 1933, xiv, 286; *Arch. of Chest Surg.*, 1934 (in the press).

The Minister of Health, Sir Hilton Young, received a deputation on May 30th from the National Institute for the Deaf, the Counties Associations for the Deaf, the National College of Teachers of the Deaf, the Council of Church Missioners to the Deaf, and the British Deaf and Dumb Association. The deputation was introduced by Lord Charnwood, who spoke on behalf of all the societies represented. Their object was to suggest the necessity for legislation to make the welfare of the deaf the duty of local authorities, and to ask for the appointment of an advisory committee on the deaf. The Minister said in reply that he was in full sympathy with the desire of the deputation to promote the welfare of the deaf to the fullest possible extent. He believed, however, that progress was to be sought not in the imposition of compulsory duties on local authorities but in the encouragement of the work of these authorities and of voluntary agencies on the lines proposed in the circular on the subject issued by his Department (Circular 1337).

MALIGNANT TUMOURS OF THE KIDNEY AND TESTIS

BY

F. HECTOR SCOTSON, M.B., B.S., F.R.C.S.

HONORARY SURGEON, MANCHESTER VICTORIA MEMORIAL JEWISH
HOSPITAL; SURGICAL OFFICER TO OUT-PATIENTS,
MANCHESTER ROYAL INFIRMARY

(With Special Plate)

Malignant tumours of the kidney and testis are among the most interesting of all growths, both from a pathological and from a clinical point of view. Their importance lies in the marked degree of malignancy they show. In this communication I wish to draw attention to their pathology, and to record a case of an early hypernephroma of the kidney and of a seminoma of the testis.

Pathology of Malignant Disease of Kidney with Report of a Hypernephroma

The term "hypernephroma" (or Grawitz's tumour) implies an origin from the adrenal, but this conception is far from proved, and it is best to regard these tumours as renal carcinomas. The tumour has a well-marked tendency to invade and obstruct the renal pelvis, and so may produce a deformity which can be detected in a pyelogram. Microscopically their chief characteristics are their yellow colour, variegated appearance, and the frequent areas of haemorrhage. The cells are seen to be of large size, and the cytoplasm clear or slightly granular, due to the presence of lipid granules. The cells may be arranged in rows or may have an alveolar arrangement. Stroma is scanty but the blood vessels large.

The other type of malignant growth is the embryoma (or Wilm's tumour). This tumour, which appears generally between the first and third years of childhood, is at times bilateral. It is soft in consistency and of grey or yellow colour: on section it is uniform in appearance. Microscopically the appearance may resemble a sarcoma or a mixed tumour.

According to Boyd¹ all malignant growths of the kidney can be placed in one or other of the above groups, but other observers maintain that there is a renal carcinoma in addition to the true hypernephroma. Graham Simpson,² in recording three such cases, emphasizes the fact that such tumours replace rather than displace kidney tissue, so that, clinically, there is an absence of any marked enlargement of the affected kidney. In addition, the renal carcinoma is the more malignant neoplasm, in all his cases producing secondary deposits in, and destruction of, some of the bodies of the lumbar vertebrae.

CASE REPORT

A. B., aged 43, was operated on in 1917 for a right subphrenic abscess, which continued to drain for twelve weeks. He stated that since then he had always had pain in his back when he lifted anything heavy, but this was not more marked on one side than on the other. He said that the trouble had increased during the last two years. On September 15th, 1933, he was admitted to the Manchester Victoria Memorial Jewish Hospital on account of a severe attack of renal colic on the right side. Microscopical examination of the urine revealed the presence of red blood cells, although there was no macroscopic evidence of blood. An x-ray of the urinary tract did not reveal any evidence of stone. After the injection of intravenous uroselectan a further x-ray revealed a normal appearance of the pelvis of the left kidney, but on the right side, instead of a uniform density as on the left side, the upper part of the shadow was extremely dense and somewhat enlarged.

Cystoscopy showed that the bladder and ureteric orifices were normal. Indigo-carmin, injected intravenously, was excreted by both kidneys in the average time and with equal force, the efflux from the right kidney appearing to be as

deeply coloured as that from the left. Using 12½ per cent. sodium iodide through the ureteric catheter, a pyelogram was made of the pelvis of the right kidney. The resulting pyelogram was identical in appearance to that presented by the intravenous uroselectan. The interpretation of the pyelogram was not clear, but it was suggested that such an appearance might be due to a stone which was not radio-opaque, or to a small growth obstructing the pelvis of the kidney. It was therefore decided to explore the affected kidney.

On October 4th, through a lumbar incision, the right kidney was exposed. Externally, no evidence of disease was found, and so a small incision was made into the convex margin of the kidney in order to explore it digitally, but this did not reveal anything abnormal. Bearing in mind the possibility of a small growth in the kidney, this organ was then excised. This turned out to be a difficult operation on account of the dense adhesions present, resulting from the former perinephritic abscess. Convalescence was uneventful, and the patient returned to his work as an engineer in two months' time.

Pathological Specimen.—On cutting the kidney longitudinally from the outer to the inner border, a small tumour was revealed. Macroscopically and microscopically this had the appearance of a hypernephroma. This growth obstructed the upper part of the pelvis, producing a dilated and thickened upper compartment, which explained the appearance presented by the pyelogram, due to the large collection of radio-opaque material which would collect in it.

The special points of interest in the case are the very small size of the growth and the unusual appearance presented by the pyelogram. The photographs (reproduced on the Plate) show: Fig. 1, the specimen removed; Fig. 2, microphotograph of tumour showing typical appearance of the hypernephroma.

Pathology of Malignant Disease of Testis with Report of a Seminoma

The modern conception of tumours of the testis is a simple one when compared to the old complicated classification. They are now generally placed in one of two groups: first, the germinal cell tumour, or seminoma,¹ and secondly, the teratoma. The seminoma seems to arise from the cells lining the seminiferous tubules. The tumour appears in middle life, and is of comparatively slow growth. On section the tumour is seen to be solid, fleshy, and homogeneous, often traversed by fibrous septa, which cause a lobulated appearance. The microscopical appearance varies, the cells being of either large size, with clear protoplasm, or small size, containing a darkly staining nucleus, giving rise to a picture like that of lympho-sarcoma. A tubular arrangement may be apparent in the slow-growing tumours, or else a diffuse arrangement.

A teratoma probably arises from the primitive germinal cells, which, being totipotent, produce structures derived from all three primitive layers. It presents, as a rule, a markedly cystic appearance, but parts or the whole of the tumour may be solid. Microscopically, derivations of all three germinal layers may be seen in varying proportions.

CASE REPORT

T. W., aged 57, complained of a painless swelling of the right testis, starting six months previously. There had been a gradual increase in size of the affected testis since the onset. There was no history of gonorrhoea, tuberculosis, or other infection. Examination showed that the body of the right testicle was enlarged to about four times its ordinary size, and, in addition, the globus major of the epididymis was markedly bigger than normal. The organ was not tender. Rectal examination did not reveal any abnormality of the prostate gland or vesiculae seminales. A provisional diagnosis of tuberculous epididymitis was made, and, as the disease seemed entirely confined to the one testis, operation was advised.

When the testis was exposed the body seemed very hard, and neoplasm was then suspected; the whole testis was therefore excised, together with the spermatic cord, as far as the internal abdominal ring. On cutting the testis longitudinally a neoplasm infiltrating the body and also appearing in the epididymis was seen. The lumbar lymphatic glands were not

excised, but, as soon as the operation wound was healed, these were treated with x rays. Unfortunately this patient has been lost sight of, and has not continued to attend for the x-ray treatment or replied to recent communications.

Pathological Specimen.—The report, made by Dr. William Susman, stated that the microscopical appearance was typical of a seminoma. The growth was somewhat necrotic and very cellular, with scanty stroma. The cells were large and spheroidal, showing no conspicuous amount of mitotic division. Judging by the microscopical appearance the pathologist considered the growth to be undoubtedly malignant, but there

was nothing to indicate whether or not it was rapidly growing. The photographs (reproduced on the Plate) show: Fig. 3, the affected testis divided longitudinally; and Fig. 4, micro-photograph of the neoplasm.

My thanks are due to Dr. S. Kelly, who called me into consultation respecting the case of hypernephroma; to Dr. H. Morris, for the x-ray reports; and to Mr. J. B. Macalpine, who kindly gave advice on the interpretation of these.

REFERENCES

- ¹ Boyd: *Surgical Pathology*, third edition, pp. 409 and 456.
² Simpson: *Brit. Journ. Surg.*, 1934, xxi, 388.

GIANT RENAL CALCULUS

BY

WILLIAM EVERETT, M.B., F.R.C.S.ED.

HONORARY SURGEON, ROYAL HANTS COUNTY HOSPITAL, WINCHESTER

(With Special Plate)

It is unusual to observe giant renal calculi, so that the case here recorded would merit a report. The largest renal calculus in the museum of the Royal College of Surgeons of England was successfully removed from a male at operation by Mr. Hurry Fenwick in 1912, and weighed 1 lb. 9½ oz. The largest in the museum of the Royal College of Surgeons of Edinburgh weighs 1 lb. 9 oz., and was successfully removed, also from a male.

Marmaduke Shields reports the removal of a stone 1 lb. 0½ oz. in weight from a male aged 39. He states that there is an enormous stone weighing 2 lb. 0½ oz. in the museum of St. Bartholomew's Hospital, which was removed from a man aged 38. Thomson - Walker mentions that LeDenti reported a stone weighing over 3 lb., but whether this was removed at operation or necropsy is not stated. Kreutzmann reports the removal of a stone weighing 650 grams (circ. 1 lb. 7 oz.), and under a careful review of the literature states that the largest single stone removed at operation was reported by Mylvaganam, and weighed 3 lb. Kreutzmann quotes eight cases of unusually large renal calculi, the smallest stone weighing 339 grams (circ. 12 oz.), occurring in the only female in the series. Waterworth, in 1932, reported a stone weighing 2.42 lb. associated with carcinoma of the same kidney.

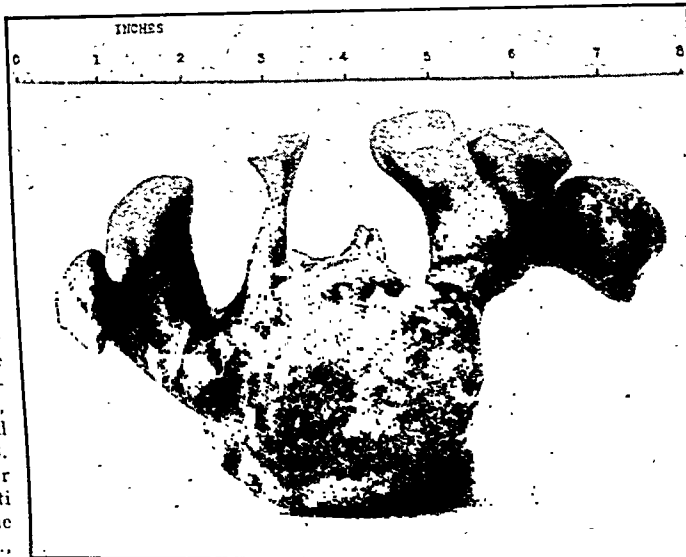
Clinical Case Record

A woman, aged 59, was admitted to the Royal Hants County Hospital, Winchester, on November 1st, 1933, complaining of a mass in the right side of the abdomen, accompanied by pain.

History of Illness

The date of the onset was given as in November, 1929. At that time the patient went to a doctor complaining of

an aching pain in the back accompanied by scalding micturition, and the passing of blood-stained urine. She was treated by her doctor, and the pain and urinary disturbance passed off, and for twelve months thereafter there was no complaint. In November, 1932, however, the aching pain in the right loin and right hypochondrium recurred occasionally, and was worse after a day's hard work. When examined upon admission to hospital there was no complaint of any urinary disturbance, but the patient stated that she had lost her appetite and had been losing weight during the last twelve months. The pain had never been of an acute character, and she was always able to continue with her household duties. She had had no colic or rigors. She had borne eleven children, and her pregnancies had been uncomplicated.



Physical Examination

On admission to hospital the patient was an ill-nourished, spare woman. Her extremities were cold and blue; her pulse was 100, and was small and of very low tension; her respiration was 20, and her temperature 97°. Her condition was one of advancing uraemia. There was marked oral sepsis and dental caries, and the tongue was dry and glazed. Examination of the heart and lungs failed to reveal any evidence of disease. Blood pressure was 160/50. On inspection, the abdomen showed a large bulging mass in the right side extending from the right iliac fossa up underneath the right costal margin. The medial margin of the tumour crossed the mid-line in the epigastrium for about an inch, and the mass could be seen to move upon respiration when the patient was recumbent. On palpation the large mass was found to be slightly nodular, and two hard projections could be felt in the right iliac fossa. The whole tumour was tender, but tenderness was most acute over the projections at its lower end.

The specific gravity of the urine was 1020; it contained no sugar, but blood, albumin, and pus were present. The amount recorded during the day varied from 16 to 36 ounces. Many white and red blood cells were present. The blood urea equalled 355 mg. per 100 c.cm. nine days before death.

X-ray examination revealed on the right side a large, branched calculus with an ovoid central portion filling the pelvis. The left kidney also contained multiple calculi. Examination of the renal function with uroselectan showed no urine coming from the left kidney, and demonstrated a small amount in the right pelvic ureter after thirty-five minutes.

Operative treatment was out of the question, and the patient died on the sixteenth day after admission to hospital,

the cause of death being uraemia following bilateral calculous pyonephrosis. Only on the second and third days did the temperature rise above the normal, when in the evenings it was 100° and 102° respectively.

Post-mortem Examination: Abdomen only

Both kidneys were removed; the right one measured 9 inches long, 7 inches broad, and 5 inches thick, and weighed 4 lb., while the left one weighed 12 oz. The left kidney showed many hydronephrotic sacs with very little renal substance, and contained multiple calculi. The right kidney contained a large stone, and showed a scar on its anterior aspect in the region of fracture of one of the branches of the stone where probable ulceration had previously taken place. This kidney also contained many hydronephrotic sacs, and upon opening these urine and thick sanious pus were found. Outside the renal pelvis the kidney substance was replaced by fibro-fatty material, which was 1½ inches thick in some places. In the right kidney were found one large branched calculus weighing 1 lb. 3½ oz., and two rough portions which had evidently broken off at a former date. There was very little renal substance left, and this was infiltrated with multiple abscesses. Three polished stones were lying in one of the cavities. The gall-bladder was normal and contained no calculi; other organs showed no abnormalities. The total weight of the calculi immediately after removal from the right kidney was 1 lb. 6 oz.

Description of Stone

The stone is composed of a solid central portion, ovoid in shape, which presents at its lower aspect definite curved indentations, where it has impinged against the vertebrae and transverse spinal processes. There is also a flattened area, where it has pressed against a vertebra. The length of the central portion is 4 inches, its transverse circumference 9 inches, and its vertical circumference 9½ inches. At its lower pole is one trunk breaking up into four branches. From the central portion posteriorly are two small horns, and anteriorly a long thin branch about 2 inches long, from which, obviously, one of the free portions of stone has broken away (See Plate). At the upper end, attached to one trunk, are again four branches. The longitudinal circumference of the entire stone is 18 inches.

Remarks

As is so often reported in cases of large stone there had been little or no disability in spite of a duration of many years. The case is interesting in that the calculus formed a large visible and palpable tumour in the right side. It would appear that giant renal calculus is more common in the male, and that probably this stone is the largest yet recorded taken from the female kidney.

The case was sent to me by Dr. Léonard Oliver of Ropley, Hants.

BIBLIOGRAPHY

- Chantreuil: *Bull. Soc. Anat. de Paris*, 1867, xlii, 181.
Gallard: *Rev. Phot. des Hôp. de Paris*, 1870, ii, 171.
Kelly, Howard A., and Burnham, Curtis F.: *Diseases of the Kidneys, Ureters, and Bladder*, p. 96.
Kreutzmann, Henry A. R.: *Amer. Journ. Surg.*, 1928, v, 360.
Miquel: *Mont. des Hôp. de Paris*, 1853, i, 449.
Mylvaganam, H. B.: *Lancet*, 1920, ii, 888.
Piquet, L.: *Bull. et Mém. Soc. Chn. de Paris*, 1911, xxvii, 1401.
Rafin: *Lyon. Méd.*, 1907.
Randall, Alexander: *Journ. d'Urol.*, February, 1921.
Ratera, J., and Ratera, S.: *Forsch. a d. Gabriele de Rontgenstrahlen*, 1912, xix, 469.
Shields, Marmaduke: *Trans. Med. Soc. Lond.*, 1905, xxviii, 11.
Thomson-Walker, J. W.: *Surgical Diseases and Injuries of the Genito-Urinary Organs*, p. 255.
Waterworth: *Amer. Journ. Urol.*, 1932.
Young, Hugh, and Davis, David M.: *Practice of Urology*, Chapter VI.

RADIOGRAPHY OF CALCIFICATION IN CARDIAC VALVES DURING LIFE

BY

J. V. SPARKS, B.A., -M.R.C.S., D.M.R.E.

CHIEF ASSISTANT, X-RAY DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL;
RADIOLOGIST, CITY OF LONDON CHIEF HOSPITAL

AND

COURTENAY EVANS, M.D., M.R.C.P.

CHIEF ASSISTANT, A MEDICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL

(With Special Plate)

Following the description in 1933 by Sosman and Wosika,¹ and Bishop and Roesler,² of calcification in the cardiac valves, we have attempted to demonstrate these calcifications radioscopically. One of us (C. E.) selected clinical cases which were likely to show these calcifications, and they were revealed in the first case examined. The clinical and radiological findings are briefly described, together with the radiographic technique used to demonstrate such a lesion.

History of Case

A married woman, aged 52 years, had for twenty months complained of pain in the sternal region, which occurred chiefly on hurrying, and very occasionally when sitting still. There was giddiness on sitting up suddenly or stooping; and sometimes shortness of breath. There was no history of rheumatism or growing pains.

Clinical Findings

The patient was a little cyanosed, and not obviously short of breath. The heart was enlarged slightly, the apex being in the fifth space in the mid-clavicular line, the impulse being heaving. There was a systolic thrill in the second right intercostal space. On auscultation an apical systolic murmur was conducted to the axilla, and the second sound was followed by a faint diastolic murmur. At the aortic base a systolic murmur was present and was conducted into the neck; along the left border of the sternum there was a faint diastolic murmur. The pulse had a frequency of 68, the rhythm was regular, and the wave had a slow rise and fall. The radial and brachial arteries were thickened. The blood pressure was 170/130 mm. Hg. The remainder of the physical examination was negative. The blood Wassermann reaction was negative, and the electrocardiogram was physiological. The diagnosis was aortic stenosis with arteriosclerosis and hypertension.

X-Ray Findings

Fluoroscopy revealed that the heart was centrally placed, and the mediastinal shadow considerably widened; the widening was thought to be due to enlargement of the aortic arch. On rotation of the patient into the semi-oblique position a well-marked comma-shaped area of calcification was visible in the position of the aortic valve. The movement of this shadow was considerable: it was more fixed at the upper end, and showed a jerking movement somewhat similar to that of a pendulum, the lower margin moving about a centimetre at each impulse. The movement was mainly backwards and to the patient's right. The shadow could be seen in both the right and the left oblique positions, and was very clear in the left lateral position, the convexity being forwards. The radiograms indicate the central position of the heart and the position of the calcified area in the anterior right semi-oblique and left semi-oblique positions (see Special Plate).

Radiographic Technique

It was pointed out by Sosman that it was remarkable that the means for the demonstration of these lesions had been available for at least thirty years, and that this possibility had only just been recognized, for the calcifications can be observed readily on the screen, provided that the eyes are adequately adapted, and that the screen examination is made

with a sufficiently small diaphragm. We have, in addition, the advantage of using a new Levy screen, which has three times the brightness of an ordinary fluorescent screen, and the contrast is made by screening through the Lysholm grid. The radiographic demonstration of such lesions is naturally more difficult, and will vary with the power of the apparatus available, the object being to obtain the shortest possible exposure, so that the view may be taken without any blurring from cardiac movement. The ideal will naturally be obtained by using very high milliamperage with a suitable small cone. The radiographs submitted were taken with only 100 mA and 1/25 of a second exposure by reducing the focal film distance to twenty-four inches, but there may be advantages in employing 1,000 mA and 1/100 of a second exposure if such a powerful apparatus, which is already on the market, is available.

Significance of Calcification in Heart Valves

Calcification in the heart valves may be present as the nodular type described by Monckéberg,² a condition of subendocardial calcification in the aortic valve occurring in middle or old age, and of doubtful relation to atheroma. Calcification to a lesser degree is associated with atheroma and as a result of valvulitis—rheumatic, subacute bacterial, or syphilitic. In the nodular calcified group the portion of the valve near the aortic attachment is affected; disease of the adjoining aorta is usually absent. In atheroma the attached portion of the valve is most likely to be calcified, while in rheumatic valvulitis the free edge of the valve would contain the calcium deposits. In subacute bacterial endocarditis bizarre areas of calcification are not uncommonly seen. Calcification of the aortic valve and atheroma of the aorta would indicate disease of the mouths of the coronary arteries and the possibility of occlusion. In rheumatic endocarditis valvular calcification would be evidence of local healing; and in subacute bacterial endocarditis the calcium deposits would show that the body was making an effort to combat the disease. (It would be particularly interesting to examine by this new technique patients who are stated to have recovered from this disease.) In syphilitic heart disease calcium deposit would suggest the coexistence of atheroma.

The presence of a landmark within the heart will be of assistance in giving anatomical significance to radiographic findings. Both coronary arteries arise from the sinuses of Valsalva of the aortic valve, and it may be possible to map out the usual distribution of the arteries and to localize small areas of calcification as being in the course of these vessels. (We are carrying out experiments on post-mortem specimens along these lines.)

We are indebted to Dr. Geoffrey Evans for permission to publish this case, and to Dr. Finzi for allowing us to reproduce the radiograms, which were taken in the x-ray department at St. Bartholomew's Hospital.

REFERENCES

- ¹ Seeman, M. C., and Wosika, P. H.: *Amer. Journ. Roentgenol.*, 1933, xxx, 323.
- ² Bishop, P. A., and Roesler, H.: *Ibid.*, 1934, xxxi, 1.
- ³ Monckéberg, J. G.: *Fuchers Arch. f. Path. Anat.*, 1904, lxxvi, 472.

The first issue for 1934 of *The Fight Against Disease*, the quarterly journal of the Research Defence Society, contains an account of the debates held in the Universities of Manchester and Glasgow. In each case the voting went heavily against the supporters of antivivisection. Sir Leonard Rogers spoke on both occasions, and instanced the many advances in therapy which had been rendered possible by animal experiments. The issue also contains an account of the research regulations in Germany, the prevention and cure of certain common diseases of animals, and a critical examination of recent antivivisection and antivivisection propaganda. Professor Edward Mellinby has become a vice-president of the Research Defence Society and a member of the general committee.

A CONTRIBUTION TO THE CHOICE OF ANAESTHETIC

BY

PAUL KUHNE, M.D. LAUS., M.M.S.A.

HONORARY ANAESTHETIST, BUCHANAN HOSPITAL, ST. LEONARDS-ON-SEA

In view of the prevalence of new forms of general anaesthesia the case to be described below should prove of interest. The patient was under the care of Mr. D. Ligat in the ear, nose, and throat department of the Buchanan Hospital, St. Leonards-on-Sea, and had treatment which necessitated four general anaesthetics within a period of thirty-one days. She was given a different type of general anaesthetic on each occasion, and in my opinion a description of their effects from the surgeon's, patient's, and anaesthetist's point of view should prove helpful.

The following anaesthetics were used in the order given: (1) chloroform and ether; (3) sodium evipan; (3) avertin with gas and oxygen; (4) evipan with premedication.

Case Record

The patient, a single woman aged 31 (weight 9 st. 6½ lb.), gave a history of chronic otorrhoea of left ear since an attack of scarlet fever at the age of 10. She was admitted for persistent otorrhoea, deafness, and tenderness over the left mastoid. On examination nothing abnormal was found apart from the ear trouble. The blood pressure was 130/70.

First Operation.—Two days after admission a radical mastoid operation was performed under chloroform and ether anaesthesia with a preoperative injection of 1/100 grain of atropine sulphate. The patient was induced with C.E., after which the percentage of chloroform was gradually reduced to about 10. The anaesthetic was administered for one and a half hours. The temperatures and pulse rates before and after the operation and twenty-four hours later were respectively 97.4° and 68, 98° and 90, and 99.6° and 88. The patient was very sick for twenty-four hours, and complained of nausea for three days.

Second Operation.—Four days after the operation the wound was redressed under evipan anaesthesia. Eight c.c.m. of the standard solution of sodium evipan was injected intravenously in one and a half minutes (the first 4 c.c.m. in one minute). Complete anaesthesia, lasting ten minutes, was obtained. The temperatures and pulse rates, as above, were respectively 98.6° and 78, 98.8° and 84, and 98.6° and 86. The patient complained of slight headache the next day.

Third Operation.—Twenty days after the first operation two Thiersch's grafts were applied to the ear cavity under avertin and gas-and-oxygen anaesthesia. One hundred minims of avertin dissolved in 8½ oz. of distilled water at 40° C. were given rectally forty minutes before admission to the theatre. A nasal intratracheal tube was introduced under gas and oxygen, which was administered for thirty minutes. The temperatures and pulse rates, as above, were respectively 98° and 80, 98° and 78, and 98° and 80. The patient was restless for some hours after readmission to the ward.

Fourth Operation.—Thirty-one days after the first operation diathermy of the left inferior turbinate and stump of the middle turbinate was performed under evipan anaesthesia with premedication. Omnipon 2/3 grain and scopolamine 1/150 grain were injected subcutaneously, one hour before the intravenous injection of sodium evipan. Nine c.c.m. of the standard solution of the latter was injected in one and a half minutes (4 c.c.m. in the first minute). The patient became comatose in forty-five seconds, and four minutes after the commencement of the injection, while diathermy was in progress, the patient began muttering but did not move. Diathermy was completed one minute later, and the patient was sent back to the ward asleep. Soon after being put back to bed she complained of feeling cold and breathless, and began twitching. She became cyanosed, and about fifty minutes after the evipan injection she stopped breathing. She was completely relaxed, had a ghastly colour, and at first sight appeared dead; but on examination the pulse was found to be regular but weak, and about 60 to the minute. Artificial

respiration was applied and oxygen administered. The colour improved rapidly, the patient was conscious, and talked within ten minutes of the commencement of the attack. One hour later she stopped breathing again. This time apnoea lasted five minutes, and the pulse rate dropped to 40 per minute. The same treatment was applied, and 1 c.cm. of icoral was injected subcutaneously. The patient was conscious again within ten minutes of the commencement of the attack. One and a half hours later there was a recurrence of the above symptoms lasting two minutes. For eight hours the patient complained of being unable to breathe naturally. The temperatures and pulse rates, as above, were respectively 98° and 80, 98.6° and 102, and 98.6° and 84. The blood pressure twenty-four hours after the operation was 104/70, and rose to 125/75 on the second day.

Discussion

The patient was not acutely ill at any time; her general condition was very good, and clinically the same for all four anaesthetics. The operative procedures varied in each instance, but, except for the first operation, were of a minor nature, and not sufficient to cause surgical shock of any degree. Some of the nausea and sickness following the first operation was undoubtedly due to the operation itself, and the anaesthetic was given for a longer period than for the other operations; but even with these reservations the post-anaesthetic discomfort seemed out of proportion when compared with that noticed in the case of the other anaesthetics. The patient also informed me that she had been "just as sick" following a short chloroform and ether anaesthetic for a submucous resection a year before. The temperatures and pulse rates given were taken in the morning and evening of the operation day, and the following evening. They show the least reaction with avertin, and the most with chloroform and ether, and evipan with premedication.

The surgeon has stated that, as far as he was concerned, all four anaesthetics were satisfactory. The anaesthetist found the simplest method was with chloroform and ether, and sodium evipan required but little preparation. Avertin had the disadvantage of requiring more time, as the solution had to be prepared about one hour before the operation.

The patient's point of view was summed up as follows.

- (1) *Chloroform and ether*: "Not so bad as people make out." "I don't like going under, but it doesn't last long." "It's the after-effects that are worse: I was sick all that day, and felt sick for days, and couldn't get rid of the smell."
- (2) *Evipan alone*: "I don't remember much except the needle prick and going off with a bump."
- (3) *Avertin, gas and oxygen*: "I just fell asleep and don't remember anything of what happened that day."
- (4) *Evipan with premedication*: "I thought it was the same as I had before, but that something went wrong." "I can remember something hurting terribly in my nose, and saying that it hurt, but I couldn't move. Then I don't remember anything till I was wheeled into the ward; I felt cold and couldn't breathe. I don't remember having any injections in bed." When asked which anaesthetic she would choose if she had to have another operation the patient replied, "The one I had in bed"—that is, avertin. When asked to give reasons, she replied: "It's the nicest going off, and upset me least afterwards." Evipan alone was given as second choice, and chloroform and ether was by far the worst.

The opinion of the nursing staff was that avertin caused more work and trouble than any of the other anaesthetics. The patient had to be watched carefully during the rectal injection, and was comatose for a prolonged period after the operation. Noises in the ward caused much restlessness, and she had to be under constant supervision. This has been noted in most hospital cases. In nursing homes and private wards a much quieter atmosphere can be maintained, and the patient has no period of restlessness.

Evipan with premedication was not successful in this case. This is rather surprising, in view of the fact that some days previously evipan alone had given an excellent result. I can give no explanation of this, but the case illustrates clearly the depressant action of evipan on the respiratory centre and also its selectivity for that centre. Three periods of apnoea occurred while the pulse remained good, except for a fall to 40 per minute for a short time. The case shows clearly that evipan is a "safe" anaesthetic in so far as, with normal doses, the cardiac centre seems to be very little affected.

Summary and Conclusions

1. A case has been described in which four different types of general anaesthetics were administered within a period of thirty-one days.
2. A description of the anaesthetics has been given.
3. The anaesthetics have been discussed from the patient's, the surgeon's, the anaesthetist's, and the nurse's point of view.
4. Avertin, with gas and oxygen, in this case, appears to be the most satisfactory form of anaesthetic, though the administration requires more time and attention.
5. Evipan alone proved very satisfactory in this case, and the selectivity of this drug for the respiratory centre is clearly illustrated.

In conclusion I would like to thank Mr. D. Ligat for his help and permission to publish this case. My thanks are also due to Dr. Grace and Dr. Hall for particulars of the first two anaesthetics.

Clinical Memoranda

COMPLETE CONGENITAL DIAPHRAGMATIC HERNIA IN AN ADULT: OPERATION

(With Special Plate)

The comparative infrequency of congenital diaphragmatic hernia in adult life renders this case of interest.

A healthy German girl, aged 20, who was on holiday in England, was recently admitted to the Farnborough Hospital as a case of acute pancreatitis. She had vomited once or twice, was somewhat collapsed, and had severe pain in the epigastrium. There was also severe pain in the region of the left shoulder. The temperature was 99.2° F., the pulse 120, and the respirations 26. The upper abdomen was slightly rigid. The heart sounds were heard on the right side, and breath sounds were deficient over the whole of the left lower chest. The diaphragmatic hernia was not suspected before operation, in spite of the dextrocardia.

On opening the abdomen there was a small quantity of free fluid which was slightly blood-stained, but the only viscera present were a collapsed descending colon, an enlarged and prolapsed liver, and the pelvic organs. The right Fallopian tube was lying in contact with the gall-bladder. High in the epigastrium could be felt the tense and distended lower end of the stomach. The emptiness of the peritoneal cavity and the complete absence of palpable and visible small gut led to a diagnosis of diaphragmatic hernia. The hand could be passed a little way into the chest along the greater curvature of the stomach, but owing to the enormous distension of this organ it was impossible to proceed further until the contents had been drained off. A stomach wash had not been given before the anaesthetic as there had been no symptoms of intestinal obstruction. After packing off the lower end of the stomach a catheter was inserted through a purse-string suture, and several pints of fluid were withdrawn. It was not possible to withdraw the stomach completely from the chest

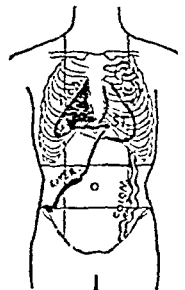


Diagram showing condition found at operation

by means of gentle traction during each expiration; with it came the spleen, which was completely mobile. On passing the hand through the hernial orifice it was found that the left half of the diaphragm was almost completely absent. The chest contained all the small intestine, the omentum, and most of the large gut; it was possible to palpate the ribs almost up to the clavicle on this side. The intestines themselves did not appear to be distended, and in any case could not be mobilized. The patient's condition was very poor at this stage, and she was therefore returned to the ward, half a pint of warm saline being left in the peritoneal cavity.

She made fair progress for several days, and the bowels were well opened. There was a troublesome post-anaesthetic cough, and on the sixth day it appeared that the stomach passed back into the chest and again became obstructed. The patient vomited copiously, in spite of repeated aspiration of the stomach contents, and died on the seventh day after the operation.

An x-ray photograph taken in bed showed coils of small intestine occupying the upper half of the left chest. Unfortunately, permission for a post-mortem examination could not be obtained. It is interesting to note that the girl's parents stated that she had always been an ardent gymnast and had enjoyed perfect health throughout her life. She had complained occasionally of flatulence, and was unable to drink aerated waters.

JOHN F. HACKWOOD,
M.D. Lond., F.R.C.S.

Farnborough, Kent.

TREATMENT OF CLIMACTERIC HYPERPIESIA BY ARTIFICIAL MENOPAUSE

The following case, which is described in detail, may be of interest as suggestive of the hopeful prognosis which may be given if the treatment advocated is adopted in this particular type of high blood pressure.

In January, 1932, the patient, a married woman of 45, was suffering severely from symptoms of hyperpiesia, her usual systolic pressure being 220 mm. She had extensive retinal haemorrhages, and her condition was thought to be due to chronic nephritis, and was investigated thoroughly from this point of view; but the urine, blood urea, and urea concentration tests were found to be normal. The laevulose test was also normal, and showed no evidence of hepatic insufficiency. The Wassermann reaction was negative, the differential blood count was normal, and x rays showed no abnormality of the alimentary tract, nor was there any bacteriological evidence of intestinal or urinary infection. The teeth and antra were thoroughly examined and x-rayed, and found to be healthy, and there was no obvious sign or symptom of pelvic disease; the patient had had five children, of whom four were alive, and no miscarriages, and the periods occurred regularly every four weeks, being normal in amount and duration, with no sign of cessation, the patient's mother not having had a menopause until the age of 50. Her appearance suggested a slight hypothyroidism, and the basal metabolism was found to be -10 to -15 per cent. She was kept under observation for nine months, and it was found that her blood pressure rose and her symptoms were accentuated by each menstrual period, the occipital headache, which was a fairly constant symptom, becoming much worse at these times and a good deal of emotional disturbance occurring.

An artificial menopause suggested itself as a means of at least alleviating these severe exacerbations of the trouble, and this was carried out by means of radium in November, 1932, by Mr. Eardley Holland. She had two periods afterwards and has had none since. Her blood pressure gradually fell to 160-175 systolic, and has remained at that level without exception. The occipital headache has entirely disappeared, and the eye condition has improved to a surprising degree, there having been no fresh retinal haemorrhages in the last eighteen months. The whole condition of the patient has changed from invalidism to a life of ordinary activity.

In conclusion, I should like to thank Mr. Eardley Holland, who carried out the insertion of radium, for permission to publish these notes.

Huddersfield.

L. SHILLITO, M.B., B.Ch.

Reviews

THE MEDICAL ANNUAL

In their introduction to the *Medical Annual* for 1934¹ the editors, Dr. LETHEBY TIDY and Mr. RENDLE SHORT, remark that "an occasional grumble is heard that there is too much for the specialist and not enough for the general practitioner, particularly in the way of simple methods of treatment." They reply that this point has not been lost sight of, and that, although the *Medical Annual* is in the main a conspectus of current medical literature, special articles of practical value are included each year which are written independently of the literature. In our review of the 1933 volume, we suggested that this yearbook was remarkable in that it had something to offer to the student and to the general practitioner and to the specialist. In the new volume there are a "considerable number of therapeutic hints for the family doctor," but we think that those who have grumbled should not forget that both general practitioners and specialists are doctors who have received the same basic education. What is sauce for one should be sauce for the other, for if the general practitioner is not aware of what the various specialists are up to he will not know how and when he should avail himself of their special activities for the benefit of his patients.

There is, however, one problem which is of particular concern to the general practitioner—national health insurance practice—and we welcome in the present issue of the *Medical Annual* the excellent article on this subject by Dr. E. Kaye Le Fleming. In a clear and concise manner he explains how "the first big scheme of preventive medicine applied to general practice" is carried out by the 19,000 medical men engaged in this work in England and Wales and Scotland.

Where there is no chaff one cannot separate the wheat, but for convenience of review it may be permissible to distinguish between an abstract (specialist) wheat and a real (practical) wheat. Of the latter variety there is plenty, and, if the verbal somersault is allowed, such articles as those on cosmetics, stammering, vitamins, insomnia, anaemia, drunkenness, and anaesthesia—among many others—will make a ready appeal to the busy general practitioner who wants to lay his hands on something tangible. We should also like to draw attention to the extremely useful Practitioners' Index at the end of the book, where short descriptions of new drugs and medical and surgical appliances, lists of books, and details of special homes, institutions, spas, sanatoria, and medical societies can all readily be found with a flick of the thumb.

PROBLEMS OF LIFE AND MIND

Dr. C. G. JUNG's book on *Modern Man in Search of a Soul*² is a translation into English of a series of essays that have, in most instances, been delivered as lectures. Among the subjects discussed are dream analysis, the aims of psychotherapy, the stages of life, archaic man, the basic postulates of analytic psychology, and the spiritual problem of modern man—all these topics being approached from the standpoint of the analytic psychology of which Jung is the founder. With considerable courage the author ventures to suggest the possibility of

¹ *The Medical Annual: A Yearbook of Treatment and Practitioners' Index*. Edited by H. Letheby Tidy, M.A., M.D., F.R.C.P., and A. Rendle Short, M.D., B.Sc., F.R.C.S. Fifty-second year. Bistol: J. Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1934. (Pp. 644; illustrated. 20s. net.)

² *Modern Man in Search of a Soul*. By C. G. Jung. London: Kegan Paul, Trench, Trubner and Co. Ltd. 1933. (Pp. ix + 282. 10s. 6d. net.)

a "psychology with the psyche"—that is, a field of study based on the assumption of an autonomous psyche. He contends that since we have no idea of the way in which what is psychic can arise from physical elements, and yet cannot deny the reality of psychic events, we are free to frame our assumptions the other way about for once, and hold that the psyche arises from a spiritual principle which is inaccessible to matter. In practice, of course, all psychotherapists deal with their patients as if the mind—conscious and unconscious—were independent of the body, and it matters but little whether they accept or deny the existence of an independent entity or soul. The actual differences between the dynamic schools of psychopathology are to be found in therapeutic techniques and in the conceptions as to the nature and content of the unconscious. Jung's conception of the unconscious is certainly impressive. In addition to repressed material Jung recognizes a collective unconscious, this being the repository of primitive images or "archetypes of apprehension," which represent both the past stages of racial development and also the future potentialities. From this racial unconscious all creative possibilities and all the dynamic powers of the psyche are assumed to issue.

The technique of analytic therapy would seem to be difficult to explain, and it could obviously only be understood by those who have been themselves analysed. The results of treatment suggest a state of mind analogous to that occurring in religious conversion. The analysis is mainly concerned with the dreams of the patient, the aim being to convert the destructive powers of the unconscious into healing forces. The archetypes come to independent life and serve as spiritual guides for the personality, thus supplanting the inadequate ego with its futile willing and striving. When the patient has gained access to the hidden sources of psychic life it is found that this marks the beginning of the cure.

Dr. Jung reveals himself once more as an independent and original thinker and psychologist, and we can confidently recommend his book to those who are interested in the problems of life and mind. It certainly creates an impression that the educated classes in Switzerland who find difficulty in adjusting to the problems of life are seeking help more and more from the psychotherapists.

CLINICAL PHYSIOLOGY OF THE EYE

In a recent discussion between some budding doctors, one of them, a man with a brilliant academic career, said that as far as eye work was concerned that had become so scientific as to have lost the zest of search; certainty and stability had destroyed the romance of the unknown. If anyone should seriously be of this mind he might well study a book entitled *Clinical Studies on the Physiology of the Eye*,³ by J. GRANDSON BYRNE. In this work there is collected a series of observations on the eye which are full of interest, and calculated to arouse in the most complacent of methodical clinicians a new spirit of inquiry and perhaps of vehement opposition. The author first considers the relation of the critical and affective nervous systems, then the effector mechanisms which mediate palpebral, pupillary, and lens movements. Next follow observations on the paradoxical pupillary dilatation and constriction associated with somatic lesions and the mechanism of accommodation, and on visceral disorders associated with referred pain and hyperalgesia. There are other chapters, but these form the main contents.

There is no medical practitioner who does not know the phenomenon of the Argyll Robertson pupil and its

significance, and also something of the nervous mechanism of its production. That reaction is an exemplar of many others, and it is with these that Dr. Byrne's book is particularly concerned. He enters into a fuller explanation of the Argyll Robertson phenomenon, and propounds other rarer and less certain pupillary reactions set up by local and general bodily disorders. For some of these he makes out a good case; others—for example, "pupil inequality and ulcer of the leg"—seem somewhat too subtle and leave room for doubt, yet there is enough apparent evidence to warrant further investigation. The author draws a most practical moral from his observations in these words:

"From the foregoing it is apparent that the practice of ophthalmology, like that of any other specialty, should be undertaken only by one who has had a thorough training in the theory and practice of medicine, followed by a long period (*plurimos annos*) of general practice. The determination of the patient's refraction and the prescribing of glasses may seem to be an easy matter, but—from the standpoint of the patient's welfare in general, not to mention the early, complete, and speedy recovery of ocular function—it is by no means an easy matter, and should not be so regarded by anyone who assumes the responsibility of treating disordered ocular function."

THE DEVELOPMENT OF RADIOLOGY

The Science of Radiology,⁴ edited by OTTO GLASSER, is a charming book of infinite variety. In 1929 steps were taken to organize a congress of radiology in connexion with the project for holding an international exposition in Chicago, which would deal with the progress of science during the past 100 years. In 1931 the four national radiological organizations of North America decided to co-operate in the organization of the first American Congress of Radiology. Dr. Byron H. Jackson of Scranton, Pennsylvania, was appointed chairman of the committee on history and education. One of the duties of this committee was the editing of a book that would denote the outstanding features developed in the science of radiology from the time of Roentgen's discovery up to the period of the congress. Dr. Otto Glasser was appointed editor, and with the assistance of twenty-five contributors, each of whom is an authority on the special branch of the subject on which he writes, he has produced a book of a character unique in the history of radiology. Although the volume deals mainly with the development of radiology in the United States, the book has an international appeal, for the authors have drawn upon the radiological literature of all countries.

In the opening chapter Dr. Glasser, who is the author of the standard work on the life of Roentgen, describes the discovery of the Roentgen rays, and gives a very brief account of Roentgen's life, effectively disposing of the myths and fables which became associated with the great discovery. Then follows a short account of the discovery of radium by Pierre and Marie Curie, due credit being given to Henri Poincaré, the French scientist, who a few weeks after Roentgen's discovery suggested the investigation of fluorescent substances, and to Henri Becquerel, who undertook their systematic study. Becquerel's experiments with uranium salts and their action on photographic plates led to the discovery that penetrating and invisible rays were emitted from all uranium compounds, whether these were fluorescent or not. His work showed that these rays were similar to the x rays, and that they were a special property of the atom itself; in fact, an entirely new property of matter had been discovered. The story is then told of Pierre and Marie Curie's research work on the Becquerel radiation, and, finally, of their discovery of radium. On these

³ *Clinical Studies on the Physiology of the Eye* By J. Grandson Byrne, M.A., M.D. London, H. K. Lewis and Co., Ltd. 1934. (Pp. 144; 39 figures. 10s. 6d. net.)

⁴ *The Science of Radiology*. Edited by Otto Glasser, Ph.D. London: Baillière, Tindall and Cox. 1933. (Pp. xiv + 450; 10s. figures. 25s.)

foundations the whole science of radiology has been erected.

In subsequent chapters every branch of radiology is dealt with by well-known American specialists. One chapter is devoted to the American pioneers in radiology, and is of great historical interest. X-ray physics, x-ray apparatus, and radiological diagnosis and treatment are all chapters of absorbing interest, and an excellent account is included of x-ray cinematography, due credit being given to Macintyre of Glasgow, who in the first volume of the *Archives of Skiagraphy* (April, 1897) published a paper on x-ray cinematography. He had previously, at a meeting of the Glasgow Philosophical Society, shown an x-ray cinematographic film of the movements of the leg of a frog, and it is interesting to remember that Macintyre described both the direct and the indirect methods of x-ray cinematography. Military roentgenology is an interesting chapter, and a fascinating story is told of the use of x rays in warfare.

The reader will find that in this book the history of radiology in all its branches is accurately given; and even the most recent developments in radiology, such as the nature of the cosmic rays and the Gurwitsch rays, find a place. Numerous references are given. The illustrations are of excellent quality, and a good index is provided. It is with confidence that we recommend this book to radiologists both young and old.

SYNOPSIS OF HYGIENE

The fourth edition of the well-known *Synopsis of Hygiene*,⁵ by Professor JAMESON and Lieut.-Colonel PARKINSON, follows the third at an interval of less than four years. It amply sustains the merits of its predecessor, and adds new virtues besides. The work contains much fresh material, for which room is made without increase of bulk by the omission of the purely laboratory section on chemical methods. The order of subjects, which has been recast, gives priority to the more social topics. The opening section is concerned with health authorities and their powers, sanitary officers and their duties, and health propaganda. The specific fevers are next dealt with in turn, all information supplied being well up to date. Then follow articles on industrial disease, the animal parasites, and hospitals.

The section on the welfare services, which has been most usefully enlarged, includes the findings of the Maternal Mortality and Morbidity Committee, discusses the question of a national maternity service, and supplies detail enough, without over-elaboration, on maternity and child welfare schemes to convey a clear impression of the scope and character of the work. Under "schools" the problems of the mentally and the physically defective child are well presented. "Personal Hygiene," an excellent article, passes on to nutrition, family budgets, and the open-air life. Among other subjects treated are food, ventilation, and water supplies, the last including new methods of purification, such as catadyn sand. The essentials of sewage disposal and housing are set forth in an interesting way. The substantial section on sanitary law appears to omit no points of importance. Meteorology figures in an appendix along with a table of food values and a summary of physical and chemical factors.

The book makes ample provision for the needs of the student, and by means of its numerous references points the way to further progress. In 1930 we recommended the third edition to those preparing themselves for the Diploma in Public Health. We repeat that recommendation now in the case of the fourth with added cordiality.

⁵ *Synopsis of Hygiene*. By W. Wilson Jameson, M.D., F.R.C.P., D.P.H., Bacteriologist, and Lieut.-Colonel S. Parkinson, D.S.O., M.B., F.R.C.P., D.P.H., Lieut.-Colonel R.A.M.C. (ret.). Fourth Edition. London: J. and A. Churchill, Ltd. 1934. (Pp. 619; 17 plates, 214.)

THE NEWBORN

Dr. ERIC PRITCHARD has collected into book form the lectures on the care of newborn babies given during the past few years to students at Queen Charlotte's Hospital, and although the title-page of *The New-Born Baby*⁶ states that it is a manual for midwives and maternity nurses, it should also prove useful for medical students and practitioners. There is a paucity of easily available information on this important age period, for, divided between textbooks on midwifery and on paediatrics, diseases of the newborn suffer from a sort of scattered responsibility. Such subjects as the premature infant, ophthalmia neonatorum, infections in the newborn, and the skin of the newborn are especially well described, while there is an excellent section on nursery fallacies, which exposes the foolishness of dummies, lime-water, lullabies, and domestic measures. On the artificial feeding of the newborn, however, this little book appears rather too complicated for the average maternity nurse. How the midwife, attending mothers in their homes, is to undertake the modification of cow's milk suggested, including the making of whey and a subsequent peptonization for three hours, is not explained. Some easier procedure should be advocated and explained. Nor does the section on constipation seem the wisest sort of teaching for the nursing profession, with six drugs described as of value in the course of the first page and training mentioned only on the second. The style throughout is clear and the teaching dogmatic, with many happy illustrations. Candidates for the C.M.B. should find the book of value, especially if the examiners could also be persuaded to read it.

Notes on Books

The second edition of Professor BECKMAN's *Treatment in General Practice*⁷ is a book for the use of medical practitioners. Every disease is given its separate heading, and the appropriate treatments, diets, and drugs are considered in detail. The volume contains a great deal of information, and is brightly and breezily written in a style that will no doubt find many admirers. It may be taken to represent current American practice, is furnished with a bibliography and an index, and can be cordially recommended to the readers for whom it is designed.

The volume of selected *Researches Published from the Wards and Laboratories of the London Hospital during 1933*⁸ contains over thirty reprints of papers published in various medical, pathological, or physiological periodicals during the year. Most of them come from the wards, and their perusal gives the reader a clear impression of the skill and keenness with which the workers in that great institution make use of the opportunities for research with which they find themselves surrounded.

Dr. B. DE RUDDER's work on *The Acute Infectious Diseases of Civilization*⁹ contains, as its subtitle indicates, a discussion on the epidemiology and control of the commonest infectious diseases—such as measles, small-pox, whooping-cough, scarlet fever, diphtheria, and poliomyelitis. The work is divided into two parts. In the first the author discusses in turn the epidemiology and endemology of the diseases named, the doctrine of latent and spontaneous immunization, the influence of seasons and climate on infectious diseases, and their incidence and mortality in various countries; while in the second he deals

⁶ *The New-Born Baby. A Manual for the Use of Midwives and Maternity Nurses*. London: H. Kimpton. 1934. (Pp. 272; 8 figures. 4s. 6d. net.)

⁷ *Treatment in General Practice*. By Professor H. Beckman, M.D. Second Edition. Philadelphia and London: W. B. Saunders Company. (Pp. 889. 45s. net.)

⁸ *Researches Published from the Wards and Laboratories of the London Hospital during 1933*. By Dr. B. de Rudder. Leipzig: Georg Thieme. 1934. (Pp. 286; 49 figures. M.16; bound, M.18.)

⁹ *The Acute Infectious Diseases of Civilization*. By Dr. B. de Rudder. Leipzig: Georg Thieme. 1934. (Pp. 286; 49 figures. M.16; bound, M.18.)

with notification and isolation, disinfection, return cases, the carrier problem, the serum prophylaxis of measles, whooping-cough and poliomyelitis, and active and passive immunization against diphtheria and scarlet fever. An appendix of mainly German and American literature is included.

The thirteenth issue of "The Year's Practical Medicine"¹⁰ has been issued under the continuing editorship of Dr. CAMILLE LIAN, and contains an index for the last five years. The barbiturate controversy seems to have arisen in France, for three contributors deal with certain aspects of these drugs. The x-ray appearances in pneumoconiosis are well reviewed, and the up-to-date nature of the production is illustrated by a good description of the basophil syndrome of pituitary dysfunction, and another of the Schuller-Christian syndrome. There is, however, still too much neglect of work done outside France.

There is no substitute for skilled personal instruction in the difficult task of teaching a sufferer from cleft palate to speak properly with what Nature, the surgeon, and the mechanic have between them given him for that purpose. But to those who cannot get the aid of a specialist in this teaching no better guide could be found than the monograph *Cleft Palate Speech*,¹¹ in which Miss VAN THAL gives detailed advice as to the necessary training of both mind and body.

¹⁰ *L'Année Médicale Pratique*. Edited by Dr. Camille Lian. Thirteenth year. Paris: René Lépine. 1934. (Pp. 662; 6 figures. 26 fr.)

¹¹ London: Allen and Unwin, Ltd. 1934. (Pp. 94; illustrated. 3s. net.)

Preparations and Appliances

PYELO-LITHOTOMY FORCEPS

Mr. W. K. IRWIN, F.R.C.S. (London, W.), writes:

When removing calculi through an incision in the renal pelvis I had often found difficulty in manipulating the ordinary type of forceps, especially if the patient was stout, the pedicle short, and the kidney not readily mobilizable. I therefore designed a special instrument, which has been much used during the past six years. A new pattern, which is a material improvement, has now been made in accordance with my suggestions.

In the new model, shown in the accompanying illustration, the inner end, for grasping the calculus, is $1\frac{1}{2}$ inches long, is bent at a right angle to the handle, and has concave fenestrated jaws. The handle portion is $\frac{4}{5}$ inches in length. The whole instrument is stronger than in the first pattern. With such a forceps one can work in a much more limited space than with a straight or nearly straight type.

The instrument is obtainable from Messrs. Down Bros., St. Thomas's Street, S.E.1.

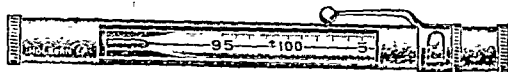
AN IMPROVED CLINICAL THERMOMETER CASE

Dr. B. RICHARDSON BILLINGS (Folkestone) writes:

Appalled at the "mortality" of clinical thermometers under average conditions, I have designed a case which protects a thermometer during the vulnerable periods of its career. Until clinical thermometers can be made so as to be absolutely indestructible, we must put up with breakage due to accidental dropping, though quite a number are broken in the thin case usually provided as a container. Moreover, these cases do not sterilize the thermometer.

The container I have devised is a strong metal tube longitudinally fenestrated, and lined with a pyrex glass tube (the strongest glass known), the ends of this lining being ground to a watertight fit against washers at each end. The lower end of this tube has a light compression spring-loaded ferrule, in which the bulb of the thermometer is held. The screw-cap at the other end presses the thermometer down into the tube and keeps it comfortably housed, in spirit or other antiseptic; a clip, of the fountain pen type, keeps the case snug in one's

pocket. Thus the thermometer is kept safe, sterile, and ready to hand. Risk of damage through undue pressure being applied (as, for instance, when leaned upon while in the waistcoat pocket) is minimized. In the rare contingency of the glass liner becoming damaged, this can easily be replaced at a cost far below that of a new thermometer. Owing to atmospheric



pressure, when the thermometer has been extracted and the case laid on its side, the fluid does not run out.

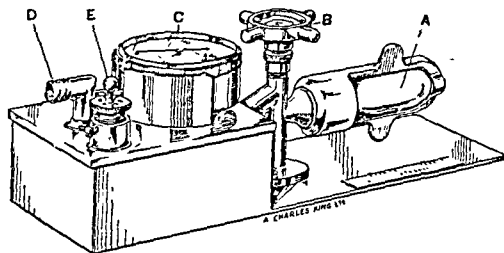
The Holborn Surgical Instrument Co., Ltd., 26, Thavies Inn, E.C.1, have ably carried out my design, and are prepared to sell these containers at five shillings each, spare barrels being sixpence.

TESTING PATENCY OF FALLOPIAN TUBES

Mr. F. NEON REYNOLDS, F.R.C.S. (London, W.), writes:

The apparatus shown is for the investigation of the patency of the Fallopian tubes.

The illustration needs no lengthy explanation. A is a CO₂ sparklet bulb; B, a needle valve control; C, a manometer; D, the connexion for rubber tubing leading to the uterine



cannula; and E is a relief valve, which can be set to "go off" at any desired pressure. This relief valve is a safeguard in that it prevents the pressure rising to a dangerous degree should the supply valve be opened too fully and suddenly by any inexperienced assistant.

The main advantage of the apparatus, however, and the one for which it was designed, lies in its size. It measures $8\frac{1}{2}$ by $3\frac{1}{2}$ by 3 inches, and can be carried easily in one's ordinary instrument bag. Those who prefer to use CO₂ instead of air can thus be relieved of carrying an extra and somewhat bulky addition to their ordinary impedimenta.

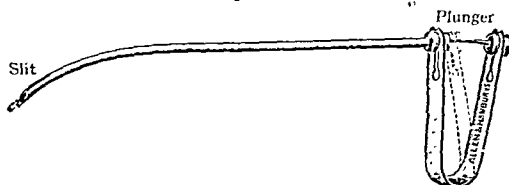
The apparatus is made by Messrs. A. Charles King, Ltd., 34, Devonshire Street, W.1.

A RADON SEED INTRODUCER

Dr. SYLVIA B. WIGODER (National Radium Centre, Bristol Royal Infirmary) writes:

The accompanying illustration shows an instrument I designed some little while ago. Experience has proved it of great assistance, and I should like to mention some of its advantages.

The instrument is quite simple in construction. It is loaded at the point, a slit carrying the silk to prevent cutting, while a little vaseline makes it possible to use all sizes of seeds.



One hand only is required to use the instrument, the other being free to steady the growth. The curve has made the introducer adaptable for almost any situation. By having the silks of equal lengths it is, of course, easy to determine the depths the seeds are inserted by the portion remaining above the growth.

I have to thank Messrs. Allen and Hanburys for the manufacture of the instrument, and for the great care they have taken in following my instructions.

British Medical Journal

SATURDAY, JUNE 9th, 1934

TUBERCULOSIS AND THE MILK SUPPLY

On November 2nd, 1932, the Prime Minister appointed a committee of the Economic Advisory Council with the following terms of reference: "To consider what practical measures can be taken to secure a reduction of disease among milch cattle in this country, and to report upon any changes desirable in the existing administrative practice, and, in particular, upon the value and practicability of methods for reducing the incidence of bovine tuberculosis and improving the milk supply." The Committee, with Sir Frederick Gowland Hopkins in the chair, after receiving evidence from numerous sources, has at last published its eagerly awaited report.¹ Though the report itself contains a wealth of information on the frequency of disease in cattle and of milk-borne disease in man, on the nutritive value of milk, and on the effect of pasteurization on the individual constituents of milk, as well as a critical summary of existing legislation, it is on its proposed recommendations for improving the present position that interest must be chiefly centred. Before considering these in detail, it must be pointed out that the Committee has restricted itself almost entirely to bovine tuberculosis and its effect on the milk supply. It has left, at any rate temporarily, the problem of eradicating contagious abortion, mastitis, and Johne's disease to the initiative of the farmer, and it has not squarely faced the problem of milk-borne disease, which would still exist even if tuberculosis was eradicated.

The three main lines of recommended administrative development may be summarized as follows: (1) An extension of routine veterinary inspection. It is proposed that veterinary inspection should be made obligatory on all local authorities, and that a veterinary service should be built up consisting largely of whole-time officers with a training in veterinary State medicine. (2) An active policy for the eradication of bovine tuberculosis. It is realized that the Tuberculosis Order, 1925, has done nothing to reduce the incidence of tuberculosis in cattle, and that the only sound method for combating this disease is the building up of tuberculosis-free herds. To achieve this end a scheme is outlined, and various inducements are held out to owners to secure their co-operation in it. A list of tuberculosis-free herds (accepted herds) is to be instituted, together with a list of herds whose owners are making bona fide efforts under official control to free them of tuberculosis (supervised herds). Free veterinary advice and free tuberculin testing are to be provided, financial help where necessary is to be forthcoming, and a higher price is to be paid for milk from tuberculosis-free

herds by means of a levy on other types of milk. (3) Regulations governing the grading of milk and the granting to large urban authorities of the right to require pasteurization of milk other than that produced by herds free from tuberculosis.

The third recommendation involves far-reaching proposals. In the first place it is maintained that all liquid milk for human consumption should be sold under an official designation, and that all such milk, whether to be consumed in the raw or pasteurized state, must attain a certain standard of cleanliness on the farm. Four grades of milk are suggested: (a) *certified milk*, derived from tuberculosis-free herds, to be sold raw, with no necessity, as at present, for bottling to be performed on the farm; (b) *pasteurized milk*—namely, milk which has been heated once in a licensed plant by a process approved by the Ministry of Health or the Department of Health for Scotland; (c) *sterilized milk*—namely, milk which has been raised to the boiling point or higher in a plant licensed for the purpose; (d) *milk (uncertified)*—namely, milk which has undergone no form of heat treatment, which is not derived from tuberculosis-free herds, but which attains a certain hygienic standard. In the second place it is laid down that the council of any county borough, municipal borough, large burgh, or urban district in an area the population of which exceeds 100,000, and the London County Council, shall have the right to prohibit the sale of milk (uncertified) within five years of initiation of the tuberculosis eradication scheme, provided it has given not less than two years' notice of its intention to do so.

These recommendations are framed in an endeavour to achieve the maximum gain in public health with the infliction of the least hardship on the producer-retailers in the large towns. It is contended that the immediate institution of compulsory pasteurization in large towns would deprive a large number of farmers, who produce and sell their own milk on the outskirts, of their present means of livelihood. The proposal, therefore, is to offer these producer-retailers the alternative of pasteurizing their milk or of freeing their herds from tuberculosis within five years. So far as small towns and country districts are concerned, where compulsory pasteurization is at present impracticable, reliance is to be placed on increasing the supply of milk from tuberculosis-free herds and on educating the public to boil all milk which is not of certified standard. If the recommendations in this report are fully implemented, they will undoubtedly go some way towards safeguarding the public health—at any rate in the large towns. Whether they will be successful in leading to a reduction of tuberculosis in cattle is another question. In the long run an adequate economic stimulus for building up tuberculosis-free herds must depend on a demand for milk from this type of herd. But where is this demand to come from? It is known that raw milk from tuberculin-tested herds is not free from the risk of carrying other diseases, and it is difficult to imagine how any medical

¹ Cmd. 1591. Economic Advisory Council Committee on Cattle Diseases Report, May, 1934. H.M. Stationery Office: (2s. 6d. net.)

adviser, aware of this fact, is going to recommend in large towns, where a choice is available, the consumption of raw potentially dangerous certified milk at a higher price in preference to pasteurized safe milk of Grade A standard at a lower price. The objection felt by some people at present to pasteurized milk—namely, that, even though safe, it is often produced under uncleanly conditions and is aesthetically undesirable—will no longer hold good, because a pre-pasteurization standard of cleanliness is to be enforced.

It is, however, premature to discuss the possible outcome of this report until it is known how far the Government proposes to adopt the Committee's recommendations. That it calls for a substantial advance in public health legislation is very gratifying, and that it represents a determined effort to improve the cleanliness and safety of the milk supply is a matter for especial congratulation. While we cannot go all the way with the distinguished botanist "F. K.," who writes on this subject so eloquently in *Nature* of June 2nd, we echo his plea that "a great national effort must be made to discover means of securing to the people, all the year round, plentiful supplies of the best milk that Nature and art can produce."

THE BRITISH HEALTH INSURANCE SYSTEM

Some incorrect impressions of British national health insurance have found their way across the Atlantic, and to put the matter in a truer perspective for American readers Sir Henry Brackenbury has contributed an article to the *New England Journal of Medicine*. He finds no difficulty in proving that on the results of twenty-one years' administration there has been marked benefit both to the insured community and to the medical profession working under the Acts. He points to the resolution which the Representative Body of the British Medical Association passed eight years ago, almost without dissent, affirming that the measure of success attending the experiment had been sufficient to justify the profession in uniting to secure its continuance and improvement, and also to the memorandum of evidence presented by the British Medical Association to the Royal Commission, in which eight specific advantages are enumerated.

No one can say to what extent the national health insurance system has been responsible for the marked improvement in national health during the last two decades, notwithstanding war and economic calamities. The effects of insurance cannot be separated from other agencies, such as an increase in the knowledge of medicine and ancillary sciences, more effective public health administration, and popular education in hygiene; but the beneficial result of all these agencies must have been largely augmented by the activities of the insurance practitioner. To the medical profession itself national health insurance has brought advantages. Practitioners are learning to be colleagues rather than

rivals; family practice and the various branches of the public health service are being brought into better relationship. Many practitioners have found it a relief to be able to give a fuller attention to their poorer patients without the feeling that they will be distressed afterwards by the presentation of a bill. Large numbers of general practitioners in poor areas would have found it difficult to-day, without the insurance system, to earn by the exercise of their profession sufficient income on which to live. Sir Henry Brackenbury is careful to add that the money coming to them through these arrangements has been fully earned; it is the greatly increased amount of work which has led to this financial improvement, and notwithstanding the increase in quantity of service, there is no evidence of any deterioration in quality.

Certain drawbacks undoubtedly there are. The multiplicity of rules and regulations is often mentioned, but this arises from three valuable features in the system: the right of every member of the medical profession to enter the service; the close approximation of its conditions to those obtaining in private practice; and the considerable share assigned to the profession itself in the administration. The very confidence shown in the profession which these features disclose necessitates provision to deal with occasional negligence or delinquency and to safeguard the service from any untoward consequences of this freedom. Sir Henry Brackenbury admits that there is a tendency to multiply and complicate rules unnecessarily, but in general it may be said that they do not trouble the practitioner much more than the ordinary requirements of the penal code trouble the law-abiding citizen. Two other points of some importance are mentioned. The more easily transferable character of insurance practice facilitates the procedures of commercially minded practitioners and the exploitation of the profession by ingenious laymen. Again, with a small proportion of insured persons there is a tendency to demand the doctor's services as a business right and to be critical and suspicious lest they should not secure their full due. But the majority of insured persons enter into relations with their practitioners in the right spirit.

If as a result of British experience advice were offered elsewhere Sir Henry Brackenbury would lay it down, first of all, that the three unusual features of the British scheme already mentioned should be regarded as fundamental—namely, (1) the right of all doctors to be members of the service, (2) the absence of interference between doctor and patient as such, and (3) the appropriate association of the profession with the administration of the scheme. To these he would add three others, which will not be unfamiliar to readers of the *British Medical Journal*: that medical advice and treatment must be separated as completely as possible from any insurance provision for cash payments; that the scheme from the beginning should make provision not only for a general practitioner service, but also for consultant, specialist, and other ancillary services, and if possible institutional treatment; and that the administration

should be as simple as possible, in topographical areas, and not through a multiplicity of approved societies. In Great Britain, owing to interests already established, it has been recognized that approved societies may need to be represented on whatever local committees administer the scheme. In the Proposals for a General Medical Service for the Nation, issued by the British Medical Association in 1930, an extension of the scheme to dependants is urged, also the inclusion of specialist service and hospital care. Financial stringency has prevented any attempt to establish such provision during the past three years, but the scheme has been very favourably received, and if Sir Henry Brackenbury had written a little later he would no doubt have added that a conference of bodies interested in the subject is projected for the not distant future.

WORK OF THE G.M.C.

The General Medical Council completed the business of its summer session in five days, but only by putting in several hours of "overtime." Its work consisted almost entirely of the consideration of charges against practitioners, but although fourteen medical men came before the Council on charges of varying gravity, only three erasures were made. Of the three, two followed convictions for serious offences, and the third followed upon the proof of professional relationship between the respondent and co-respondent in divorce proceedings. In three cases in which there had been convictions for drunkenness or cognate offences the facts were found proved, but judgement was suspended until a later session. In one of these in which the practitioner had on a previous occasion been before the Council following a similar offence, and had broken the promise he then gave, the Council took the unusual course of postponing judgement for as long as two years, and required the practitioner to report at the end of the first year. Two cases of alleged canvassing were investigated, and one of them dismissed. In the other, certain facts were found proved, and judgement was postponed. These cases are the most tedious which the Council has to try, for they are usually brought by other doctors in the neighbourhood, whose evidence must be closely tested, and the story has to be pieced together from a number of witnesses the value of whose individual testimony may only be slight. A case which aroused comment in the Press concerned a neurological physician of high repute who had given an interview to a responsible Sunday newspaper, stating his view that barbitone compounds were most valuable and satisfactory hypnotics, and that so far as any addiction was concerned this did not develop out of their medical administration but nearly always arose from repeated personal attempts to counteract depression and insomnia. There are many experienced members of the profession who share this opinion and welcome its public ventilation by a well-known teacher. Exception was taken to a laudatory description of the specialist by the journalist. The Council thought the article "unwise," but accepted Dr. Collier's assurance that his motive was not, as alleged in the charge, to promote his own professional advantage. Here the complainant was a layman with a grievance; and if

the Council had declined to consider the case at all we should no doubt have heard it said in some quarters: "The G.M.C. has one law for the poor G.P. and another for Wimpole Street." Another case arose out of a complaint against an insurance practitioner, and was reported to the Council by the Minister of Health, who, however, was not represented at the inquiry. This practitioner, so the allegation ran, had falsely represented to his insurance committee that he had been paid certain sums by four insured patients for special treatment, which he thought, wrongly, to be outside the terms of service, whereas in fact he had received from them larger sums (in one of the cases much larger). The medical services subcommittee had found that the doctor afforded certain services and received fees therefor in addition to those notified by him to the committee, and failed to notify such additional services and fees. He was severely censured by the insurance committee; representations were made for a deduction from his remuneration—actually £15 was deducted—and he was ordered to refund the amounts he had charged, but no recommendation was made for the removal of his name from the list, though the Ministry reported the case to the General Medical Council, to whom the only penalty open is the larger one of erasure from the *Medical Register*. The evidence brought before the Council, however, came down to the evidence of only one of the four patients, who himself was too ill to give very clear testimony. On the other hand, the practitioner was able to bring forward evidence—that of his dispenser—which, through a misunderstanding, was not given at the medical services subcommittee hearing, and which bore out his own statement that these additional payments were not in fact received by him. He had not appealed, believing that the monetary penalty finished the case. The Council found the facts not proved, and the case was dismissed. The Council took the unusual course of reversing the findings of the Dental Board in two cases in which the Board had recommended that dentists should be struck off for alleged contraventions of professional ethics, in one case for circularizing former patients of the practice, and in the other for instituting a clinic for poor persons and inducing local medical practitioners to make the clinic known. It is rare—though it has happened at least once before—for the Council to upset the finding of the Dental Board. The Council, like the court of appeal in criminal cases, does not rehear the evidence, but has to accept the facts as found by the Dental Board.

THE BIRTHDAY HONOURS

The list of medical honours announced on the occasion of His Majesty's sixty-ninth birthday will be found at page 1042. Sir Milsom Rees, who has held the appointment of laryngologist to Their Majesties since the King's accession in 1910, is promoted to be G.C.V.O. Dr. Ambrose Thomas Stanton, who for the past eight years has been chief medical adviser to the Secretary of State for the Colonies, is promoted to be K.C.M.G. Dr. Maurice Alan Cassidy, physician-extraordinary to the King and senior physician to St. Thomas's Hospital, is created K.C.V.O. Dr. Frederick Grant Banting, Nobel prizeman, was appointed in 1923 professor of medical research at the University of Toronto in recogni-

tion of his large part in the discovery of insulin, and now becomes K.B.E. The honour of knight bachelor is to be conferred on five members of the medical profession. Major Robert George Archibald, R.A.M.C. (ret.), has been director of the Wellcome Tropical Research Laboratories at Khartum since 1920. Mr. Comyns Berkeley, consulting obstetric and gynaecological surgeon to the Middlesex Hospital, is vice-chairman of the National Radium Commission, and director of the L.C.C. Radium Centre at Hampstead. Professor Grafton Elliot Smith, F.R.S., famous in the world of anthropology and Egyptology, has for many years held the chair of anatomy at University College in the University of London. Major-General James Drummond Graham lately relinquished the post of public health commissioner with the Government of India, and was for a time officiating Director-General of the Indian Medical Service. Rai Bahadur Upendra Nath Brahmachari is a well-known civilian practitioner in Bengal. Our readers generally will welcome these rewards for distinguished service in varied fields of medical practice, research, and administration, while members of the Metropolitan Counties Branch of the British Medical Association, of which he has been treasurer and president, will note with particular pleasure the honour bestowed on Mr. Comyns Berkeley. In the list of those upon whom a knighthood is to be conferred there appear also the names of two men having close links with medicine: Captain Ian Fraser, M.P., chairman of St. Dunstan's, whose services on behalf of the blind are appreciated far and wide; and Mr. Samuel Brighouse, for many years coroner for South-West Lancashire, and still active at the age of 84. Miss Lloyd Still, matron of St. Thomas's Hospital, receives the honour of D.B.E. during her presidency of the International Council of Nurses.

TREATMENT OF SPRAIN

Just four years ago Leriche drew attention to the rich sensory innervation of the articular ligaments, and later he came to the conclusion that irritation of these nerve endings is an important factor in the disability that so often follows the common sprain. In his opinion the actual lesion in this condition is not a gross rupture of the ligaments or capsule, but rather a molecular disturbance of the white fibrous tissue. This led to vasomotor disturbances, oedema, and irritation of the sensory nerve endings. These findings led Leriche and Fontaine to try the effect of intraligamentous injections of novocain in cases of sprain, and they found that pain and limitation of movement, in fact all disability, disappeared immediately after the first injection, though in some cases in which symptoms recurred it was found necessary to repeat the injections on the second and third days. Two recent communications from other observers contain reports of cases similarly treated and with equally favourable results.¹ Although it may be true that macroscopic lesions—tearing of fibrous tissue and extravasation of blood—are absent in some very mild joint injuries, it must be borne in mind that "sprain" is a clinical term that covers almost all the minor injuries of joints short of gross ligamentous rupture, subluxation, dislocation, and fracture. The

whole group of injuries forms a continuous crescendo rather than a series of disconnected conditions. From the practical point of view, therefore, Leriche's conception of sprain is of doubtful value, seeing that there is no way of distinguishing clinically between his mild cases of "molecular" sprain and those common injuries in which partial rupture of ligaments and haemorrhage undoubtedly take place. Localized tenderness and swelling are present in both. Practitioners in this country have been brought up to believe that rest to the damaged part, followed by graduated exercise, is as necessary in the treatment of sprain as in any other type of injury, and there is no doubt that the Hiltonian treatment properly applied is very effective in most cases. Apparently, however, Leriche and his followers prefer the intraligamentous injection of novocain. The injection must certainly relieve the pain; yet it is difficult to suppose that it has any beneficial action on the injured ligament. Nevertheless, the results reported are most striking, particularly in cases of trauma to the shoulder, where rest followed by graduated exercise too often fails to alleviate the pain and stiffness that are such a troublesome feature in this particular injury. Though the rationale of Leriche's method of treatment may be obscure, it merits wide clinical trial. It is simple and apparently effective.

SUDDEN DEATHS OF SWIMMERS

There are few deaths so mysteriously tragic as that of the apparently robust and practised swimmer who suddenly sinks like a stone. Dr. A. Ravina and Dr. Simone Lyon¹ have lately tried to disentangle the conflicting theories advanced from time to time to explain this manner of death, and they devote particular attention to the work of Dr. Verhoogen.² His explanation assumes the existence of anaphylactic sensitiveness to thermal impressions. It may be congenital and hereditary, but generally it is acquired. The anaphylactic shock caused by cold water induces rapid vasomotor paralysis and general muscular impotence. Verhoogen records the case of a man who nearly died while bathing in a mountain lake, and who for several years had been subject to attacks of urticaria, shivering, and general debility when his skin came into contact with cold water. In Verhoogen's opinion this condition is by no means rare, and he recognizes it in those cases of pruritus and urticaria for which bathers commonly give jelly-fish the blame. According to another school, associated with the name of de Gurbert, the sudden collapse of the swimmer is due to an upset of his digestive mechanism, and occurs during the first two or three hours after a meal, when the food is still so inadequately digested that, under the influence of cold, it acts as a foreign protein whose sudden absorption by the circulation has disastrous effects—anaphylactic shock, of a kind. On this view, the risk of sudden death is less immediately after a meal, when the food is still insufficiently digested to be absorbed too quickly. According to a third theory, that of Frommel, most of these sudden deaths are the result of the sudden action of cold water on the nasal mucosa. The nasal branch of the trigeminal nerve is supposed to be responsible for a triple reflex provoking respiratory

¹ Arnulf, G., and Frieb, Ph.: *Presse Méd.*, April 14th, 1934, p. 597; Courbois, Mandillon, and Gerget: *Gaz. Hebdom. des Sci. Méd. de Bordeaux*, February 25th, 1934, p. 122.

² *La Presse Médicale*, December 6th, 1933.

³ *British Medical Journal*, November 18th, 1933, *Epitome*, para. 347.

inhibition with transitory arrest of the movements of the lungs, cardiac inhibition with bradycardia, and a rise of the systolic with a fall of the diastolic blood pressure. The trigeminal may also be held responsible for those cases in which a "header" from a good height brings one ear in painful contact with the water, or the swimmer goes to such a depth that pressure on the tympanum becomes great. The theory attaching special importance to disturbances of the semicircular canals may explain the inability to co-ordinate his movements from which the bather suddenly suffers, but not his complete collapse. Dr. Ravina and Dr. Lyon find that Verhoogen's theory has the merit of offering prophylactic and therapeutic remedies. If it should prove correct, and if all bathers were medically examined, the potential victims of these drowning accidents could be detected and advised not to venture into cold water. For a lump of ice or a compress soaked in ether applied to the forearm for a couple of minutes would, it is suggested, raise a papular rash in a quarter of an hour, betraying this form of idiosyncrasy.

THE "ACH" INDEX OF NUTRITION

The search for some method of picking out undernourished children from big groups by a simple test or tests continues, and the latest index to be suggested has the backing of the American Child Health Association. In a new pamphlet¹ by Drs. Raymond Franzen and George T. Palmer, and in an article² by the former author, the details and value of the "ACH index" are set out and discussed. The letters stand for "arm," "chest," and "hip," and the aim of the index is the aim of other indices—namely, to identify children with small amounts of musculature and subcutaneous fat in relation to body build. It is well known that ordinary weight-for-height-and-age tables are liable to miss children with big frames and to include well-covered children with light frames. The starting-point of the new index was an investigation of over ten thousand children of varying social and economic status, scattered over seventy-five cities in the United States of America. A medical examination was combined with a complete set of measurements—shoulder breadth, hip width, chest width and depth, height, weight, arm and calf girth, size of deltoid, and thickness of the subcutaneous tissue over different areas of the arms and legs. A very thorough analysis was made of this material, and all sorts of combinations of measurements were tried. Some were found to yield no additional information to that given by other measurements, and they were discarded. Finally, the matter was narrowed down to a measurement of arm girth, chest depth, and hip width. Two instruments are needed—a steel tape and wooden callipers. The children are instructed to remove heavy clothing and empty their pockets. The upper arm is bared and only thin layers of clothing cover the chest. The girth of the upper arm is measured, first, with the arm flexed, at the highest point of the biceps, and, secondly, with the arm relaxed. The sum of the two measurements is called the "arm girth." Next the chest-depth is measured with callipers placed just below the angle

of the left scapula, and, with the base of the callipers at right angles to the long axis of the chest, the other arm touches in front just above the nipple line. The measurements are taken at the end of inspiration and at the end of expiration with ordinary quiet breathing. The sum of these two readings is recorded as "chest depth." The "hip width" is next measured, and represents the distance between the most lateral parts of the great trochanters. The calculations now necessary consist in subtracting the sum of the two chest depth readings from the sum of the two arm girth readings. This is then compared in a table with the minimum difference allowed for each hip width. If the child is undernourished the difference will be less than that allowed in the tables. Tables for use with boys and girls between 7 and 12 years of age have been prepared. A higher rating can be used to pick out a larger number of cases for more detailed examination, but for general purposes the method and tables here described are recommended. A very thorough test of the "ACH index" was made for a group of 500 children aged 11 years, half boys and half girls. Out of this group, with the most extensive criteria available, forty-three children were selected as undernourished. Of these the "ACH index" picked out forty-one, as compared with sixteen by the ordinary weight-for-height method and twenty-seven with weight-for-height-and-width-of-hips. Rating by a medical examiner appears only to have detected five out of nineteen boys in the test, the rating for girls not being available. It is claimed that the method is very economical in time.

PRESCRIPTION OF THYROID: DANGER OF OVERDOSAGE

In a recent letter the Wholesale Drug Trade Association calls attention to an increased demand for 5-grain tablets of thyroid extract. Several firms, especially in the North of England, are now manufacturing twenty times as many of these 5-grain tablets of tab. thyroideum B.P. as they did before. It is thought that many practitioners are in the habit of inadvertently prescribing tab. thyroid. B.P. when they mean to order the considerably less potent *fresh* gland tablets. In support of this contention it is pointed out that several complaints have been received from doctors and chemists of untoward effects following the use of 5-grain thyroid tablets, and that on inquiry it has been found that the doctor had actually intended *fresh* gland to be used. The dose of the 1932 B.P. preparation "thyroideum" (synonyms: "thyroideum siccum," "dry thyroid," "thyroid extract," "thyroid gland") is given as 1/2 to 5 grains, and it should be realized that this preparation is five times as strong as the *fresh* gland preparation. The table of corresponding doses is given below:

Tab. Thyroid. Gland (Fresh).	Thyroid. Sicc. (B.P.)
1 1/2 grain	1/10 grain
1 "	1/5 "
2 grains	2/5 "
3 "	3/5 "
5 "	1 "

It seems opportune here to emphasize that when "thyroid tablets" are ordered *fresh* gland cannot legally be supplied. Consequently, unless *fresh* gland extract is specifically asked for there is a danger, almost a certainty, of the stronger extract being pro-

¹ The ACH Index of Nutritional Status. American Child Health Association, 450, Seventh Avenue, New York City. (10 cents.)

² Amer. Journ. Dis. Child., April, 1934, p. 789.

vided. In this connexion it is of interest to note that Martindale's *Extra Pharmacopoeia*, 1932 edition, states, under the heading of Standardized Thyroid Tablets: "We discard the old fresh substance basis for thyroid tablets as being unscientific and misleading. H. W. Paines repeats our advice . . . to prescribe [the drug] as *thyroideum siccum*."

JOHN KEATS'S ANATOMICAL AND PHYSIOLOGICAL NOTEBOOK

Every medical lover of Keats's poetry knows that he was a dresser at Guy's Hospital, that he qualified at the Apothecaries' Hall on July 25th, 1816, and that he actually practised for a short time. The little notebook in which he jotted down the substance of some of the lectures he heard as a student had long been known and, thanks to Sir William Hale-White, it was reproduced photographically.¹ Mr. M. N. Forman has done well to print the notes, even though in an edition of only 350 copies. He would have done still better could he have issued the whole book in facsimile, for the single page he reproduces makes one hunger for more. The notes in themselves are of small interest, for they only represent the anatomical and physiological teaching of the early nineteenth century. The value of the notebook lies in the delight it gives of seeing the script of one who wrote: "The other day during the lecture there came a sunbeam into the room and with it a whole troupe of creatures floating in the ray, and I was off with them to Oberon and fairyland." "My last operation," he once wrote to Charles A. Brown, "was the opening of a man's temporal artery. I did it with the utmost nicety but, reflecting on what passed through my mind at the time, it seemed a miracle, and I never took up the lancet again." Mr. Forman introduces the book with a short preface and a list of the persons to whom Keats refers. The "Mr. Grosvenor of Oxford" was John Grosvenor (1770-1817), a pioneer in massage, a founder of the Radcliffe Infirmary, where he was one of the earliest surgeons, and the proprietor and editor of *Jackson's Oxford Journal*. Dr. Gibson gives an excellent account of him in his *History of the Radcliffe Infirmary*.

THE JOURNAL OF THE A.P.I.M.

The May number of *Revue Internationale de l'Association Professionnelle Internationale des Médecins* contains matter of great interest and importance, including the questionnaires and answers on "the different legislations as regards accident insurance" and on "the legal and professional position of opticians." Full information on these subjects has been received from seventeen European countries. - In a preliminary "Causerie professionnelle" the general secretary of the A.P.I.M., Dr. Fernand Decourt, takes up the question of "Abuse in sickness insurance," and, after dealing with the various allegations made as to the responsibility of the medical profession in this matter, which are "common form" in every country, he expresses the opinion that there are two reforms which, if adopted, might greatly lessen the claims for insured persons upon the funds of their societies. The first is that steps should be taken to give the insured

person a prospect of some pecuniary individual share in the financial benefit which would result from suppression of abuse. He is of opinion that if the insured person thought that he would have an individual claim on economies made, he would become a jealous defender of the prosperity of his society. Dr. Decourt quotes as evidence of this good result the existence of certain societies already making use of this method, which seems not unlike that adopted in this country by the Hearts of Oak Benefit Society. The second reform suggested by Dr. Decourt is that the insured person should participate in the expenses of the drugs and dressings supplied to him. This has already been done in one or two countries with considerable advantage, and those who are interested in this subject would do well to read what Dr. Decourt has to say about it. In addition, there are letters from the correspondents in Austria, Holland, and Poland, containing much interesting information as to the professional position in these countries.

SUMMARIES

Sir Clifford Allbutt, in his *Notes on the Composition of Scientific Papers*, gave the following advice: "On the completion of a long thesis or important scientific essay it is well to draw up a syllabus of the argument and to place it at the beginning; in any case let the conclusions be resumed succinctly at the end; it is not for the author to compel the reader to peruse his essay." Developing this point on rather more technical lines, Drs. George H. Simmons and Morris Fishbein wrote in their *Art and Practice of Medical Writing*: "The summary—a brief abstract of the article—may appear at the beginning or at the close. Not every article should be summarized. Those of more than average length (more than 1,500 words), those which involve much description of detail and technic, and those which aim at a complete survey of literature on the particular subject demand a summary. A brief digest of a long article in the introductory paragraph often will stimulate some to read the article who otherwise would not." Our object in making these quotations, as might be supposed, is to remind medical authors once again that every MS. except the shortest should be regarded as incomplete without a concise summary. Having quoted so much we may end with another extract. In her little book, *The Writing of Medical Papers*, Mrs. Maud Mellish-Wilson (whose death a few months ago is deplored far beyond the Mayo Clinic) advised contributors to scientific journals to wind up their articles with "a brief review of the work done and of the conclusions which may properly be drawn therefrom. The writer should have in mind that this portion of the paper is usually not only the first portion read, but that it may be the only portion read. Further, if properly made, the summary and conclusions may serve as a most desirable form of abstract to be published by other journals."

On the evening of Friday, June 29th, at the London School of Hygiene and Tropical Medicine (incorporating the Ross Institute), the Earl of Athlone, Chancellor of the University of London, will perform a ceremony in honour of the memories of Patrick Manson and Ronald Ross.

¹ Printed from the Holograph in the Keats Museum, Hampstead. Edited by Morris Nuxton Forman. London: H. Milford, Oxford University Press. (12s. 6d. net.)

JUNE 9, 1934]

STANLEY G. WILLIMOTT AND MINNIE GOSDEN: POISONING BY CAUSTIC SODA

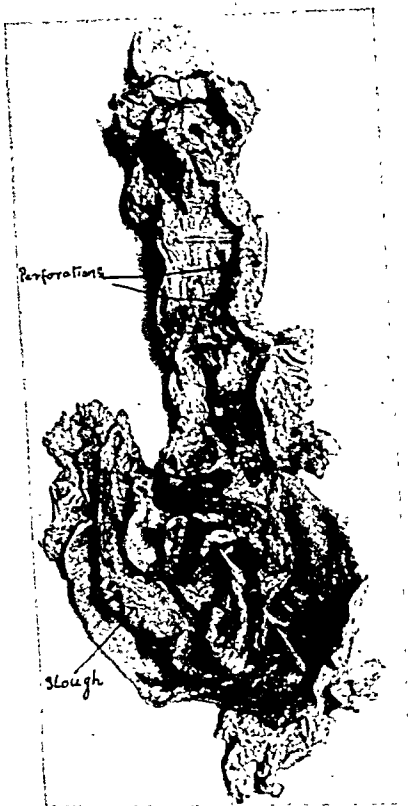


FIG. 1.—Oesophagus and stomach.



FIG. 2.—Section of cardiac end of stomach.



FIG. 3.—Section of kidney.



FIG. 4.—Section of liver.

W. PAGEL: ONSET OF PULMONARY TUBERCULOSIS—IMPORTANCE OF LOCAL FACTORS

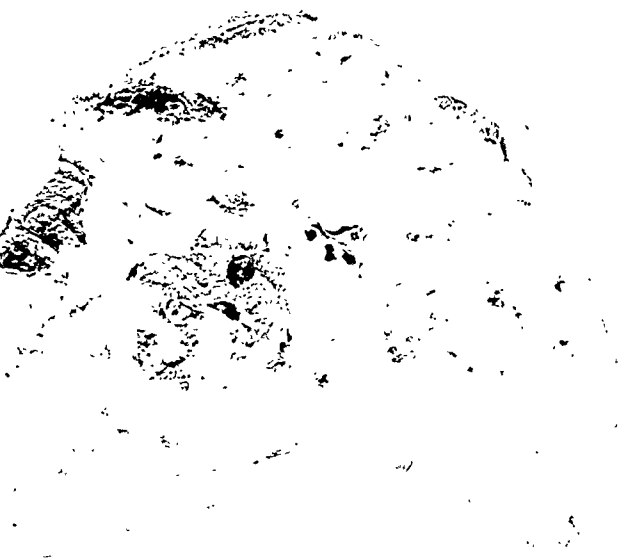


FIG. 1.—Right lung. Upper lobe: with emphysema and extension of miliary tubercles. Lower lobe: large carcinoma metastasis surrounded by recently liquefied tuberculous round foci. Thickening of pleura over right lower lobe.



FIG. 2.—Miliary tuberculosis. Right lung crowded with miliary tubercles. Left lung collapsed by recent and old pleurisy. Very few tubercles.

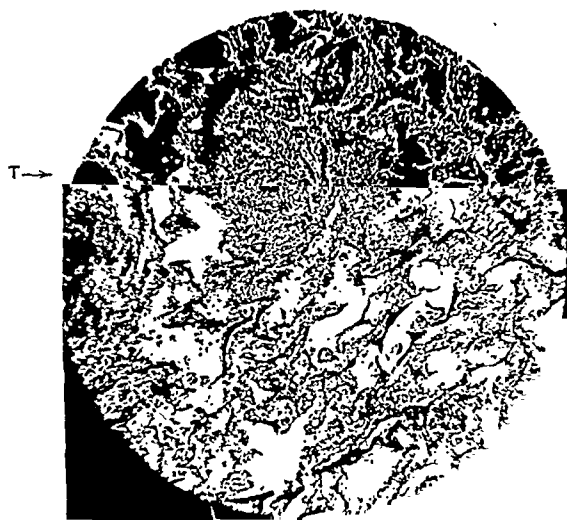


FIG. 3.—Miliary tuberculosis. Left lung: atelectatic lung tissue (A). Only one tubercle (T), without caseation and tubercle bacilli, consisting only of epithelioid, and giant cells.

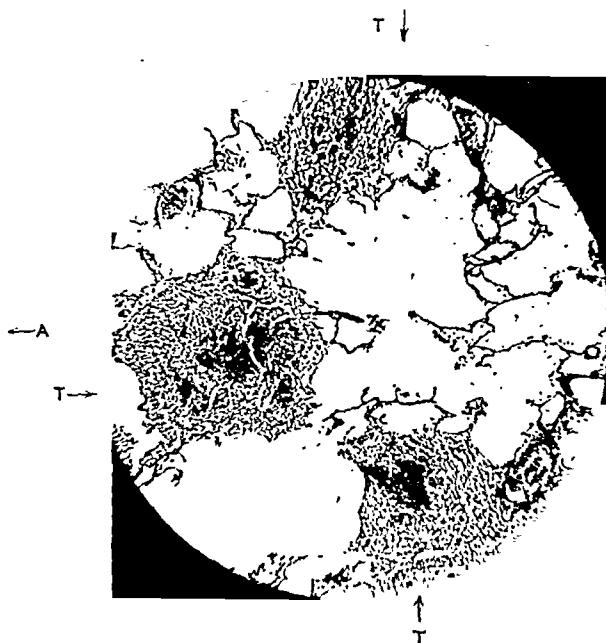


FIG. 4.—Miliary tuberculosis. Right lung: emphysematous lung tissue (E). Numerous tubercles (T) with caseation and many tubercle bacilli.

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F. HECTOR SCOTSON: MALIGNANT TUMOURS OF KIDNEY AND TESTIS



FIG. 1.—Hypernephroma: specimen after removal.



FIG. 2.—Section showing typical appearance of hypernephroma.



FIG. 3.—Seminoma. Testis divided longitudinally.

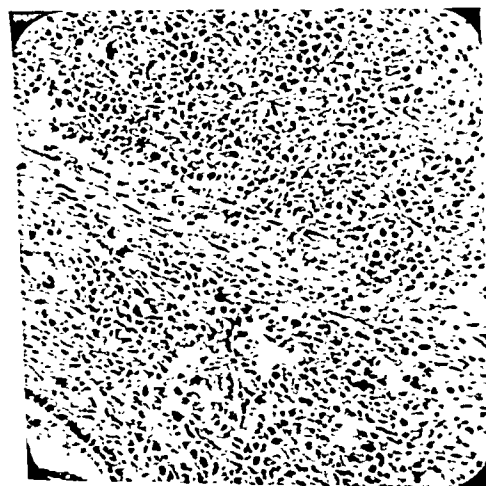


FIG. 4.—Section of seminoma.

WILLIAM EVERETT: GIANT RENAL CALCULUS



Bilateral calculous pyonephrosis, with giant calculus in right kidney.

JOHN F. HACKWOOD: COMPLETE CONGENITAL
DIAPHRAGMATIC HERNIA IN AN ADULT—OPERATION

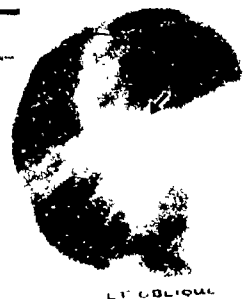


Showing coils of small intestine in upper half of left chest.

J. V. SPARKS AND C. N. EVANS: VISUALIZATION OF CARDIAC VALVES BY X RAYS



RT OBLIQUE
FIG. 1.—Right oblique view.



LT OBLIQUE
FIG. 2.—Left oblique view

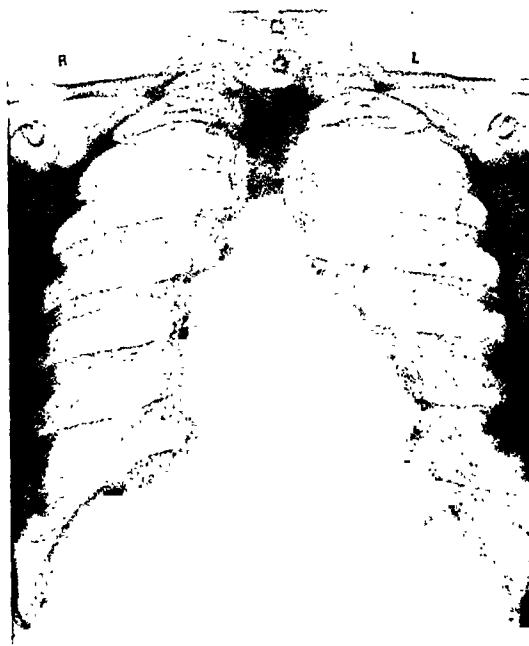


FIG. 3.—Anterior view.

In each illustration the arrow indicates calcification on aortic valves.

MEDICAL VISIT TO RUSSIA

MOSCOW CONGRESS ON RHEUMATISM

[FROM A CORRESPONDENT]

The Fourth International Congress on Rheumatism was held in Moscow, from May 3rd to 7th, and was attended by the delegates of no fewer than twenty-six nations. After the closure of the official Congress a party travelled to South Russia to inspect the medical arrangements of this part of the country and to view the spas and health resorts of the Caucasus and Black Sea regions. Another party, with less leisure, went to Leningrad, where they spent three days, returning home from there by boat.

SCIENTIFIC SESSIONS

The official opening was performed by the People's Commissioner for Health in the presence of over 2,000 persons, and the scientific sessions commenced with papers on the subject of rheumatism and the heart from the President of the Congress, Professor Konchalovsky, Dr. P. M. Weil (Paris), Dr. Coburn (New York), Professor Singer (Vienna), Dr. Bradley (England), Dr. Schlesinger (London), Professor Holsti (Helsingfors), Professor Kissel (Moscow), and others. An excellent pathological and therapeutic museum was then inspected in the "Hall of Savants," where the remaining sessions took place. During the afternoons sight-seeing tours were arranged for the delegates, who were able thus to visit the Kremlin, the tomb of Lenin, St. Basil's Cathedral, and other orthodox "sights." In addition, tours were made each day to the various fine physiotherapeutic clinics of Moscow, the children's hospitals, abortion clinics, big factories—each of which has a clinic and beds attached—and the Central State Institute of Hydrology and Climatology (Professor Danichevsky). On the following days the discussions centred round the subjects of the balneological treatment of chronic rheumatism and arthritis in miners, and transport and metal workers. Papers on these subjects were presented, among others, by Professors Plate (Hamburg), Connut (Prague), Vlastos (Athens), Dalmady (Budapest), and Pisani (Italy), and Doctors Fischer (Paris), Kahlmeter (Sweden), Fortescue Fox (London), Danichevsky (Moscow), Schmidt (Pistany), Copeman (London), and Buchstab (Odessa). On the first evening a banquet was arranged at the Hotel National for the delegates, whilst on the second night a special performance was given at the State Opera House. On the third evening, certain of the delegates had the unusual distinction of being entertained by Kalinin, the President of the U.S.S.R., to dinner in the Kremlin.

THE TRAVELLERS' LOG

The party who travelled southwards left Moscow on May 8th, and arrived at Kharkov, an industrial centre, halfway between Moscow and the Black Sea, in time for a late breakfast on the next day. Here, as elsewhere, they were met by a delegation from the State Public Health Ministry and from the local medical societies. They were shown round all that was most interesting from both the medical and lay sides, were entertained sumptuously, and then sent on their way to their next "port of call"—a large "collective" farm in the North Caucasus region. The distance traversed necessitated continuous night travel through the three weeks' duration of the tour, and proved somewhat fatiguing. It was, however, of the greatest interest to study the practical application of communism to medicine in a country of 170 million inhabitants. The result cannot, the English party thought, be yet judged either as a complete success or as a failure. It was felt, however, that, although a great deal remained to be done, much, nevertheless, had already been accomplished, particularly in view of the previous extreme backwardness of Russia in this sphere. A spirit of enthusiasm seemed to imbue the majority of the medical men with whom we talked, despite the very low standard of comfort enjoyed by these men in comparison with the standards of the West.

The further centres visited included Sotchi, Gagra, and Sukhum, beauty spots on the Black Sea; two days on the Black Sea itself en route for Yalta and Sebastopol, in the Crimea; Odessa, where some of the party took the famous "Liman" mud baths; and, lastly, Kiev, the capital of the Ukraine, where a final banquet and performance at the Opera were provided after a day of energetic sight-seeing in almost tropical heat.

JOINT COUNCIL OF MIDWIFERY

The Joint Committee on Midwifery held its second meeting on May 30th, with the Earl of Athlone in the chair, and received the reports of the Training and Distribution and the Administrative Subcommittees appointed last January. Among those present were:

Sir Francis Fremantle, M.P., and Miss Migan Lloyd George, M.P.; Dr. J. S. Fairbairn and Mr. L. C. Rivett, representing the British College of Obstetricians and Gynaecologists; Mrs. Stanley Baldwin and Lady Williams, representing the National Birthday Trust Fund; Miss Pye, Miss Burnside, and Miss Carter, representing the Midwives' Institute; Sir William Hale-White and Miss Wilmshurst, representing the Queen's Institute of District Nursing; Miss Doubleday, representing the College of Nursing; Dr. W. H. F. Oxley, representing the British Medical Association; Miss Wooldridge and Miss Coleman, representing the Association of Inspectors of Midwives; Major Elton Longmore, and Dr. Newnham.

RESOLUTIONS ADOPTED

The report of the first subcommittee, under the chairmanship of Dr. Fairbairn, contained six resolutions (five of which dealt with technical matters), which will be referred back to the constituent bodies for their approval or amendment. The sixth, which was unanimously approved by the committee, was as follows:

"This committee is of opinion that a detailed scheme should be prepared for the enlistment of midwives throughout the country in an organized service, suited to the needs of each district, and having due regard to the retention of the mother's freedom of choice of attendant."

It was resolved that this resolution should constitute the terms of reference for the future work of the committee, together with the fourth and last resolution submitted by the Administrative Committee. The Administrative Subcommittee, under the chairmanship of Sir Francis Fremantle, had been examining the problem of the payment of the midwife's fee in necessitous cases, and submitted the following resolutions, which were passed unanimously, and will be referred back to the constituent bodies:

"That it be made compulsory upon local authorities under the Midwives Acts or the Maternity and Child Welfare Acts (1) To pay the midwives' fees in necessitous cases. (2) That the term 'necessitous' should be interpreted to mean that in computing all resources the whole of the maternity benefit, exclusive of any increase in such benefit by way of additional benefits and of any second maternity benefit, shall be disregarded. (3) That the manner of claiming her fee by the midwife shall be clearly defined and shall not necessarily entail application to and approval by the local authority before the birth."

"That in every case where for her safety the mother is removed to hospital the local authority should be required to make a payment to the midwife on an approved scale for such pre-hospital treatment as she may have carried out."

"That where the local authority have paid such fees they shall have power to recover unless it be shown to their satisfaction that by reason of poverty the patient is unable to pay such fee."

"The committee is of opinion that further consideration of the whole question of the remuneration of midwives as bearing on the efficiency of the midwifery service is urgently required."

The name of the committee was changed from "The Joint Committee on Midwifery" to "The Joint Council of Midwifery."

THE BIRTHDAY HONOURS

The Honours List, issued on the occasion of His Majesty's birthday, includes the names of the following members of the medical profession:

G.C.V.O.

Sir MILSOM REES, K.C.V.O., D.Sc., F.R.C.S.Ed., Laryngologist to Their Majesties the King and Queen.

K.C.M.G.

AMBROSE THOMAS STANTON, C.M.G., M.D., F.R.C.P., Chief Medical Adviser to the Secretary of State for the Colonies.

K.C.V.O.

MAURICE ALAN CASSIDY, C.B., M.D., F.R.C.P., Physician Extraordinary to the King.

K.B.E. (Civil Division)

FREDERICK GRANT BANTING, LL.D., M.D., D.Sc., of the Dominion of Canada, discoverer of insulin.

Knighthood

Major ROBERT GEORGE ARCHIBALD, C.M.G., D.S.O., M.D., R.A.M.C. (ret.), Director, Wellcome Tropical Research Laboratories, Sudan.

COMYNS BERKELEY, M.A., M.D., M.Chir., F.R.C.P., F.R.C.S., F.C.O.G., M.M.S.A., Consulting Obstetric Surgeon, *Middlesex Hospital, Director of the L.C.C. Radium Centre.*
GRAITON ELLIOT SMITH, M.D., Litt.D., D.Sc., F.R.S., F.R.C.P., Professor of Anatomy in the University of London (University College).

Major-General JAMES DRUMMOND GRAHAM, C.B., C.I.E., K.H.S., I.M.S. (ret.), late Public Health Commissioner with the Government of India.

Rai Bahadur UPENDRA NATH BRAHMACHARI, Medical Practitioner, Bengal.

C.B. (Military Division)

Major-General PATRICK HAGART HENDERSON, D.S.O., M.B. (late R.A.M.C.), Honorary Physician to the King, Director of Hygiene, the War Office.

Major-General ERNEST ALEXANDER WALKER, M.B., F.R.C.S. Ed., I.M.S., Honorary Surgeon to the King, Director of Medical Services, India.

C.B. (Civil Division)

Surgeon Rear-Admiral PERCIVAL THOMAS NICHOLLS, M.R.C.S., L.R.C.P.

C.I.E.

Lieut.-Colonel JOHN ALFRED STEELE PHILLIPS, I.M.S., Director of Public Health, Bihar and Orissa.

Lieut.-Colonel HAROLD HOLMES KING, I.M.S., Director, King Institute, Guindy, Madras.

C.V.O.

LOUIS FRANCIS ROEBUCK KNUTHSEN, O.B.E., M.D.

C.B.E. (Military Division)

Group-Captain EDWARD CECIL CLEMENTS, O.B.E., M.R.C.S., L.R.C.P., R.A.F.

C.B.E. (Civil Division)

JOHN CROSTHWAITE BRIDGE, F.R.C.S.Ed., M.R.C.P.Ed., D.P.H., Senior Medical Inspector of Factories, Home Office.

WILLIAM HENRY PEACOCK, M.B., B.Sc., Deputy-Director of Health Services, Nigeria.

O.B.E. (Military Division)

Colonel WALTER LISTER, T.D., M.R.C.S., L.R.C.P., late Assistant Director of Medical Services, 49th (West Riding) Division, Territorial Army.

O.B.E. (Civil Division)

HARRY EDWARD HEWITT, M.D., B.S., D.P.H., Second Medical Officer, General Post Office.

Miss KATHERINE STEWART MACPHAIL, M.B., Ch.B.Glas., Member of the British Community in Belgrade.

Khan Bahadur KHWAJA ABDUL RAHMAN, M.B., Ch.B.Ed., D.P.H., Director of Public Health, Punjab.

GEORGE MACLEAN, M.B.E., M.B., Ch.B., Sleeping Sickness Officer, Tanganyika Territory.

I.S.O. (Companion)

Rai Sahib LALA RAM SAHAI, Sub-Assistant Surgeon, Residency Hospital, Indore, Central India.

M.B.E. (Military Division)

Flight Lieutenant FRANCIS WILFRID PETER DIXON, M.B., B.S., R.A.F.

M.B.E. (Civil Division)

JOSEPH ANTOINE HERMANN ANDRÉ, M.R.C.S., L.R.C.P., Superintendent, Leper Asylum, Mauritius.

ANDREW BUCHANAN MACDONALD, M.B., Ch.B., for devoted work in the treatment of lepers in Nigeria.

JOSEPH LENNOX DONATION PAWAN, M.B., Ch.B., Government Bacteriologist, Trinidad.

Major FRANK HERMANN OTTO, Indian Medical Department, Assistant Surgeon on the Port Health Staff, Bombay.

GEOFFREY OSMUND SCHMIDT, Indian Medical Department, Assistant Surgeon, British Consulate, Kashgar.

SOWANI PUAMAU, First Native Medical Practitioner, Gilbert and Ellice Islands Colony, Western Pacific.

Hon. M.B.E. (Civil Division)

YUSUF HAJJAR, M.D., Medical Officer in charge of the Government Hospital at Jerusalem, Palestine.

Kaisari-i-Hind Medal (First Class)

Miss DORIS LOUISA GRAHAM, M.D., B.Ch., Medical Missionary, Krishnagar, Bengal.

Miss MILLCENT VERE WEBB, L.R.C.P. and S.Ed., L.R.F.P.S., F.C.O.G., Chief Medical Officer, Women's Medical Service, and Secretary of the Funds under the Presidency of Her Excellency the Countess of Willingdon.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY

The annual general meeting of the London and Counties Medical Protection Society was held at Victory House, Leicester Square, on May 30th, with Sir JOHN ROSE BRADFORD in the chair.

The chairman, in presenting the annual report, said that there was no very outstanding feature to which he had to call attention. There had been a notable increase of work during the past year, not only in the number of applications for advice received, but in the number of cases which had had to be seriously considered by the society. Fortunately, settlements had been arrived at in the large majority of instances and litigation avoided. He had again to lay stress on the importance of membership of a defence society; the fact still remained that something like one-third of the practising members of the profession appeared content to remain without this protection. He referred regretfully to losses sustained during the year, in particular by the deaths of Dr. E. Collier Green and Sir George Makins, vice-presidents of the society for twenty-three and seventeen years.

The report was adopted, and Sir John Rose Bradford was unanimously re-elected to the presidency. The vice-presidents were also re-elected, with the addition of Sir William Hale-White and Sir Cuthbert Wallace, as were the retiring members of council, the secretary (Dr. C. M. Fegen), and the treasurer (Dr. R. L. Guthrie). In speaking to one of these resolutions Dr. C. O. HAWTHORNE said that it was really astonishing when one read the annual report how any member of the profession could comfortably sleep at night unless he had the protection of a defence society. The British Medical Association never lost an opportunity of urging newly qualified practitioners to join a defence society as one of their first acts after registration. The report showed also that it was advisable even for those of riper years to maintain their association with such a body, because new points of attack continually appeared to which no one's attention had ever been drawn before. The meeting concluded with votes of thanks to the officers, legal advisers, and staff.

THE SOLICITORS' REPORT

The solicitors' report, which was embodied in the general report of the society, urged that the present relation of insurance practitioners to the Ministry of Health in the matter of prescribing appeared to need revision. The insurance practitioner was between the devil and the deep sea. If he failed to prescribe adequately he was liable to be brought before the medical service subcommittee on a charge of having failed to render all necessary and proper services; if he prescribed what in his opinion were the best drugs, his average might be above the average for the area. One piece of legs

lation during the year would be of great value to the medical profession in High Court proceedings. Prior to the passing of the Administration of Justice (Miscellaneous Provisions) Act, 1933, every litigant had the right to ask that his action should be tried by a jury, but that right, save in certain specified cases, had now been taken away. In the past patients instituting proceedings against medical men had, for obvious reasons, asked for a jury, and there were no grounds for opposing the trial of a jury action. It had sometimes been found that, despite the evidence, a jury had returned a verdict for the patient, evidently moved by motives of sympathy, and once it was found by a jury that a doctor had been guilty of negligence the verdict was practically impossible to upset. By the passing of the Act a number of these difficulties would be removed. The solicitors further mentioned that the wider use of psychological treatment increased the risk of attack by patients, particularly women, upon practitioners in this field. There were a large number of cases in which women patients had made the most extraordinary accusations against the doctor treating them. It was a risk inherent in this type of treatment: the need for safeguard through membership of a defence society was again emphasized.

SHENLEY MENTAL HOSPITAL

OPENING BY THE KING

The Middlesex County Mental Hospital at Shenley, in Hertfordshire, was opened by the King, who was accompanied by the Queen, on May 31st. A description of the new hospital, which is situated in grounds of about 500 acres, appeared in these columns of February 10th (p. 257).

Their Majesties, on arrival, were received in a marquee by Viscount Hampden, Lieutenant for Hertfordshire, who presented Mr. Howard S. Burton, chairman of the Middlesex County Council, Sir William Lobjoit, chairman of the Hospital Visiting Committee, and Mr. L. G. Brock, chairman of the Board of Control. A move was then made to the recreation hall, a large building constructed for stage and cinema performances, with seating accommodation for 1,000, where Sir William Lobjoit read an address of welcome. He said that this institution was the first public mental hospital to be designed and opened since the war. The cost of its erection was over half a million. The present buildings accommodated 1,046 patients—the ultimate accommodation would be 2,000—and the detached villa plan had been adopted so as to facilitate the classification and treatment of patients in comparatively small groups on the most modern scientific principles. The reception hospital, which was fully equipped for intensive medical investigation, and the adjacent convalescent units were specially designed for the treatment of early mental illness. In this connexion the provisions of the Mental Treatment Act, 1930, had been borne in mind, particularly the enlargement of the opportunities for voluntary treatment. Every facility was available for the occupation and recreation of patients, both in the recreation hall and in the ample grounds.

The King, after expressing the pleasure of the Queen and himself at the opening of the hospital, and their interest in the mental health service, continued: "In recent years important advances have been made in the ideas governing the treatment of mental illness, and the Act to which you have referred has enlarged the opportunities for applying these new methods. It is necessary that such progress should be reflected in the provision which local authorities make for the mentally afflicted under their care. I note with satisfaction that, in designing this mental hospital, you have paid special regard to the treatment of early mental illness by the provision of the reception hospital, which I look forward to seeing to-day. I am glad that you have provided a nurses' home. Such provision not only contributes to the contentment and well-being of the nurses, but has a profound influence upon the recruitment of this important branch of the hospital staff. I congratulate the Middlesex County Council, the Visiting Committee, and the Board of Control upon the manner in which this important enterprise has been conceived and carried out."

After the King had declared the hospital open dedicatory prayers were said by the Bishop of St. Albans, and the members of the committee, the medical superintendent (Dr. G. W. Shore), the matron, and other officers were presented. The King and Queen then inspected certain parts of the hospital, including the kitchen, the reception hospital, and the nurses' home, signed the visitors' book, and took their departure, after which there was a general inspection by the guests. The hospital has its own water supply, sewage treatment works, lighting plant, and various other services, for the distribution of which three and a half miles of underground subway has been constructed. It is fully equipped with operating theatre, dental and other clinics, x-ray and special treatment rooms, dispensaries, and laboratories. Residences have been provided for the medical superintendent and deputy medical superintendent, and houses for assistant medical officers, senior officials, and a staff village form part of the ultimate scheme.

Scotland

New Chairman of Scottish C.M.B.

At a meeting of the Central Midwives Board for Scotland, held on May 31st, Dr. Robert Cochrane Buist, consulting gynaecologist to the Dundee Royal Infirmary, was appointed chairman of the Board in succession to the late Dr. James Haig Ferguson. Dr. Buist is a graduate of Cambridge, St. Andrews, and Edinburgh Universities, and in 1932 received the honorary degree of LL.D. from St. Andrews. He is a vice-president of the British Medical Association, and was at one time a prominent member of Council, deputy chairman of the Representative Body, and chairman of the Journal Committee. He has been an active member of the Scottish Committee of the Association, and served for some years as its honorary secretary.

Edinburgh Royal Infirmary

The last annual report by the managers of the Royal Infirmary of Edinburgh recalls that from early times this institution has profited very greatly from the large sums bequeathed by means of legacies. An indication of the deep hold of the Infirmary on the affections of Scottish people at home and abroad is afforded by the announcement that during the year under review bequests were intimated from South Africa, the United States, Canada, India, and Greece, while the occupations of the testators included those of a gamekeeper, a farm labourer, a quarryman, a domestic servant, and a nurse. The amount received for general purposes and endowment was £56,247. In addition, a legacy of £4,500 was received for cancer research, and is being applied primarily for assisting work in the radium and x-ray departments. The ordinary income was maintained; there were increases in patients' donations, contributions from approved societies, and payments by insurance companies under the Road Traffic Act, but a reduction in interest and dividends from invested funds is likely to be still more serious this year. The Infirmary extension scheme has been carefully reviewed in the light of present conditions. It was discovered that the original proposals to erect a combined gynaecological and maternity hospital, together with a home for nurses, would cost very much more than the amount which had been collected or was likely to be collected in the immediate future. It was decided, therefore, to restrict the scheme to a maternity hospital and the building of a new nurses' home. The Board of the Infirmary was already committed to build a new maternity hospital by the agreement entered into with the directors of the existing Edinburgh Royal Maternity and Simpson Memorial Hospital. Provision is made for 122 beds, with departments for all sections of maternity work,

including facilities for the instruction of medical students and midwives. The new nurses' home will give accommodation for 260 nurses. It is proposed to erect this building on a site to the north of the new maternity hospital, partly on the site of the former George Watson's College, and partly on ground acquired at the foot of Archibald Place. Even with the restriction of the scheme it is anticipated that the capital cost will exceed the available funds by between £40,000 and £50,000, so a further appeal will have to be launched. Construction of the new pavilion to house the skin and venereal diseases departments on a site to the north of the eye department is proceeding. When complete, this addition will set free for other purposes valuable accommodation in the main building.

Lord High Commissioner in Edinburgh

His Grace the Lord High Commissioner, Mr. John Buchan, who represents the King at the annual Assembly of the Church of Scotland, has made his usual round of visits to hospitals in Edinburgh. Accompanied by Mrs. Buchan, he paid a visit to the Royal Infirmary on May 23rd. In presenting prizes won by nurses in the recent examinations, Mr. Buchan remarked that he had made up his mind that he would write a medical book, because he wished to know more about medical science, and from long experience he knew that the way to find out more about a subject was to write a book on it. Mrs. Buchan on the same day paid a visit to the Queen's Institute for District Nursing, where she was received by Lady King Stewart, representing the Scottish Council, who informed her that there were now 503 affiliated nursing associations in Scotland, employing 895 nurses. On May 24th a visit was paid to the Deaconess Hospital of the Church of Scotland, which, as Mr. Buchan recalled, is the only hospital in Britain owned by a Protestant Church. He made reference to the loss the hospital had sustained in the recent death of its chairman, the late Lord Sands, who, he said, had been a man of many-sided interests. The proposed extension of the hospital, he had been informed, was to be called the Lord Sands Memorial Wing. Mrs. Buchan paid a visit also to the Royal Maternity and Simpson Memorial Hospital, where she made a tour of the wards and inspected the seventy babies at present in the hospital.

Conference of Health Visitors

The Scottish National Health Visitors Association, to the number of nearly 200 delegates and members, held its fifteenth annual conference last month at Kilmarnock. After a civic welcome by Provost Henry Smith, a paper dealing with maternal morbidity, by Dame Louise McLroy, was read by Dr. Arbuckle Brown, deputy medical officer of health, Glasgow. This was followed by an address by Professor Munro Kerr, who said that maternal morbidity and mortality were influenced by three primary factors—the adequacy of ante-natal care, the efficiency of natal care, and the degree of co-ordination between the different agencies concerned with maternal care. Many of the unsatisfactory conditions at present connected with ante-natal supervision would automatically disappear if the agencies concerned with maternal welfare were better co-ordinated. For many years, Professor Munro Kerr said, he had advocated a maternity service for the country, and to-day everyone admitted that a maternity service in some form was essential for insured persons, for those who would become insured if the Insurance Act was extended, and for the destitute. The idea underlying his scheme was the establishment of a network of obstetric centres throughout the country, utilizing existing institutions

and making additions where necessary. In the scheme he proposed the institutional part of the service for Scotland would consist of: (1) four primary hospital centres in Edinburgh, Glasgow, Aberdeen, and Dundee; (2) secondary hospital centres in towns and in cottage hospitals; and (3) subsidiary centres at maternal and infant welfare clinics, which ought to be closely linked with the hospitals of the locality and the centres for its domiciliary service. The activities of family doctors, midwives, health visitors, and social workers should be based on these centres and clinics, which, in addition to their purely medical function, would be invaluable centres for the training of the last three groups of workers. Dr. B. R. Nisbet, medical officer of health, Kilmarnock, said that a careful inquiry had shown that in Kilmarnock 81 per cent. of the mothers had some ante-natal care, while in 50 per cent. it was considered adequate. These figures were, comparatively speaking, good, though not ideal, and perhaps explained the fact that out of 1,500 births in the town during two years there had been only two maternal deaths. The maternity home had rendered good service, but was now too small to cope with the needs of the district, and it had been decided to build a new maternity hospital, which would maintain the close existing relation of the practitioners in the district with the official maternity scheme.

Selkirk Hospital

The annual meeting of Selkirk Cottage Hospital Association was held on May 31st, when it was announced that the endowment fund stood at £12,277, while there was a balance to carry forward to next year out of which the committee recommended that £500 should be transferred to the endowment fund. It was reported that during the year 231 patients had been treated under the scheme, and that there had been 134 private patients.

Ireland

The State and the Practice of Medicine

Dr. Charles S. Thomson, medical superintendent of health, Belfast, in the course of a paper read at the Royal Victoria Hospital, stated that a question which was giving concern to many people was the question of whether the practice of medicine, and this included the hospitals, was to be governed by the State, in whole or in part, or not at all. The mere mention of putting the voluntary hospitals on the rates, for example, was sufficient to arouse a commotion within the breasts of thousands, for it was widely held that the splendid work of the voluntary hospitals was largely due to the freedom which, in itself, made for the success of those institutions. It was held that the very soul of the hospitals would be destroyed if the so-called cold, formal hand of the State replaced the close, personal touch which resulted from the voluntary system. Someone has said that a bank overdraft was a sign of wealth. Assuredly it conveyed the idea that the bank had good security before it parted with its money. In the case of the British hospitals the banks knew that there was excellent security in the profound respect and esteem in which the hospitals were held by the public, and that, in the last resort, notwithstanding the financial difficulties of the times, the public might be relied upon to see the hospitals through. They could therefore put aside any question as to whether a threat of State supervision of the voluntary hospitals was imminent. The question of the financial needs of their hospitals was one which sound organization, push, and drive ought to settle.

Public Health in the Irish Free State

Moving the recent vote in the Dáil for the Department of Local Government and Public Health, the Minister, Mr. S. T. O'Kelly, said that during the year mortality from all causes showed a reduction as compared with the preceding year. The number of deaths registered in 1933 was 40,650, as against 42,984 in 1932. Deaths from typhus numbered twelve, as compared with thirty in the preceding year; and from enteric fever sixty-nine—a reduction of thirteen. There was a welcome decrease in infant mortality. The number of deaths was sixty-five per 1,000 registered, as compared with seventy-two per 1,000 in 1932. The prevalence of diphtheria showed a serious upward tendency, the number of deaths being 414 as against 383 in the previous year. Measures for the immunization of children against the disease, however, were being widely adopted. The organization of public health services was proceeding satisfactorily. Child welfare schemes were being well maintained, while schemes for school medical inspection were now practically complete in the four county boroughs and in eighteen counties in which county medical officers of health were in charge. The number of children inspected by the school medical officers in 1932 was 112,776; the figure for 1933 was not yet available. Of the number examined in 1932, 37 per cent. were found to suffer from dental defects, 22 per cent. from tonsils and adenoids, 11.9 per cent. from defective vision, 3.9 per cent. from other eye defects, and 6.2 per cent. from malnutrition. These figures represented a decline as compared with those for 1931, except in the case of children suffering from dental defects. Great interest continued to be taken in this service by school managers, teachers, and parents of the children. In practically every case the advice of the county medical officer of health in regard to proper dieting had borne good results, and the number of children suffering from malnutrition was on the decline. The provision of free milk, for which a sum of £100,000 was included in the estimate, had helped largely in this respect. Dr. R. J. Rowlette, speaking during the debate, said he believed that the Minister was honest and earnest in his desire that public health administration should be improved, but there were various matters in which progress during the past year or two had been disappointing. Since 1925 it had been the law of the country that each county authority should appoint a county medical officer of health, but, in reply to a question a few days ago, the Minister had informed him that there were only eighteen such officers appointed in the twenty-seven county areas in the country, and, when pressed, the Minister had said that some of the county authorities had not enforced the law because of unwillingness to increase local rates. It was not, however, a matter of choice for county authorities. The law was there and should be obeyed; the Minister should take some action. The country, as the Minister must be aware, was far behind others in public health administration. Then, in the matter of medical inspection in schools, although the Act had been in force since 1919, only 30 per cent. of the children were being medically inspected. Infant mortality was increasing in the cities throughout the country. Every county, Dr. Rowlette continued, should have its infant welfare society. In 1932 the death rate in Galway of infants under the age of 12 months was 136 per 1,000 births registered, whereas the rate for the whole country was only 71. The rate in Waterford City was 132, in Sligo 134, and in Wexford 113. In Dublin, where there was a child welfare association, the rate was only 100. The Ministry should be far more active in encouraging the formation and development of such societies. He welcomed the report, which showed that the death rate from tuberculosis was the lowest on record.

There had been a steady growth in the prevention and treatment of tuberculosis in Ireland for the last twenty years, and he was glad to see that it was bearing proof. But surely, with such striking evidence, the Minister could bring sufficient pressure to bear on the county of Longford to make the authorities provide for the treatment and prevention of tuberculosis as other counties had done. Referring to the question of pure milk supply, Dr. Rowlette said it was estimated that at least 50 per cent. of the cases of tuberculosis, other than tuberculosis of the lungs, were due to contaminated milk. Deaths under this heading for the year 1932 numbered 818, so that 409 deaths were due to the fact that the Oireachtas had neglected to do its duty in ensuring a pure milk supply. To those deaths could be added an enormous amount of illness and disability due to dirty milk. Why had the long-promised Clean Milk Bill not been introduced?

Medical Charity: Bequest by Sir William Whitla

The managing committee of the Royal Medical Benevolent Society in Ireland has acknowledged the receipt of £250, a legacy bequeathed by the late Sir William Whitla. By the terms of his will this sum is to be invested, and the income applied to medical men in Belfast, or their wives, and orphans in Northern Ireland. Sir William Whitla was a keen supporter of medical charities, and this legacy is typical of his generosity.

England and Wales

The Drought

Speaking at Swindon, on June 1st, on the occasion of the opening of the new water scheme, Sir Hilton Young described the measures being taken by the Government to relieve the drought, which existed, he said, over a large part of Northern Europe and America; unfortunately we were in the middle of it. The recent fresh period of dry days made it more necessary than ever to take every possible precaution in anticipation of the summer months, which were usually the driest. The emergency Act which came into force last month provided the necessary legal powers to increase and husband supplies, and the Government was pressing forward with the application of the Act in order to deal with the situation in the places where there was already, or would probably soon be, a shortage. Sir Hilton was arranging for a standing conference of the three representative bodies—the British Waterworks Association, the Institute of Water Engineers, and the Water Companies Association—to act in co-operation with the Ministry. They would thus bring to bear upon remedial measures all the available knowledge and experience of the experts and of those actually responsible for water supplies. The measures that were being taken would be effective in reducing the evils of the drought. Much could be done by the public for its own protection by economizing the use of water for domestic and industrial purposes by preventing waste and by reducing use for all purposes that were not essential.

Ministry of Health Circular on Birth Control

By direction of the Minister of Health a letter (Circular 1408) has been sent to maternity and child welfare authorities in England and Wales on the subject of birth control. This begins with a reference to the Ministry's memorandum (153/M.C.W.) dated March, 1931, and Circular 1208 of July 14th, 1931, and more particularly to paragraph 4 of the memorandum and paragraph 3 of the circular which deal with the provision under the Public

Health Acts of clinics for women suffering from gynaecological conditions. Paragraph 4 of the memorandum stated that the Government had decided that any Departmental sanction which might be necessary to the establishment of such clinics should be given only on condition: (1) that the clinics will be available only for women who are in need of medical advice and treatment for gynaecological conditions, and (2) that advice on contraceptive methods will be given only to married women who attend the clinics for such medical advice or treatment, and in whose cases pregnancy would be detrimental to health. The present circular (dated May 31st, 1934) recalls that the Departmental Committee on Maternal Mortality and Morbidity, in its final report published in 1932, called special attention to the importance of the avoidance of pregnancy by women suffering from organic disease such as tuberculosis, heart disease, diabetes, chronic nephritis, etc., in which child-bearing is likely seriously to endanger life. The Departmental Committee considered that advice and instruction in contraceptive methods should be readily available for such women. It was pointed out in the memorandum and circular of 1931 that the powers which the Public Health Acts confer upon local authorities for the provision of clinics limit their availability to sick persons, but the Minister is now advised that there is nothing to prevent the local authority from rendering such a clinic available for women suffering from forms of sickness other than gynaecological conditions. After careful consideration of the recommendation made by the Departmental Committee, the Minister is of opinion that where a local authority has provided a clinic at which medical advice and treatment are available for married women suffering from gynaecological conditions, and at which contraceptive advice is afforded to married women so suffering in whose cases pregnancy would be detrimental to health, it would be proper also for married women who are suffering from other forms of sickness, physical or mental, such as those mentioned in the Departmental Committee's report, which are detrimental to them as mothers, to be afforded contraceptive advice at the clinic if it is found medically that pregnancy would be detrimental to health. "What is, or is not, medically detrimental to health must be decided by the professional judgement of the registered medical practitioner in charge of the clinic."

Radiologists at Dinner

The annual dinner of the Section of Radiology of the Royal Society of Medicine took place at Claridge's on June 1st, with Dr. R. S. Paterson in the chair. The principal guests were Dr. Robert Hutchison, president-elect of the Royal Society of Medicine, and Mr. W. H. Collins, donor of the munificent gift of £35,000 to the Middlesex Hospital, earmarked for the equipment of the diagnostic section of the radiological department. Dr. Paterson, in proposing the health of the guests, referred to Mr. Collins as a man whose generosity was united to vision. He was one of those who believed in the continuance of the voluntary hospital system, the only disadvantage of which was its financial limitations compared with State or municipal provision. By his beneficence he had enabled the radiological department at Middlesex to combine the enormous advantage of voluntarism with an unusual freedom from financial difficulty. Mr. Collins expressed the hope that the workers in the radiological departments of other hospitals would not be jealous of the good fortune of the Middlesex, but would rather invoke it as an example to their own boards and supporters. He congratulated the department on having Dr. Graham Hodgson in charge, saying how admirably Dr. Hodgson had collaborated with him in ensuring the best use of the help he had been able to furnish. Dr.

Robert Hutchison, in proposing the health of the Section, said how much he owed, as a dietitian, to the confirmatory (or otherwise) work of the radiologists, though he viewed them rather as a judge in the lower court must regard their lordships of appeal: they had a way of upsetting one's best clinical diagnosis. A distinguished physician once told him that when he had to recommend the removal of an appendix but was not very sure on the subject he was careful to send the case to a sympathetic surgeon. Dr. Hutchison confessed that he also liked to send his cases to a sympathetic radiologist, who would let the poor physician down lightly when he proved to be wrong. The Section of Radiology appeared to be very vigorous; it represented one of the advancing lines of medicine, and was taking to itself more and more diagnostic resources and wider facilities for treatment. Dr. Herniman-Johnson mentioned that although the Section in its present form was only three years old, it was one of the largest of the twenty-odd Sections of the Society, numbering some three hundred members—the largest Section of all, the Clinical, having four hundred.

Infants Hospital, Westminster

Prince George took the chair at a festival dinner, on May 30th, in the Guildhall, in aid of the Infants Hospital, Vincent Square, the company numbering more than 400. At the close of the evening the Prince announced that contributions to the special appeal fund totalled £19,000. Among those at the high table were the Lord Mayor of London and the Lady Mayoress, Dr. Eric Pritchard, medical director of the hospital, Dr. G. F. Still, and Dr. H. Morley Fletcher. In proposing the toast of "The Hospital" His Royal Highness conveyed the regret of the Princess Royal at being unable to be present on behalf of an institution in whose welfare she, as its president, took a very keen interest. He recalled that this was the first hospital in the world whose special object it was to care for children under 5 years of age, and that large sums of money had been spent with much thought in bringing the hospital up to its present well-equipped position. Everything required in a modern hospital had been installed in miniature. The research work unceasingly carried out was providing most valuable data, and through this there was a continuous improvement in nursing and in treatment, to the advantage of many sick children all over the country. "If the present knowledge of infantile diseases had been available twenty-five years ago I feel sure that many C3 men and women would be classed A1 to-day." Sir Gomer Berry, chairman of the Committee of Management, in responding to the toast, said that the hospital now had 100 cots in Vincent Square and eighteen at the convalescent home at Burnham, while the out-patient department could accommodate 2,000 cases a month. After thanking Prince George for the honour he had conferred on them, he paid a tribute to the medical and surgical staff, under the guidance of Dr. Pritchard, whose work for the health of children was widely known and appreciated. Sir Ernest Benn submitted the toast of "The Lord Mayor and the Corporation of London," and Sir Charles Collett replied. Dr. Cyril Norwood, head master of Harrow, in proposing "The Citizens of To-morrow," looked forward to a system of physical education to which as much care and thought would be given as had hitherto been applied to purely mental education. Mrs. Stanley Baldwin, who replied, said that to save the children they must begin with the mothers. Foreign countries, and notably Italy, realized how much their future depended upon the younger generation. The medical, nursing, and administrative staff of the hospital were toasted by Sir Harold Bellman, and Dr. Eric Pritchard replied.

Reports of Societies

CONTROL OF INFECTIOUS DISEASES

At a meeting of the Society of Medical Officers of Health, held at their house on May 25th, with Dr. CHARLES PORTER in the chair, Dr. H. STANLEY BANKS, medical superintendent, Park Hospital, London, opened a discussion on "Current Methods of Control of Infectious Diseases."

Dr. Banks critically reviewed the main conclusions of Report No. 35 of the Ministry of Health on scarlet fever. The report favoured limitation of the number of scarlet fever cases admitted to hospital, and the preferential admission of pneumonia, measles, and influenza. This had been tried, particularly in London, but there was still an insistent demand for hospital facilities in scarlet fever. An alternative method was to shorten the period of detention in hospital to two or three weeks. This had been found to be quite practicable in the great majority of cases which were treated adequately with scarlatinal antitoxin at an early stage of the disease, and particularly by the intravenous route. Complications were then very few, and almost entirely limited to children under 5 years of age, who were susceptible to mixed infections. Short detention in scarlet fever wards was in the interest of the patient, provided that nutrition was maintained from the outset. Late complications in scarlet fever wards were probably often the result of superadded infection from patient to patient. It was desirable to combine short detention with attendance at an out-patient clinic at least once before the patient returned to work or school. This method had, in his experience, given satisfactory results. He agreed with the report in condemning terminal disinfection of houses and wards as an ineffective procedure. Current disinfection of hands and fomites during the illness was the important matter. This subject had been discussed *ad nauseam*, and the modern view was accepted by most authorities. He suggested that the time had come to make it public.

Dr. E. H. R. HARRIES, dealing with diphtheria, said that this was a preventable disease, only to be controlled adequately by the active immunization of susceptible children. The disease was prevalent and severe in this country at the present time, and it was to be hoped that immunization upon a scale sufficiently great to affect incidence might not be unduly delayed. Many cases of severe clinical type were associated with either the *gravis* (starch-fermenting) or *intermediate* (Mair's barred form), strains originally described by the Leeds workers. The swab, used as a primary or chief means of diagnosis, frequently resulted in fatal delay in the injection of antitoxin, and in the erroneous diagnosis of diphtheria in patients harbouring non-toxic organisms. Patients should be sent into hospital upon suspicion without swabbing, the necessary investigations being left to the hospital to carry out. Practitioners were reluctant to inject antitoxin pending diagnosis. Fears of anaphylaxis, especially with modern, practically protein-free, concentrated sera, were greatly exaggerated. Severe reactions, even with massive intravenous dosage, were extremely rare, and were controllable by the injection of adrenaline, which should always be available. Post-tonsillectomy diphtheria and scarlet fever might be obviated by the prior injection of a combined prophylactic dose of diphtheria and scarlet fever antitoxins. Preliminary Schick and Dick tests were preferable, as these would indicate which, if any, of the specific sera were called for. The value of terminal swabbing was problematical. The ordinary standard was two consecutive negative swabs from nose and throat. Chronic carriers nearly always had some nasopharyngeal abnormality which called for rational surgical measures. True intermittency of the carrier state among diphtheria convalescents nursed in open wards was rare. The apparent intermittency was frequently due to contact reinfections. Convalescent carriers were best treated in cubicles or in the open air. Swabbing as a means of detection of carriers

in the community was hopeless, but found its legitimate uses in the control of outbreaks in institutions when combined with virulence tests and Schick tests.

Dr. W. GUNN, in opening the discussion on measles and whooping-cough, mentioned some of the clinical and epidemiological features of these infections in the search for more rational and effective measures for their control. He referred to the great increase of facilities for hospital treatment and the wider provision for domiciliary care of measles cases by various health authorities and agencies within recent years. He exhibited charts detailing the numbers of measles patients admitted to the infectious diseases hospitals of the late Metropolitan Asylums Board and of the London County Council during the years 1924-34, and the numbers of contacts injected with immune measles serum during the last two epidemics, showing a steady increase of those two measures for measles control. While a great future was predicted for the general employment of immune serum in the prevention and attenuation of measles, the benefits of routine hospitalization of measles cases were probably overrated. To justify the expenditure of much public money and energy it was necessary to show that hospital treatment gave much better results than those following domiciliary care. Bacteriological evidence was brought forward to prove that the majority of the complications of measles were due to invasion by the haemolytic streptococcus, transmission of which from patient to patient was readily traceable, especially when they were nursed in ordinary "open" wards. He urged the general application of "bed-isolation" principles to the nursing of all cases of measles in the early stages of the disease, pointing out that the problem of "cross infection" was thereby largely solved. The sole exception to this was chicken-pox, ward outbreaks of which were readily controlled, as it was usually possible to identify the immunes and isolate the rest in appropriate wards. The frequency with which cross infection was directly attributable to exposure in the waiting rooms of practitioners and the crowded waiting halls of general hospitals, and measures for checking it, were mentioned. The therapeutic and prophylactic employment of various immune sera—measles, adult and convalescent, streptococcal and diphtheritic—in averting the most dreaded complications and secondary infections associated with measles was briefly discussed. Definite benefit appeared to follow the intravenous administration of immune measles serum when given in the early phases of the disease. Our measures for the control of whooping-cough, curative and preventive, remained unsatisfactory both for the individual and for the community. Routine administration of so-called specific drugs was unnecessary, and even harmful. Drugs should be reserved for cases where indications were present calling for their exhibition. Vaccines prepared from the Bordet-Gengou bacillus had proved useless—and occasionally dangerous—in treatment, but there was room for an extended investigation into the efficacy of a reliable vaccine in the prophylaxis of whooping-cough, such as had been carried out in America and Canada and on the Continent. In this country many workers had had adequate experience of the most approved methods of control of measles and whooping-cough, but, so far, the necessary administrative machinery and driving force had been lacking. Little real progress could be expected unless the various public health and hospital authorities joined hands in a resolute endeavour to stamp out the more serious acute infectious diseases.

On May 24th the Mayor of Middlesbrough opened the new municipal hospital for children at Holgate. The buildings were transferred from the late board of guardians in 1930, and have since been converted for their new use at a cost of about £2,500. Provision has been made for eighty-two beds, the acute cases being warded on the ground floor of the two-story building. There is also a schoolroom, and arrangements are made for the teaching of children with chronic diseases in the wards. An up-to-date operating theatre and an anaesthetic room are placed on the first floor.

CORRESPONDENCE

Psychological Effect of Hysterectomy

SIR,—I should very much value a discussion on the results of hysterectomy, partial or total, in your journal. One has been taught that the removal of the uterus has no effect, psychological or physical, on the woman, but I know of two cases where the effect was profound.

Case 1.—A woman of 33 was found to have a large fibroid. The surgeon told her that it might be possible to do a myomectomy, but advised partial hysterectomy, which was duly performed. The ovaries were left untouched. About six months later the patient began to suffer from profound depression, which reached its acme at the times when the menstrual period would normally have occurred. For over a year she was almost an entire nervous wreck, but gradually improvement set in, and she got over the acute breakdown. To-day, six years after the operation, she still is somewhat neurasthenic, and says she feels quite definitely that she has changed completely in character, and that the operation has had a profound psychological effect. I may add she has since married and has a satisfactory marital relationship. She is an extremely well-educated sensitive woman.

Case 2.—A married woman, aged 39, with two children, was advised partial hysterectomy for excessive periods due to fibroids. In this case the patient's reactions to the operation were not so marked, but she found that her normal sexual response to her husband had disappeared. This in itself might have been enough to agitate her seriously, but, in addition, the husband, an intelligent, well-educated man devoted to his wife, found that the idea of the absence of the uterus aroused such a distaste in his mind that he became impotent. His feeling of affection in no way changed, but the whole marital relationship was completely wrecked.

Both these instances seem sufficiently important to me to indicate that research into the matter might be extremely valuable. It appears that in the first case myomectomy would have been far preferable and should have been done. In the second case, I know that the patient to-day would infinitely prefer the inconvenience of menorrhagia and be as she was before to the sense of mutilation and shipwreck of her married life which she has now.

One knows that there are cases when hysterectomy is inevitable, but it does seem to me that the operation should be the final resort, and the pros and cons weighed more carefully than they are to-day. As a woman I feel that hysterectomy is bound to have a most profound psychological effect.—I am, etc.,

WINIFRED COPPARD, M.R.C.S., L.R.C.P.

Walberswick, Suffolk, May 28th

Diverticulitis and Diverticulosis

SIR,—In an interesting paper on the surgical aspects of diverticulitis, in the *Journal* of June 2nd (p. 973), Mr. Harold C. Edwards writes:

"On the history, the physical examination, and the x-ray findings, it may be impossible to distinguish diverticulitis from diverticulosis, except in the severer cases, and I have failed in my attempt to estimate the percentage of cases of diverticulosis in which inflammation occurs."

This can, of course, be true, but may I state that with careful radiology the diagnosis in early cases between diverticulosis and diverticulitis is, in our experience, easy, as soon as, say, an inch of the bowel wall has become involved in the oedema from adjacent inflamed pouches. First, the large jagged appearance of a diverticulitic area is characteristic; secondly, peristalsis can be observed to cease at that place; and thirdly, such an area does not undergo the continual changes in outline which healthier

parts do, whether dotted with diverticula or not—changes which are easily shown by superposing successive films. The jagged palisade appearance is also distinct from that of spasm without organic lesion, of growth, or of the pre-diverticular state. Difficulty in diagnosis may, of course, arise, but is usually confined to the somewhat rare advanced and complicated cases. The essential is to obtain the piece of bowel concerned in profile, if possible from more than one aspect.

Pictures demonstrating the above points, with clinical records, have been published by Mr. Marxer and myself (*Quart. Journ. Med.*, October, 1925; *British Medical Journal*, January 23rd, 1926; and *Lancet*, May 21st, 1927).

—I am, etc.,

Ruthin, June 2nd.

EDMUND SPRIGGS.

Periodic Health Examinations

SIR,—In his lecture "Cancer: with Special Reference to Early Diagnosis," printed in the *British Medical Journal* of May 19th (p. 881), Dr. Roy Ward points out the value of periodic health examinations for the early diagnosis of cancer and the merits of life insurance companies in this line. "In the U.S.A.," he says, "life insurance companies give free examinations biannually to all life policy holders over 40." And at the same time he wishes such a system could be instituted in other countries.

May I first of all mention that it is not quite as good in America as Dr. Roy Ward thinks. Examination is not offered to all insured persons over 40, nor is it given biannually, even when it takes place. It depends on the sum of insurance taken out at what intervals the examination occurs: for low sums it is a five-year interval; for large sums a yearly one. The age is not limited; but no company grants the periodic examination to all policy holders. Then there are two English companies which grant such examinations—the "Legal & General" and the "Wesleyan & General." The former, on request, grants every year a health examination to whoever wishes it; the latter, biannually for sums of £500 and over. (The "Prudential" does not grant examinations, but helps those who have to be operated on, by granting them, free of interest, loans up to ninety guineas to every £1,000 for operations and nursing which, though not furthering early diagnosis, helps in the fight against disease.)

In Germany periodic health examinations began in 1925. At present there are seventeen companies that give their policy holders of sums varying between £150 to £500 (par) free health examinations triannually. Besides this, they are educating their public by means of illustrated journals, urging them to pay a timely visit to the doctor and to learn the early signs of disease, where this is important for a successful cure. They have created a popular film, "Don't Leave it to Chance," which promulgates the idea of the necessity of early diagnosis, and have organized a health service centre, the *Deutsche Zentrale für Gesundheitsdienst der Lebensversicherung*. In Switzerland the "Vita" has inaugurated such health service, and is offering it also in other countries (Belgium, Holland, Spain, France) where it has branches; the example has been followed by two more companies in Switzerland. In Austria the "Phoenix" does this kind of work; in Italy in great style, the *Istituto Nazionale delle Assicurazioni*; Japan also has made great progress in this line. In South Africa the "South African Liberal," and in Dutch India six companies, have taken up periodic health examinations, but only one company in Holland itself.

Those who are interested in the matter may find details in my article in the *Blätter des Roten Kreuzes* (February, 1928). It will be seen that there is room for improvement along these lines in regard to, and independently of, the question of life insurance. Dr. Roy Ward makes clear

the importance of drawing attention to the institution of periodic health examinations as such, which, as the insurance companies have recognized in the first instance, are one of the most important means not only of combating cancer, but in aiding preventive medicine. May I be allowed to associate myself with his views?—I am, etc.,

OTTO NEUSTÄTTER.

Scientific Director of the Deutsche
Zentrale für Gesundheitsdienst
der Lebensversicherung.

Berlin, Schlachtensee, May 29th.

The Method of Medical Care

SIR,—As one who may have earned the right to claim that he understands the difference "between sociology and socialism," may I express my congratulation upon your editorial in the *British Medical Journal* of April 7th, 1934? This clear and courageous statement will, I am sure, contribute to substantial progress in the United States.

Your editorial quite correctly recognizes that the anti-social stand of certain officers of the American Medical Association has latterly rested its case almost entirely upon the allegation that national health insurance in Great Britain has been a colossal failure, whether judged by public or by professional standards. The American medical profession has been almost persuaded that the British medical profession was opposed to national health insurance, or accepted it only on sufferance. If I may be permitted a colloquialism, your editorial, coming hard upon the heels of Sir Henry Brackenbury's article in the *New England Journal of Medicine*, and upon the publication of the report of the special commission of the Michigan State Medical Society, will "spike the guns" of this campaign of misrepresentation.—I am, etc.,

I. S. FALK,

Milbank Memorial Fund, Division of
40, Wall Street, New York, Public Health Activities.
May 16th.

Incidence of Cancer

SIR,—In a letter in your issue of May 26th (p. 963) your reviewer quotes from *Recent Advances in Pathology* figures the apparent meaning of which is that cancer of the lung has become much more common in recent years. He can only have seen the first edition of our book, since in the present one we also refer extensively to the statistical research of Professor Passey, whose conclusion is that the apparent increase in the incidence of lung cancer is due to improved methods and facilities for diagnosis. A striking fact which emerges from Professor Passey's analysis is that the increased incidence of the disease reported in this country is confined to hospitals at which there is a tuberculosis dispensary. In view of Professor Passey's findings we do not wish to be regarded and quoted as advocates of the belief that lung cancer is becoming more common, and we shall therefore be grateful if you will publish this qualification to your reviewer's statement.—We are, etc.,

May 31st.

G. HADFIELD.

LAWRENCE P. GARROD.

SIR,—May I do my best to answer Mr. Duncan Fitzwilliams's very pertinent question in the *Journal* of June 2nd (p. 1004)?

Although it is true that we have no reliable statistics of the extent to which primitive African or other civilized communities suffer from cancer, I doubt whether they would satisfy the statisticians even if we could obtain them. Differences in race, in colour, in evolutionary

position, in customs, etc., would introduce so many factors other than those due to civilization, or lack of civilization, that for the purpose of comparison they could hardly be so reliable as those which show the proportion of cancer suffered by the same civilized nation for a sufficiently long period of its history. And what could better answer the purpose than those statistics which have now been collected in our own country since the beginning of this century? During this generation the progress in material civilization has been so rapid that we should be well within the mark in estimating that it is equal to that made during the previous one hundred years. The figures are also not those of cancer in its early stages, such as might show a spurious increase due to improvements in diagnosis, but of cancers in their most pronounced forms, so pronounced, indeed, as to have caused death. The increase, moreover, is not a trifle, easily to be argued away, but is so considerable that it points to the conclusion that during the last thirty-three years of our intensive civilization cancer has almost doubled in frequency, in spite of the many thousands of lives which have been saved by better methods of treatment.

I fully agree with my reviewer that we ought not to blame civilization for this appalling increase in cancer, but some fault in our own particular brand of civilization. In the last century civilization brought with it a rising death rate from cholera, enteric fever, tuberculosis, and other diseases of insanitation. But these we now know were not directly due to civilization, but to faulty ways of living—to insanitation. And when civilization had advanced a little further, and the mistakes were corrected, the disorders due to them were either wiped out or are being wiped out.

After the same fashion it may reasonably be assumed that cancer is not a disease either of normal old age or of normal civilization, but of some error which now accompanies both of these conditions.

Doubtless I am running considerably in advance of my subject when I venture to predict that the fault of civilization which is to cancer what insanitation was to cholera and enteric fever, is abnormal degeneration. The Victorian oncologists were of the opinion that cancer is essentially a disease of degeneration, and I suppose this view is still held. But what the degenerating circumstances are, how they act, and in what way they can be prevented—or, in other words, how further civilization will enable us to get rid of them—can hardly be entered into here.

I must apologize to Mr. Duncan Fitzwilliams for the much too didactic turn which this reply to his letter has taken. My excuse is that it is his own fault, for it is provoked by the generous and kindly words in the opening sentences of his letter.—I am, etc.,

Reading, June 4th.

HASTINGS GILFORD.

Memorial to Dr. Haig Ferguson

SIR,—Some friends of the late Dr. Haig Ferguson feel that a proposal to have a permanent memorial to his life and work will meet with a ready and general acceptance—indeed, they believe, with an instant, glad, and even eager response, for it is not given to many men to hold the place Dr. Haig Ferguson won for himself by the force of his personality.

The chivalrous courtesy and unvarying kindness shown to everyone he had to deal with, in whatever rank or class they were, endeared him to the whole community. His skill in his own particular department of medicine, while making him the channel of incalculable benefit to his patients and their families, won for him the respect

and honour of the whole medical profession in Edinburgh and far beyond. And in another direction, less well known because of the essential modesty of the man, he has, as a wise and far-seeing philanthropist, influenced and helped many hundreds of needy girls at perhaps the most critical period of their lives. It is in this last characteristic that we see the possibility of founding such a memorial to Dr. Haig Ferguson as would be not only fitting and worthy, but would seem to be nearer to his heart than any other that could be projected.

For over forty years Dr. Haig Ferguson identified himself with the fortunes and work of the Lauriston Home—a home for unmarried mothers (first cases) where both pre-natal and post-natal care are provided, and where also, apart from those medical necessities, a refuge is afforded to those who are often in the extreme of misery, all the more intolerable in that it is mental rather than physical. The Lauriston Home is lineally descended from the St. Luke's Home which the late Sir John Halliday Croom founded some forty-five or fifty years ago. For the last thirty years at least Dr. Haig Ferguson was its moving spirit, and was in constant and intimate association with its work up to the time of his death. It may be said that of the many philanthropic activities with which his name was associated there was none which he had so completely at heart. The institution has a somewhat precarious existence, being entirely dependent upon the slender payments of the inmates, along with such subscriptions as a rather restricted circle of friends contribute; those last, being mainly due to the personal influence of Dr. Haig Ferguson, will now tend to cease.

If a sum of £5,000 could be raised the home could be placed on a lasting and permanent basis, and, as the "Haig Ferguson Memorial Home," would perpetuate the memory of a great and good man, while at the same time affording shelter to that class of unfortunate inarticulate people which was ever the object of his understanding and pitying solicitude. We commend this appeal to the personal and generous consideration of your readers in the belief that they will welcome the opportunity. Donations should be sent to R. H. Wallace Williamson, Esq., C.A., 37, Melville Street, Edinburgh.—We are, etc.,

R. W. JOHNSTONE,
Chairman.

A. E. LAURIE,
Vice-Chairman

ALISON RICHARDSON,

MURIEL A. NIMMO SMITH,
Joint Hon. Secretaries.

F. C. NIMMO SMITH,
Appeal Secretary.

Edinburgh, May 31st.

Strangulated Hernia

SIR,—Mr. Wood Power (May 26th, p. 964) pertinently asks in what percentage of cases I can carry out the injection treatment of hernia, and what are the percentages of cures and failures. Any oblique inguinal hernia that is completely reducible is suitable for this method of treatment. Size is no contraindication.

The results of cases where treatment has been completed are as follows: Total, 57—cured, 44; failures, 12; untraced, 1. This gives a percentage of cure of 77, but it must be taken into account that of my twelve failures four were direct hernias, and in one of these the bladder was incorporated in the neck of the sac; in two cases there were adhesions near the neck of the sac preventing complete reduction, as proved by subsequent events; one patient had had many previous operations, and his abdominal musculature was not good (however, he feels that his condition is considerably improved); in one case there was an enormous recurrence after an operation, and the neck of the sac was practically as wide as the

whole inguinal canal, so that it may be called direct. This accounts for eight of the failures. Of the remaining four, two received an insufficient number of injections—that is, the technique was faulty—and one of the other failures I strongly suspect has adhesions near the neck; the remaining patient wrote, in answer to my inquiry a short while ago, that he has had a recurrence on one side.

I therefore anticipate that by declining to treat cases of direct hernia, and those in which there is any suspicion whatever of adhesions near the neck, I shall effect a very considerable improvement in my percentage of cures in the future.—I am, etc.,

London, W.1, June 3rd. ST. GEORGE B. DELISLE GRAY.

Criticism of Ante-natal Work

SIR,—Though I am but a general practitioner I feel that the substance of the lecture entitled "A Criticism of Ante-natal Work" (May 19th) ought not to go uncriticized, for the impression which it leaves on one's mind is that it vastly overstates the dangers of induction, without due regard to its advantages.

In dealing with the question of induction, and of its safety or otherwise, surely one must take into consideration the stage at which it is performed. Though there can be no doubt that at the thirty-second week there must be danger to the child, I believe that induction at a fortnight, three weeks, or occasionally a month before term often makes all the difference between a long second stage with instrumental delivery and a reasonably safe normal labour. This I have done fairly often, and I think my figures support this statement, for it is common knowledge that the foetus is capable of growing disconcertingly during the last few weeks. Moreover, I have so far found that infants thus induced seem to progress as well as any others, at any rate while in hospital; and my opinion is that, provided the foetus "feels" a five- or six-pounder, there is little danger so far as prematurity is concerned.

I have under my care a small lying-in hospital where, during the last three years, we have had 777 cases—499 of which were primiparae and 278 multiparae. At this hospital I superintend and perform ante-natal work and any inductions I think fit, and in cases of difficulty during labour or the puerperium am called upon. Thus it is seen that there is continuity of treatment from start to finish. Of these 777 cases I have induced 127, twenty-nine of which had bougies inserted, the remainder having quinine; 109 were induced for "disproportion," post-maturity, or similar reason; ten for albuminuria; and eight for breech presentation.

This must seem an appalling proportion, but in these inductions there were only six stillbirths, of which five were probably due to causes other than induction. Two were forceps cases and one was post-mature; these made me wish I had induced earlier. One was a breech presentation with albuminuria, and yet another had albuminuria. There were, then, at the most, two in which induction could possibly be considered the causal factor. In only one of the bougie inductions was there any pyrexia, and that only the most transient. I feel that no criticism of the stillbirth rate in induction cases is fair unless it is compared with a parallel series of forceps cases, for surely one of the objects is to transform a potential instrumental labour into a normal one.

Of these 777 cases there were only twenty-seven forceps cases, which I am convinced is a lower rate than that which usually pertains, and I am sure that the high induction rate has saved many an instrumental labour. It is, moreover, instructive to see that among these twenty-seven forceps cases there were six stillbirths, and I feel sure that the dangers to the child are infinitely

greater from the use of forceps than from induction—let alone the dangers to the mother. In regard to breech presentations, should the foetus not be *persuaded* to turn, my policy is to observe its growth, and if in any doubt about the size of the head then to induce. This, I think, is better than the use of force under an anaesthetic. I must admit that compared with the lecturer's statistics my figures are small indeed, but they do represent one's personal work and experience, and I hope may be of some help in this difficult problem.—I am, etc.,

Manchester, May 25th.

C. VIBONT BROWN,
M.B., Ch.B.

Osteopathy

SIR,—Dr. Dorothy Wood's letter (June 2nd, p. 1009) greatly interested me. She describes understandingly the underlying pathology on which osteopathy is based. "Spinal displacements . . . are, in the main, static fixations of articulations which have been carried beyond the normal range of movement, and held in abnormal positions by the sustained unequal tension of ligaments, muscles, and surrounding soft tissues." Further on she states: "Owing to the highly cultivated tactile sense, which can only be developed by years of special training, the osteopath is able to detect these fine deviations from the normal, vertebral or otherwise, which are usually not apparent to the surgeon."

It is her assertion of this very highly developed technique of spinal manipulation, only possessed by the initiated, which arrested by attention, for not long ago one of my patients was treated by an osteopath for twenty weeks, and as I was anxious to know what the treatment consisted of I questioned and cross-questioned the lady at some length. One of course does not always believe the stories of patients, but in this particular case I believe the story to be true. The osteopath she consulted was the genuine article from the Middle West—not a mere native imitator of occidental healing.

The procedure was as follows. The patient stripped to the waist in an ante-room, and then was ushered into the presence of the osteopath, who "rubbed" her spine for about a quarter of an hour (of course this "rubbing"—the patient's own words—may be the manipulation of the spine by the highly cultivated tactile sense of the osteopath). After the "rubbing" was over she was sent into another room, still stripped, and was exposed for another fifteen minutes to the rays of a violet lamp. She then dressed, deposited her guinea, and left, to return week by week. As she did not seem to make much progress the osteopath applied tonsil suction (evidently the osteopath was trying to see if draining the tonsils would produce more effective results).

Her friends who had recommended the osteopath inquired as to her progress. She replied that she was no better. "Wait until he gets on your back," was their assurance. At the next visit he got on her back. She lay on a couch face downwards, and the osteopath got astride of the patient and pressed firmly with both hands on the lumbar vertebrae, causing considerable pain. After this experience of the "highly cultivated tactile sense" she did not return. She is still alive and well—an osteopathic cure!—I am, etc.,

Warrington, June 3rd.

J. S. MANSON.

SIR,—Dr. Dorothy Wood, in her reply to Mr. Bankart's article on osteopathy, makes some alarming statements. In regard to the spinal "displacements" to which she refers, may I ask her why these cannot be demonstrated radiologically? How does she defend the common practice of a patient attending an osteopath regularly once a week

to have a "bone put back in the spine"? Such patients abound at orthopaedic hospitals—after they have been relieved of their money, but not of their disability. If Dr. Wood wishes, I can easily give her ample proof of the above statement.

Allow me to mention just three cases I have seen during the last few days which disprove Dr. Wood's contention that osteopathic principles are based on sound pathology.

1. Internal derangement of the knee-joint. "Bone put back" by osteopath, who advised the patient that he must "avoid getting water on the knee." Result—the knee-joint again became deranged on the homeward journey. Osteopath refused to see him.
2. Typical chronic tenosynovitis of the flexor tendons of wrist. "Bone put back," with no relief of symptoms.
3. Tuberculous shoulder-joint, with cold abscess on the arm. Manipulated by osteopath.

As regards the so-called "highly cultivated tactile sense" which osteopaths possess and surgeons do not, this is surely a doubtful advantage when it leads them so often to find displacements which are not present and to overlook such diseases as tuberculosis and cancer which are.—I am, etc.,

Hove, Sussex, June 4th.

J. M. TURNER, F.R.C.S.

The Medical Charities

SIR,—I hope that Dr. Arnold Gregory's letter (May 26th, p. 962) on the matter of the medical charities will be read by all members of the Association; it sums up the present situation, and gives some indication as to what is required to improve the state of affairs.

A letter such as Dr. Gregory's should be quite unnecessary; special charity weeks should be unnecessary; all the usual methods we now employ to gather together a few pounds for the charities should be unnecessary. It should be the wish and duty of every man and woman in the profession to impose a tax on his own earnings so that he may subscribe towards the relief of his colleagues or his late colleagues' dependants. There must be very few practising men who cannot afford to make at least one donation to the funds of the charities; many of these could well afford a small annual subscription. I feel that we should now aim at making a levy on the members of the profession in order to raise the capital sum mentioned by Dr. Gregory: 50,000 practitioners of medicine ought to be able to give one guinea each towards this sum. In addition, a similar sum ought to be raised every year by annual subscription. A levy and compulsory subscription should cause no hardship at all, and would render quite unnecessary all the special functions and all the campaigns of the various organizations at present in the field (all clamouring for subscriptions, all overlapping in their appeals, all quite inadequately supported).

The experience of charities secretaries in most Divisions is that letter and personal canvass will produce nothing further; the average medical man seems to be somewhat apathetic and unconcerned when the matter of charities crops up. More than once I have been told by a practitioner that no man ought to be "so down and out" that he cannot make provision for his family; but because he himself is "too hard up" I have not succeeded in extracting a subscription. However, until the ideal can be attained, we must make special efforts on the lines suggested by Dr. Gregory. I would suggest that the first move should be towards reconstitution of the Central Charities Committee of the Association. There ought to be more direct representation of the Divisional charities secretaries (who are the fellows who do the donkey-work): this committee should co-opt representa-

tives from all the charities, and also any hard-working men and women whose services may be useful. The next step should be the organization, by the committee, of a conference of all B.M.A. charities secretaries, local Royal Medical Benevolent Fund secretaries, Epsom College local secretaries, Ladies' Guild secretaries, and so on. At this conference the whole matter of medical benevolence could be reviewed, a committee formed to draw up a new scheme, and a general stimulus given to the profession to look to its dependants.

I would suggest that as the Annual Meeting of the B.M.A. will not be held in England in 1935 it would be very convenient to have the first conference of charities secretaries next year. If the conference is to do any good work it must be unhampered by other business: we want no more fiascos like that at the Eastbourne Meeting in 1931.—I am, etc.,

RAYMOND H. ROBINSON,
Charities Secretary, Torquay Division, B.M.A. ;
Local Secretary, Epsom College:

Torquay, May 28th.

Scottish Medical Golfing Society

SIR,—Will you kindly grant us space in your columns to announce the birth of the Scottish Medical Golfing Society. On April 20th, 1934, a meeting was held at the Langham Hotel for the purpose of giving concrete form to a common desire that Scottish members of the medical profession in the London area should meet occasionally throughout each year for the express purpose of vying with one another in propelling the golf ball from tee to hole, according to the rules of golf. The various offices were created, and the following were filled:

President.—Bertram Shires.
Vice-Presidents.—Sir Ashley Mackintosh (Aberdeen), Sir Robert Muir (Glasgow), Professor Musgrove (St. Andrews), and Sir Harold Stiles (Edinburgh).
Honorary Treasurer.—Bruce Williamson.
Honorary Secretaries.—Norman Fleming and Burton Yule.
Councillors.—A. Landale Clark, A. K. Forbes, D. McKenzie, D. J. MacMyn, J. W. Skelley, and L. E. Barrington Ward.

An entrance fee of one guinea and an annual subscription of one guinea will be due from all members of the society, the subscription being paid by a standing banker's order so long as membership of the society is held. Doctors who are interested are requested to apply for membership to the undersigned, stating their qualifications for the above society, also club and handicap.—I am, etc.,

92, Harley Street, W.1, June 2nd. NORMAN FLEMING.

Poisoning by Ground Ivy

SIR.—The plant I referred to is the "ground ivy" of all our herbals and botany books going back to the middle of the sixteenth century. It is a labiate and not a *Hedera*. The ordinary *Hedera* climbing ivy often has a creeping ground habit. In some respects it is a remarkable plant. When grown on a tall wall the upper part takes on quite a different appearance from that of the lower. The late Harrison Weir, the artist, showed me a stout-looking shrub in his garden. When I asked him what it was, he replied, "Ivy off the wall." He had cut down the upper three or four feet from the main stem and planted it. It took, and grew into a big bush. Common "wall" ivy is not poisonous, as sheep will eat it freely, and walls when covered by the plant have to be fenced to keep them off. I have made inquiries as to what "ground" ivy contains in a pharmaceutical way. Beyond an aromatic oil of no great strength, the answer is "Practically nothing." I wonder if the infusion contains a sufficiency of gum to protect the skin

from the air or the clothing, or whether the gum plus the oil gives the relief. At any rate, the infusion works, and as a help in these miserable cases of prurigo it is worth a trial. I used the fresh plant, but a herbalist, writing to me, indicates that the dried plant is also useful. This is the best time to gather it—when in bloom and full of juice.—I am, etc.,

Appledore, Kent, June 3rd.

F. WILLIAM COCK.

Tests for Drunkenness

SIR,—After all these years of doubt it is indeed a relief to find that medical men, especially police surgeons, have had removed from their minds, by a recent decision, the anxiety invariably caused by a police call to a case of "Drunk in charge of a car." I admit it has taken much time and thought to arrive at a satisfactory conclusion. Cases are apparently now divided into two groups: (1) the one in which the person implicated declines to be examined, and, the act of forcible examination being a trespass vetoing any test, the solicitor is in the happy position of demanding an acquittal on the ground that no tests were employed; (2) the other in which the fact that the implicated person asked for an examination is to be accepted as a clear proof that he is sober. All most satisfactory to the accused and to the medical man.—I am, etc.,

June 4th.

J.P. POLICE SURGEON.

Obituary

E. E. BOWDEN, M.R.C.S., L.S.A.
Consulting Surgeon, Warrington Infirmary

On Sunday, June 3rd, Warrington lost her oldest practitioner by the death of Dr. E. E. Bowden. He had been in poor health since last autumn, and was confined to bed for the last five months. He was born at Patricroft, near Manchester, on September 9th, 1862, and had been associated with Warrington for forty-seven years. He was appointed junior house-surgeon at the Warrington Infirmary immediately after qualifying as M.R.C.S. and L.S.A. in 1887, and continued in residence there as senior for nine years. He commenced in general practice at Warrington in 1896, and held numerous appointments: Post Office, factory surgeon, medical officer to the Training College until its removal to Liverpool, police surgeon, and surgeon to the Warrington Infirmary for twenty-five years, retiring in 1922, when he was presented with a testimonial from the board of management. During the war he was chairman of the Recruiting Medical Board, and acting D.C.M.S. of the Ministry of National Service and Ministry of Pensions. He was also medical referee for the Warrington, Leigh, Altrincham, and Wilmslow county courts.

Dr. Bowden joined the British Medical Association in 1888. He was a member of the Manchester Pathological Society, the Royal Institute of Public Health, and the Society of Members of the Royal College of Surgeons. He was chairman and secretary of the old Warrington Medico-Ethical Society, now defunct. He was the first chairman of the Warrington Panel Committee, and also chairman of the Warrington Division of the British Medical Association, to which he was always loyal. This record shows that he had a variety of interests associated with the practice of medicine, and all his work was accurate, painstaking, and thorough, and much appreciated by the higher authorities whom he served. Behind a stern and somewhat brusque manner he hid a kindly and sympathetic heart, and his familiar figure will long be missed.

JUNE 9, 1934]

in the homes and numerous factories and workshops of Warrington. He leaves a widow and two sons, one of whom is a member of the medical profession.

J. S. M.

THE LATE DR. WILLIAM B. PATERSON

Sir James Barr writes: I am very sorry to learn of the death of Dr. W. B. Paterson from the excellent obituary notice by Dr. Robert Coope in the *Journal* of June 2nd. I owed many obligations, professional and personal, to Dr. Paterson, whom I always held in the highest esteem, and patients might trust their lives with confidence to him. I have a lively recollection of one night when getting off a tram-car the driver failed to stop and my right humerus was dragged out of its socket. I was assisted home. A surgical colleague was telephoned for, but he was at an operation and could not come for at least half an hour. A practitioner friend was obtained, but he had no anaesthetic. He laid me on the floor, and with his foot in my axilla he pulled for a considerable time, but, contrary to my expressed wish, he gave up the job as hopeless and sent home for chloroform. I told my wife that I could not lie in agony till his return and asked her to ring up Paterson and tell him to bring chloroform with him. He arrived almost immediately fully armed and I asked him to put me under chloroform and keep me deeply under till the dislocation was reduced. I woke up comfortably in bed. The following day the surgeon and my other friends insisted on giving me a dose of tetanus antitoxin. My recovery from the accident took about six months. I very much regret that I did not hear of Paterson's illness when I was in Liverpool about nine months ago. The medical mortality in Liverpool of late has been somewhat appalling, and I am now very sorry to find Paterson added to the list. I wish to extend my sincere sympathy to Mrs. Paterson.

Dr. JOHN MYLES of Dolgelley was born in Limerick in 1855, and received his medical education at Trinity College, Dublin. Before this he had spent many years in Australia and New Zealand, and served in the New Zealand Artillery in the second Maori War. He graduated M.B., B.Ch. Dublin in 1889, and obtained the F.R.C.S.I. in the same year. In 1894 he proceeded M.D. After graduation he returned to New Zealand, engaged in private practice at Kumara, and was appointed medical superintendent of the Ross and Kumara hospitals. Five years later he came to England, living in Clapham, eventually removing to Dolgelley, where he had practised for twenty-seven years. At the outbreak of the Great War, although over military age, he obtained a commission as Captain R.A.M.C., and was medical officer to the Caernarvon Auxiliary War Hospital. Dr. Myles took an active part in the formation of the Dolgelley branch of the British Legion, and in recognition of his services in this connexion was awarded the gold badge of the Legion. He had been a member of the British Medical Association since 1897. A great athlete in his youth—he was an Irish Rugby international in 1875, and at about the same time was in the crew at Henley which won the Ladies' Plate—he carried with him through his life a zest for active pursuits and a great love for his fellow men. Wide in his reading as in his travels, he was a man of broad outlook, and a welcome member of many social organizations. His geniality and exceptional talent for making friends endeared him to his colleagues and patients, and at his funeral Dolgelley Parish Church was crowded with representatives of the many interests he had espoused in a long life of devoted service.

The following well-known foreign medical men have recently died: Dr. CHRISTIAN ZOELLER, professor of epidemiology and bacteriology at the Val-de-Grâce School of Medicine, Paris, aged 46; Dr. CRUDA MIHALOVITCH, formerly Minister of Health at Belgrade, aged 64, from anthrax; and Professor ARTHUR HÜBNER, director of the Nerve Clinic at Bonn, aged 53.

Medico-Legal

BUSINESS RELATIONS BETWEEN DOCTORS

This is the first of a series of articles, contributed by a legal correspondent, on some practical aspects of business transactions between medical practitioners.

GENERAL CONSIDERATIONS

When a doctor buys or sells a practice, or takes a partner, an assistant, or a locumtenent, or enters the employment of another as an assistant or locumtenent, he creates, whether he realizes it or not, a legal relationship which is bound by legal rules. Unfortunately, the experience of the large defence societies, of the British Medical Association, and of those solicitors and agents who are accustomed to these transactions shows that doctors are lamentably careless in their dealings with one another. Men who take the most scrupulous care of their patients may display in their business relationships an indifference which if carried into their professional life would quickly expose them to a charge of manslaughter. The reason for this widespread failing may be a large generosity of mind, which assumes that other persons are honest and will carry out their intentions and obligations loyally, and which cannot see the necessity for legal compulsion. It may be a preoccupation with the needs of sick bodies and minds, and an impatience with intellectual abstractions which seem to have no practical value. But the fact remains that solicitors who specialize in medico-legal work are constantly being called in to unravel the complicated and acrimonious problems that arise when two or more medical men, in addition possibly to a number of lay relatives, have involved themselves in a financial and professional relationship of vital importance to all concerned, have based years of their working lives and hundreds of pounds of their savings on it, and then, when the situation is transformed by a quarrel or a death, find that their intentions have never been clearly stated and agreed, and that they all hold completely different and antagonistic views about the rights and duties of each party to the arrangement.

The purpose of this paper is therefore twofold: to persuade the medical practitioner how important it is to conduct his business relationships with his fellows in the proper legal way, and to show him something of the law governing these relationships. It is impossible to avoid giving a certain amount of general advice as distinguished from legal information, but this tendency has been resisted as far as has been practicable. The material is not by any means original. For practically all of it the author is indebted to the classical textbook of Barnard and Stocker, the earlier chapters of *The Conduct of Medical Practice*, various articles and letters that have appeared from time to time in the *British Medical Journal* and the *Lancet*, and the more recent annual reports of the two great professional defence societies.

The chief business relationships between doctors are those of partnership; of a principal with his assistant or locumtenent, and of a doctor selling his practice with the doctor who buys it. These relationships have several features in common. He who buys part of a practice is at once a purchaser and a prospective partner, so his relationship with the vendor—the technical term for a party who is selling something—is a double one. A doctor sometimes becomes an assistant with a view to becoming a partner later on; or under terms, such as a small share in the profits in addition to his salary, which make his position difficult to distinguish from that of a partner. A locumtenent's position is much like that of an assistant, but as it is transitory it does not involve much provision for the future.

INTANGIBLE ASSETS

Business relationships between doctors, and indeed between other professional persons, have one notable feature which distinguishes them from those between commercial or financial persons. A commercial or financial business usually involves a good deal of tangible property, such as land, buildings, or money. A medical practice rarely has any property attached to it, but consists almost entirely of the intangible factor known as goodwill—that is, the readiness of patients to consult the owner of the practice. The value of a practice is the value of its goodwill, an important ingredient of which is the number of patients and the size of the fees they pay. For this reason a doctor who buys a practice or a share in one can never know, despite the most skilled and careful investigation, quite what he is getting. The purchase price is calculated on the gross receipts, but the real value of the practice will depend to an overwhelming extent on subtle factors like the completeness of the introduction, the willingness of patients to transfer to a stranger, and the extent to which they like the new-comer personally. Similarly, the value of a share will depend largely on the manner in which the established partner behaves after the agreement is signed and joint work is started: whether he is loyal or obstructive; whether he works or slacks. A former owner or assistant who sets up practice in the neighbourhood may draw off a large number of the patients and reduce the value of the goodwill disastrously.

The only tangible property included in the practice will, as a rule, be a few medical stores and some stationery, for if a house or surgery goes with the practice it is usually much more convenient to transfer the legal interest in it by a separate transaction with separate documents. A new practice is therefore as intangible and abstract a chattel as it is possible to buy, sell, or share. It is practically true to say that the purchaser takes, and the vendor sells, a potential interest in a number of psychological complexes belonging to various persons domiciled in the neighbourhood who are not concerned in the contract. The essentially abstract nature of a practice, considered as a valuable thing, dominates all business transactions connected with it. The one question that is ever present may be put thus: "What effect is this change, this conduct, going to have upon the feelings of the patients?"

The law, though no stranger to the concept of goodwill, is not very closely adapted to business relationships between medical men. It is chiefly framed for commercial partnerships and agency and the transfer of tangible property, and its concepts are sometimes difficult to apply to professional transactions. For instance, when a partner dies, his executors cannot claim anything for his estate in respect of his share of the goodwill. It is not legally a partnership asset for purposes of valuation, although the firm may own nothing else. It is practically impossible to confine within legally intelligible propositions the subtle mental factors which are so vitally important in medical relationships. The capacity of the law and legal agreements to control these transactions is much less than in commercial relationships, and their success depends far more on the personal and professional integrity of the parties.

IMPORTANCE OF A LEGAL AGREEMENT

Nevertheless, the fact that the scope of the law is especially limited in medical relationships does not make the law any less important within that scope, but rather more. Medical men are always tempted, and very often succumb to the temptation, to say: "We are both men of honour and know what we want; why should we bind ourselves with a legal agreement? Surely we can each trust the other to do his duty without this compulsion. Why should we pay a lawyer a fee to type out in complicated language what we can express simply?" Some doctors put nothing in writing at all; a few others, with

more sense, put their bargain in writing and exchange signed copies. Both groups, however, are risking grave trouble, for many reasons. The first and most obvious risk is that one or both will turn out deliberately dishonest. The second is that, with the best intentions in the world, they will disagree on what they really meant. If the bargain has never been put into writing, this development is not only probable but almost certain. Even if the terms have been written down, there is ample room for difference on their interpretation.

The third risk is that one of the parties will die and that his personal representatives, inquiring into his interest in the practice, will find absolutely no record of its limitations. When a disagreement of this kind develops there is often nothing to be done but to call in a lawyer with experience in medical relationships to sort it out. Contracts for the transfer of a practice for partnership or for assistantship are valid even though they are not expressed in writing. A contract exists, but its terms can only be deduced from the conflicting evidence of the parties, one of whom may be dead, and of persons who may have been in close enough contact with them to know what they intended; and from the behaviour of the parties—the way in which they carried on the business. Even when the parties are friendly and anxious to reach a settlement, this process is tedious and unsatisfactory; when they are hostile it may involve a lawsuit in the Chancery Division costing hundreds of pounds. In any event the whole trouble could have been avoided altogether by consulting an experienced solicitor before entering into the relationship and having the bargain expressed in proper legal form, which, whatever the contracting parties may forget or misunderstand afterwards, will always convey a definite and unequivocal meaning to a lawyer.

The following is a typical example, reported by a defence society, of the evil consequences of neglecting to have a legal agreement drawn up.

Two doctors fell out over an agreement to transfer a practice on the Continent. The question at issue was whether a definite contract had been made. As both parties had approved the terms but the agreement had not been signed, various legal difficulties were introduced. Fortunately both were members of the same defence society, and the dispute was settled by the society's solicitors, but the practitioners would have saved themselves and their society much trouble if they had employed the solicitors to keep them from making a muddle instead of to get them out of it.

Moreover, this work should always be entrusted to a firm with special medical experience. With great respect to the members of an admirable and indispensable profession, not all, and probably not many, solicitors are so familiar with medical practice and partnership as to be able to draw up an agreement which will avoid the many traps which lie open to the stranger.

In the annual report of the Paddington Houses Association Ltd. it is stated that during last winter cooking demonstrations were arranged for the tenants of houses belonging to that body. These were based to some extent on the report of the British Medical Association on the necessary minimum weekly expenditure on food per family, and weekly menus were drawn up in accordance with it. It was found that this standard of nutrition was above what could be afforded by many in one of the areas. The material for use in these classes was obtained from local shops. Emphasis is laid on the economies resulting from the wise use of gas in cookery and the planning of meals days ahead, as well as on the value of milk and cheese for children. The Paddington Houses Association now owns eighty-five houses, all free of mortgages. It houses 322 families, comprising about 1,365 persons. Owing to shortage of cheap accommodation in the vicinity it is still compelled to allow a larger number of persons per room than is desirable. Close co-operation is maintained with the borough council in its work against overcrowding.

JUNE 9, 1934]

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on June 2nd the degree of Doctor of Medicine (D.M.) was conferred on K. N. Irvine.

UNIVERSITY OF LONDON

Dr. G. R. Cameron and Dr. L. P. Garrod have been assigned to the Faculty of Medicine.

Mr. N. J. Ainsworth, M.R.C.S., L.D.S., has been recognized as a teacher of dental surgery at the Royal Dental Hospital of London, School of Dental Surgery, and assigned to the Faculty of Medicine.

Professor H. S. Raper, D.Sc., M.B., F.R.S., has been appointed as an additional external examiner on the Board of Examiners for the Diploma in Biology in 1934.

The Regulations for the Academic Post-Graduate Diploma in Medical Radiology (Red Book, 1933-4) have been amended as follows: (1) By the addition of the following after the seventh paragraph on page 497:

"Students who have passed the B.Sc. (Special) Examination in Physics as Internal Students of this University will be exempted from the course of study and examination for Part I of the Diploma."

"Students who have passed the B.Sc. (General) Examination in Physics or the B.Sc. (Special) Examination with Physics as their subsidiary subject as Internal Students of this University will be exempted from the course of study for Part I of the Diploma."

(2) By the deletion of the tenth, eleventh, and thirteenth paragraphs on pages 497-8 and the substitution thereof of the following:

"Part I of the Examination will be held twice in each year, beginning on the Tuesday following the third Monday in March and on the first Monday in December."

"Part II of the Examination will be held twice in each year, beginning on the third Monday in June and on the second Monday in December."

"Every student entering for either or both parts of the Examination must apply to the Academic Registrar for an entry form and a certificate of course of study, which must be returned duly filled in and attested in accordance with the General Regulations as to Approved Courses of Study, together with the proper fee, not later than February 8th for the March Examination, April 8th for the June Examination, or November 8th for the December Examination."

The following appointments have been made: Professor G. E. Gask, F.R.C.S., and Mr. H. L. Eason, M.S., F.R.C.S., as Governors of the British Post-Graduate Medical School; Sir Cooper Perry, M.D., as representative on the governing bodies of the National Training College of Domestic Subjects and the Battersea Polytechnic; and Dr. H. G. Cook, F.R.C.S. (nominated), to act as representative on the Court of Governors of the University College of South Wales and Monmouthshire for a further period of five years as from October.

Applications for the William Julius Mickle Fellowship must be sent in by October 1st. The Fellowship is of the value of at least £200, and is awarded annually by the Senate to the man or woman who, being resident in London and a graduate of the University, has in its opinion done most to advance medical art or science within the preceding five years, and has therein shown conspicuous merit. Further particulars may be obtained on application to the Academic Registrar.

Provided there is a candidate of sufficient merit, a Paul Philip Reitlinger Prize of £30 will be awarded on December 3rd for the best essay embodying the result of some research work on a medical subject carried out by the candidates, who must be matriculated students who, on June 1st preceding the award, were studying in one of the schools of the University in the Faculty of Medicine, or graduates of the University who on the same date were of not more than five years' standing from the taking of the first degree, and are or were students of such school. Essays must reach the University by October 1st and regulations for the award of the prize may be obtained from the Academic Registrar.

UNIVERSITY OF WALES

The following candidates have satisfied the examiners in the examination indicated:

TRIPLE FIRST DIVISION.—P. K. Ghosh, B. K. Pal, H. K. B. Resteg, P. K. Sen, H. A. Zaki.

SOCIETY OF APOTHECARIES OF LONDON

The following candidate has been approved at the examination indicated:

M.D. OF MIDWIFERY.—Marjorie Houghton James, M.B., B.S., D.P.H.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At the monthly meeting held on June 1st a resolution was adopted in silence expressing regret at the death of Dr. John Hugh Robert Glenn, a Fellow of the College.

The following were admitted Licentiates and Members of the College: W. R. F. Collis, M. J. O'Donnell, R. B. Pringle, and T. F. M. Woods.

The Services

DEPUTY DIRECTOR-GENERAL, A.M.S.

The War Office announces that Colonel W. P. MacArthur, D.S.O., O.B.E., M.D., F.R.C.P.I., Honorary Physician to the King, who is at present consulting physician to the Army and professor of tropical medicine at the Royal Army Medical College, has been appointed Deputy Director-General, Army Medical Services, the War Office, with effect from September 16th, in succession to Colonel F. D. G. Howell, D.S.O., M.C., Honorary Surgeon to the King, who, on completion of his temporary tenure of the appointment, will proceed to India to take up the appointment of Deputy Director of Medical Services at Army Headquarters, which will become vacant on December 26th. Colonel MacArthur will be succeeded as consulting physician to the Army and professor of tropical medicine at the Royal Army Medical College by Lieut.-Colonel J. Heatly-Spencer, O.B.E., M.D., R.A.M.C.

LEISHMAN PRIZE

Major F. McKibbin, R.A.M.C., has been awarded the Leishman Prize for the year 1933, consisting of a silver medal and a sum of £30, for his work in the interests of military hygiene. This prize is awarded annually for the best piece of work in any branch of medicine, surgery, or allied sciences, or in connexion with the general duties of the Royal Army Medical Corps, by an officer of the R.A.M.C. or Army Dental Corps, or by an officer removed from either of these corps but still on the active list.

NORTH PERSIAN FORCES MEMORIAL MEDAL

Surgeon Lieutenant-Commander S. G. Rainsford, Royal Navy, has been awarded the North Persian Forces Memorial Medal for the year 1933 for his paper on "Laboratory Methods of Diagnosis of Brucella Infections" published in the *Journal of the Royal Naval Medical Service*, January, 1933. This is awarded annually for the best paper on tropical medicine or hygiene published in any journal during the preceding twelve months by a medical officer, of under twelve years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service, provided the Memorial Committee considers that any of the papers published has attained a standard of merit justifying an award.

DEATHS IN THE SERVICES

Colonel Robert Blood, late R.A.M.C., of Kingstown, County Dublin, died on April 2nd, aged 87. He was born on March 10th, 1847, was educated at Queen's College, Galway, and in the school of the Royal Irish College of Surgeons, Dublin, and graduated M.D. and M.Ch. in the long-defunct Queen's University of Ireland in 1871. Entering the Army as assistant surgeon on September 30th, 1871, he became colonel on August 10th, 1901, and retired on August 13th, 1904. In the old regimental days he served in the King's Regiment, the 8th Foot, now the King's Liverpool Regiment.

Surgeon Captain John Joseph Hogan Rooney, R.N. (ret.), died after a long illness in the Royal Naval Hospital, Chatham, on May 24th. He was educated at the Cecilia Street Hospital, Dublin, and in the school of the Royal College of Surgeons, Edinburgh, and took the Scottish triple qualification in 1901, after which he entered the Navy as surgeon. He attained the rank of surgeon commander on January 1st, 1917, and retired with an honorary step of rank as surgeon captain on August 18th, 1925. He served in the war of 1914-18, receiving the medals. He leaves a widow.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons spent two days this week in committee on the Finance Bill. Post Office Estimates, import duties on iron and steel, and the second reading of the Milk Bill were down for other days. On June 5th Mr. Chamberlain announced that no instalment would be paid to the United States in respect of War Debt, pending discussion. Statements on nutrition were made at meetings of private members' groups in the Commons.

On May 30th the House of Lords agreed to amendments made by the House of Commons to the Birmingham United Hospitals Bill.

The Statutory Salaries (Restoration) Bill was read a first time by the Commons on May 30th.

The Licensing (Permitted Hours) Bill, "to make provision with regard to the power to make, and the validity of, directions as respects a part of the year only, and to the power to fix, and the validity of decisions fixing, the permitted hours on weekdays where such decisions are so made," was introduced in the Commons by Sir John Gilmour on May 30th, and read a second time on June 1st.

The Protection of Animals (Cruelty to Dogs) Scotland Bill passed through Committee in the House of Commons on June 4th without amendment, and was read a third time. It was read a first time by the House of Lords on June 5th.

In the House of Lords on June 5th the Unemployment Bill was discussed on the motion for the second reading. Lord Marley, in criticizing the Bill, cited medical evidence as to malnutrition among children of the unemployed. The debate was adjourned.

Health of School Children

Debate on Education Estimates

In committee of the House of Commons, on May 30th, Mr. RAMSBOTHAM introduced the Board of Education Estimates for 1934. The total was £42,104,018. He estimated that during the year the Exchequer and the rates between them would find about £82,000,000 for education. Reports received did not confirm the impression that the physical condition of the children was deteriorating in consequence of prolonged economic distress. The school medical officer for the North Riding of Yorks reported that out of 13,000 children medically examined only seven were really bad cases. The percentage of children pronounced subnormally nourished declined from 6.54 per 1,000 in 1930 to 3.97 in 1933. The school medical officer for Thornaby and Eston said that about 50 per cent. of the men there were unemployed, but an amazingly high standard of nutrition was maintained. The few that were underfed did not suffer from lack of quantity but of quality of food, and this not because of poverty. Mr. Ramsbotham added that certain cases of malnutrition arose not on account of poverty but of organic defects and delicacy. A recent investigation found that it was comparatively rare for the brothers and sisters of a malnourished child to show any signs of malnutrition. In the country as a whole the number of malnourished school children per 1,000 was 11.2 in 1931, 10.7 in 1932, and 11.1 in 1933. This year 190 out of 316 authorities had exercised powers under the school-feeding sections of the Education Act, and ten more were expected shortly to do so. The authorities covered about 70 per cent. of the school population of England and Wales. Over 90 per cent. of the children in industrial areas were covered by authorities which exercised these powers. In seaside towns, small country towns, and rural areas the problem of malnutrition was small or negligible. The Board of Education paid a grant at the rate of 50 per cent. on the provision of meals. In 1928 the net expenditure of the authorities in this service was £227,000; last year it was £560,000. In February,

1934, the authorities fed 292,000 children, either with ordinary meals or with milk, 212,000 of these being fed free of charge. Although only 1 per cent. of the public elementary school children were reported to be suffering from malnutrition, free meals and milk were provided for over 4 per cent. In addition, about 900,000 children received one-third of a pint of milk daily for a penny under voluntary schemes organized by the National Milk Publicity Council. To say that all poor children, irrespective of physical condition, should be fed at the expense of educational funds was a suggestion he could not accept. Provision of meals should be based upon a selection by school medical officers, supplemented by reports from their teachers, the children included being those who showed any signs of subnormal nutrition. Experience in the most distressed areas showed it possible to keep malnutrition in check by providing dinners, or even milk only, under a system of medical selection, not including those children who, though poor, were able to take advantage of the education offered them. No embargo had been or would be placed on the school medical service. Last year the Board approved seventeen proposals for new clinics and 124 forms of inspection and treatment, and this year the Estimates allowed for an increase in the cost of the school medical service. The Board intended to press on the re-organization of the schools on the lines of the Hadow report. Every type of child, whether clever or backward, benefited in the senior schools set up under that report.

Malnutrition in Distressed Areas

Mr. COVE moved a reduction in the Estimates. He contended that an embargo was maintained against the provision and improvement of school buildings. A spokesman of the Association of Education Committees had asserted that, in general, new proposals for the amelioration of the conditions of very young, ailing, and defective children, and for the extended provision of playing fields, were rejected by the Board. Approval was not generally given to the provision of nursery schools, open-air schools, or schools for defective children. Mr. Cove inquired whether the circular issued in September, 1931, restricting developments in the education service, had been scrapped. A feeling was growing up that the reports upon the nutrition of school children were not as objective as they might be. Everyone connected with the distressed areas knew children were ill fed and ill nourished. Doctors themselves did not know what malnutrition was technically, and did not accept any universal test. An investigation had lately been made into the physical condition of children under 5 in Newcastle. Nearly half the children in the poorer class were found to be below the standard height, compared with 5 per cent. of the better-class children. In weight more than half the children of the poorer class were below the standard, as against 13 per cent. of the better-class children. Only 2 per cent. of the poorer children were above the standard, compared with 25 per cent. of the better-class children. Only 20 per cent. of the poorer children passed an anaemia test satisfactorily, and 23 per cent. were found to be definitely anaemic. Of 125 poorer children forty-nine had suffered from acute or chronic chest trouble, compared with only five of the 124 better-class children. This investigation established the need for improved attention to the physical well-being of children from the ages of 1 to 5. Sir PERCY HARRIS pointed out that the House was debating the Education Estimates without the annual report from the Board or that from the Chief Medical Officer. The latter was always one of the most remarkable documents published by the Stationery Office. When the history of public health in this country was written, Sir George Newman would be shown to have contributed more to it than any other medical man or public officer. Was the Board meeting the criticisms of its own medical officer and adviser? In the light of his advice, would Mr. Ramsbotham make a statement on nursery schools, and give a lead to the country?

Vocational Tests

Dr. G. MORRISON, speaking as an old head master, said British methods of vocational testing had been rough-and-ready. He had seen in an elementary school in Rome a complete psychological laboratory to serve that school and

three or four others. In charge of it were two trained psychologists, one with a medical degree, and it had delicate, expensive, and elaborate machines for testing response to stimuli and so on. Though this was mainly for the benefit of those leaving school, the testing was done throughout the school course, and accurate records were kept. He asked Mr. Ramsbotham to consider the possibility of doing something in that direction, and more scientifically than in the past. Mr. West said that Mr. Ramsbotham would find in Kensington, if he investigated in conjunction with the medical officer of health, an abnormal number of cases of malnutrition. In the northern division of the borough he would find a disease rate in children double that in the southern part, and an infantile mortality of 120 per 1,000. Mr. ERNEST EVANS suggested that the Board of Education should consult the Ministry of Health about improving the water supplies to schools in rural areas.

Need for More Nursery Schools

Lady ASTOR said that of children up to 2 years only 50 per cent. got the benefit of infant welfare services. Between the ages of 2 and 5 there was a gap in the treatment of children. Of those entering the schools at 5 between 40 and 50 per cent. showed signs of rickets, while 27 per cent. were physically impaired. In 1932, in every 1,000 children between 5 and 15, 194 required treatment, 174 medical observation, and 613 dental treatment. Nearly 58,000 children were in special schools for the blind, deaf, tuberculous, epileptic, mentally deficient, or crippled. Nursery schools were a necessity, and the "cuts" on them should be restored. The country had 5,000 children in open-air nursery schools, but 174,000 between the ages of 2 and 4 were living in slum conditions. In these nursery schools rickets could be eliminated. The schools also eliminated grime, fear, and disease. Open-air nursery schools for 50,000 children would not cost more than £1,000,000, and would save other expenditure later on.

Replying to the debate Mr. RAMSBOTHAM asked for definite instances of education authorities which complained that schemes for new schools had been rejected. Considerable new building had taken place. Local authorities in Willesden, Birmingham, and elsewhere had used the services of experts from the National Institute of Industrial Psychology for testing children and giving vocational guidance. These methods probably were in their infancy, but it was worth while for local education authorities to look into the possibility of giving more scientific and efficacious vocational guidance than at present. Within the last month or two the Board had authorized two more nursery schools.

The motion for reduction of the Estimates was defeated, and the debate was adjourned, the Labour Opposition intimating that it might seek to discuss education again at some later date.

The Government's Milk Policy

Dr. WAITER ELLIOT, in committee of the whole House of Commons on May 31st, moved a resolution to authorize additional expenditure by any board administering a scheme under the Milk Marketing Act, and also to authorize payments for similar purposes out of moneys provided to the Government of Northern Ireland. The resolution also proposed to authorize the payment out of moneys provided by Parliament of sums not exceeding in the aggregate £750,000 to be applied by the Minister of Agriculture and Fisheries and the Secretary of State for Scotland, respectively, during a period of four consecutive years, with the object of securing, so far as practicable, that the milk supplied for human consumption in Great Britain was pure and free from the infection of any disease, and to provide for requiring boards administering milk marketing schemes to make payments after the end of that period to registered producers in respect of milk produced by them in such circumstances as might be prescribed by the Minister with that object. Money was also asked for contributing up to £1,000,000 in two years on a £ for £ basis towards the expenses incurred by Milk Marketing Boards in giving effect to approved arrangements for increasing the demand for milk, and to provide for regulating the manner in which milk is described for purposes of advertisement and sale.

Dr. Elliot said the annual value of the milk products with which the Ministry of Agriculture had to deal was £63,000,000. There were about 3,400,000 dairy cows in the country, and 320,000 persons engaged in the industry. Over 80 per cent. of the world's export of butter and over 50 per cent. of the world's export of cheese were sold in the United Kingdom. The Government sought a bigger consumption of milk, and, to secure that, a clean-up of the herds. Critics contended that it was a mistake to assist the manufacturing side of the industry, and that the money voted by Parliament should be devoted to increasing the consumption of liquid milk in schools. Some 10,000,000 gallons of milk a year were consumed in the schools by 1,000,000 children. That might perhaps be doubled in the first year, but milk used for manufacture in 1933 was estimated at 160,000,000 gallons. Even milk made into cheese on farms might amount to 45,000,000. Parliament must tackle this 200,000,000 gallons as well as the problem of greater consumption of liquid milk. It could not start a campaign for large consumption of milk except upon public confidence in the quality.

Eradication of Bovine Tuberculosis: Proposed Expenditure

This question had been exhaustively reviewed by the Committee of the Economic Advisory Council under the chairmanship of Sir F. G. Hopkins, whose report had been published.* Whatever might be the merits of pasteurization, a universal compulsory scheme was at present impracticable. The Hopkins Committee reported that the total eradication of bovine tuberculosis from all herds was the only complete solution of the problem of tuberculous milk. That solution could not be obtained for many years, and not without much expenditure, but the Government proposed to use £750,000 to make a start on this problem. It was impossible at present for the Milk Board to bear the cost of the scheme for establishing tubercle-free herds as well as the scheme for the Roll of Accredited Producers, which, following the recommendations of the Grigg report, was to be undertaken in England and Wales by the Milk Marketing Board without Government aid. To ensure continuity the Bill would enable Ministers to require the boards to continue this campaign. Boards would be required to submit, for the approval of the Government schemes for increasing the demand for milk, and a scheme would not be approved for grant on the £ for £ basis unless it contained provision for the supply of milk to schools at reduced rates. He had no need to argue the case for increasing the general consumption of milk. Even in winter this country had a 20 per cent. excess of milk over liquid requirements, and in summer the excess might rise to 40 per cent. Under the resolution before the House advances would be paid on milk sold under the marketing scheme for manufacture into cream, butter, cheese, milk powder, or condensed milk. He assumed that in the first year 160,000,000 to 180,000,000 gallons would qualify for advances under the resolution. The Government of Northern Ireland would shortly propose to carry through a similar series of reforms in some ways more drastic, grading the milk, cleaning up the herds, and providing a supply of milk to children in schools.

Mr. TOM WILLIAMS said the report of the Hopkins Committee indicted the dairy farmers, the large local authorities and all past Governments. It showed that 40 per cent. of the cows reacted to the tuberculin test, and that there was no sign of any diminution in the number. Of samples of milk taken in four large Scottish cities 10 per cent. were infected with tubercle bacilli. Of the local authority sample taken in England and Wales 7 per cent. were so infected. They could not hope to increase consumption of milk if they could guarantee a much purer supply. The Hopkins report showed that some county authorities were indifferent to securing a pure supply. Responsible people said between £30,000,000 and £50,000,000 would be required to clean up all the herds in the country. Dr. Elliot proposed to spend £170,000 yearly. What would he do with it? Would he provide Grade A (T.T.) milk, or provide a national veterinary inspectorate to inspect all the animals from time to time? There ought to be a national organized service of trained and qualified inspectors, and no county boundaries should

* See leading article, p. 1035.

interfere with their work. State funds should supply free milk to every elementary school child in the country. An investigation in Cardiff had shown that in a good middle-class house 3.8 pints of liquid milk were consumed per person weekly, in a good working-class area 1.87 pints, in a house under the new housing scheme 1.32 pints, and in a poor working-class house 1.1 pints. In the good working-class area 9 per cent. of the houses took no liquid milk; in the housing scheme houses 15 per cent., and in the poorer working-class houses 26 per cent. The sale of skimmed milk rose from 1.94 pints weekly per person in a good working-class house to 3.24 pints per person in a poor working-class house, though this last was not in a slum area. Moreover, the consumption of fresh liquid milk in a poor working-class house where there were children was only 1.1 pint per head, compared with 2.8 pints in a similar house without children. Of the children from houses which took no fresh liquid milk, only a few received milk at school. Low wages and unemployment had led to a decrease in milk consumption in certain areas. He need not quote from the British Medical Association's report on nutrition. Last year 900,000 children attending elementary schools in England and Wales received on an average one-third of a pint of milk per day, but paid 2s. a gallon for it, whereas the subsidized price at the factories was 5d. per gallon.

Mr. JAMES DE ROTHSCHILD said that medical opinion was not agreed on pasteurization, and that was one of the first things which should be examined during the campaign to increase the purity of milk. Pasteurization must never be regarded as a substitute for pure unprocessed milk, and the present conflict in medical opinion was worrying the milk-consuming public. Pasteurization allowed large distributors to foster low-grade production. The large distributors had followed this policy for years, and desired to continue it. Experiments to decide the relative values of raw and pasteurized milk could be conducted in schools over a long period. Such an experiment in the Larnarkshire schools had proved inconclusive. One on a large scale would give the public confidence when drinking milk. The campaign for purity could only succeed if the producers were rewarded with higher prices for better quality, but the distributors' margin for high quality milk could be drastically reduced because no processes were necessary. The present marketing scheme encouraged the production of low-grade milk. Mr. OSWALD LEWIS said it was undesirable to increase consumption of raw milk regardless of the possibility of spreading disease. At a later stage the Government would assure the House that it had in mind some definite qualifications with regard to the raw milk to be supplied in schools.

Immunization of Herds by Inoculation.

Sir FRANCIS ACLAND said he did not understand how bovine tuberculosis could be eradicated so long as the sale was permitted, as the Hopkins report proposed it should be, of milk uncertified—that was, of milk cleaner than it had to be now, but not derived from tubercle-free herds. He believed there was more chance of immunizing herds by inoculation than would appear from the Hopkins report. Research on immunization by inoculation should now be taken up with the greatest activity, and the supply of milk to schools should be delayed till they had a certainty of a tubercle-free supply. He backed the "children's minimum" policy, which asked for free provision of milk to all elementary school children, necessitous children under 5, and expectant and nursing mothers; but if they rushed into the proposal of distributing milk to schools some medical officer would say a child had acquired tuberculosis from milk, and that would be a fearful handicap. Many medical officers of health overdid their pursuit of pasteurization. Very little pasteurization was really fool-proof, and no one had laid down the exact conditions for it. Captain HENEGERS, as a Grade A producer, said that doctors had done much to kill production of clean milk in the United Kingdom, and, by crabbing the milk supply day in and day out, made it difficult for the Milk Marketing Board to raise the sales of liquid milk. Certified milk cost nearly 3d. a gallon extra to produce. The farmer must have a reward for producing cleaner milk. It would be a great thing to clear tuberculosis from this country, but the doctors had not given the milk producers a fair deal in representing the odds arising from tuberculosis. These were 2,200 to 1 in any year against any child getting tuberculosis

He supported the supply of fresh milk to children, citing experiments by Dr. Corry Mann at the Foundling Hospital as conclusive proof of the value of milk. He believed the Milk Marketing Board intended to extend the supply of cheap milk to factories, mines, and workshops. Admiral TAYLOR said the import of skimmed condensed milk should be prohibited. Although labelled "Unfit for babies," there was no guarantee that it would not be given them. What would Dr. Elliot do if factories in this country began to manufacture it?

The Medical View

Sir FRANCIS FREMANTLE said he spoke as a consultant medical officer of health, an active dairy farmer, and as president of the Central Council of Milk Recording Societies. As a medical officer of health he was always asked not to exaggerate, or perhaps not to emphasize, the danger of disease arising from milk. No one would wish to exaggerate the fears of the public, but agriculturists who tried to belittle the amount of disease did the worst disservice to the dairy industry. The People's League of Health had established a veterinary council and a medical science council, which established a combined commission to study the milk supply. They reported last year, and in April sent a deputation to the Minister of Health and to the Minister of Agriculture. Their careful conclusions were emphasized by the report of the Economic Committee of the Privy Council. They said that among the diseases conveyed from the cow to man were tuberculosis, undulant fever, and septic sore throat. The finding that at least 40 per cent. of the cows in this country were infected with tubercle had not been sufficiently met by those who talked for the dairy industry. That the nutritive value of milk was great the experiments of Dr. Mann with children in a Poor Law institution showed, but the nutritive value of milk must be considered in conjunction with its infectivity. It was absurd to say that the medical profession should not pay attention to the comparatively small proportion of tuberculous milk. It had to look at the sufferings of crippled children, to say nothing of the 2,000 deaths and 4,000 fresh cases every year. Pasteurization was perfectly simple, and did not destroy the nutritive qualities of the milk or its flavour. The difficulty of the machinery was solving itself, though on farms and out-of-the-way places there was danger in the use of this machinery. If milk was provided for schools it would be under the authority of the school medical officer or of the medical officer of health. They would consider the best way of protecting the milk given, and the greater number would say it was possible to pasteurize milk cheaply. In any case, the nutritive value of the milk would be to the advantage of the children, and these officers would desire to give to the children as large a supply as could be allotted. The short-term policy was the pasteurization or boiling of milk; the long-term policy the eradication of tubercle from the herds. The latter was most difficult, but could be done by a proper long-term policy, as set out in the reports he had mentioned. Greater support was needed for the veterinary profession in supervising cattle. The country required a system of tuberculin testing and of isolating tuberculous cattle from those which were not. The veterinary profession had not advanced with the times, and still suffered from want of proper training. The increase of educational facilities and the bringing up of a new generation of veterinary officers should receive consideration. They could not have proper veterinary inspection without adequate machinery of college and staff, and without bringing the best men into the profession. They must recognize the value of scientific work for prevention as well as disease in dairy cattle, and pay for the services of veterinary surgeons, who would do work on cattle such as medical officers of health had been organized for fifty years as a profession to do for human beings. Despite all difficulties, it would be an enormous gain if the proportion of food given to children every day in the form of milk could be increased, but there was danger in sudden change. In some homes the children might be deprived of other food because they were getting milk at school.

Mr. SKELTON, replying for the Government, said Sir Francis Acland need not fear there would be an inadequate supply of safe milk for the children of this country. There was a considerable and growing number of certified herds, and in London the great bulk of the milk, if not the whole, was

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pasteurized. If the country could clean up the herds it would secure a degree of safety it could never attain by pasteurization, which had anxieties and dangers.

The House agreed with Dr. Elliot's resolution by 177 to 43. On June 1st the resolution was reported and the Milk Bill was brought in by Dr. Elliot. The Government proposed that the second reading debate should be on June 7th.

Lotteries Bill and Competitions in Aid of Hospitals

The House of Lords went into committee on the Betting and Lotteries Bill on May 30th, and continued discussion of that stage on May 31st. In Clause 24 (Restrictions on Certain Prize Competitions) Lord LUKE moved to insert a new subsection to ensure that a corporate body established before the passing of the Bill for a charitable purpose might conduct for any such purpose any competition in which success depended partly upon the exercise of skill, provided that the body had submitted to the chief officer of police in its area a copy of the rules and conditions of the competition, and an opinion of counsel that success in the competition depended to a substantial degree on the exercise of skill, and provided that the chief officer of police had not, within fourteen days of that submission, intimated his disagreement.

Lord Luke said his friends were anxious to preserve for hospitals this competition source of revenue, which seemed to be threatened by the clause. It was undesirable that voluntary workers, endeavouring to raise funds for a charity, should be open to prosecution and penalties when acting under the best legal advice, and that the charity for which they acted should lose thousands of pounds—spent in printing and advertising. The British Charities Association had run competitions for ten years. Last year it distributed £21,000 to hospitals, which brought its total distribution to 900 hospitals up to £250,000. The competitions had been part skill and part chance, and not one had been challenged in the courts. It was impossible to run a competition depending entirely on skill if prizes were to be distributed. Prize competitions for charity were popular and harmless, and charities could not afford at present to be deprived of this source of income. A hospital running a competition after this Bill passed, if unamended, would run the risk of an action to show whether the skill element was substantial. Lord LONDON-DERRY, the Minister in charge of the Bill, said he could sympathize with Lord Luke's desire that the British Charities Association should be allowed to conduct competitions without danger of criminal proceedings, but the solution he proposed could not be entertained. Whether any competition was legal could be determined only by the courts. The legality would depend, to a certain extent, on the way the competition was conducted. Lord LUKE said he would leave the amendment and a consequential one over to the report stage.

Clause 24 was agreed to. The DUKE OF ATHOLL moved at the end to insert a new clause giving exemption for State and licensed lotteries. He said that recently he had allocated, from what had been described as a lottery, large sums of money to 118 hospitals and other institutions. All, including great London hospitals, had written grateful letters, and most expressed the hope that he would be able to inaugurate another scheme on similar lines for their benefit. He read a letter of thanks from the Treasurer's House of St. Thomas's Hospital. He saw no reason why lottery subscriptions should clash with voluntary subscriptions. His clause would enable the Government to authorize definite bodies such as hospitals to promote a lottery, or to appoint commissioners to carry out a lottery, or else authorize others to do it. The DUKE OF SUTHERLAND supported the amendment. The BISHOP OF WINCHESTER and Lord SOMERLEYTON opposed it. The Bishop said the majority of the hospitals were not asking for these lotteries. Lord Somerleyton said that voluntary hospitals in London were in a better position than for some time. Fewer had deficits.

Lord LONDON-DERRY hoped the House would not accept the amendment. He was chairman of two hospitals in London, and opposed any organized system of lotteries for the purpose of supplementing hospital finance. If any system of lotteries were established the fountain of charity would dry up, as they heard it had in Ireland, where charitable contributions

formerly forthcoming were now non-existent. The Government agreed with the Royal Commission that large-scale lotteries, promoted by a statutory board for charitable objects or by individual charities under permits, were undesirable.

The House negatived the clause proposed by the Duke of Atholl, and completed the committee stage.

Experiments on Animals

Replying to Sir Robert Gower, on May 30th, Sir JOHN GUNMOUR stated that the number of instances during 1933 where inspectors witnessed the whole, or the initial procedure, of an experiment on a living animal was seventy. Twelve of these were under licence alone, three under Certificate B, and fifty-five under Certificate A. In addition, the inspectors in the course of their visits saw and examined many thousands of animals under experiment. The seventy experiments in question and the animals under experiment were seen in various registered places, a complete list of which would be given in the Annual Return. Information was not yet available as to how many experiments on animals were reported as performed during 1933.

Duty on Insulin Removed

On May 31st Sir Francis Fremantle, Dr. Howitt, and Captain Elliston, as a deputation from the Parliamentary Medical Committee, interviewed Mr. Neville Chamberlain about the removal of the duty on imported insulin. Mr. Chamberlain was accompanied by Mr. Geoffrey Shakespeare and Dr. Burgin. The deputation pointed out that the medical Members of Parliament were in a difficult position. Originally opposed to the tariff on insulin, they had gone into the matter thoroughly, and had finally agreed that the duty was necessary to enable British producers to compete with the Danes, who had buildings and equipment free and their product exempted from income tax. In Denmark raw pancreas and labour were both cheaper. Since the investigation no objection had been taken to the duty in the medical press, nor, so far as the deputation knew, from medical quarters. Nor was any objection on the score of prices taken by the Ministry of Health, the British Medical Association, or the medical profession generally. Under protection the price of British insulin had fallen. On the other hand, it was evident that the Danish producers were prepared to undersell the British manufacturers, however much these reduced the price, and would so secure the British market and the foreign trade which was now beginning. That involved a great danger of stopping research as well as production. The deputation, in fact, could see no reason for the change of Government policy. Mr. CHAMBERLAIN, in reply, showed that the imposition of the duty last February was not a Government decision, but the decision of the panel of experts that insulin was a fine chemical. He suggested that it was open for the British manufacturers to apply again to the Import Duties Advisory Board for any duty which was needed to protect their industry. He would not give any reason for the recent Government decision, except the general one that the cheaper insulin was, the better for the patients.

Debate in the Commons

On June 4th the House of Commons began consideration of the Finance Bill in Committee. Mr. H. WILLIAMS moved the deletion of Clause 5, which repealed the customs duty on insulin. He said that it was a little inappropriate, on the day that the announcement was made that Dr. Banting had been honoured, that the committee should be asked to pass a clause which would probably have the effect of handing over to a foreign monopoly the manufacture of insulin, which was discovered by this young and distinguished Canadian medical man. The increase in the duty on insulin from 10 to 33½ per cent. had not been followed by any rise in the price, and there was no evidence that any sufferer from diabetes in this country had been prejudiced. Dr. Howitt said that to-day this country produced finer and purer insulin than any other country in the world. Our rivals were the Danes. People who said that insulin would become cheaper if the protection

was removed were wrong, for while the protection had existed insulin had steadily become cheaper and cheaper. Denmark was able to produce insulin more cheaply than we were, partly because of the subsidized nature of the manufacture, partly because of the ease with which the Danes could obtain the pancreas, and partly because of the cheapness of the pancreas. In the hospital with which he was connected only British insulin was used. That was not from patriotic reasons, but because the doctors said that it was the best. There was the danger that it might pay Denmark to sell her insulin here at a loss for a period if she could succeed in closing down our chemical works.

Mr. CHAMBERLAIN said that the imposition of the duty of 33½ per cent. on imported insulin under the Safeguarding of Industries Act was a kind of accident. Insulin was not picked out by the Government as being an article of such importance to the country in wartime that it must be safeguarded. The omission of insulin from the list of fine chemicals was challenged by the Association of British Chemical Manufacturers. The Board of Trade took up the challenge, and opposed the inclusion of insulin. The matter went before the tribunal, which decided that insulin must be included in the list. The purpose of the association was to establish the principle that certain biological products should be defined as fine chemicals; having established that principle by the decision of the tribunal it was not particularly interested in insulin. The clause in the Bill was not introduced because of any improper behaviour on the part of the chemical manufacturers in this country. It was very much to the credit of the British manufacturers that they had not only continually reduced the price of insulin, but had produced insulin of a quality which had established a special reputation here and abroad. Representations had been made to him to the effect that diabetics felt that the price of insulin was higher than it would have been but for this duty. There were a considerable number of people to whom insulin was a matter of life or death. If these people thought, even mistakenly, that they had to pay more for it than was necessary by reason of the duty they would have a just cause of complaint. Since the announcement that the duty was to be repealed there had been a further reduction in price. The repeal of the duty left the British manufacturer free to make application to the Import Duties Advisory Committee for a duty on imported insulin. There would be an inquiry into the facts of the case, and if the committee came to the conclusion that diabetics would suffer they would, he imagined, make a recommendation accordingly.

The clause was ordered to stand part of the Bill.

Water in Swimming Baths.—Mr. SHAKESPEARE told Mr. D. G. Somerville, on May 31st, that a report on the purification of water in swimming baths was prepared by the Ministry of Health in 1929. This report emphasized the importance of clean water in public baths, and explained the best method of purification. Local authorities were aware of the recommendations in the report, to which attention would again be called in the forthcoming annual report of the Ministry. In the case of swimming pools not belonging to local authorities, the water, if impure, would constitute a nuisance under the Public Health Act, and local authorities would have power to deal with it.

Specialists on Royal Commissions.—In reply to Mr. Chorlton, on May 31st, Mr. BALDWIN said he had noted the views expressed by the Parliamentary Science Committee in a letter dated May 8th, which urged the inclusion of scientists and technicians in the personnel of all Royal Commissions, Departmental Committees, and other committees dealing with scientific and technical matters. He said it would be inadvisable to lay down a general rule. The importance of including scientists and technicians in appropriate cases was, and would be, borne in mind.

Vaccination in the Navy.—On June 4th Sir B. EYRES-MOSELLE informed Mr. Groves that it was not the practice to allow persons to enter the Navy who were conscientious objectors to vaccination. All candidates on entry were required to declare their willingness to be vaccinated, or revaccinated and inoculated if necessary. Otherwise they were not accepted for entry.

Medical News

The Queen has consented to open the new Students' Hostel at the London Hospital Medical College on Tuesday, July 3rd, at 3.30 p.m.

The Earl of Derby will distribute the prizes at St. Thomas's Hospital Medical School in the Governors' Hall, on Tuesday, June 26th, at 3 p.m. There will be tea and music on the terrace.

The annual general meeting of the British Science Guild will be held on Tuesday, June 12th, at 4 p.m., at the Royal Society of Arts, John Street, Adelphi, with the president, Lord Melchett, in the chair. The meeting will be followed by a popular lecture (illustrated by lantern slides and experiments) on "Friction," by Professor E. N. da C. Andrade, D.Sc. Tickets for the meeting and lecture may be obtained, free of charge, from the secretary of the guild, 6, John Street, Adelphi, W.C.2.

An exhibition, organized by the Rubber Growers' Association, will be held at the Hotel Metropole, Northumberland Avenue, W.C., on June 13th, 14th, 15th, and 16th, from noon to 8 p.m. Admission free.

The Fellowship of Medicine (1, Wimpole Street, W.) announces a lecture-demonstration on "Oedema and Diuretics" at 11, Chandos Street, W., on June 12th, and another, on "Renal Insufficiency," for June 19th. There will be a course in proctology at St. Mark's Hospital from June 11th to 16th, and a course in medicine, surgery, and the specialties at the Prince of Wales's Hospital from June 11th to 23rd; the latter will be repeated from June 25th to July 7th. Forthcoming courses include cardiology at the National Heart Hospital, June 25th to July 7th; diseases of children at the Children's Clinic, June 25th to July 7th; ophthalmology at the Central London Ophthalmic Hospital, July 2nd to 7th; and a week-end course in medicine and surgery at the Metropolitan Hospital, June 30th and July 1st.

The Faculty of Medicine of the University of Paris has arranged a post-graduate course in cancer for the month June 11th to July 12th. In addition to formal lectures, discussions, and clinics in the mornings, there will be demonstrations of surgical, x-ray, and radium treatment. The fee is 300 francs, and a certificate will be awarded at the end of the course. Inquiries should be directed to the Faculty of Medicine, Salle Bédard, Paris.

The next conference of the British Health Resorts Association will be held at Cromer, at the invitation of the urban district council, supported by the local medical practitioners and the Norfolk Branch of the British Medical Association, from Friday, June 29th, to Sunday, July 1st. There will be discussions on "The Seaside Resort in the Treatment of Respiratory Diseases," to be opened by Dr. R. A. Young, followed by Dr. L. S. T. Burrell, and "Climatic and Allied Factors in the Incidence of Disease and its Treatment on the East Anglian Coast," to be opened by Dr. R. Fortescue Fox.

A congress on *B. coli* infections and intestinal intoxications will be held at Châtel-Guyon on September 23rd and 24th, and will comprise medical, surgical, therapeutic, and hydrological sections. Among the topics to be considered are septicaemia of *B. coli* aetiology, also the diseases of children caused by this organism, and its localization in the genital organs. Other subjects for discussion include hydromineral therapy in intestinal infections and intoxications, nervous complications in these conditions, and the gynaecological aspects of *B. coli* infection. The fee for membership of the congress is 50 francs. Specially reduced railway fares and hotel charges are available for those who attend. Further information is obtainable from the administrative secretary of the congress, M. Juin, or Dr. P. Balme, Les Grandes Thermes, Châtel-Guyon.

The third French Congress of Gynaecology will be held in Paris from July 7th to 10th, with Professor Koenig of Geneva as president of honour, and Dr. André Binet of Nancy as president.

The King has approved the grant of the Polar Medal in bronze, with clasp inscribed "Antarctic 1929-31," to Dr. William W. Ingram, M.C., who was a member of the British, Australian, and New Zealand Antarctic Research Expedition, 1929-31.

Owing to the present financial crisis the Austrian Minister of Education has decided to reduce the number of university institutes. One of the two oto-rhino-laryngological clinics has already been closed, as well as one of the three gynaecological clinics.

A lecture on the theory and practice of contraception will be given to medical students and practitioners by Dr. Gladys Cox on Tuesday, June 12th, at 6 p.m., at the Walworth Women's Welfare Centre, 153A, East Street, S.E.17. Tickets must be applied for in advance.

The second centenary of the birth of the Spanish surgeon Antonio de Gimbernat is being celebrated this month by the Surgical Society of Catalonia, when a prize of 1,500 pesetas will be awarded for the best biography of Gimbernat.

The summary of deaths among medical practitioners during 1933, published in the *Journal of the American Medical Association*, shows that the four commonest causes of death were heart disease (1,131), cerebral haemorrhage (360), pneumonia (313), and cancer (286).

The prize of 5,000 Belgian francs offered by *Bruxelles-Médical* for the best work published in its columns during 1933 has been divided between Professor Bessemans, rector of Ghent University, and Dr. Dumont, a colonial medical officer.

Dr. Jean Charcot, the well-known explorer and member of the Académie de Médecine, has been nominated Grand Officer of the Legion of Honour.

Professor W. His has been awarded the Goethe Medal and nominated honorary doctor of philosophy in the University of Berlin.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: Bacillus, Dublin; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: Associate, Edinburgh; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Orchitis After Prostatectomy

"X. Y. Z." writes: A man aged 72 had a suprapubic prostatectomy done a year ago for hypertrophy. Prior to his operation he had frequent acute attacks of epididymo-orchitis. These attacks still persist. Can any reader suggest what form of treatment one might adopt? The patient is strong and active; no history of gonorrhoea, or anything to suggest malignancy.

Worms in White Fish

"RURAL G.P." writes from Ireland: I have on several occasions found small "wire-worms" in the flesh of white fish such as codling. Are such worms found in all fish or in some only; are they completely killed by ordinary cooking; and, if swallowed alive, would they become parasitical in man?

Movement of Needles in the Tissues

Dr. C. BELCHER (Birmingham) writes in reply to "Sceptic" (May 12th, p. 880), who asks whether foreign bodies move in the tissues: The following cases will prove that such is a fact. Foreign bodies do travel from the original entry. A youth consulted me for a pain in his right side, not severe, but worse at one time than another. On his first visit I found little to account for his trouble. On his second visit I went over him more carefully, and passing my hand over his side felt a prick. I examined the part again, and still experienced the sharp prick like that of a pin; and, looking at the spot, which was in the posterior axillary line at a level with the first lumbar vertebra, I saw a small discoloured spot, the point of a pin or needle; but he could give me no information as to how it got there. The following evening he returned, with his mother. I explained to her what I had discovered and asked permission to remove it, which I did; it was a darning needle about two inches long, blackened, but quite serviceable. Immediately the woman saw it she recognized it, and exclaimed "I remember it very well; when he was a baby, not having a safety-pin handy, I fastened his shawl in front with the needle, put him in the cradle in a hurry as I was called away, and forgot it until I came to undress him and then thought about the needle. Look as I would I could not find it." The other case was a man with a small beershop, who came to me complaining of numbness and tingling of the fingers of his left hand. I could see nothing in the hand to account for it, and so examined his arm and upper arm; when I put my hand in his left axilla I felt a slight ridge, and when I pressed upon it he said that this started the tingling in his fingers. I recognized that whatever it was this was the cause of his trouble, and intimated that he had got some substance into his axilla and asked him how it had got there. He refused to admit anything being there; never, to his knowledge, had he had anything go into his side. I suggested he might let me put a needle under the skin (as the foreign body was only skin deep), which he did, and I distinctly felt a hard substance beneath. Without any anaesthetic, local or otherwise, I made a small incision, and with the forceps withdrew a triangular splinter of glass one and a half inches long. I showed it to him, and he was dumbfounded. On coming back to have it dressed he told me he had talked it over with his wife, when she remembered that on a windy day the previous summer the glass door leading to the shop had blown to and he had put his shoulder to it to prevent slamming, but he had smashed the glass pane. He felt nothing, but she noticed a spot of blood on the top of the shoulder of his white shirt afterwards, and mentioned it to him, but they could see no wound.

Income Tax

Review of Past Years

"JUNIOR" asks how many years is the inspector authorized to go back for investigation of accounts.

* * The Income Tax Acts do not give the inspector much authority in the matter, but they give the Commissioners the right of making assessments for the six previous years. In certain circumstances those assessments may be confirmed wholly or partially in treble duty. Consequently it is advisable to meet any reasonable requests by the inspector as there is in the background the possibility that refusal may lead to action by the Commissioners, which may in effect enforce production of the evidence requested by the inspector.

Motor Car Transactions

"W. A." bought a car in 1927 for £685 and sold it in May, 1933, for £35, the reduced value then being £231. He bought a new car for £405 in replacement, but sold it in October for £295, and may not buy another. He has been allowed depreciation at 15 per cent. per annum.

* * He is entitled to obsolescence allowance in respect of the replacement in May, 1933, the amount being £231 - £35 = £196. That sum can be treated as a professional expense of the year 1933. No obsolescence allowance is due in respect of the subsequent transaction unless and until another car is purchased in replacement of the one sold in October, 1933.

Purchase of Drugs

"F. L." purchased a share in a practice in October, 1932, and paid £52 to his predecessor for a share in the drugs. Can he claim that that payment is an allowable expense.

** "F. L.'s" liability is determined by his share of the profits of the practice, and, presumably, the cost of the drugs used is charged in arriving at the amount of the firm's profits, and his special payment cannot be deducted again. In effect it is a capital payment so far as "F. L." is concerned, and is part of the cost to him of acquiring his share in the practice.

LETTERS, NOTES, ETC.

Local Anaesthetic for Myringotomy

Dr. ARTHUR MURPHY (Brisbane) writes: In the *Journal of February 10th* (p. 262), Dr. John M. Dewar of Edinburgh asks in a letter for the means of incising the membrum tympani under local anaesthesia. May I assure him that the following local anaesthetic will secure the painlessness of the proceeding within ten minutes, often less. The criterion is that the inflamed membrane goes white in colour, which in my experience it has always done.

Tutocaine, menthol, acid carbol. crystals, aa grains 15.
Alcohol 42 per cent., aq. dest., aa m8.

Powder the menthol and mix the tutocaine with it in a mortar. Then, in a glass, add first the carbolic acid, then the spirit, and then the water. In chemically pure glass bottles it keeps indefinitely. Apply on an applicator directly to the ear drum over the area to be incised.

** Care should be taken that this preparation is not applied to the skin of the auditory meatus.

Cost of Hypodermic Needles

Dr. T. D. ROSS (Cathcart, Glasgow) writes: A patient of mine who uses insulin daily has been complaining about the high cost of hypodermic needles. He has made inquiries and finds that the wholesale prices charged to chemists for these are: *British make* (stainless steel) 17s. 6d. per gross, or about 1½d. each; *German make* (nickel plated) 10s. to 12s. per gross, or ¾d. to 1d. each. The prices being charged by chemists are 6d. for one only or 5d. each if purchasing half a dozen lots or more of British needles, and 3½d. each for German needles. My patient much prefers the British article. If the above wholesale prices are correct it would appear that the retailer is making an exorbitant profit.

Pernicious Anaemia in the Asiatic

"M.D. (Madras)" writes: The naïve assertion by Dr. Eric C. Spaar of Colombo, in your issue of March 31st (p. 578), about the non-occurrence of pernicious anaemia in the Asiatic reminds one of the recent controversy in the correspondence columns of the *Journal* on the incidence of rheumatic infection in the Tropics. I believe that Davidson, in his valuable monograph on pernicious anaemia, does mention the rarity of the disease in India. Most practitioners of standing in India should be able to testify to the contrary. I have myself, in my limited hospital work, come across at least half a dozen cases that will satisfy the most exacting of modern criteria in diagnosis of pernicious anaemia, and have seen undoubted cases of subacute combined degeneration. I deplore the lack of case reports with full details of investigation. I hope that the growing tendency of expression in India will dispel in time many ill-founded textbook notions on diseases in this country.

Martyrdom-by-Sandwiches

Dr. DOUGLAS ANDERSON, a member of the New South Wales Branch of the Association, now in England, writes. In order to protest against what they interpret as the contention of the B.M.A. that a working man can live on 5s. 10½d. a week, and on the other hand the extravagant living at the University, five Oxford undergraduates have formed the Martyrs' Memorial Dining Club. The five members have met nightly to consume ten penn'orth of sandwiches and coffee served from a coffee stall, and they have an anthem designed to be chanted as they assemble, running:

Here where the Martyrs resolute and godly
Escaped through flame to Pit that flames for all,
We pale and studious denizens of Bodley
Receive our sustenance from yonder stall.

Now, however, at the end of term, it is reported that the Martyrs, despite their privations, are looking remarkably fit and well. Might we not add another verse to their anthem?

After a week of martyrdom-by-sandwiches

The five have not appeared to waste away;

Indeed they've thriven as they had not planned, which is

A sign one shouldn't doubt the B.M.A.

The Word "Clinic"

Dr. W. W. SHRUBSHALL, D.P.H. (Burgess Hill, Sussex), writes: In your issue of May 19th I notice with satisfaction the protest against the misuse of the word "clinic," suitably expressed by Dr. L. Firman-Edwards. I well remember when the importation of this word with its modern meaning, probably from America, was first noticeable, and the derision in which it was then held by some of my confreres. The scorn for it in its modern misuse was, unfortunately, not sufficient to inhibit its growth. Your correspondent's suggested use of the word "centre" in place of "clinic" in this connexion appears to be quite appropriate.

Anglo-American Continental Medical Society

Dr. TOM A. WILLIAMS informs us that the officers of the Anglo-American Continental Medical Society commissioned him to arrange a gathering of the society and its friends in the British Medical Association during the Bournemouth meeting. In consultation with those responsible for organizing the meeting, Friday, July 27th, at 12.30 p.m. for luncheon in the Pavilion, has been selected. The society feels that all its members who are eligible should belong to the B.M.A., in order to keep in touch with the profession at home and in their turn to keep it acquainted with the fact that there are still on the Riviera, and throughout Europe and the contiguous countries, practitioners competent to deal with English-speaking people who have the misfortune to be ill while abroad. To that end it wishes not only to get into touch with former friends, but to form new connexions in England by means of this gathering at Bournemouth. Those wishing to attend should communicate with Dr. Tom Williams, before July 23rd, at the Royal Societies Club, St. James's Street, S.W.1.

Abstracts for Filing

The *Archivos Latino Americanos de Cardiología y Hematología*, a bi-monthly periodical published in Mexico, adopts an excellent practice in the publication of its epitome of current medical literature. Abstracts from foreign journals are printed on specially stiffened coloured paper which, readily detachable, and bearing a reference number at the top right-hand corner, can be placed straight into a card-index filing cabinet. Use of the reverse side of each sheet allows for an overflow of subject-matter in the case of a long abstract, and enables three abstracts to be printed on a uniform amount of space on each page.

London for the Visitor

London is expected by travel authorities to attract greater numbers of visitors this summer than ever before, from the rest of Britain and from over-seas. In readiness for their arrival the Automobile Association has produced for the first time an *A.A. London Guide*. This booklet is built round a general descriptive article suggesting convenient excursions, chiefly afoot, and street maps of the City and West End are supplemented with a cross-referenced list of principal streets. It may be obtained free by members of the A.A. on application to Farnham House, New Coventry Street, W.1.

Toxins and Emulsions: Correction

We regret that line 11 of the third paragraph in Dr. V. G. Walsh and Dr. A. C. Frazer's letter (June 2nd, p. 1004) was printed incorrectly by the accidental substitution of line 14 of the same paragraph. The two sentences involved in the error should have read: "Thus we can safely eliminate the solubility idea once and for all. Adsorption is the only phenomenon necessary to explain these results."

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 64, 65, 66, 67, 68, 69, 72, and 73 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 70 and 71.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 292.

BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, JUNE 16th, 1934

PREGNANCY DIAGNOSIS IN THEORY AND PRACTICE*

BY

J. M. ROBSON, M.D., M.Sc.

BEIT MEMORIAL RESEARCH FELLOW

Recent work in sex physiology has shown that two types of hormones are excreted in the urine of the female subject at various stages of the life cycle. They are: (1) hormones produced by the ovaries (and during pregnancy probably by the placenta), exerting their effect upon the secondary sex organs and having no direct action on the gonads themselves; and (2) hormones capable of influencing the morphological and secretory activity of the gonads, and produced by the anterior lobe of the pituitary (and possibly by the placenta during pregnancy). The former group includes a number of substances to which the name of oestrin has been given, while the term "gonadotropic hormones" describes those substances which are not produced in the gonads themselves, but activate these organs. Oestrin is found in the urine for some days after birth, during the whole of the period of sexual activity, and for at least some years following the menopause. The gonadotropic hormones are excreted in the urine for some days after birth, and during the whole life cycle after the onset of puberty.

The excretion of both these types of hormones is very markedly increased during pregnancy, the amounts found in the urine being largely in excess of those present under any other physiological conditions, and the diagnosis of gestation is essentially dependent upon this fact. But whereas conception is almost immediately succeeded by a tremendous increase in the gonadotropic hormone excretion, which reaches its maximum in the early stages of pregnancy, the increase in the elimination of oestrin occurs more slowly, and is gradual and progressive throughout gestation, reaching a maximum at parturition. The gonadotropic hormone content of the urine, rather than its oestrin content, has therefore largely been employed for diagnostic purposes, as it is more especially in the early stages of gestation that such a test is of greatest value to the clinician. In the mare, however, oestrin is the chief hormone excreted in the urine during pregnancy, and the diagnosis depends upon the recognition of certain quantities of the oestrous hormone (Crew, Miller, and Anderson, 1931).

Tests for Gonadotropic Hormones

Now a number of methods have been elaborated for the determination of the gonadotropic hormone content of fluids and tissues. These tests are dependent upon morphological or secretory changes induced in the organs of injected animals by the material that is being tested. The alterations that may be observed in the gonads of experimental animals subject to the action of gonadotropic hormones are numerous, and may be classified as follows.

	Female	Male
Morphological	1. Follicular maturation 2. Ovulation 3. Formation of corpora lutea (a) True corpora lutea (b) Atretic corpora lutea (c) Corpora haemorrhagica 4. Formation of blood spots	Increase in size affecting apparently chiefly the interstitial tissue
	1. Secretion of oestrin 2. Secretion of corpus luteum hormones	Secretion of male hormone

There has been much controversy as to whether all these effects are due to a single gonadotropic hormone acting in different concentrations and under different conditions, or whether two or more gonadotropic hormones are responsible for the various effects observed. A careful analysis of the results obtained by a number of investigators (Aschheim, 1933; Evans, 1933; Hisaw *et al.*, 1933; Coester, 1932; etc.) strongly suggests that more than one substance is concerned in the control of the various changes produced in the gonads. Moreover, it can also be asserted that extracts containing gonadotropic hormones and obtained from different sources do not all produce the same set of reactions in the gonads. For example, recent work is showing that extracts made from the pituitary gland possess properties which are not shared by those made from pregnancy urine.

Action of Hormones in Urine

But we are more particularly concerned with extracts from urine excreted under different physiological and pathological conditions, and it appears, on the whole, probable that two types of extracts can be obtained—namely: (1) extracts which produce chiefly follicular maturation and oestrin secretion; and (2) extracts which lead to the formation of ovarian haemorrhages and to the production of luteal tissue and of ovulation.

Now the substances obtained from the urine of female subjects apart from pregnancy conform, on the whole, to Type 1, while the gonadotropic hormones produced during gestation are, as a rule, capable of bringing about the effects described under Type 2. In practice, in the estimation of gonadotropic hormone content of urine, which constitutes pregnancy diagnosis, certain reactions induced in the gonads of the injected animals have been arbitrarily chosen as end-points. And although some observers have attributed most of these reactions to a definite gonadotropic hormone (the luteinizing hormone, prolan B) it must be emphasized that such an assumption, in so far as it relates to pregnancy diagnosis, is at present chiefly

* A British Medical Association Lecture delivered to the City of Aberdeen Division on April 12th, 1934.

of theoretical interest. Of practical importance is the elaboration of a method which will give a positive result with the amount of gonadotropic hormones present in a definite quantity of urine obtained from a pregnant subject, and a negative result when a similar amount of urine from a non-pregnant subject is employed. Such an end has been attained by a variety of techniques, among which the most important are: (1) the Aschheim-Zondek test, (2) the Friedman test, and (3) the Brouha test. This last relies upon the action of the gonadotropic hormones in stimulating (in male animals) the production by the testes of the male hormone which causes growth of the vesiculæ seminales; the test, which is performed on male mice, does not give as reliable results as the other methods. Lately Bellerby (1934) has described a simple test which depends on the induction of ovulation by the injection of gonadotropic substances in *Xenopus*, kept under standard conditions. Results are obtained within nine hours—a much shorter interval than that required for the other tests. Further data are necessary before the value of this method can be assessed.

The Aschheim-Zondek Test

The Aschheim-Zondek test is performed on immature female mice about three weeks old, and depends on the production in the ovaries of certain definite changes. As the urine to be examined may be toxic to the mice, which may interfere with the test, it has to undergo some treatment previous to its injection. Zondek has suggested extracting the toxic substances by shaking the urine with ether, the ethereal fraction then being discarded; and this method has proved very successful. The method employed by the Edinburgh Pregnancy Diagnosis Station has also given very satisfactory results, and is performed as follows:

To each 25 c.cm. of urine one gram of sulphosalicylic acid is added. The urine is allowed to stand for thirty minutes, with occasional shaking. It is then passed through a filter paper, and the filtrate is neutralized with sodium bicarbonate and kept for injection.

Five mice are used for the test, and each animal receives six injections of 0.4 c.cm. of treated urine: the injections are spread over three days—that is, two injections per day, morning and evening. On the morning of the fifth day after the first injection (satisfactory results can also be obtained 100 hours after the first injection) the animals are killed and the ovaries examined macroscopically, and, if necessary, under the binocular microscope. The following changes may be observed in the ovaries: (1) *corpora lutea*—these are usually easily recognizable; (2) *blood spots*—these may be large and easily seen, but on the other hand they may be minute and may have to be carefully looked for (steeping the ovaries in glycerin for a few minutes renders evident any small blood spots which may otherwise not easily be detected); (3) *enlarged follicles*—constituting the so-called "white spots." The presence in one or more ovaries in the five animals of a corpus luteum or blood spot (or both) constitutes a positive diagnosis. The presence of enlarged follicles is, according to the arbitrary standards, a negative finding, but it has, nevertheless, been found advisable to repeat the test in such cases, as occasionally it does represent a positive diagnosis.

The period of time (four to five days) necessary for the diagnosis does not, in the majority of cases, present any drawback, but it is sometimes desirable to secure a result more rapidly. A number of observers have attempted to develop a rapid test by modifying the Aschheim-Zondek technique (Zondek, 1931; Aberson, 1931; Lassen, 1932), but there is at present no really satisfactory evidence that any of these modifications possess a sufficiently high degree of reliability. On the other hand, the use of the rabbit as a test animal has led to a technique which gives reliable results within much shorter intervals

The Friedman Test

Friedman (1929) found that the intravenous injection of urine from a pregnant subject into rabbits was followed by ovulation in the ovary in a period of twenty-four hours or less, and immediately realized the importance of this finding in relation to pregnancy diagnosis. The rabbit never (or very rarely) ovulates spontaneously, and hence, if mature animals are segregated, they are suitable for the test. Provided that they are more than 3 months old ovulation can also be induced in immature animals, which are so suitable in many ways for the test that they have been very generally employed.

Three types of technique have been used—namely, (1) a single injection of urine, (2) multiple injections of urine, and (3) the injection of a concentrated preparation of the active gonadotropic substances made from the urine to be tested.

The first two of these methods have apparently yielded very good results in the hands of several observers, although it is to be noted that in many cases accurate results cannot be secured in less than forty-eight hours (for example, Ehrhardt, 1932). These methods were, at first tried at the station in Edinburgh, but were not found sufficiently satisfactory. This may be due to the interval elapsing between the collection of the urine and its receipt for examination being longer than has been the case with other investigators. We therefore decided to elaborate a method which would give results possessing a high degree of reliability within twenty-four hours, if possible. And the method I am now using as a routine in Edinburgh is actually capable of doing so.

The active gonadotropic hormones are obtained from the urine in the following manner.

To 50 c.cm. of the urine is added 50 c.cm. of rectified spirit, and the mixture is allowed to stand for some minutes. The precipitate, which consists of inactive material, is centrifuged off and discarded: 150 c.cm. of rectified spirit is then added to the supernatant fluid. This brings down the active factors; the precipitate is again centrifuged off, and the supernatant fluid is now discarded. The precipitate is extracted with ether to remove any remaining toxic substances, and the fraction not removed by the ether is dissolved in 5 c.cm. of saline and neutralized; 3 c.cm. of this solution is injected intravenously, and the animal is operated on twenty-four hours later. If for any reason the reaction is doubtful (in about 10 to 20 per cent. of cases), then the remaining 2 c.cm. is injected, and the animal is again operated on after a further interval of twenty-four hours.

Unless a definite positive test is given by one ovary both ovaries are always inspected. A positive diagnosis is returned if (1) one or more ovulated follicles, or (2) one or more haemorrhagic follicles, are observed.

Both ovulated and haemorrhagic follicles may, of course, be present in the same animal. In the great majority of cases (about 80 to 90 per cent.) the result is definite within twenty-four hours. Uncertainty at this stage may arise for these reasons: sometimes the ovaries of normal rabbits contain small blood spots; occasionally, too, after the injection of gonadotropic hormone, the only effect after twenty-four hours is the production of a blood spot. Hence if such a condition is found in the ovary on inspection it may be difficult to decide whether the blood spot has arisen as a result of the injection or independently of it. Twenty-four hours later, however, the question can be decided, as, with the method employed, a more marked effect is seen in the ovary if the test is positive. Rarely, too, follicular maturation only is seen twenty-four hours after the injection, and in such cases a further examination at forty-eight hours is undertaken.

Fortunately the above difficulties do not often arise, and it is only in some 10 to 20 per cent. of the cases that it is not possible to give a diagnosis within twenty-four hours.

Reliability of Tests

It is important to determine what degree of reliability can be achieved with the Friedman test, and how this compares with the Aschheim-Zondek test. Mack and Agnew (1934) have recently reviewed the literature on the subject and classified the results in several thousands of cases, including a large number of their own. The Aschheim-Zondek test gave a mean accuracy of 96.6 per cent. in 8,685 cases described by various investigators, while an accuracy of 98.5 per cent. was obtained by means of the Friedman test in 1,899 cases. In their own cases they were able to get slightly better results with the Friedman than with the Aschheim-Zondek test. At the Edinburgh station 3,151 A.Z. tests, controlled by clinical findings, were performed during the period 1930 to 1933, and the actual error was 1.75 per cent.—an accuracy of 98.25 per cent.

Table Showing the Results Obtained with the Aschheim-Zondek and Friedman Tests on a number of Cases Tested in Edinburgh

Cases	Aschheim-Zondek Test		Friedman Test	
	Positive	Negative	Positive	Negative
Definitely pregnant ...	74	2	75	1
Definitely non-pregnant ...	1	66	1	65
Abortion ...	1	5	5	1
"Delayed menstruation" ...	0	2	2	0

We have also examined 151 cases with both the rabbit and the mouse test; the data are shown in the table. In 138 cases (seventy-three pregnant and sixty-five non-pregnant) the results of both tests were in agreement. Six cases of early abortion urine were also examined, and in five of these the Friedman method gave a positive result while the Aschheim-Zondek was negative. In one case the Friedman test was negative and the Aschheim-Zondek positive. In two cases in which menstruation was delayed for some time the Aschheim-Zondek test was negative while the Friedman yielded a positive result. The possibility that these apparently false positives were due to undetected early abortions cannot be excluded. Lastly, there were two cases in which the Friedman test was definitely wrong (one false positive and one false negative), and three cases in which the Aschheim-Zondek test was definitely wrong (two false negatives and one false positive). These results are substantially similar to those previously reported by a number of observers, and agree in showing that there is little difference between the reliability of the Aschheim-Zondek and the Friedman tests.

Validity of the Tests

The various diagnoses described represent tests, not for pregnancy, but for the presence in the fluid examined of gonadotropic hormones capable, in the definite amounts injected, of causing certain alterations. A positive result, therefore, means no more than that those amounts of hormone are present in the quantities of fluid examined, and it is then necessary to make a differential diagnosis between the various conditions in which these hormones may be excreted. It must be emphasized, however, that in the great majority of cases a positive test does actually indicate gestation.

The increased excretion of gonadotropic hormones occurs not only during a normal pregnancy but also during ectopic gestations. It commences very shortly after the embedding of the fertilized ovum, and continues as long as the living products of conception or chorionic elements are in biological contact with the maternal tissues. Positive effects have been obtained with urine collected

even before the missed menstruation. If pregnancy is interrupted the excretion of gonadotropic hormones rapidly falls, and the test becomes negative within a few days.

The pregnancy test is also positive in cases of hydatidiform mole and chorion epithelioma: indeed, in these cases the excretion of gonadotropic hormones is usually at a much higher level than during pregnancy, the amount excreted attaining, in some instances, several 100,000 units per day (Ehrhardt, 1930). When either of these conditions is suspected a quantitative estimation of the gonadotropic content of the urine may be carried out, and a finding of 100,000 or more units per litre strongly suggests that a normal gestation is not present. A few cases of malignant disease have also been recorded in which the urine gave a positive pregnancy diagnosis test.

After the menopause the excretion of gonadotropic hormones is markedly increased, but extracts usually only cause follicular maturation effects. At times such urines give positive Aschheim-Zondek reactions, and this also applies to the urine excreted by patients after operative or radiological castration (Brandstrup and Lassen, 1933).

Finally, it is of interest to note that in normal pregnancy the excretion of gonadotropic hormones may occasionally fall to such a low level that the pregnancy test becomes negative (Runge, Hartman, and Sievers, 1932). A negative test in the presence of decidual tissue may also be observed in rare cases in which the tissue between the embryonic and maternal circulation is fibrosed (Kleine, 1933). A similar fibrosis has been described by Phillip (1931) in two cases of hydatidiform mole in which the Aschheim-Zondek test was negative.

BIBLIOGRAPHY

- Aschheim, S.: *Arch. Gynäkol.*, 1933, clv, 44.
 Bellerbr, C. W.: *Nature*, 1934, cxxxiii, 494.
 Brandstrup, E., and Lassen, H. P. A.: *Arch. Gynäkol.*, 1933, clvi, 336.
 Coester, K.: *Arch. Exper. Path. and Pharmacol.*, 1932, clxviii, 745.
 Crew, F. A. E., Miller, W. C., and Anderson, J.: *Veterinary Journ.*, 1931, lxxxvii, 450.
 Ebersson, F.: *Proc. Soc. Exper. Biol. and Med.*, 1931, xxviii, 407.
 Ehrhardt, K.: *Deut. med. Woch.*, 1930, lvi, 917.
 Idem: *Arch. Gynäkol.*, 1932, cxlix, 188.
 Evans, H. M.: *Mem. Univ. California*, 1933, ii.
 Fevold, H. L., Hisaw, E. L., Hellbaum, A., and Hertz, R.: *Amer. Journ. Physiol.*, 1933, civ, 710.
 Friedman, M. H.: *Ibid.*, 1929, xc, 617.
 Kleine, H. O.: *Arch. Gynäkol.*, 1933, clviii, 83.
 Lassen, H. P. A.: *Klin. Woch.*, 1932, p. 1104.
 Mack, H. C., and Agnew, S. H.: *Amer. Journ. Obstet. and Gynecol.*, 1934, xxvii, 232.
 Phillip, E.: *Zeit. Geburtsh.*, 1931, xcix, 376.
 Runge, H., Hartmann, H., and Sievers, K.: *Arch. Gynäkol.*, 1932, cxlix, 608.
 Zondek, B.: *Klin. Woch.*, 1931, p. 1434.

The second (1934) edition of the *List of International Fellowships for Research*, issued by the International Federation of University Women (Crosby Hall, Cheyne Walk, S.W.3; price 2s.), contains a useful index which enables quick reference to be made to those which relate to specific subjects. The list is classified under three headings: fellowships open to graduates of all countries irrespective of nationality; those for study abroad which are restricted to students from two or more specified countries; and those which are limited to students of one specified country. Most of the fellowships are without sex discrimination, but the exceptions to this rule are duly specified. No attempt has been made to give an exhaustive description of the exchanges which can be arranged for students and members of faculties of the European universities, since this has been already made available with much additional information in the hand book published by the League of Nations Institute of Intellectual Co-operation. The sole intention of the present list is to place at the disposal of students in readily accessible form such knowledge as will enable them to pursue post-graduate work in foreign countries. Most of the fellowships and scholarships are intended to advanced post-graduate or research work, and scholarship for undergraduate study are not included, except where the opportunities offered are equally available for both graduates and undergraduates.

ANEURYSM OF THE INNOMINATE ARTERY TREATED BY PROXIMAL LIGATURE

BY

H. S. SOUTTAR, C.B.E., D.M., M.Ch., F.R.C.S.

The surgical treatment of an innominate aneurysm is a sufficiently unusual event to be worthy of record, and the case to be described presented several features of interest.

History of Case

The patient, a Frenchwoman aged 62, was sent to me by Dr. Melsome of Bath, whom she had consulted only seven months before for a pulsating swelling in the right side of the neck just above the clavicle. She was a finely built woman of exceptional muscular development and unusual energy, for which she found an ample outlet in her profession as a masseuse. Apart from the swelling in the neck, she was in excellent health, and of unusual vigour for her age. The pulse was equal on the two sides, regular, and of good volume. Her blood vessels were somewhat thickened and tortuous, and her blood pressure was 160/100, although she had been for some weeks at absolute rest. The Wassermann reaction was negative.

On examination a pulsating swelling could be seen extending about an inch above the right clavicle. The swelling was visible even when she lay at rest in bed, but it became much more prominent on slight exertion, when the expansile character of the pulsation became very obvious. X-ray examination showed slight enlargement of the ascending aorta, with increased prominence of the aortic knuckle and a loss of translucency at the right apex of the lung; it was thought that this might be due to an aneurysm, although no definite outline could be seen. She was kept under observation, at absolute rest, for a fortnight, but as no diminution of the swelling occurred it was decided to operate.

The Operation

On May 24th, 1933, the operation was undertaken under local anaesthesia. After wide infiltration with novocain 1/2 per cent. and adrenaline, an incision four inches in length was made just above the right clavicle, dividing the platysma and the clavicular head of the sternomastoid. The internal jugular vein was divided between ligatures, and a very satisfactory exposure was thus obtained. A large pulsating swelling was seen in the floor of the wound, and this was separated with great care from the surrounding structures, to which it

between the swelling and the aorta, which was itself slightly enlarged. It was obviously due to this enlargement of the aortic arch that the whole of the structures were pushed upwards, and that access from above the clavicle could be obtained.

The carotid and vertebral arteries were next defined, but a large vessel arising from the anterior aspect of the swelling and running almost directly backwards occasioned some difficulty. This ultimately proved to be the subclavian artery, grossly displaced. Of other structures exposed, the vagus was seen passing downwards in front of the aneurysm, while the annulus of Vieussens could very clearly be seen encircling it.

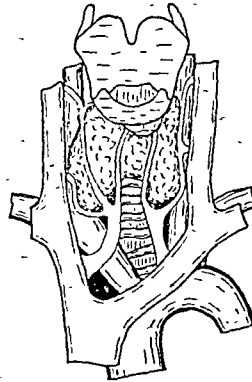


FIG. 2.—Innominate artery in relation to veins.

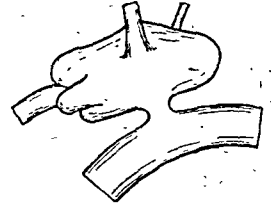


FIG. 3.—Aneurysm of innominate artery as found at operation.

As digital compression on the common carotid artery did not cause any inconvenience to the patient, a wide ligature of kangaroo tendon was inserted and very gently tied so as just to obstruct the blood flow. A similar ligature was placed on the subclavian, which again caused no inconvenience, although the right pulse, of course, immediately stopped. These ligatures were tightened and loosened several times, and a period of fully half an hour was spent in ascertaining if either alone or together they produced any ill effect. When it had been satisfactorily demonstrated that they produced no symptoms whatever, a wide ligature of kangaroo tendon was placed on the innominate artery itself. The wall of the vessel was obviously fragile, and the ligature was therefore tied with great caution. As there was just room, a second ligature was then placed between it and the aorta, there being just sufficient more or less normal artery to carry the two. The ligature on the subclavian was now finally tied, but that on the carotid was removed, as it was thought that in this way the collateral circulation to the brain would be more easily established, while the complete absence of pulsation in the aneurysmal sac, which had now shrunk to comparatively small dimensions, suggested that this was not likely to prejudice the result of the operation. Finally, the sternomastoid was repaired and the wound closed, a small drainage tube being left in place for twenty-four hours.

The patient made an uninterrupted recovery without incident, and left the hospital four weeks after the operation.

The further course of the case is of some interest. The patient remained in perfect health until the end of December—that is to say, for seven months—when she had an attack suggesting a small cerebral haemorrhage. Following a very violent fit of sneezing she had a pricking sensation in the left hand, and some uncertainty of movement of the arms and legs. These were accompanied by a slight weakness in the left side of the face, a little difficulty in speaking, and a certain mental vagueness. This cleared up in the course of a few days, although the difficulty in speech persisted for a fortnight. The explanation of these symptoms, suggesting as they do a small haemorrhage on the right side of the brain, is by no means obvious, for one would have imagined that a haemorrhage in this region could scarcely follow ligature. They might have been due, of course, to a small embolus, but they resemble far more the symptoms which follow leakage from a small intracranial aneurysm. Fortunately no recurrence has taken place, and at the present time, nearly a year after the operation, the patient appears to be in perfect health.

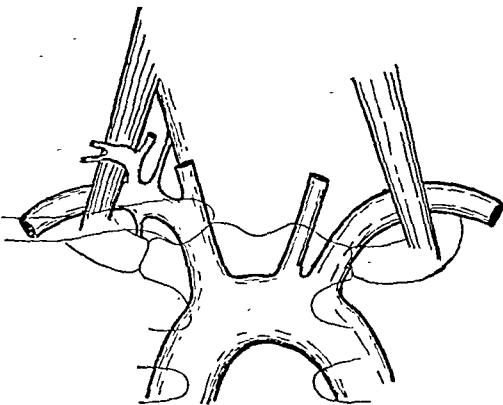


FIG. 1.—Innominate artery in relation to sternum.

was adherent. A number of large vessels could be detected entering this swelling at various points, but owing to their gross displacement it was impossible at first to discover what they were. The swelling extended across the middle line of the neck, pushing the trachea backwards and to the left, and on freeing it in this region the innominate artery was found to enter it at about the middle line of the neck. The artery was very short, forming little more than a connexion

Literature on the Subject

The literature on the subject is not extensive, and it has been admirably collated on two occasions, by Sheen in 1905 and by Thompson in 1915. Ballance has described five personal cases, thus achieving a position which is unique, while Reid has recorded three cases in his review on all the aneurysms admitted to Johns Hopkins Hospital. I think it will be of interest to give a brief account of these articles, since each presents some important aspect of the subject.

Sheen's Case

Sheen¹ describes a case of aneurysm of the right subclavian, in which the innominate and right common carotid were tied at the primary operation, and two months later the subclavian was tied close to the aneurysm.

The patient was an old soldier, aged 46, who for six months had suffered from numbness and tingling of the right hand and arm, accompanied latterly by severe pain. Six days before admission he noticed a swelling above the right clavicle. He was a well-built man in good general health, with a typical pulsating swelling reaching 5 cm. above the right clavicle. The right radial pulse was only just perceptible, and the fingers of the right hand were bluish white. The heart and the other arteries appeared normal. At the end of two months' observation, during which the aneurysm increased in size, the operation was undertaken through a median incision extending from the cricoid cartilage to a point one inch below the sternal notch. The innominate was exposed after some dissection, and ligatured with stout floss silk to form a stay-knot of two ligatures. The carotid, which was now flaccid, was tied by a single silk ligature. Recovery was uneventful, but pulsation soon returned in the aneurysm. Two months later the subclavian was tied close to the aneurysm through an incision above the clavicle. There was no return of pulsation, and pain and tingling of the arm disappeared.

Sheen found thirty-six cases, including his own, of ligature of the innominate artery, of which, however, only eight recovered. As the cases dated back to 1818 it is evident that this very high mortality was largely due to sepsis and resulting haemorrhage. Only one patient, indeed (operated upon by Smyth of New Orleans), recovered in what may be termed the "pre-antiseptic" period of surgery. After the year 1871 sixteen cases were operated upon with nine deaths. Sheen concludes that the operation is reasonably safe in those cases in which the aneurysm is of a circumscribed character and in which the condition of the other arteries is good; that the carotid should be tied as well as the innominate, if possible at a previous operation; and that some cerebral lesion is the complication most to be feared.

Thompson's Case

Thompson² describes one case, and has collected fifty-two cases of ligature of the innominate artery from the literature.

His patient was a negro male, aged 46. Six weeks before admission a swelling appeared in the right armpit. Four days before admission the arm began to swell, and he had intense pain in the hand and wrist. The right axilla was occupied by a huge swelling, which extended upwards above the clavicle. The right arm and forearm were greatly swollen and oedematous with distended veins, and the radial pulse was imperceptible. Under local anaesthesia a transverse incision was made above the clavicle, dividing the sternomastoid, sternohyoid, and sternothyroid. The aneurysm was exposed, its sac blending with the scalenus anticus. On following the carotid downwards the innominate was exposed with ease, but the situation of the subclavian was such that ligature of this artery appeared to be too dangerous. The innominate itself was therefore tied with narrow linen tape, a stay-knot being formed. Pulsation in the aneurysm disappeared, and no cerebral symptoms followed. Pain and swelling in the arm remained, and a month after the opera-

tion a large axillary abscess was opened. A week later there was severe haemorrhage from the abscess cavity, which was stopped by packing. The patient died a month later without cerebral complications, and it was shown that the aneurysm was completely consolidated.

Thompson, as stated above, found in the literature fifty-two cases of ligature of the innominate artery, including the thirty-six described by Sheen, with a total of sixteen recoveries. He states that ligature of the carotid and the innominate together has a smaller mortality than ligature of the innominate alone. He has analysed a series of thirty-one cases operated upon between 1818 and 1915, with fifteen recoveries and sixteen deaths. It will be noticed that there was only one recovery before 1880: the patient was a man of 33, who was operated upon by Smyth of New Orleans in 1864 for a traumatic aneurysm occurring three months after an injury.

Ballance's Cases

Ballance³ describes five cases in three articles which he has devoted to the subject.

The first case, operated upon in 1902, was that of a soldier, aged 35, who for three months had suffered from loss of voice and swelling in the right side of the neck, with slight dysphagia. There was a large expansile swelling above the right clavicle slightly displacing the trachea. The swelling slowly increased in size. Under chloroform anaesthesia a median incision was made from the lower margin of the thyroid cartilage to the lower border of the manubrium. After a little blunt dissection with the finger the innominate artery was clearly felt. In order to obtain better access the manubrium was sawn through, and the upper portion split vertically. This did not give sufficient access, and a portion of the bone was therefore removed on each side. The innominate artery was then fully exposed and tied by four strands of goldbeater's skin ligature. The patient, however, developed a left hemiplegia and died the next day.

In the second case (1909) the patient, a man aged 35, had a pulsating swelling above the inner end of the clavicle. The wall of the aneurysm appeared to be very thin; but as it was extending rapidly operation was undertaken. The inner end of the left clavicle and the cartilage of the first and second ribs were divided and removed, with the left three-fourths of the manubrium. The exposure was good, but during the manipulation the aneurysm ruptured. The bleeding was immediately stopped by plugging the innominate with the finger. The artery was ligatured with kangaroo tendon, but the man died thirty hours later.

The third case (1912) was that of a man aged 43 with a pulsating swelling above the inner end of the right clavicle. Through a median incision the upper part of the manubrium was removed, giving a good exposure of the innominate, which was tied with a stay-knot. The patient recovered completely, with no complications.

The fourth case, operated upon in 1918, was that of a woman aged 60, who complained of a pulsating tumour above the right clavicle. It was about four inches in diameter, and extended into the superior mediastinum. As the x-ray photograph showed no deformity of the aorta it was determined to attempt ligature of the innominate. A vertical median incision was followed by a transverse one on a level of the upper border of the manubrium. The inner end of the left clavicle, the cartilage of the first left rib, and the left three-quarters of the manubrium were removed. A good exposure of the innominate was obtained, and it was ligatured with kangaroo tendon, forming a stay-knot. Following the operation the right arm was cold and partially paralysed, but it had completely recovered a month later. Pulsation in the aneurysm had ceased. The patient died two and a half years later from other causes, and necropsy revealed the complete success of the operation.

In the fifth case (1925), that of a man aged 55, there was a large pulsating mass extending high up on the right side of the neck and occupying the greater part of both anterior and posterior triangles. In spite of very considerable difficulty from the fixation of the tumour and its dimensions the innominate artery was tied successfully, and this was

followed by ligation of the common carotid and of the axillary arteries at later dates. The patient lived until 1933, and a full account of the case will be found in the *Lancet* for April 14th, 1934.

In his paper of January, 1922, Ballance mentions five other cases from recent literature with three recoveries, and one death from hemiplegia and one from haemorrhage at operation.

Reid⁴ reports that in 124 cases of aneurysm of various arteries admitted to Johns Hopkins Hospital, only three were true cases of innominate aneurysm, and, of these, two were operated upon. One patient died at operation, apparently from traction on the aorta, which would seem to be very dangerous. In one the innominate artery was tied and later the carotid, with improvement. The operation was performed by Halsted, and the patient lived six months, dying of pneumonia.

Other Records

Juckelson⁵ records a case in a man aged 30, following a punctured wound in the neck; he was treated by ligation of the innominate and extirpation of a portion of the sac, and was well five and a half years after the operation. Buchser⁶ gives a pathological report with a clinical history of an innominate aneurysm which perforated the trachea. His article includes a full bibliography of the German literature. Baldwin⁷ describes a case (1910) in which he ligatured the subclavian and the common carotid arteries in a woman aged 52, with an aneurysm of the innominate. She recovered completely and lived for eighteen years. The case is remarkable, since it has been generally held that in the case of innominate aneurysm distal ligation is not successful.

Lessnoi⁸ records a case of traumatic aneurysm of the right common carotid artery in a man of 35, treated by ligation of the innominate, with recovery. In the same article he describes eight other cases of traumatic aneurysm, so that the incidence in this region is obviously rare. Flint⁹ gives details of a case (1927) of a traumatic aneurysm of the innominate artery in a man of 37, following on a bullet wound received in 1918. Rapid growth of the aneurysm began in December, 1926, eight years after the injury, accompanied by severe dyspnoea and dysphagia. Proximal ligation of the innominate artery was carried out a month after the onset of symptoms, and this was followed by the opening up of a leaking aneurysmal sac, the turning out of the clot, and the suture of the open mouth of the subclavian artery. The patient made a good recovery. Cabot¹⁰ reports a case in which he ligatured the common carotid artery for an innominate aneurysm, but death occurred from pneumonia. McCarthy¹¹ discusses, at considerable length, the treatment of aneurysms by distal arterio-venous anastomosis, describing one successful case in which an aneurysm of the innominate was cured by anastomosis to the internal jugular vein.

Conclusions

It will be seen that ligation of the innominate artery for aneurysm is a well-established surgical procedure, in which the risks of the operation are entirely justifiable in view of the gravity of the condition. Technically the operation may be easy of achievement, or the difficulties from adhesions may render it impossible. Apart from the risk of haemorrhage at the time of operation, the two chief dangers to be feared are interference with the cerebral circulation and interference with the circulation in the arm. The latter does not appear to be as serious as might be imagined, probably because during the existence of the aneurysm a wide collateral circulation has opened up. The danger to the brain, however, must always remain a serious one, and there would seem to be

no means of discovering the extent of the risk in any particular case.

I am convinced that the method adopted, of operating under local anaesthesia and of applying tentative ligatures to the arteries, is a sound one. General anaesthesia involves a disturbance to the circulation, which cannot be anything but inimical to the interests of the patient, while it precludes entirely the very important information, which a conscious patient can give, as to the effects of occluding the circulation of a large vessel.

REFERENCES

- ¹ Sheen, William: *Ann. of Surg.*, 1905, xlii, 1.
- ² Thompson, J. E.: *Ibid.*, 1915, xli.
- ³ Ballance, C. A.: *Brit. Journ. Surg.*, 1922, ix, 438; *Lancet*, 1902, ii, 1189.
- ⁴ Reid, M. R.: *Arch. of Surg.*, 1926, xii, 1.
- ⁵ Juckelson, M.: *Zentralbl. f. Chir.*, 1925, lii, 681.
- ⁶ Buchser, H.: *Arch. f. Ohren-, Nasen- u. Kehlkopf.*, 1928, cxvii, 113.
- ⁷ Baldwin, J. F.: *Ann. of Surg.*, 1928, v, 517.
- ⁸ Lessnoi, S.: *Arch. f. klin. Chir.*, 1928, cl, 280.
- ⁹ Flint, E. R.: *British Medical Journal*, 1928, i, 979.
- ¹⁰ Cabot: *New England Journ. Med.*, 1929, cc, 452.
- ¹¹ McCarthy, P. A.: *Ann. of Surg.*, 1930, xci, 161.

HYPERTONIC RECTAL SALINE FOR INTRACRANIAL INJURY IN THE NEWBORN

BY

ALAN MONCRIEFF, M.D., F.R.C.P.

PHYSICIAN TO THE CHILDREN'S DEPARTMENT, MIDDLESEX HOSPITAL;
PHYSICIAN FOR DISEASES OF CHILDREN, BOLINGBROKE
HOSPITAL; ASSISTANT PAEDIATRICIAN, QUEEN
CHARLOTTE'S MATERNITY HOSPITAL

J. N. Cruickshank, in his study¹ of 800 cases of death in the newborn, wrote: "The present writer believes that increased intracranial pressure is a factor of first importance in the production of a large proportion of cases of neo-natal death." Modern investigations have shown how intracranial pressure can be reduced by the introduction of hypertonic salt solutions intravenously or into the alimentary canal. The present communication is an account of the practical application of these experimental findings in an effort to save a certain number of newborn babies who would otherwise die.

It is generally agreed that, as a result of the birth process, the contents of the baby's skull may exhibit haemorrhage (gross or microscopical), oedema and congestion, or contusion. Cruickshank's studies throw doubt upon the supposed frequency of small areas of haemorrhage, and, in his view, haemorrhage into the substance of the brain does not occur, except in unusual circumstances. He believes that the clinical effects often attributed to haemorrhage are due really to congestion and oedema, leading to anoxaemia of the medullary centres. In the post-mortem records of Cruickshank's monograph, oedema of the brain and meninges was a very constant finding, especially in those cases marked in life by respiratory failure. It is not maintained that hypertonic rectal saline can do anything for those cases in which meningeal or cerebral haemorrhage has occurred, but in view of Cruickshank's findings as regards the latter alternative I believe it should always be used, even if the clinical diagnosis between oedema and haemorrhage cannot be made.

Pathology of Increased Intracranial Pressure

The clinical features of this condition in the newborn may be briefly sketched against the pathogenic background referred to above.

The labour has usually been somewhat difficult, with a prolonged second stage. Occipito-posterior presentations,

forceps deliveries, and other departures from normal have frequently occurred. Premature babies, despite the smaller size of the skull, are well known to be more liable to intracranial complications. The baby may exhibit respiratory difficulties from the onset, but more usually, in the cases I have treated successfully, the condition following delivery has been fairly good, and the symptoms have developed gradually in the first two or three days of life. A refusal to feed, with deepening somnolence, often alternating with periods of restlessness and crying, is usually the first manifestation. Recurrent vomiting may occur, the fontanelle is found to be bulging, and frequent twitchings of the facial muscles and limbs are observed. Failure of respiration with attacks of cyanosis is a very constant feature.

I believe that the problem here to be solved differs in no essential from that presented by head injuries in adults and older children. In the same way, a rising intracranial pressure threatens life, and the investigations largely inspired by Cushing in relation to intracranial surgery have an important application in the neo-natal period. Two out of the many contributions on the subject of hypertonic salt solutions and the lowering of intracranial pressure may be briefly summarized to illustrate the experimental justification for the methods of treatment here indicated.

Foley and Putnam² quote Cushing to the effect that people with headaches often secure relief by thorough intestinal evacuation, especially when this is accomplished by salines. In their experiments the introduction of a 30 per cent. sodium chloride solution into the rectum in animals produced a steady and great drop in the pressure of the cerebro-spinal fluid, the systemic blood pressure remaining unaffected. Even with a 10 per cent. solution they recorded a notable fall in the pressure of the cerebro-spinal fluid, which was maintained for some hours. About 35 c.cm. were used for a cat, and retained in the rectum as long as possible. Cushing and Foley³ point out that while reduction in intracranial pressure can be produced by the intravenous injection of hypertonic saline, this is to a certain extent undesirable because of effects upon the pulse, respiration, and blood pressure. (From the point of view of practical midwifery, intravenous injections for the newborn present gross difficulties.) They found that even small doses (5 c.cm.) of a 2 per cent. sodium chloride solution into the alimentary canal of the cat below the stomach (that is, duodenum or rectum) produce a definite effect in lowering the intracranial pressure, and they obtained confirmation of the effects of hypertonic salt solutions in patients with brain tumours after operations for decompression.

Danly⁴ and Jefferson⁵ have criticized the use of hypertonic salt solutions in the treatment of head injuries, but it is agreed by the latter that, properly used, this method of treatment has its place. The term "dehydration" is possibly responsible for criticism in reference to such solutions, and, certainly in the newborn, any attempt at producing dehydration is to be strongly deprecated. It might be urged that more prompt results may be obtained by the use of lumbar puncture, but the method to be described here is much easier of application, is less disturbing to the infant, and can be repeated as often as is required without any difficulty, while offering less risk of further damage to the brain.

Observations with the Method

The present method has been evolved over a period of nearly twelve months, and about twenty babies in hospital and private practice have been treated, mostly with highly successful results. I have not attempted to compare mortality rates for this and other methods of treatment, because, fundamentally, it is difficult to decide whether babies who survive would have died had they not been so treated. I can only record that obstetricians, resident officers, midwives, and nurses have been impressed with the results. A bulging fontanelle becoming normal, a comatose baby coming out of coma and taking feeds normally, and the cessation of twitching and of cyanotic attacks are some of the effects which have been observed.

Technique

The method now in use consists of the introduction of two to three ounces of 10 per cent. saline into the rectum of the newborn babe, as soon as any of the symptoms mentioned above appear.* The nurse is instructed to do this slowly, with the baby in the cot and with the minimum of disturbance, and to hold the buttocks together to get as long a retention as possible. Strong solutions are very quickly returned, and weaker solutions are not so effective, although an early case treated with only 2 per cent. saline made such a good recovery that it afforded encouragement to proceed with the method. The injections can be repeated at four-hourly or longer intervals, according to the improvement obtained. The method is wholly free from harm, and can be carried out by nurses undertaking domiciliary midwifery. "Ten times normal saline" is a convenient way of describing the strength of the solution used (ten teaspoonfuls of salt to the pint of water, or one teaspoonful in two ounces to make only the required quantity).

Other ancillary forms of treatment must not be neglected. As with head injuries in later life, absolute rest is of fundamental importance. Such babies must not be lifted out of bed for any purpose. Feeding must be carried out with breast milk expressed from the mother (or from other sources, if possible, in the early days). If the baby cannot suck, spoon-feeding may be tried, or, if this fails, an oesophageal tube. Small doses of chloral are valuable (1½ grain) if any restlessness or twitching is present. Five per cent. carbon dioxide in oxygen through a nasal catheter is of great value for failure of respiration, and if there is the slightest suggestion of intracranial haemorrhage (indicated by the rapid onset of symptoms shortly after delivery) I believe it is sound to withdraw 10 c.cm. of blood from the mother and inject this intramuscularly into the baby.

In some instances a certain amount of spasticity is found to be present in the first few weeks after recovery. I was at first depressed by this, thinking that the method was possibly saving a certain number of infants who would have been better spared from a life of paralysis and imbecility. Longer experience has indicated that stiffness of the muscles usually wears off by 3 months of age. I do not think the method can possibly influence the survival of cases with structural damage to the brain. On the other hand, since oedema and congestion of the brain are temporary conditions which will disappear in the course of a few days if only the infant's life can be preserved, the use of hypertonic saline appears to offer a chance of reducing the risks of increased intracranial pressure which Cruickshank, on the basis of his wide pathological experience, believes to be of such great importance in the problem of neo-natal death.

REFERENCES

- ¹ Cruickshank, J. N.: Medical Research Council, Special Report Series, No. 145, 1930.
- ² Foley, E. E. B., and Putnam, T. J.: *Amer. Journ. Physiol.* 1920, liii, 464.
- ³ Cushing, H., and Foley, E. E. B.: *Proc. Soc. Exp. Biol. and Med.*, 1920, xvii, 217.
- ⁴ Danly, W. E.: *Journ. Amer. Med. Assoc.*, 1933, ci, 772.
- ⁵ Jefferson, G.: *British Medical Journal*, 1933, ii, 807.

* Since this was written it has been decided to use the method prophylactically. A baby after a difficult delivery is given hypertonic saline almost immediately.

The National Physical Laboratory has issued a new edition of its pamphlet "Tests on Volumetric Glassware." No fundamental changes have been made from the preceding edition, but several points have been dealt with in more detail—for example, the testing of burette tops and permissible schemes of subdivision of scales of graduated glassware. Copies of the pamphlet may be obtained free of charge on application to the Director, National Physical Laboratory, Teddington, Middlesex.

OBSERVATIONS ON EXPERIMENTAL SHOCK

BY

R. L. HOLT, F.R.C.S.

AND

A. D. MACDONALD, M.A., M.B., CH.B.

(From the Department of Pharmacology, University of Manchester)

Whilst the theory of traumatic toxæmia has been accepted in this country as providing the most reasonable explanation of the condition recognized by surgeons as secondary shock, a body of experimental research, which seems to discount this theory completely, has been produced in America during the past few years by a number of workers.¹⁻⁴ The still earlier theories have been generally discarded, since they fail to account for the diminution in the volume of the circulating blood, a diminution which Keith¹ emphasized and which is now generally admitted to be the outstanding feature of this type of shock. The theory of traumatic toxæmia arose from the observations of the Special Investigation Committee appointed by the Medical Research Council in 1917. Its reports were published officially,² and, later, Cannon summarized the work in his monograph,³ in which he also shows that the other theories of the ætiology of shock are untenable.

Shock was usually produced by traumatizing one of the posterior extremities of cats. The low blood pressure which resulted from such trauma was found to occur whether or not the nerves to the limb or the spinal cord had been severed prior to the damage. The amount of swelling due to loss of plasma or blood into the traumatized area was not believed to be sufficient in itself to account for the fall in the blood pressure. Further, it was found that by clamping the main artery and vein to the limb before trauma was applied collapse of the circulation was delayed until the clamps were removed. It was assumed that a depressor substance was liberated in the damaged tissues and that the fall in blood pressure was due to the absorption of this substance into the general circulation, on which it acted.

The Histamine Theory

About the same time, Dale and Laidlaw⁴ described a shock-like condition produced in animals by the injection of histamine. This condition bore so close a resemblance to the shock produced by muscle trauma that it seemed reasonable to regard the two kinds of shock as closely related. Although the pure chemical substance has been separated from many tissues of the body this histamine theory has never been substantiated by the demonstration of a depressor or shock-inducing substance in the blood of the shocked animal. Furthermore, it is quite evident, as Smith⁵ points out,

"that the failure to produce shock by crushing the muscles of a limb, the main vessels of which have been clamped, is susceptible of an interpretation other than the prevention of the hypothetical capillary poison from reaching the general circulation. It might well be supposed that shock does not occur under these conditions because there is no actual loss of blood, whereas upon removal of the clamps shock does occur because of the extravasation of blood and transudation of plasma into the lacerated tissues."

Smith showed that when blood withdrawn from a branch of the distal end of the clamped femoral vein, after the muscles of the limb had been thoroughly crushed, was returned to the circulation there was not the slightest evidence for the presence of any depressor substance in this blood. On the contrary, the blood pressure was raised, being restored to the pre-bleeding level. The transfer of such blood to another animal which had been bled but not otherwise traumatized also raised the recipient's blood pressure, and never yielded any evidence

of containing histamine-like substances. If, however, histamine was injected intra-arterially into the limb the blood collected later from the clamped vein was easily shown to be depressor to the circulation of either the shocked animal or a bled recipient. Some mechanism other than the liberation of a histamine-like substance must then be responsible for the production of shock.

The Local Loss of Blood

Blalock⁶ repeated the experiments of Cannon and Bayliss⁷ on dogs. He found that trauma to the leg never reduced the blood pressure to a shock level without causing the loss of enough blood and plasma into the traumatized area to account for the fall. These results were opposed to the conclusions of Cannon and Bayliss, who stated: "In no case, however, was there sufficient bleeding into the wounds to account, by itself alone, for the effects observed." But Cannon and Bayliss determined the local loss of blood by weighing the extremities, traumatized and control, after amputation by symmetrical cuts across the upper ends of the thighs. Blalock soon discovered that trauma to a thigh results in extravasation into the loose tissues of the groin and flank. To include this in his comparative weighings he separated the hindquarters butcher-fashion, cutting across the body in the mid-abdominal region and splitting the lower part of the vertebral column. The difference in the weights of the limbs thus amputated in all experiments in which a low blood pressure was produced by trauma to one limb amounted to at least 4 per cent. of the body weight, or about half of the total calculated blood (taking the blood as one-thirteenth of the body weight). This work supplies such an impressive body of evidence and has received so little attention in this country that we decided to repeat, with such differences in technique as seemed advisable, the fundamental experiments of Smith⁵ and Blalock.⁶

EXPERIMENTS A

Depressor Substances in Blood from Damaged Limb

Dogs were anaesthetized with sodium barbitone (0.3 gram per kilo intravenously). Records of blood pressure and respiration were taken in the usual way: blood pressure, by means of a cannula in a carotid artery, connected to a mercury manometer; and respiration, by a tambour applied to the lower ribs. Shock was induced by striking the thigh muscles with the flat side of a 2 lb. hammer, applied so that neither the skin nor the bone was broken. For transfusion experiments clotting was prevented by the intravenous injection of chlorazol-fast pink (Boots), as recommended by Huggett,⁸ in a dosage of 200 mg. per kilo body weight. By inserting a three-way cannula into the common iliac vein it was possible to withdraw either the whole or part of the blood returning from the experimental limb during or after the trauma. This gave no trouble, probably because of the efficiency of the anticoagulant. In the light of Blalock's work it is obviously desirable to draw samples from and to clamp the common iliac vessels rather than the femorals, as practised by Smith.

Sixty c.cm. of blood collected during the latter part of a shock-producing trauma were reinjected as soon as the blood pressure became steady. This raised the blood pressure, although the sample was taken during a steep fall, when the likelihood of a spread of any depressor substance present was at its greatest. In no experiment of this kind, in which we have collected and reinjected blood from a traumatized limb, have we found any evidence for the presence in that blood of any histamine-like substance, taking the blood either during the trauma or at any interval afterwards. And the same conclusion is arrived at if the blood is transferred to another animal in which no trauma has been induced and which, with its higher blood pressure, is probably more sensitive to the action of depressor substances. If after clipping the vein we injected 1 mg. of histamine into the iliac artery of that leg and collected a small blood sample (5 to 10 c.cm.) from the vein even ten minutes later, such blood on reinjection produced a typical histamine response—a sharp fall in pressure with recovery in a few minutes.

These results are shown in the kymographic record here reproduced, and confirm Smith's claim that "direct methods have failed to demonstrate a depressor substance in the blood of the shocked animal."⁵

EXPERIMENTS B

Local Loss of Blood and Plasma

In this series of animals the same recording methods and the same technique for inducing anaesthesia and shock were used as in the previous experiment. When the blood pressure seemed to be established at a shock level the hindquarters were divided as recommended by Blalock, and weighed. The

figures for ten dogs are set out in the accompanying table, which shows the blood pressure changes, the loss of blood and plasma into the traumatized area (indicated by the difference in weight between the limbs), and the proportion of the circulating blood which this loss represents. Great care was taken in dividing and weighing the limbs to ensure the reliability of these figures. The average percentage of blood volume lost into the traumatized area is calculated at 57 per cent., an ample confirmation of the observations of Blalock,

who claims a corresponding figure of 50 per cent., whereas Cannon,¹² amputating at a much lower level, found that the difference in weight only amounted to 11 per cent. of the blood volume. In a series of cats the corresponding figure was 43 per cent. Although lower than in dogs, this fluid loss is quite sufficient in itself to account for the collapse of the blood pressure, and makes it unnecessary to assume the absorption and general action of any histamine-like substance. The nature of the fluid which produces the marked increase in the weight of the traumatized limb has been investigated by Blalock.¹⁰ He found that the local gain in weight was

developed, but in some experiments this usual increase in blood concentration was insignificant. Whilst agreeing that there is a general tendency towards concentration of the blood, we found that the figures obtained varied with the severity of the initial shock, with the repetition of the trauma, and with the ability of the animal to compensate, with tissue fluids, for its loss of plasma.

EXPERIMENTS C

The Initial Fall in Blood Pressure

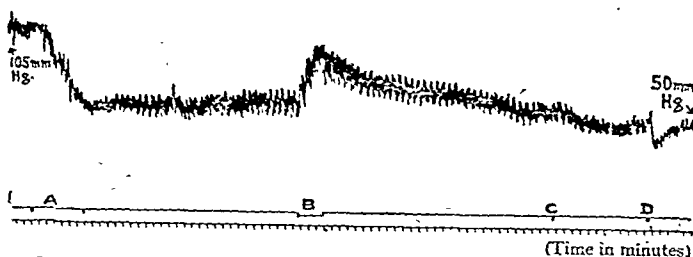
In our earlier experiments we were surprised at the amount of trauma which was necessary to keep the blood pressure at a shock level. If no attempt was made to sustain the normal body temperature shock was maintained much more readily. We found that in healthy, well-nourished animals which were kept warm the blood pressure could often be brought down to a shock level by slight trauma, but on cessation of this the blood pressure tended to rise rapidly to normal. This fall in blood pressure came on so quickly as to suggest that it was of neurogenic origin.

It has been shown by several workers that denervation of a limb, even if it includes sympathectomy or transection of the cord,³ does not prevent the development of shock following trauma. These results were obtained from experiments in which shock was maintained. We determined to investigate the cause of the initial fall in blood pressure, believing that it might produce further evidence of the changes taking place in the traumatized tissues. The animals were anesthetized and records taken as in Experiments A and B. We found that the fall in blood pressure after mild trauma occurred: (a) when all nerve impulses from the limb had been cut off by means of a spinal anaesthetic, the efficiency of which was tested by faradizing the central end of the sciatic nerve; and (b) when the common iliac vein was occluded, preventing the passage of blood from the traumatized tissues into the general circulation. The fall in blood pressure was prevented by occluding the iliac artery.

These findings suggested that even the initial fall in blood pressure is the result of a local change, presumably an opening up of the large vascular bed provided by the thigh muscles. Whether or not such a change is produced by the local action of a histamine-like substance as a result of the tissue injury we cannot say, but certainly, in our experiments, there is no evidence of the passage of such a substance into the general circulation.

Discussion

The old division of shock into primary and secondary types is misleading, since it does not take into account the pathological features of the two conditions. Primary shock is most reasonably explained on the basis of a disturbance of the nervous system. It is similar in origin to the fainting which not infrequently accompanies severe injuries. This variety of shock results from a reflex inhibition of the heart and a reflex relaxation of the vascular tone throughout the body. In the absence of gross injury to the nervous system there is a strong tendency to recover rapidly from this type of shock, for which the term "neurogenic" has been suggested. Secondary shock may develop several hours after injury, or in the presence of severe injuries it may follow so closely upon the primary shock that no temporary



Female, 9½ kg. Na barbitone, 2.85 grams, as anaesthetic; chlorazol-fast pink, 2 grams, as anticoagulant. (A) Effect of trauma on blood pressure: reduced from 105 to 60 mm. Hg; 60 c.cm. of blood collected from the iliac vein of the traumatized leg towards the end of trauma. (B) The return of this blood raised the blood pressure from 60 to 90 mm. Hg. Within half an hour the pressure had again fallen to 60 mm. Hg. (C) The iliac vein was clamped and 1 mg. histamine injected into the left common iliac artery. (D) Twelve minutes later 6 c.cm. blood was collected from the clamped vein and injected intravenously in the other leg, producing a brief fall in blood pressure because of the histamine present.

Experiment	Dog's Weight in Kilos	Initial Blood Pressure, mm. Hg	Shocked Blood Pressure, mm. Hg	Weight of Traumatized Limb in Grams	Weight of Control Limb in Grams	Difference in Limb Weights Calculated as Percentage of Animal's Total Blood
1	8	130	70	1,200	1,020	30
2	7½	140	85	1,240	990	43
3	6	183	53	920	530	74
4	9½	145	55	1,630	1,040	86
5	11	—	—	2,110	1,435	78
6	7	165	85	1,230	910	60
7	10½	175	55	1,910	1,450	57
8	7	150	65	1,360	1,020	63
9	9	160	40	1,570	1,250	45
10	9½	165	60	1,500	1,260	33

Average percentage of blood volume lost in traumatized area = 57 per cent

due to the transudation of plasma rather than of whole blood, since the haemoglobin content of the fluid expressed from the traumatized limb was only 30 per cent. of that obtained from the control. This finding explains the result generally reported that the blood in traumatic shock is concentrated. We have attempted to follow the blood changes in these experiments by hourly cell counts and haemoglobin estimations. It was not unusual for the cell count and haemoglobin concentration to be increased by 25 per cent., or even more, as shock

recovery is demonstrable. Any satisfactory explanation of this type of shock, for which the term "haemogenic" has been suggested, must account for the diminution of the blood volume and the concentration of the blood which form the essential pathological features of this condition.

According to recent American work, which has been confirmed by us, the lowered blood volume is due to the loss of blood and plasma into the traumatized area. The immediate onset of this type of shock is characterized by a local vaso-dilatation of the vessels in the injured area, which is accompanied by an increased permeability of the vessel walls and a transudation of plasma into the tissue spaces. This is naturally accompanied in traumatic cases by some extravasation of blood from ruptured vessels, but, except in cases of severe haemorrhage, the loss of plasma is relatively greater than the loss of whole blood.¹⁰ In this way some concentration of the corpuscles in the circulating blood is accounted for. The cause of the increased permeability of the capillaries in the traumatized area is not definitely known. It is probably the result of a substance which is freed locally by the injured tissues, but no clue as to its nature is obtainable, since there is no evidence of its absorption into the general circulation.

This theory of secondary shock stresses the fact, which is supported by experimental evidence, that the lowered blood pressure and blood volume so typical of this condition are due primarily to local factors and not to a general increase in capillary permeability, as postulated by Cannon and Bayliss. This local factor, though the most important, is not working alone to bring about a state of shock, for, unless the blood volume is diminished so greatly as to cause death within a short time, there is a strong natural tendency to restore the blood volume to its normal level by drawing on the fluid reserves of the body. That such a change takes place was indicated in some of our experiments by the steady rise in the blood pressure and the accompanying dilution of the previously concentrated blood which took place after the cessation of trauma. The local factor may therefore be regarded as the initiating factor, but in order to maintain the state of shock others, which may be called sustaining factors, must be present. The loss of blood which frequently accompanies injuries directly lowers the blood volume. Sweating (common in severe shock), vomiting, and, under active service conditions, the prolonged lack of food and water reduce the reserves of body fluids which are necessary to restore the blood volume. Cold and exposure are also potent influences. In the presence of one or more of these sustaining factors the blood pressure is maintained at a level lower than is necessary to ensure an efficient circulation. Anoxaemia of the tissues, a lowered metabolic rate, increased permeability of the capillaries, and an increased viscosity of the blood are among the important changes which result from the low blood pressure. Cannon³ sums up the situation by saying: "A series of vicious circles may thus be started which, if not interrupted, lead to a still further aggravation of the already existent abnormal state, and which account for the progressive nature of fatal shock."

Clinical Considerations

The experimental work described in this paper has been concerned with trauma applied to one of the posterior extremities of anaesthetized animals, and any clinical application must therefore be made with some reserve. In civil practice severe burns and accidents are among the commoner causes of secondary shock. We believe that our experimental work is sufficiently similar to allow of comparison with the shock found in accidents, for

secondary shock is characteristically observed in connexion with extensive damage to muscles or with multiple wounds in which the sum of the damage is equivalent to considerable injury in one region. The secondary shock associated with severe burns has been somewhat overlooked as a result of the marked improvement which has followed the adoption of the tannic acid treatment. Underhill¹¹ claimed that the shock associated with burns was due to the marked concentration of the blood, and obtained excellent results from simply forcing fluids. Blalock¹² extended his experiments to the production of burns to wide areas of the body surface of dogs. Here again he found in the burnt and surrounding tissues an excess of fluid, akin to plasma, equivalent in amount to 40 or 50 per cent. of the total blood volume. This factor of loss of fluid after burns may be even more important in the human being than in the dog, since there is frequently a copious exudation from the injured skin in man which is not seen in dogs. It seems probable that the beneficial effect of tannic acid is largely dependent on the prevention of fluid loss as well as on lessening the absorption of toxins. Results obtained in the shock which results from intestinal manipulation¹³ also stress the importance of the local factor in producing secondary shock. In fact the present outlook would seem to relegate to a secondary position the toxic factors which have been regarded for the past fifteen years as of primary importance in the production of secondary shock.

The present theory of the pathology calls for no radical change in the treatment of secondary shock. Operations under ether, chloroform, or spinal anaesthesia, which all tend to produce in the presence of a low blood volume a pronounced fall in blood pressure, are contraindicated until adequate measures have been taken to restore the blood volume to normal limits. In secondary shock the restoration of the blood volume by the slow intravenous injection of compatible blood, or, failing that, of a gum-saline solution, the application of heat to the body, and the alleviation of pain and restlessness still form the cardinal features of the therapy, but further work on the treatment of shock is now in progress.

Summary

The evidence against the acceptance of the "Traumatic toxæmia" or histamine theory of secondary shock is reviewed and accepted, since: (1) we have been unable to demonstrate the presence of any depressor substance in the blood from a traumatized area; and (2) in no experiment was the blood pressure reduced to a shock level without there being a loss of plasma and blood into the injured tissues, sufficient in itself to account for the effects observed.

REFERENCES

- 1 Keith, N. M.: Report of Shock Committee, No. 27, March, 1919.
- 2 Report of Shock Committee. Special Report Series, Medical Research Committee, Nos. 25, 26, 27.
- 3 Cannon, W. B.: *Traumatic Shock*. New York. D. Appleton and Company. 1923.
- 4 Dale, H. H., and Laidlaw, P. P.: *Journ. Physiol.*, 1918-19, lii, 351.
- 5 Smith, M. I.: *Journ. Pharmacol. and Exp. Therap.*, 1927-8, xxxii, 465.
- 6 Blalock, A.: *Arch. Surg.*, 1930, xx, 959.
- 7 Cannon, W. B., and Bayliss, W. M.: Report of Shock Committee, No. 26, 19-23, March, 1919.
- 8 Huggett, A. St. G., and Rowe, F. M.: *Journ. Physiol.*, 1933, lxxx, 82.
- 9 Freedlander, S. O., and Lenhart, C. H.: *Arch. Surg.*, 1932, xxv, 693.
- 10 Blalock, A.: *Ibid.*, 1931, xxii, 617.
- 11 Underhill, F. P., Carrington, G. L., Kapinow, R. K., and Pack, G. T.: *Arch. Int. Med.*, 1923, xxxii, 31.
- 12 Blalock, A.: *Arch. Surg.*, 1931, xxii, 610.
- 13 *Idem*: *Ibid.*, 1931, xxii, 314.
- 14 Parsons, E., and Phemister, D. B.: *Surg., Gynecol. and Obstet.*, 1930, li, 196.
- 15 Cannon, W. B.: Report of Shock Committee, Nos. 26, 27, 1919.

A NEW PRINCIPLE IN ETHYL CHLORIDE ANAESTHESIA FOR ORAL SURGERY

BY

R. BLAIR GOULD, M.B., CH.B.

CONSULTING ANAESTHETIST TO THE LONDON COUNTY COUNCIL;
ANAESTHETIST, GOLDEN SQUARE THROAT, NOSE, AND EAR
HOSPITAL, ROYAL DENTAL HOSPITAL, ETC.

The technique of this method of anaesthesia was elaborated by Dr. Max Borchardt of Berlin. It has been in use on the Continent during the past two years, during which time many hundreds of cases have been reported.¹ The only reference to it in the English literature which I have been able to trace is a short article by H. H. Tomlinson of Liverpool.² The method introduces such a complete innovation in ethyl chloride anaesthesia that it well merits a more detailed description.

The Somnator

The apparatus shown in Fig. 1 is known as the "sommator," and is easily portable. It consists of two parts: a metal mouthpiece (see lower part of the figure), to the inside of which is attached a bag of a highly absorbent material, readily permeable to air; and a nosepiece, which is made to fit into the mouthpiece, and consists of a wire frame over which is stretched a bag of the same fabric. The mouthpiece and nosepiece are attached to each other by rubber bands, by which they are also attached to two metal loops designed to fit over the ears. A further rubber band passes from one ear loop to the other behind the occiput in order to retain the apparatus in position. The fabrics are easily interchangeable, and the whole apparatus may be sterilized by boiling.

Administration of Anaesthetic

The technique of administration is as follows. The nosepiece is placed inside the mouthpiece, and the patient is asked to hold the latter between the teeth or lips, a dental prop having previously been inserted, if desired. The ear loops are placed in position, and the

patient is receiving abundant supplies of air through the nose, and the anaesthetic is diluted by the air passing through the mouthpiece. This is a very important fact, as inhibition of respiration is easily brought about by too concentrated a vapour.

As the anaesthesia progresses the nosepiece is lifted out of the mouthpiece and inverted over the nose (Fig. 3). Ethyl chloride is now sprayed on to both fabrics, the concentration being increased until the third stage of anaesthesia is reached. The mouthpiece is then lifted out of the mouth and inverted over the nosepiece (Fig. 4). The surgeon now commences his work, and during the operation the mask remains over the patient's nose, such quantities of ethyl chloride being sprayed on to it as may be necessary.

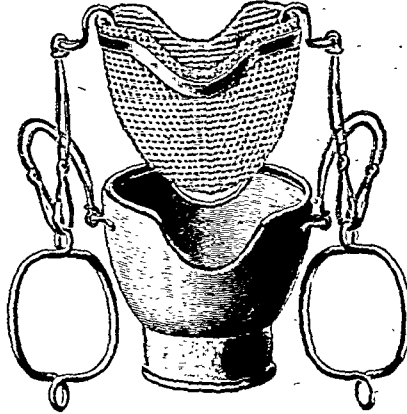


FIG. 1.

Advantages of the Method

It will readily be seen that this method is a great advance in the technique of ethyl chloride anaesthesia, and that it introduces such an element of safety that it is likely to replace present methods in suitable cases. In the present method ethyl chloride is administered by means of a face-mask or rebreathing bag until the patient is judged to be so deeply under its influence that the anaesthesia will last throughout the course of the operation. Using the sommator this no longer applies. The surgeon can commence as soon as the patient has become anaesthetized, and the

subsequent depth of anaesthesia is entirely under the control of the anaesthetist. Dangerous dosage or concentration of the anaesthetic are avoided, and by reason of the large quantity of air which the patient receives throughout the anaesthetic the colour remains pink. These are most important factors in contributing to the safety of the anaesthetic.

In my experience of over a hundred cases it has proved equally satisfactory for children and adults, and has given anaesthesia of four minutes' duration without ill effect. It is in my opinion as great an advance on present methods as nasal nitrous oxide is an advance over the old "straight" gas. In cases where it is not desired to pack off the mouth, or where it is important to eliminate

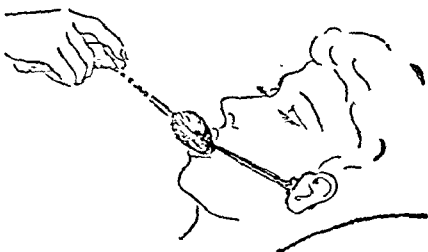


FIG. 2.

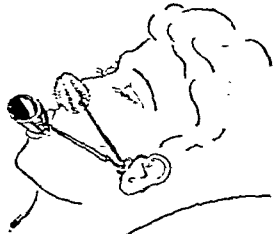


FIG. 3.

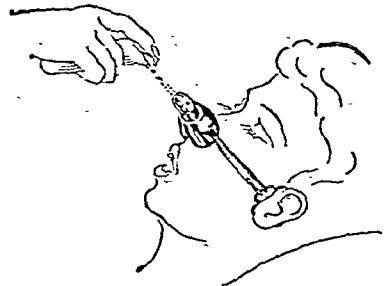


FIG. 4.

occipital rubber band attached (Fig. 2). The apparatus is now self-retaining, and the anaesthetist's hands are free to hold the jaw and steady the head. A few drops of ethyl chloride are sprayed on to the fabric. It is important not to spray more than 0.5 c.cm. of anaesthetic on to the fabric at once, so that the possibility of liquid ethyl chloride reaching the patient's face is avoided. The patient is told to breathe deeply. During this stage the

mouth-breathing, the anaesthetic may be commenced with the apparatus over the nose, as shown in Fig. 4, the mouth being covered with an obturator during induction. The slight disadvantage of a prolonged induction due to the dilution of the anaesthetic vapour by air can easily be eliminated by means of a towel placed over the apparatus. In general anaesthetics, where open ether is preceded by an ethyl chloride induction, the use of this

method entirely eliminates the fear which is engendered in a patient by the face-mask. The induction is pleasant and almost imperceptible to the patient, and after induction the apparatus is easily removed and the usual mask substituted.

For use with the somnator there has been elaborated a new type of ethyl chloride, containing 15 per cent. of added constituents (valerian, camomile, peppermint, and alcohol) by which the boiling point has been raised and freezing of the ethyl chloride on the fabric thus prevented. This latter constitutes one of the disadvantages of ordinary ethyl chloride, as when freezing occurs the concentration can no longer be controlled. It is also claimed that the added valerian reduces excitement and after-vomiting, a claim which appears to be substantiated in my series of cases. Out of thirty-four cases in which the apparatus was used with ordinary ethyl chloride eleven (32.3 per cent.) vomited, but in thirty-six cases where the special ethyl chloride was used only two (6.6 per cent.) vomited. This ethyl chloride has, however, the disadvantage that induction appears to be unduly prolonged, and its anaesthetic action is somewhat weaker.

I am much indebted to Mr. F. St. J. Steadman, the senior dental surgeon to the West London Hospital, and dental surgeon to the Royal Dental Hospital of London, for kind permission to use the method at his clinics. The apparatus is marketed in England by Messrs. Cottrell and Co., 15, Charlotte Street, London, W.1.

REFERENCES

- ¹ Polus, J.: *Revue Stomat. Belge*, No. 1, 1932; v. Liebermann: *Deutsche Med.*, No. 45, 1932; Hauberisser, E.: *Zahn. Rund.*, No. 15, 1932; Borchardt, M.: *Ibid.*, No. 13, 1933; *ibid.*, No. 3, 1934; Antonini, J.: *Nuova Rassegna di Odont.*, No. 5, 1932.
² Tomlinson, H. H.: *Dental Record*, liii, No. 12.

Clinical Memoranda

AN UNUSUAL CASE OF DIPHTHERIA

Cases of diphtheria of the vulva are noted in the literature¹ of this disease, but the following case presents circumstances unusual enough to merit a record.

A girl of 7 years was brought to Dr. B. R. Nisbet, medical officer of health for Kilmarnock, on November 12th, 1933, suffering from a purulent vaginal discharge, which had become evident the previous day. Although smears showed the absence of gonococci, the clinical symptoms were so strongly suggestive of vulvo-vaginitis that he sent the child on November 15th to the venereal diseases ward of Heathfield Hospital, Ayr, for observation and treatment.

On admission, the patient was noted to have a purulent vaginal discharge with redness of the vulva and several small circular excoriations of the labia majora. No membrane was visible. The day following admission the patient complained of a sore throat and was feverish, and inspection of the fauces revealed typical diphtheritic membrane on both tonsils. A direct examination of the swab clinched the diagnosis, and 16,000 units of diphtheria antitoxin were given at once.

Smears of the vaginal discharge similarly examined showed pus cells, Gram-positive bacilli, and mixed coccal forms, but no gonococci. Cultures of the throat and vaginal secretion both showed typical Klebs-Loeffler bacilli, and the culture of vaginal pus was sent to Glasgow Public Health Laboratory for a further test of the organisms. These were reported virulent in the guinea-pig.

With rest and the ordinary toilet of the vulva, the patient recovered and was discharged well on January 27th, 1934, the undue length of her stay in hospital being on account of a persistent slight cardiac irregularity in convalescence.

Associated Features.—Immediately faucial diphtheria was diagnosed Dr. Nisbet was informed, and he has since supplied me with the following interesting data. On November 16th, 1933, a further case of faucial diphtheria was notified from a house in the same block of the tenement wherein the girl resided, and was removed to hospital. On December 1st a

brother of the patient was similarly dealt with. On December 5th another brother of the patient was found to have a positive nasal culture, and still another case of diphtheria was discovered in the same tenement.

This case appears to have been one of primary vulval diphtheria with secondary infection of the throat. I am indebted to Dr. Nisbet for his assistance in amplifying the report.

JAMES GRANT, M.D., D.P.H.

Medical Officer of Health for the Burgh of Ayr,
and Medical Superintendent,
Heathfield Hospital, Ayr.

OBSTRUCTION OF THE OESOPHAGUS BY THE BEARD

The novelty of this cause of oesophageal obstruction is, I think, worthy of record.

Some two years ago a man called upon me in an emergency with the history that some food had lodged in his throat, preventing all further attempts at swallowing. His wife, who accompanied him, was necessarily the spokeswoman, because it transpired that the patient had been subjected to complete laryngectomy (for carcinoma) some eighteen months previously in London. The man had made a splendid recovery, and breathed normally through the stump of his trachea at the root of the neck.

Indirect inspection of his funnel-shaped deep pharynx showed a bolus of meat, which I removed. As the swallowing was not relieved, a further examination revealed another mass of meat, which I proceeded to pull up. During this act, to the amazement of both the patient's wife and myself, the meat was accompanied by a thick, twisted, slimy tuft of long black hairs, which we both hauled up for at least twelve inches. By further vigorous (and rather painful) traction it eventually came away in our hands, and the small remains slipped back into the man's throat. After this the act of swallowing was quite normal.

For a short time it was difficult to account for such an unusual occurrence, but it soon dawned on me that this patient had had a plastic operation performed on the front of his neck to close a pharyngeal fistula subsequent to laryngectomy, with the result that he was now growing part of his beard in the gullet.

I do not know the subsequent history of the case, but believe that x-ray therapy was suggested as a depilatory. The alternative, of course, would be periodical clipping of the hairs through an endoscope.

Liverpool.

JOHN ROBERTS, F.R.C.S.

DUODENAL ULCER IN A 10-YEAR-OLD CHILD

Duodenal ulcer in a child of this age is a comparatively rare condition. The following is the record of a recent case.

The patient, a girl aged 10, was seen in the out-patient department, and gave the following history. Off and on for the past six months she had had pain in the region of the stomach. The pain was present when she awoke in the morning, was relieved by a hot drink, and, at times, persisted throughout the morning. The school teacher allowed her to go home for a hot drink when the pain was severe. The bowels were regular, and there was no vomiting. On examination there was tenderness under the right costal margin, and opaque meal examination showed well-marked seven-hour gastric retention and an absence of any duodenal filling. Unfortunately a test meal was not given.

The child was admitted into hospital without any definite diagnosis having been made. The pyloro-duodenal region, the gall-bladder, and the appendix were under suspicion; we had also to bear in mind the possibility of some form of abdominal tuberculosis. Under avertin and local anaesthesia the abdomen was opened through a right paramedian incision and the following pathology disclosed: gall-bladder normal; mobile caecum; appendix normal externally, but the mucous membrane of the tip was bluish red; large duodenal ulcer, palpable and visible in the first part of the duodenum. The hepatic surface of the duodenum was

¹ Medical Research Council *Diphtheria* (1923), p. 230.

the portion involved, and its peritoneum showed numerous petechiae. The involved bowel was hard. The appendix was removed, and a posterior gastro-enterostomy, with a vertical stoma extending from the incisura angularis to the great curve, was performed. This was on February 5th, 1934, and the child has had complete freedom from her dyspepsia up to the present time. Convalescence was uneventful.

REMARKS

Berglund¹ found only fourteen duodenal ulcers in 1,323 post-mortem examinations in children under 13. Dietrich,² in 8,534 post-mortem examinations, found six cases of duodenal ulcer in children under 10. In the Mayo Clinic only two out of 8,360 cases of duodenal ulcer were in children. Kennedy³ reports on five cases of duodenal ulcer in children, and recognizes four distinct groups according to age.

Group 1: Ulcer in the newly born, which makes its presence known by melaena neonatorum. Group 2: Ulcers in children from a few weeks to the end of the first year. These are acute, and are probably of an infectious nature. Group 3: Ulcers in children from 1 to 9 years. These are chronic, and frequently fail to give rise to any suggestive symptoms. Group 4: Ulcers in children from 9 upwards. These give symptoms similar to adult duodenal ulcer, and may be treated in a similar manner.

Our case would appear to fall into Group 4, since it gave rise to typical dyspeptic symptoms and responded well to gastro-enterostomy.

One would hope in a child of 10 to obtain some light on the aetiology of duodenal ulcer. An investigation of the literature shows that quite a number of duodenal ulcers in children are associated with tuberculous disease of the lungs. For example, Gray⁴ relates the death of a 5-year-old child from haemorrhage from a duodenal ulcer, and the post-mortem examination revealed pleurisy with effusion. Murchison⁵ describes a duodenal ulcer in a child with tuberculous deposits in the lungs. In Berglund's post-mortem material six of the nineteen with duodenal and gastric ulcers had tuberculous meningitis or syphilis. Our case shows a normal chest radiogram, a negative Wassermann reaction, and no evidence of tuberculous disease. It has been suggested that a mobile caecum or pathology of the appendix might be a factor in the aetiology of duodenal ulcer, and we must record that this case had a caecum which could be withdrawn easily through a right paramedian incision, and had an appendix which showed slight pathological changes at its tip. One hesitates to stress this relation in view of the very large number of deformed and diseased appendices and mobile caeca which exist in the presence of a normal duodenum.

Finally, we would like to emphasize the importance, in a child, of seven-hour gastric retention, revealed by x-ray examination of the opaque meal. For many years we have been exploring abdomens which give this sign, and in the majority of cases it leads the surgeon into suitable surgical pathology. Appendicular deformity, ileal kink, obstructing bands, long-standing hypertrophic stenosis, and enlarged mesenteric glands have in the past accounted for all our cases of gastric retention in children. We can now add to this list obstructing duodenal ulcer.

REFERENCES

- ¹ Berglund, Nils. *Acta Paediatrica*, 1928-9, viii, 323.
- ² Dietrich, H. V. *Arch. med. Woch.*, 1912, lix, 688.
- ³ Kennedy, R. L. J. *Journ. of Pediatrics*, St. Louis, 1933, ii, No. 6, p. 641.
- ⁴ Gray, *Edinb. Med. and Surg. Journ.*, 1888, lvi, 450.
- ⁵ Murchison. *Trans. Path. Soc. Lond.*, 1869, xv, 174.

M. BRICE SMYTH, M.B., B.Ch.
P. T. CRYMELE, F.R.C.S. Eng.
F. M. ALLEN, M.D.

Belfast Hospital for Sick Children.

Reviews

EXPERIMENTAL PHARMACOLOGY

HEFFTER's Handbook of Experimental Pharmacology was commenced more than twenty years ago, but owing to the war its publication did not start before 1919. The first two volumes were completed by 1924 and the first half of the third volume appeared in 1927. Since then there has been a long delay, doubtless due to the death of the original editor. The second portion of the third volume has now appeared¹ under the editorship of Professor HEUBNER, and the handbook is to be completed this year by a third and fourth portion of the third volume. As soon as the work is completed supplementary volumes will be produced in order to bring the earlier volumes up to date.

The part under review contains some 800 pages. Three-quarters of it is occupied by a monograph on iron written by Professor E. Starkenstein, and the remaining monographs deal with manganese, cobalt, and nickel, and the general pharmacology of metals. The handbook has somewhat altered its scope, for in the second volume, which appeared ten years ago, Professor Starkenstein dealt with the opium alkaloids in 300 pages, whereas in the present volume iron occupies 800 pages, and 100 pages are devoted to a metal of secondary importance, such as manganese. The article on iron is of an encyclopaedic nature, and gives a complete account of the history, chemistry, pharmacy, pharmacology, and metabolism of this metal. It includes tables giving the iron content of foods, mineral waters, and organs of the body, and others which show the original data of experiments on the action of iron in anaemia. Professor Starkenstein has himself made extensive investigations upon the intermediate metabolism of iron, and is therefore able to give a critical review of the experimental results. His monograph will be found of great value for reference by all who are interested in recent developments in iron therapy.

The promise of the early completion, with index, of Heffter's important work is very welcome, because there is no other handbook of pharmacology comparable in size and in scope.

IMMUNITY AND THE NERVOUS SYSTEM

It is not unreasonable to suppose that the nervous system may play an important part in resistance to infective diseases. The subject is specifically discussed in a book by Dr. METALNIKOV on the rôle of the nervous system in immunity.² The earlier chapters deal with observations on immunity in invertebrates, mainly directed to showing the preponderant influence of phagocytosis. The only antibodies detected in insects were bacteriolysins, although Chorine has demonstrated the development of a neutralizing substance analogous to antitoxin. The immunity developed in insects is, however, relatively non-specific; caterpillars immunized against cholera also acquired immunity to *B. paratyphosus* and *B. coli*.

The importance of the nervous system in the development of immunity is shown by ingenious experiments on caterpillars. If the third thoracic ganglion is destroyed immunity is not developed. If a tight ligature is tied round the middle of the caterpillar immunity is developed in the parts in front and behind the ligature, although only one part is immunized. If, however, the ventral nervous cord is burnt through, immunity is developed only in the part immunized. It must be noted

¹ *Handbuch der Experimentellen Pharmakologie*, Band III, 2. Teil. By A. Heffter and W. Heubner. Berlin: J. Springer, 1934. (Pp. 621-1502. RM.55.)

² *Rôle du Système Nerveux et des Facteurs Biologiques et Psychiques dans l'Immunité*, by S. Metalnikov. Paris: Masson et Cie. 1934. (Pp. 166; 25 figures. 28 fr.)

that, since the immunity is non-specific, it is not necessary to suppose that the nerves carry a stimulus specific for any particular organism.

The latter part of the book deals with the relation of conditioned reflexes to immunity. In the experiments described injections of foreign substances are accompanied by an external stimulus, such as sounding a trumpet or rubbing the ear. After several such injections the external stimulus is repeated without the injection and the presence or absence of a response observed. The most successful results were obtained with injections into the peritoneal cavities of guinea-pigs. In these cases the external stimulus, by itself produced a striking change in the number and proportions of cells in the peritoneal fluid. A not very striking rise of agglutinin titre in the serum (at most 100 per cent.) was produced in similar experiments. The author's judgement of what is significant in an experiment is weak. Thus (p. 134) he quotes a rise in the red blood count of 3,983,000 to 4,890,000 as evidence of concentration of the blood; and (p. 114) a 10 per cent. rise in the leucocyte count is considered significant.

TRAUMATIC SURGERY

The fifth volume of *The Practitioner's Library of Medicine and Surgery*³ covers the whole of traumatic surgery in its most liberal sense, even including articles on the surgery of the sympathetic nervous system and on post-traumatic states. In every instance the pathology, diagnosis, treatment, and prognosis are most fully discussed, and the value of alternative methods is considered. In the first chapter, for example, an article on burns includes no fewer than seven pages on the pathology, both clinical and experimental, of this injury. The systematic treatment of severe burns is dealt with in great detail, whilst all the modern methods of local treatment are examined with elaborate care and their value critically considered. Our sole criticism would be that the methods are perhaps too scientific, and could for the most part only be applied in a well-equipped hospital. We agree that severe burns ought to be treated under these conditions, but unfortunately such an ideal is by no means always attainable.

Fractures occupy one-third of the volume. Their pathology is illustrated by a series of masterly diagrams, the value of which is enhanced by appropriate x-ray photographs. The well-known treatises of Scudder and of Roberts and Kelly have been drawn upon extensively, and indeed the greater part of the illustrations appear to have come from these sources. The whole article is full of practical details of great value, and the minute description given of the treatment of fractures of the phalanges is only one example of the practical outlook of the authors. The short chapter on amputations is remarkable for the great beauty and clearness of its illustrations. We doubt, however, whether most surgeons would endorse the value placed upon a "Gritti-Stokes" amputation, even if they recognized its inverted name, while still fewer will have the optimism to indulge in "kineplastic" methods. Of great interest is the chapter on traumatic lesions of the thorax, for here at least modern methods have revolutionized our older conceptions. The complex pathology of pneumothorax is fully explained with its applications to the surgery of the chest. The surgery of the hand receives the full treatment demanded by such an important subject, and this should be of the utmost value to the house-surgeon. The traumatic surgery of the brain, of the spinal cord, and of the peripheral nerves are all treated with exceptional

fullness, and this section even includes an article on the traumatic neuroses.

The whole book is a masterpiece of production and of illustration, and the subject-matter is of equal excellence. While the scientific basis of treatment is given here in great detail, the approach is essentially practical, and on every page the reader will find those small details which make all the difference between success and failure.

TROPICAL TYPHUS

The confusion produced by the description of various forms of typhus fever in many parts of the world is such that it is a relief to turn to the unifying *Researches on Tropical Typhus* of Dr. LUDWIK ANIGSTEIN in Study No. 22 of the Institute for Medical Research, Federated Malay States.⁴ The author, after extensive experience of exanthematous typhus in Eastern Europe during the Great War and subsequently in Warsaw, spent two years in Malaya investigating the "tropical typhus" of Fletcher and Lessler, of which they found two types—the scrub typhus or K type, and the W (K19) or urban form, the infection of which was conveyed by mites or ticks. Dr. Anigstein has succeeded in conveying tropical typhus to guinea-pigs and rats, and in finding Rickettsia-like micro-organisms in the congested tunica vaginalis of these animals, and also in cultivating a pleomorphic organism and obtaining serological reactions with *B. proteus* X group, including both the K19 (W) and the K types, as well as from a large number of human tropical typhus cases. Moreover, after passage through guinea-pigs and rats, he produced the disease in a human volunteer by inoculating him with the brain of an infected animal.

No fewer than seventy-six strains of the organism were isolated from human and animal cases, and all forms, from Rickettsia-like ones, through bipolar-staining coccobacilli, and spindle-shaped organisms up to *proteus* forms, were obtained, and thus they closely resemble in every way those of typhus exanthematicus of Europe. Moreover, he took body lice out with him and fed them on tropical typhus patients; the results were fatal to the lice, with the development of enormous number of micro-organisms in them similar to those found in the tunica vaginalis of guinea-pigs and rats inoculated with emulsified infected lice and to those of European typhus. A vaccine made from cultures has also given promising results when used for prophylactic inoculation on a palm-oil estate highly infected by tropical typhus, for a rapid decline in the incidence of the disease followed, and only one case occurred subsequently among about 300 coolies receiving two doses. This memoir should be read by all interested in the widely distributed group of typhus fevers.

UROLOGY FOR THE PRACTITIONER

Hofrat Dr. FELIX SCHLAGINTWEIT in his *Urologie des praktischen Arztes*⁵ has produced a very useful and practical work, which has the merit of keeping absolutely to its title. It is truly a urology for medical practitioners, and deals entirely with the management of urological cases from the point of view of general practice. The author is careful to point out when a complete urological examination, or an operation, is indicated, and wisely

⁴ *Researches on Tropical Typhus: A Study of the Bacteriology, Serology and Epidemiology of the Disease.* By Ludwik Anigstein, M.D., Ph.D. Studies from the Institute for Medical Research, Federated Malay States. No. 22. Kuala Lumpur: Kyle, Palmer and Co., Ltd. 1933. (Pp. 186; illustrated.)

⁵ *Urologie des praktischen Arztes.* By Dr. Felix Schlagintweit. Zweite, erweiterte Auflage. Munich: J. F. Lehmanns Verlag. 1933. (Pp. 181; 104 figures. RM.7; geb. RM.8.20.)

³ *The Practitioner's Library of Medicine and Surgery.* Vol. v, *Traumatic Surgery.* By various authors. New York and London: D. Appleton-Century Company, Inc. 1934. (Pp. xlv + 1,080; illustrated. 50s.)

omits all details of specialized methods of treatment which are beyond the scope of the general practitioner.

The book opens with a very brief outline of the anatomy and physiology of the urinary apparatus. This is followed by an excellent description of case-taking and of the ordinary physical examination of the patient, the examination of the urine, and the indications for radiography and pyelography. The next section is devoted to the use and care of catheters and other urological instruments, the technique of passing them, and a description of the methods of irrigating the urethra and bladder. About two-thirds of the work is taken up with a description of urinary diseases, as seen by the general practitioner. The effects of obstruction are clearly indicated, and the dilatation of urethral strictures is excellently described. The section on prostatic hypertrophy is almost entirely occupied with the treatment of acute retention, the rules for self-catheterization, and the medical treatment of early cases.

In the chapter on urinary infections the author gives a short account of the haematogenous infections, which is followed by a more detailed account of inflammations of the different organs—urethra, prostate, bladder, kidneys, etc. About half the space is occupied with the treatment of gonorrhoea. In the chapter on stone the treatment of renal colic and of migratory calculi is well described. The indications for operation and the risks of calculous anuria are also clearly set forth. The chapter on tumours is mainly concerned with symptoms. The treatment of clot retention is carefully explained, and is the only complication which the practitioner is expected to treat.

After a chapter on injuries and malformations of the urinary tract, the book ends with one on diet in the treatment of urinary disease, which is exceedingly useful. All the descriptions are clear and concise. The teaching is sound, and the book is strongly to be recommended.

Notes on Books

Practical X-Ray Therapy,⁶ by Dr. HUGH DAVIES, is a small elementary textbook which will probably be of use to radiographers in preparing for the examination of the Society of Radiographers. The scope of the work is necessarily limited, but the information it contains is accurate and well arranged. Special chapters are devoted to apparatus, the measurement of x-ray dosage, and the general care of the patient whilst undergoing x-ray treatment. The remainder of the book deals, in a general way with diseases of the skin, diseases of the blood, of the nervous system, and so on. Suitable diagrams are used to illustrate the text, and an appendix contains diagrams giving the percentage depth dose under varying conditions. An adequate index completes this small volume, which can be recommended to those who wish to get some idea of the elementary facts connected with x-ray therapy.

La Cellulite,⁷ by Dr. L. ALQUIER, is a monograph in which an attempt is made to explain the majority of the reactions of the body in terms of changes in the cellular tissues. These changes, again, are related to constriction and dilatation of the blood vessels, and the associated reflexes are discussed. According to the author there exist, in addition to these changes in the blood vessels, corresponding changes in the connective tissues themselves, which he describes as "retractions," and his thesis is summed up in the statement that "to every irritation the organism responds by reactions of the vasomotor system and of the tissue retractility." These reactions become abnormal as soon as "adaptation to the modify-

ing causes ceases to be adequate." In the "neurostat" the author has discovered an electrical appliance which indicates these changes with precision, whilst he is able to stimulate and control these changes by means of irradiated metallic powders and certain homoeopathic substances in impermeable envelopes. The author is too modest to claim that his method will lead to the cure of cancer, but he assures us of his conviction that "the study and treatment of vasomotor perturbations and cellular retractions is the essential condition of the physical and moral equilibrium which are necessary for our happiness."

*Secret Ways of the Mind*⁸ is a translation from the German of a book by Dr. KRANEFELDT of Berlin. The two opening chapters deal respectively with the early studies of double personality and the trauma hypothesis, but the main purpose of the writer is to provide the reader with an adequate sketch of the psychologies of Freud, Jung, and Adler. The author himself is an adherent of the Zürich school, and the book has the advantage of an introduction by Dr. C. J. Jung. The translation has been undertaken by Mr. RALPH M. EATON, who contributes a helpful preface. In this critical survey of the developments of dynamic psychology the fundamental differences between the conceptions of Freud and Jung as to the functions, origin, and content of the unconscious are admirably outlined.

An Introduction to the Biochemistry of Nitrogen Conservation,⁹ by Professor G. J. FOWLER, includes the substance of a course of lectures delivered by the author. It covers a wide field, for he starts with a general account of elementary bacteriology and biochemistry, and finishes with a full account of the technical details of sewage purification and the recovery and utilization of sewage nitrogen.

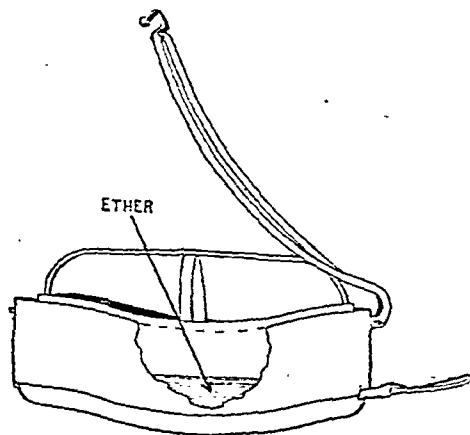
⁶ *Secret Ways of the Mind*. By Dr. W. M. Kranefeldt. Translated from the German by R. M. Eaton. London: Kegan Paul, Trench, Trubner and Co. Ltd. 1934. (Pp. 188. 6s. net.)
⁷ London: E. Arnold and Co. 1934. (Pp. 280; 6 plates. 12s. 6d. net.)

Preparations and Appliances

ANAESTHETIC MASK

Dr. A. D. Woolf (Highams Park, Essex) writes:

To overcome the disadvantage of an overflow of liquid from an anaesthetic mask on to the patient's face I have devised a mask with a deep gutter (seen in the accompanying illustration) which retains surplus fluid until it is reabsorbed by the gauze.



For those practitioners who of necessity have to rely upon the services of a nurse to give a little chloroform during a confinement the mask will be found very useful. It has been manufactured for me by the Medical Supply Association, 167-185, Gray's Inn Road, W.C.

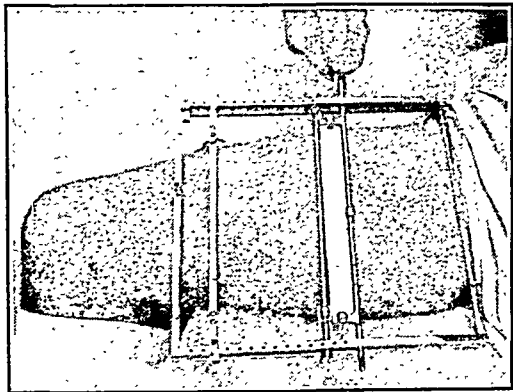
⁶ *Practical X-Ray Therapy*. By Hugh Davies, M.A., M.R.C.S., D.M.R.P. London: J. and A. Churchill. 1934. (Pp. viii + 134; 47 figures. 8s. 6d.)

⁷ *La Cellulite, Pathologie, Physiologie, Retractions, Tumeurs*. By L. Alquier. Paris: Masson et Cie. 1933. (Pp. 288. 5fr.)

APPARATUS FOR SKIN GRAFT CUTTING

Mr. GRAHAM HUMBY (Guy's Hospital) writes:

For the successful cutting of skin grafts of large (superficial) area seven important requirements have to be considered: (1) the elimination of human error; (2) the production of a sufficiently large flat surface on the rounded contour of a limb; (3) the prevention of movement of the skin on the underlying tissues; (4) the avoidance of the considerable trauma involved in certain existing methods of fixing the skin; (5) the maintenance of uniform breadth and thickness



throughout the graft; (6) the provision of a readily sterilizable apparatus; (7) the maintenance of a sharp edge on the cutting blade.

I have evolved a machine, shown in the photograph, which has now been tried out in the operating room, and which appears to obviate all difficulties and meet the above requirements. It consists of a rigid rectangular framework, which is strapped on the limb. Tiny needles on a crossbar at either end pierce the skin to a depth of one-eighth of an inch, and allow of stretching of the skin surface, the degree of tension being adjustable by a simple ratchet mechanism. Sliding in the framework is a knife seven inches long and wafer-thin, which is removable and renewable in the same way as is a safety-razor blade. In front of this knife is a roller, which is so arranged that it precedes the cutting edge by one-eighth of an inch, and thus constantly presents to the knife as it advances a flat skin surface from which to cut. The angle at which the cutting edge meets the skin is adjustable, and allowance is made for a to-and-fro movement through a range of one inch in a direction at right angles to the side members of the frame. This allows the knife to be used after the manner of a saw, advancing little by little with each thrust.

Grafts of different thicknesses can be cut with the same instrument by varying the depth of the cutting edge, and simple adjustment regulates their breadth up to the maximum available on the limb. Human skill is almost completely eliminated, and so the need for practice is reduced to a minimum. The machine should prove of particular value to the general surgeon who is called upon to perform a skin-grafting operation on only rare occasions, enabling him to cut large grafts with comparative ease. It is made by Down Bros.

HUMIDIFYING APPARATUS FOR INFLATION OF TYMPANUM

Dr. R. YOUNG KENNY (London, W.) writes:

Since inflation of the tympanum is so frequently used in otological practice, this simple modification of the apparatus may be of interest to aural surgeons.

The apparatus consists of: (1) a vacuum flask with a 3-in. cork stopper (capacity a little over an imperial pint); (2) one thistle funnel with stem passed through the cork and reaching to within an inch of the bottom of the bottle; (3) a bent tube which passes just through the cork, and is connected to (4) the tube to the inflating bag. The latter has two valves, arranged so that air is drawn from the flask and forced through the connecting tube to the end of the Eustachian

catheter, or, in the case of Politzerization, to the nasal tip. The object of the apparatus is to supply for inflation air which has been warmed, humidified, and cleaned. This is doing what the normally functioning nose does to the inspired air which normally ventilates the tympanum. The ciliated epithelium which lines the Eustachian tube and the tympanum is affected by cooling, by drying, and by dust- and germ-laden air, as well as by the irritating gases with which our atmosphere, especially in crowded city areas, is laden. The old method of inflation, whether done by the use of the compressed-air tank, the electric pump, or the Politzer bag, does not take these defects into account.

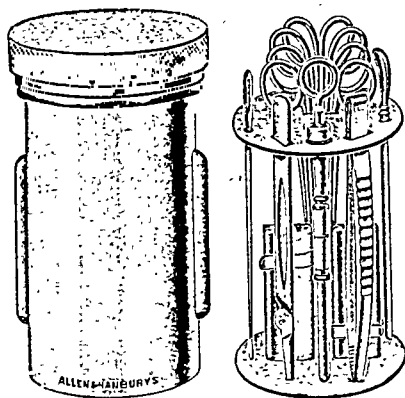
The vacuum flask is first rinsed with hot water (boiling), and then half filled with boiling water and corked. The thistle funnel should previously have had its mouth loosely stuffed with sterile absorbent cotton-wool, and covered with a double thickness of gauze held on by an elastic band. Now about six or eight squeezes of the bag will draw off the air left in the bottle, and replace it with filtered air entering by the thistle funnel and going through the water. The tubing and bag will also be warmed. The bag is like the 10-oz. Politzer bag, with valves at each side allowing the current of air to go only in the one direction—from vacuum flask to patient. If it is desired to introduce some volatile medication this may previously be added to the water.

At first a thermometer was used, passed through the cork to give the temperature of the air in the upper half of the flask, but this was found unnecessary, because, though the air comes warm after about eight squeezes of the bag, it never comes too hot. This can be tested by placing a catheter inside one's cheek and pressing the bag many more times than is ever used in an inflation treatment.

Before each inflation squeeze the bulb two or three times to expel any condensed moisture which may collect in the tubing. The Holburn Surgical Instrument Company made the bag, with connecting tubes and valves, for me.

A SPIRIT-CONTAINING INSTRUMENT CASE

Allen and Hanburys Ltd. have recently brought out the instrument case shown in the accompanying figure. It consists of a nickel-plated cylindrical metal case 6 in. high by $3\frac{1}{2}$ in. in diameter. In it is fitted a removable rack or stand carrying a number of instruments required for minor surgical operations. The case is filled with spirit so that the instruments are quickly available in a sterilized condition. A screw-on cover with cone fitting is provided, which prevents leakage of spirit. In use the rack is lifted out and placed on the inverted case cover.



The following equipment is provided: two 5-in. Spencer Wells forceps, one 5-in. dressing forceps, one 5-in. scissors (blunt-pointed), one 5-in. sinus forceps, six suture needles in metal container, one "A. & H." knife-handle, six "A. & H." knife-blades in metal container, one director and scoop, one trocar and cannula, one 5-in. silver probe.

The case weighs about 2 lb. 12 oz., and prices range from £1 12s. (case with lift-out rack to carry own instruments) to £4 12s. (case complete with stainless steel instruments). With nickel-plated instruments it costs £3 15s.

ELEVEN YEARS' WORK IN A PUBLIC
SCHOOL DENTAL CLINIC

BY

T. C. STRETTON, L.D.S., R.C.S. ENG.
DENTAL SURGEON

AND

G. E. FRIEND, M.R.C.S., L.R.C.P.
MEDICAL OFFICER

CHRIST'S HOSPITAL, HORSHAM

An account of a public school dental clinic carried on under uniform conditions during the eleven years from 1923 to 1933 inclusive may be of practical interest. The school in question, Christ's Hospital, Horsham, has an average boy population of over 800, the yearly turnover being about 150. The boys are under regular dental supervision, the dental surgeon attending one day a week during term time, and where after-care is necessary it is carried out by the resident medical officer. The figures obtained in the dental record are of interest, and we are prompted to show the further improvement possible in a school which in 1923 was already comparatively clean-mouthed.

In 1923 attention was centred, as previously, on the discovery and rectification of caries, and on the irregularity of teeth. In September, 1923, dental certificates were required for new boys entering the school, and in November of the same year a "clean mouth campaign" was instituted. It was considered that the best way further to improve the oral condition of the boys was to institute a standard for cleanliness. Clean gums and teeth are conducive to the prevention of pyorrhoæa alveolaris and caries, and to the improvement of health through the reduction of those minor ailments and diseases which are conveyed by droplet infection.

The work at Christ's Hospital comprises: (1) charting cavities; (2) notifying parents of irregularity of teeth; (3) carrying out any urgent extractions; (4) doing urgent temporary or permanent fillings; (5) adjusting regulation appliances; and (6) dealing with accidents—for example, fractured, loosened, or evulsed teeth, or fractured jaws. Routine examination is made on every boy, when the mouth is graded. Each house (about fifty boys) is examined as a whole, and any caries or irregularity of the teeth is notified to the parent for attention next holidays, only urgent repair work or extraction being done at school. Every boy whose mouth requires attention is seen at the beginning of the next term, to make sure that the work has been carried out; in those cases where this has not been, or is improperly, done, a second report (or in occasional stubborn cases a personal letter) is sent, and followed up until the work is completed. This system of examination appears to us, after ten years' experience, to be sufficient to ensure a healthy condition of the mouths throughout the school. Occasions for controversy arise principally from the neglect of parents to take boys to a dentist. Disputes do not arise between the home dentist and ourselves.

Since January, 1926, the boys have been graded into four divisions of oral cleanliness: A1, 1, 2, 3. A1 and 1 indicate clean mouths, the view being taken that it is more of an incentive to the boys to be classified as A1 and 1 for clean mouths than as 1 and 2. A1 is a super-clean mouth, and 1 is a clean mouth with, say, fillings or loosening deciduous teeth, making a distinguishing difference. The other two divisions, 2 and 3, indicate dirty and very dirty mouths. The boys in these divisions have to be rendered A1 or 1 with hard brush drill and scaling and cleaning, and have to attend regular inspections until the teeth are clean enough for the boy's promotion. In cases of stomatitis suitable mouth-washes are prescribed, and remedial treatment is given. Tonsils and adenoids and other possible causes of oral sepsis also receive attention.

This yearly classification has been carried out in the same manner since 1926, and the progress which has been made is shown in the following table:

TABLE I.—Grading of Mouths (Excluding New Boys)

Grade	1926	1927	1928	1929	1930	1931	1932	1933
A1	453	525	550	545	580	573	603	572
1	301	240	234	223	199	155	178	206
2	40	22	22	13	13	12	19	14
3	11	4	—	—	—	—	—	—
Total examined	815	792	806	792	792	771	800	792
Percentage								
A1	56.8	66.4	63.2	69.0	73.2	74.1	75.4	72.2
1	37.0	30.3	29.0	28.7	25.1	24.0	22.2	26.0
2	4.9	2.8	2.7	2.2	1.6	1.5	2.3	1.7
3	1.3	0.5	—	—	—	—	—	—
A1 plus 1	93.8	95.7	92.2	97.7	98.3	98.4	97.6	98.2
2 plus 3	6.2	3.3	2.7	2.2	1.6	1.5	2.3	1.7

This campaign for "clean mouths" has been easily conducted at Christ's Hospital. Occasionally masters have been appealed to when the whole house has been backward, but for the individual case the house captain has always carried out instructions, and has seen that the gums and teeth of those boys who were dilatory in scrubbing them were in a better condition when next inspected. In fact, the label of a 2 or 3 is considered a stigma by the boys.

A point of great value is to investigate and explain the reason for a lapse from a clean mouth to one of poorer grade. The usual cause is either laziness, coupled with a weak arm and a soft toothbrush, or a lapse in general health—for example, by the development of chronic sepsis in tonsils and adenoids. From Table I it will be seen that Class 3 mouths are now non-existent, and that the number in Class 2 is vastly reduced. Also there is a general elevation from Class 1 to the peerage of A1. Coupled with this increase in the number of clean mouths there has been about a 20 per cent. reduction in the number of cavities, and a 14 per cent. reduction in the number of boys with carious teeth.

After ten years' work on these lines we are of the opinion that an average figure of 1.5 cavities per boy is the irreducible minimum of caries, and 2 per cent. that of mouths below Grade 1. When such a clean mouth campaign is carried out systematically there is the tremendous prospect that teeth will be retained longer than at present, and that pyorrhoæa alveolaris and such conditions will be deferred, if not altogether avoided, with the result that this improved condition must repercuss upon the general health of the individual and the community.

TABLE II.—Caries (Including New Boys)

Year	Number of Boys without Caries	Number of Boys with Caries	Percentage of Boys with Caries	Cavities per Boy
1923	355	432	54.8	1.95
1924	411	379	47.3	1.82
1925	556	357	39.1	1.69
1926	479	424	45.9	1.63
1927	534	356	40.6	1.69
1928	505	386	43.3	1.60
1929	523	381	42.1	1.69
1930	438	373	43.7	1.75
1931	563	331	37.0	1.45
1932	473	324	40.3	1.54
1933	523	322	35.4	1.57

SELENIDE TREATMENT OF CANCER

A CRITICAL REVIEW

In a recent paper¹ Dr. A. T. Todd gives an account of the modifications introduced into the method of colloid treatment of cancer, begun in Bristol eight years ago, with colloidal lead selenide. The changes are, briefly, the elimination of lead entirely, except for the local application to ulcerated growths of lead amalgam ointment, and the substitution of two new colloids—a sulphur selenium colloid "SSe," and a radio-active selenium colloid "R.A.S." In the latter, selenium is combined with feebly radio-active radium residues, radium G and higher disintegration products.

The treatment begins with intravenous injection of SSe, followed two days later by $1\frac{1}{2}$ Holzknecht units of deep x rays. The reaction which follows each of these procedures—mild exacerbations of symptoms—is carefully noted, and the repetition of both at weekly intervals aims at maintaining this degree of reaction, the dose of colloid and of x rays being adjusted accordingly. This first course lasts eight weeks—that is, till 12 H of x rays have been applied. Alternation then begins, and for three weeks a weekly dose of R.A.S. is administered, again aiming at a moderate but definite reaction. SSe and R.A.S. are then given on alternate weeks for a period of six months. In a case progressing satisfactorily injections then cease for eight to ten weeks, after which a further course of alternating SSe and R.A.S. is maintained for three months more. When progress has continued for nine months treatment is stopped, and the patient attends for observation only for a further period of six months. He is then discharged, being warned to return if any suspicious symptoms occur.

Theoretical Conceptions

It will be obvious from this summary that even in favourable cases treatment is tedious; in unfavourable cases it may last longer, and is continued till the patient is moribund, for even in desperate cases improvement may ultimately set in. In discussing the reasons for the modifications embodied in his new methods Dr. Todd draws attention to the exacerbation of the disease which followed the attempt to combine x - or radium-radiation in therapeutic doses with the earlier colloidal lead selenide (D4S) treatment. Excessive doses of the colloid gave the same result in animal experiments. This effect Dr. Todd believes to be due to the presence of the radiation-sensitive selenium, converting a relatively small into a relatively large dose of radiation, as it is well known that excessive radiation of an insensitive new growth may lead to aggravation of symptoms and more rapid progress. It is possible, as he maintains, that these effects are in both cases due to damage of a defensive mechanism.

In an interesting digression Dr. Todd expounds his conviction that the new growths are the result of an infective virus, and that his treatment is successful because it is adapted to this conception of the disease. The reviewer does not believe that this is necessarily true. Even in the filterable tumours of the fowl, in which the evidence for the participation of a causative virus is strongest, the virus is so firmly combined with the cell structures that even the strongest viricidal antisera (active against filtrates) are incapable of rupturing the combination and of robbing living cell-suspensions of their property of giving rise to new growths. Still less is this possible in a growing tumour, and for pathological and therapeutic purposes the cell, with its contained infecting agent, forms an indissoluble pathogenic entity. If an analogous cell-

virus complex subsists in the neoplasms of mammals the unification is even more complete, and the therapeutic problem is essentially the problem of the destruction or encapsulation of the parenchyma cells of the new growth. This encapsulation is essentially a non-specific overgrowth of the stroma, and it may be brought about in a variety of ways. It is still impossible to predict the outcome of treatment by these procedures because rather narrow limits are set to the amount of stimulation the stroma or "junction tissue" can tolerate, and because of the second incalculable variable—the inherent malignancy or virulence. This varies from one neoplasm to another, but is relatively constant in any one tumour. The upper threshold of effective stimulation of the "junction tissue" cannot be passed without disaster. Hence it comes about that only by the therapeutic test can the cancer cases be distributed into the classes in which the treatment is more or less successful or fails.

Results of Treatment

After discussing the prognosis, both from the purely clinical side and from the outcome of certain laboratory tests, Dr. Todd gives the results of the treatment of two series of cases. Series I, May, 1931, to September, 1932, comprises ninety-five unselected cases, untreatable by surgeon and radiologist. In this series, of those patients who had completed an adequate course twenty-nine have died and fifteen are alive and well. Three patients apparently cured died from other causes. In series II, sixty-two cases, unselected as to clinical and pathological state, twelve patients who had received adequate treatment have died and three have been discharged as apparently cured. In assessing the significance of the duration of freedom from symptoms it should be remembered that the apparently cured have been under observation for six months without treatment before discharge. From the data supplied it is not possible to ascertain the survival times after "toilet" operation, and many will regret this omission. Dr. Todd informs me this interval has never been less than six months before discharge: usually "toilet" operation, or, for example, colostomy, is done at the beginning of the treatment.

Summary

To sum up, approximately 20 per cent. of unselected patients with cancer, rejected by surgeon and radiologist, have been restored to health. Of the remainder a considerable fraction have shown temporary improvement. Is this method of combined colloid and radiation therapy which Dr. Todd has developed with a patience, ingenuity, and sustained enthusiasm that all must recognize, capable of still further improvement? Or does it effect an unconscious, unforeseeable selection of a group of patients who, left untreated, would die, but having the germs of a defensive mechanism and a not too high degree of malignancy of their neoplasms, can have the scale turned in their favour? Only by a wider test of the method by others, and by its application as a preventive of recurrence after operation as Dr. Todd suggests, can this fundamental dubiety be satisfactorily resolved.

J. A. MURRAY.

The twenty-second annual report, in the *Journal of the American Medical Association* of May 19th, on the ninety-three cities of the United States with a population of more than 100,000 shows that for the first time since the summaries were undertaken no city registered a typhoid mortality rate higher than 10 per 100,000. Sixteen cities had no typhoid deaths at all—an unprecedented record. The improvement is probably somewhat greater than the figures indicate, since the estimate of the 1932 population is made without allowing for possible increase.

¹ *Brit. Journ. Surg.*, 1934, xxi, 619.

British Medical Journal

SATURDAY, JUNE 16th, 1934

DIPHTHERIA IMMUNIZATION

Diphtheria, an almost preventable disease, still attacks some 40,000 people every year in England and kills 2,000; it naturally attracts, and will continue to demand, much attention from medical writers and workers. W. T. Benson,¹ in an impressive review of the position in Britain, again points out that in a crucial test in the Edinburgh and Birmingham isolation hospitals immunization virtually abolished diphtheria among the staff and the nurses constantly and intensely exposed to risk, and that the analysis of the large American figures by Godfrey² and Lee³ reveals a like happy sequence. In Benson's view we have been merely toying with diphtheria prophylaxis in Great Britain. Prophylaxis will save money; even a moderate appeal to parents influenced 80 per cent. of them to give consent to immunization. He urges the free provision of toxoid by the local authority and a payment to the general practitioner who injects the prophylactic, the initial Schick test and retest being omitted among young children. Two campaigns embracing the general practitioner are announced from West Kensington and Lincoln.⁴ Benson warns against making one's promises to the public too comprehensive, for there will always be a small residue of children not immunized, "and 'notifiable' diphtheria will occur even in immune individuals so long as every sore throat, from which a few morphological Klebs-Loeffler bacilli have been cultured, continues to be erroneously regarded as necessarily diphtheritic."

We referred in our issue of February 17th (p. 290) to the remarkably successful use of toxoid in Canada. G. Ramon,⁵ in a recent summary, describes immunization with formol toxoid ("anatoxine"). Working with more potent toxoid—containing 20 immunizing units per c.cm.—than previously, he has obtained excellent immunity with three or even two injections containing 3 c.cm. of toxoid. R. A. O'Brien and H. J. Parish,⁶ who employed toxoid of even higher value, with the effective avoidance of reaction provided by the useful Moloney-Fraser test, converted 95 per cent. of children from Schick-positive to completely negative within a few weeks. Swyer,⁷ with formol toxoid, obtained 93 to 100 per cent. change to the Schick-negative state within four to twelve weeks after two or three injections. The toxoid made by C. G. Pope and M. Healey⁸ of the strikingly high value of ninety-two antigenic units presumably is also being used for immunization. Formol toxoid may be regarded as

almost a tried friend. It must, however, be given in at least two spaced doses. The possibility of obtaining reasonable immunity with but one dose has attracted much attention recently. Great hope is centred on "localizing" the toxoid injected; this can be done with alum (Glenny) or with tapioca or typhoid vaccine (Ramon). The action of alum is remarkable. In 1925 A. T. Glenny, C. G. Pope, H. Waddington, and U. Wallace⁹ discovered that the addition of alum provides a precipitate of high immunizing power even in one dose. This alum toxoid precipitate has been continuously tried during the past few years in England and is still being cautiously used. W. H. Park, with handsome acknowledgement of the English work on which the method was based, reported in 1930 at the International Congress in Paris highly successful results with this form of alum toxoid, but states that the reactions with alum toxoid are annoying though not in the least harmful. The employment of alum toxoid has been enthusiastically adopted in some of the Western and Southern States in the U.S.A., with gratifyingly high conversion of Schick-positive children to negative after one dose. It is of interest that the induration or "lump" which occurs in a few patients, and the rare abscess, have been tolerated by American parents, who are presumably more amenable than our own public. Saunders¹⁰ recently made an inquiry in Ireland into the tendency of different batches of precipitated alum toxoid to cause induration and abscess. In the U.S.A. W. H. Park¹¹—the honoured pioneer in this field—working with J. D. Munroe and V. K. Volk, after a carefully controlled investigation, has just recorded with wise moderation that toxoid with the addition of 0.2 per cent. alum, in two doses, gave an 89 per cent. Schick-negative result at the end of two months and 94 per cent. at the end of a year. McGinnes and Stebbins,¹² in Virginia, describe the injection of one dose of precipitated alum toxoid into small groups of children with a resulting conversion from positive reaction to negative in 94 to 96 per cent. The biochemist may be trusted to provide purer alum toxoid in the near future, and so virtually abolish the unwelcome "lump" that still hinders the general introduction of this method of immunization.

So much for the severely practical aspects of immunization: those who would look further will enjoy the lengthy and philosophic report by S. F. Dudley, D. M. May, and J. A. O'Flynn,¹³ the latest contribution by the Medical Research Council to a task so competently started in 1923 with the classic, *Diphtheria*. These authors state that amongst a changing population of boys at Greenwich Hospital School—approximately 1,000 at any moment—there were from 1919 to 1927 385 cases of "diphtheria," while in five years following active immunization, then tardily authorized, forty-four infections labelled "diphtheria" were recorded, of

¹ *Edinburgh Med. Journ.*, May, 1934, p. 293.² *Amer. Journ. Public Health*, 1932, ii, 287.³ *Proc. Preventive Med. Soc.*, 1931.⁴ *British Med. J. (Journal Supplement)*, May 18th, 1934, p. 255.⁵ *Canad. Med. J.*, 1934, 513.⁶ *Lancet*, 1932, ii, 176.⁷ *J. C. C. Annual Report*, 1932, ii, III, 56.⁸ *Brit. Journ. Exper. Path.*, 1933, xiv, 77.⁹ *Journ. Path. and Bact.*, 1925, xix, 31.¹⁰ *Lancet*, 1933, i, 781.¹¹ *Amer. Journ. Public Health*, 1934, xxviii, 342.¹² *Idid.*, 1934, xxix, 319.¹³ Medical Research Council: "Active Immunization against Diphtheria," Special Report Series No. 163, 1934.

which only eight were clinically recognizable; of these, six occurred in Schick-positive boys before inoculation. The authors have garnered a rich harvest of observations and conclusions. Active immunization gives almost certain protection against recognizable clinical diphtheria: gravis bacilli infected the school in 1932; mitis predominated in 1933; one boy in four had virulent K.L.B. in his throat during 1932; gravis bacilli are more invasive than mitis, since they may cause, in Schick-negative people, a trivial illness called "diphtheria," but active immunization is a sound method of protection against recognizable clinical infection with gravis bacilli. A virulent carrier state may exist with a Schick-positive reaction. Tonsillectomy has no effect on Schick immunity. Ten per cent. of boys artificially made Schick-negative may become Schick-positive in from six months to four years, but this loss is of little practical consequence, for, in the event of infection, the clinical result is usually trivial. The figure given contrasts with those of H. J. Parish and C. C. Okell,¹⁴ who ascertained that only 2 to 5 per cent. of children in a school had lost the full Schick-negative level when tested two to several years after immunization; Nélis,¹⁵ in a recent report, confirms these findings. Even where the conclusions of Dudley and co-workers are heterodox, criticism is blunted by the authors' own disarming self-criticism. Thus, after arguing ably for some pages that artificial immunization may increase the "virulent carrier rate" and the occurrence of diphtheria among the inoculated—a conclusion probably unacceptable to Godfrey and Lee, who have analysed the large American figures—they admit that in Hamilton, Canada, the opposite conclusion was reached; a special "caution" also warns the unwary against necessarily regarding the observations and conclusions as applicable to other populations or even to the same population at different times. A survey of all this recent activity convinces one that the fever specialist, the immunologist, and the health officer are alert to remedy the present unsatisfactory position. What of the responsibility of the parent and general practitioner, and of those who oppose preventive inoculation?

THE CONTROL OF THE DIGESTIVE FUNCTIONS

Recent investigations have extended our ideas about the control of the digestive functions in certain rather interesting directions. The older views may be divided into the following three mechanisms: psycho-neural reflexes, neural, and humoral. The psycho-neural, or conditioned, reflexes were most clearly demonstrated by the work of Pavlov and his pupils, and need no further reference here than to point out that the claims made as to their philosophical significance are not as readily substantiated. There can be no doubt that these experiments show that in some subtle way the brain can transform psychological receptions into

nerve stimuli, but this does not provide sufficient grounds for concluding that what we call "mind" is entirely a complex system of such transformations, or for explaining all mental phenomena on a purely mechanistic basis. The link between the psychological receptor and the nerve stimulus is entirely unknown to us, and we cannot picture precisely what takes place when a hungry dog as a result of the sight or odour of food begins to salivate or secrete gastric juice. Nor is it easy to understand how a secretion of gastric juice can be initiated by the suggestion of certain food to a patient under hypnosis. What picture can be drawn of the train of events which leads to an attack of vomiting on the receipt of bad news? What is the basal element leading to the frequently severe gastro-intestinal dysfunction associated with hysterical dissociation? We have as yet to be content with the term "psycho-neural," and must await greater understanding of mind processes before these phenomena are likely to become understandable in more physiological terms.

The control of the digestive functions on a lower plane by the relatively simple neural mechanisms falls more or less into line with our general conceptions of vegetative reflexes. Humoral control of the digestive system is now a well-established fact. Although doubt still exists in the minds of many physiologists as to whether the gastrin hypothesis is tenable in its original form, recent work has shown that histamine, or histamine-like substances, can be obtained from the gastric mucosa, and these may lead to the consequences formerly attributed to the hypothetical gastrin. In a recent contribution Okada¹ draws attention to a substance extractable from spinach, which he calls "spinacin," and which has a powerful stimulant action on the gastric and pancreatic secretions when injected subcutaneously: given by mouth it is inactive. Spinacin appears to be an imidazol derivative, and is readily distinguishable from histamine. The stimulant action of spinacin on gastric and pancreatic secretions is unaffected by section of the vagi or by injection of atropine, so that it seems to be a member of the group of humoral agents acting on the digestive glands. Like histamine it does not produce its effects on these glands when injected in relatively large doses into the circulation, apparently because of toxic action on the secreting cells; but when introduced subcutaneously, intramuscularly, or very slowly intravenously, a striking response is obtained.

Okada has also used this substance in the treatment of achylia gastrica, hypochlorhydria, and in gastric cancer. In all of these cases a few days' treatment with the spinach extract so far changed the reactivity of the gastric glands that, whereas both test meals and histamine had previously evoked little or no response in the matter of acid, they now gave normal or almost normal curves of free and combined acidity. In the same work Okada presents a considerable mass of evidence in support of another mechanism of gastro-

¹⁴ *Lancet*, 1928, ii, 322.

¹⁵ *Rev. d'Hyg.*, 1934, lvi, 206.

¹ *Nagoya Journ. Med. Sci.*, December 26th, 1933.

intestinal control—namely, a humo-neural mechanism. This conception found its earliest support in the observations of a good many workers on the action of insulin. While the immediately recognizable result of insulin injection is a fall in blood sugar, a whole series of phenomena were gradually described as occurring when the blood sugar fell to hypoglycaemic levels. Outstanding among these phenomena was hunger, and it was soon demonstrated that hypoglycaemia leads to increased gastric motility and increased volume and acidity of the gastric juice. The peculiar thing about these results of hypoglycaemia was that they could be prevented by section of the vagi or by the injection of atropine, as well as by glucose. These results lead to the view that hypoglycaemia stimulates the vagal centre and so gives rise to the motor and secretory sequels observed. Now whereas this humo-neural mechanism is brought into action by a fall in blood sugar, a similar end-result is obtained by the injection of various amino-acids, with consequent increase in blood amino-acids. The effect of the latter on the vagal centre can be demonstrated in the same way as in the case of hypoglycaemia, and can also be prevented by the injection of glucose. Exactly similar responses were demonstrated by Okada for the pancreatic and the biliary secretions, but not for the succus entericus. For the pancreatic juice the humo-neural mechanism is best brought into play by fat, which leads to the secretion of a juice rich in ferment and thus simulates that obtained by vagal stimulation. This action of fat can be prevented by hyperglycaemia, section of the vagi, or by atropine. These and other experiments described by Okada deserve repetition and critical study.

THE DENTAL BOARD AS FAIRY GODMOTHER

The third Dental Board since the passing of the Act of 1921 has held its final session, and its chairman, Sir Francis Dyke Acland, took occasion to give a short summary of what has been accomplished in the way of dental education, research, and health propaganda. The Board, in one of its functions, is a stern disciplinarian, but in another it is a fairy godmother, showering gifts on the deserving. Out of its total income over the twelve years of a little over half a million it has allocated as grants to students a sum of £173,000; it has given £53,000 to dental schools for extension and equipment; and it has voted £52,000 for research and £34,000 for dental health education. In addition, grants in aid of teaching in dental schools have been given to the amount of £10,000, and a like sum has been expended on post-graduate and post-registration lectures. The grants to the dental schools have enabled three of them—Glasgow, Leeds, and Newcastle—to provide new buildings and equipment, and six others have been helped to make structural alterations. In this same session, but after the chairman had spoken, a grant of £5,000 was offered on the usual conditions to the University of Birmingham towards the cost of its proposed new dental school at Edgbaston. The grants in aid of teaching in dental schools have been made on the basis of a definite

policy during the last five years. They have had two objects: the first, to attract to the schools the services of one or two young dental practitioners of high standing, to devote whole or part time to operative dental surgery, orthodontics, or allied clinical subjects; and the second, to encourage the schools to set up better-paid posts of professorial rank. The scheme of bursaries for dental education was adopted in 1923, and up to the end of last year 702 bursaries had been awarded, and 355 of the bursars to whom grants were made had qualified. The grants made by the Dental Board to research have had a 'two-fold channel'—namely, through the Department of Scientific and Industrial Research and through the Medical Research Council. By means of a Dental Investigation Committee of the Department profitable researches have been carried out on dental models and materials. Recent fluctuations in the Board's income, owing to the lowering of the retention fee—a concession to hard-hit dentists—has compelled the Board to withdraw support from these researches. Lord Rutherford, the chairman of the General Board of the Department, in a letter acknowledging the generosity of the Dental Board over many years in financing this work, expresses the hope that the Board may see its way at a future date to make renewed provision for a programme of investigation, and with that in view the results so far reached are to be placed on record as a starting-point for further work. On the medical side several researches are in progress under the auspices of a committee of the Medical Research Council for the investigation of dental disease. The most important is that on diet and the teeth, by Dr. May Mellanby, who has shown that teeth of good structure can be produced in certain animals by a dietary having a low cereal content but rich in vitamin D. Sir Francis Acland, in commenting, as a layman, on Mrs. Mellanby's work, suggested that it would be useful to have, alongside her conclusions establishing the importance of diet in dental structure, some more complete experiments than had yet been possible upon the effect of perfect environment, apart from attention to diet. Finally, with regard to the Board's work for dental education, the chairman said that this was winning appreciation from health and education authorities. In the jargon of the day, it is making the younger generation "tooth-minded." A cynic might say that the Board by its benefactions is doing its best to ensure that the dental profession of the future shall be highly educated but without any patients. A truer view would be that the work of the dentist will become increasingly preventive.

VACCINE THERAPY IN BACTERIAL ENDOCARDITIS

Dr. C. Dimitracoff has lately reported the results of treatment with autogenous vaccines in four patients with subacute bacterial endocarditis. The vaccine was made in all cases from a streptococcus grown from the blood. The organism was of the *viridans* type in three instances, and all these patients were cured. In the fourth a streptococcus of haemolytic type was obtained, and this patient died in spite of vaccine therapy. As other authors have reported failure with this, as with all other methods of treatment, the

criteria of diagnosis must be completely satisfied if we are to accept these reports of success. In the author's first case it must be objected that there was no evidence of valve disease, and the presence of heart failure is also an argument against the diagnosis. This last objection applies also to the third case, yet in this instance the existence of valvular disease, a large spleen, and positive blood culture provide the strongest evidence for the diagnosis. There were no emboli in either Case 1 or Case 3, and clubbing of the fingers is not mentioned. No details are given of Case 2; finally in Case 4, with clear evidence of valve disease, and multiple emboli, there can be no doubt as to the presence of infective endocarditis, but for this patient treatment was unsuccessful.

SANATORIUM EXPERIENCE

The twenty-seventh report of King Edward VII Sanatorium, Midhurst, covers the twelve months ending June, 1933, during which 320 patients were admitted and 220 discharged. Artificial pneumothorax was employed in 173 cases, and it is hoped to publish a special report soon to amplify that which appeared in the *Quarterly Journal of Medicine* for July, 1932. The number of operations for phrenic evulsion (66) and thoracoplasty is thought to warrant special notice, and detailed accounts of these will be published later. The first-named procedure has produced interesting results in cases of apical disease. Thirteen patients have been submitted to thoracoplasty in the last five years; twelve are still alive, with an after-history of six months to five years, and eight of these have now a tubercle-free sputum. It is noteworthy that two of these eight had originally laryngeal tuberculosis, which did not improve under treatment by rest, but which healed shortly after the operation. Six of the twelve patients are now at work. The after-history of seventy-seven patients who had gold treatment has now been followed up. Eleven have died. In four cases an artificial pneumothorax operation was associated with the gold treatment, and one had phrenic evulsion performed. Of the sixty-six surviving patients thirty-nine have now no sputum, or tubercle bacilli are not present in it; twenty-seven cases are still positive, three of these having had also artificial pneumothorax, and one a thoracoplasty. The pathological department finds no support for the impression that the reading of the sedimentation test, when performed a second time—after one month's residence in the sanatorium—is more often higher than lower. No change occurred in the rate in 6.2 per cent. of the cases; in the remainder it was as often lowered as raised. An attempt was made to test comparatively the accuracy of the micro method of performing this test. The conclusion was reached that for practical clinical purposes the micro method was quite accurate enough, especially when repeated frequently, as it should be. Marked errors usually occurred only in abnormal rates. Intense auto-agglutination giving a false normal reading could always be identified by close inspection of the column of blood. Radiographical reproductions are included in the report to illustrate the difficulty of diagnosis of a cavity. Clinically, in a certain case there was some whispering pectoriloquy in the right upper zone in front, but this was not sufficiently defined to warrant

a positive diagnosis. The first film taken suggested the presence of excavation, but was not conclusive. After semi-collapse of the lung by artificial pneumothorax, a second film proved the presence of a large cavity. A new departure at Midhurst has been the provision of an operating theatre, so that all surgical procedures now employed in the treatment of pulmonary tuberculosis can be undertaken in the sanatorium.

OVULATION IN THE WOMAN

Until quite recent years the current view was that menstruation in the woman corresponded with pre-ovulation in the bitch. The brilliant results obtained by direct experiment on animals, particularly by the American school, have led to a complete reorientation of our ideas. It is now accepted that ovulation and pregnancy can occur without menstruation and menstruation without ovulation. There are some who would insist that anovular menstruation should not be called "menstruation," but seeing that the term was introduced centuries before its association with ovulation was understood, and that even now the diagnosis between ovular and anovular menstruation can only be determined by the histological examination of material removed by the curette, this point of view is perhaps unnecessarily precise. It is generally agreed that ovulation takes place normally between the tenth and the fourteenth day of the menstrual cycle, and that the rate of degeneration of the ovum is such that it becomes incapable of being fertilized within seven days of being extruded from the ovary. It follows that there are only about six days in the menstrual cycle when the ovum can be fertilized. Recent work has suggested that the spermatozoon does not live longer than about forty-eight hours in the female genital tract, and some authors have stated with assurance that a woman whose periods are absolutely normal can become pregnant only if coitus occurs between the eighth and seventeenth days of the menstrual cycle. If this were so, the problem of birth control would be relatively simple of solution. While it is true that conception is most likely to take place at this time, there would appear to be unequivocal clinical evidence that it may follow coitus on any day of the cycle. It must be concluded either that ovulation does not always happen between the tenth and fourteenth days of the cycle, or that the spermatozoa can live, as was formerly believed, for as long as three weeks in the female genital tract. It is, of course, possible that ovulation may happen more than once during each menstrual cycle. Investigating this question, Séguin and Simonnet¹ have sought to correlate with ovulation the appearance of a thin glairy fluid in the cervical canal (which persists for three to four days) and the maximum concentration of folliculin in the urine. They believe the glairy fluid to be secreted for the purpose of rendering the cervical canal permeable to the spermatozoa. Artificial insemination proved successful in two patients, the operation being performed when the secretion was at its height. The same operation was unsuccessful in a third patient, although performed at the same phase of the cycle in three consecutive months. A study of the urinary folliculin showed that it did not reach its highest concentration

¹ *Gynéc. et Obstét.* 1933, xxvii, 657.

until the twenty-second and twenty-third days of the cycle. At this time there was a second and sub-maximal secretion of the glairy cervical fluid. Artificial insemination at the twenty-first day of the cycle subsequently proved successful. If this work is confirmed, it would seem that the coexistence of the glairy cervical discharge with the maximum amount of folliculin in the urine indicates the time of ovulation—a point of value in the treatment of sterility.

ANTIMONY POISONING FROM ENAMELLED VESSELS

A report by Dr. G. W. Monier-Williams on "Antimony in Enamelled Hollow-ware" has been issued by the Ministry of Health.¹ It shows that an unexpected and hitherto scarcely realized risk lurks in the use of certain hollow-ware receptacles for the preparation of lemonade. Several specific outbreaks of antimony poisoning during the last few years have been traced to such receptacles, and they are due to the tartaric acid in the "lemonade crystals" or the citric acid in lemon juice dissolving some of the antimony oxide used in the manufacture of the white enamel coating. For instance, the 120 people present at a social gathering were served with lemonade, made of sliced lemons, which had been prepared in large white enamel jugs, and in half an hour thirty persons were sick. An analysis of the lemonade showed the presence of antimony, whilst the enamel of the jugs was found to contain 9 per cent. of antimony oxide. In another instance the sickness was so severe that some of the patients had to be removed to hospital, but they recovered by the next day. The antimony oxide is employed as a cheap substitute for the more usual tin oxide, which is non-poisonous, and it does no harm when used for articles such as baths, sinks, and clothes-boilers, which are never likely to come into contact with liquid or solid foods. The report suggests that the total prohibition of antimony in any hollow-ware articles capable of being used as receptacles for food might be best for the interests both of the public and of the trade. The increase in the cost of production would be only 3 or 4 per cent., and it appears that the trade would not object provided that the restriction applied equally to imported goods.

THE NOGUCHI LECTURES

Nothing perhaps would have puzzled Noguchi more in his puzzled life than the Hideyo Noguchi lectures of 1933, which are now issued as vol. i of the third series of the publications of the Institute of the History of Medicine of the Johns Hopkins University.² Noguchi was a brilliant and simple-minded bacteriologist coming from the lowest class in Japan. He lived for and in his laboratory, where he daily performed the juggling feat of eating rice with chopsticks in one hand whilst he held a book in the other. He died of yellow fever at Accra on the Gold Coast on May 21st, 1928. Nevertheless Dr. Castiglioni, who is professor of the history of medicine at the University of Padua as well

as the chief medical officer to the Austrian Lloyds at Trieste, has done good service by these lectures on the renaissance of medicine in Italy. The first deals with the dawn of the Renaissance and centres round Leonardo da Vinci and Vesalius; the second with the flowering of the Renaissance, which is dominated by Berengario da Carpi and Caelius; the third with the legacy of the scientific renaissance and the main currents of thought from Fracastoro to Galileo. Each lecture is full of thought and all are well worth reading. Speaking of the rise of anatomy he says Vesalius gave the impress of his own personality; Leonardo is a solitary thinker who despises previous tenets. Vesalius feels the link between himself and his forerunners, between himself and his followers. He realizes his debt to the first and is conscious of his power over the second. His work is conceived and complete in the smallest details, and this explains his marvellous success. The lectures are introduced by a preface from the pen of Professor Sigerist, and there is a portrait of Dr. Castiglioni which does not wear the happy expression we are accustomed to associate with his joyous personality.

VITAMIN STANDARDIZATION

An international conference on vitamin standardization is being held this week at the London School of Hygiene and Tropical Medicine, under the auspices of the Permanent Commission on Biological Standardization of the Health Organization of the League of Nations. This conference is the second of its kind. The first, held in 1931, established standards and units for vitamins A, B₁, C, and D, which have since been widely used in many countries throughout the world. Although the standards originally recommended have on the whole worked well, the rapid advance of scientific work in this field has made it necessary to review the findings of the first conference in the light of recently acquired knowledge. Several vitamins are now available in a relatively pure state, and it is probable that the present conference will recommend the replacement of the standards chosen in 1931 by purer preparations than were available at that date, especially in the case of vitamins C and D. The chairman of the conference is Professor Edward Mellanby, and the technical secretaries are Dr. W. R. Aykroyd (League of Nations, Geneva) and Dr. Harjette Chick (Lister Institute, London).

The May meeting of the Joint Tuberculosis Council was largely devoted to a discussion of human tuberculosis of bovine origin and the examination of contacts. A committee was appointed, consisting of Professor W. W. Jameson (convener), with Drs. Jas. Watt, C. O. Hawthorne, W. H. Tytler, Lissant Cox, Jane Walker, Esther Carling, Neville Cox, and D. P. Sutherland, "to study and report upon the milk supply in reference to the promotion of health and the prevention of disease, especially tuberculosis." Concerning the routine examination of contacts, doubt was expressed as to the value of the methods usually adopted, and finally a second committee was formed, consisting of Dr. Ernest Ward (convener), with Drs. F. W. Goodbody, D. P. Sutherland, J. C. Gilchrist, G. T. Hebert, G. Jessel, W. Burton Wood, and L. S. T. Burrell, "to consider and report upon the examination of contacts and the discovery of early or latent tuberculosis, especially among adolescents."

¹ Reports on Public Health and Medical Subjects, No. 73. "Antimony in Enamelled Hollow-ware." By G. W. Monier-Williams, M.A., Ph.D., F.I.C. London: H.M. Stationery Office, 1934. (4d. net.)

² The Renaissance of Medicine in Italy. By Arturo Castiglioni, M.D. The Hideyo Noguchi Lectures. Baltimore: The Johns Hopkins Press; London: H. Milford, Oxford University Press, 1934. (7s. net.)

"EXPERIMENTS ON MAN"

PROFESSOR BARCROFT'S STEPHEN PAGET MEMORIAL LECTURE

The eighth Stephen Paget Memorial Lecture, which was part of the annual general meeting of the Research Defence Society, was delivered by Professor Joseph Barcroft, F.R.S., of Cambridge, in the hall of the London School of Hygiene and Tropical Medicine, on June 5th. Lord Lamington presided over a large audience, which included a few anti-vivisectionists.

Professor Barcroft limited himself to researches which were upon human beings, but were such that they would have to be conducted under the Act of 1876 were man regarded as a "vertebrate" in the sense of that Act. As to whether the results of experiments performed on animals could be regarded as applicable to man, he said that the question was one which could not be answered "yea" or "nay" without an implication which would be untrue. The results of such experiments as could be performed on animals could as a rule be transferred to man, though not without some reservations, which varied with the nature of the experiment.

OBJECTIVE EXPERIMENT

The lecturer first considered objective experiments—for example, the administration of simple chemical substances, which in one way or other acted on the relatively uncomplicated processes of living protoplasm. The mode of action of hydrocyanic acid was now known; it prevented the oxidation processes of the body by destroying the action of the enzymes concerned. There was no reason to suppose that these essential processes of life in man differed materially from those in other mammals; weight for weight the lethal dose of prussic acid was likely to be of the same order throughout the warm-blooded animals. Here he exhibited a number of curves showing the strength of prussic acid vapour in air which proved fatal to various mammals in the time given. It was likely that somewhere within these limits, or not far outside them, the curve for man would fall. If it was desired to know how long a man could survive a concentration of 0.6 mg. of hydrocyanic acid gas per litre the answer would be that he was exceedingly unlikely to die if exposed for less than one minute, and extremely unlikely to live if exposed for much more than fifteen minutes. This was known to be correct so far as the inferior limit was concerned, because the matter had been put to the test, a man remaining in the gas for upwards of two minutes, and continuing in possession of his faculties. If only it was known why the dog and mouse were so susceptible and the monkey and guinea-pig so resistant, the toxicity of the gas for man could be placed within much narrower limits. The susceptibility of the dog appeared connected with the fact that the dog was capable of a much greater and more sustained degree of activity than most other animals. It could run down almost anything, including man, from which it was to be inferred that the maximal total ventilation of which the dog was capable was for its size greater than for man. The reason why it yielded so quickly to an atmosphere of prussic acid was explained by its power of respiration, whereby it took a much larger quantity of the fatal gas. It was therefore to be predicted that the gas would be much less powerful in its effect on man than on dog. In the experiment just mentioned there was a dog in the lethal chamber with the man, and at the termination of the experiment the dog was moribund.

EXPERIMENT ON SENSATION AND MENTAL PERFORMANCE

The extent to which experiments on animals could yield correct information with regard to human sensation was influenced by the fact that various sensations were developed in very different degrees throughout the

mammals. Some sensations, notably smell, were ill-developed in man as compared with many animals. On the other hand, what might be called the sense of pungency was comparatively highly developed in man: constituents in the air which were intensely irritating to man appeared to have little or no effect on animals. Again, there was the difficulty that even the most experienced experts could not define exactly what was being felt by the animal. So far as experiments on sensation were concerned, the classical one was that of Head and Rivers, who explored the sensations contingent on the cutting, and regeneration, of the nerve going to an area of skin on the forearm. The tragedy of it was that no subsequent observer had found it possible in portraying his sensations to reproduce the picture given by Head and Rivers of epicritic and protopathic sensibility. Three very serious researches had been carried out on this subject from different angles—by the surgeons in the persons of Trotter and Davies, by the psychologist in the person of Boring, and by the physiologist in that of Sir Edward Sharpey-Schafer. There was unanimity among the observers on two points—that a single experiment would not suffice to teach them correctly to describe their sensations, and that the description in no case supported the theory that crude and delicate sensations differed not only in degree but in kind. The theory of protopathic and epicritic sensation seemed to have gone, but there remained the heroism and example of its originators, and if they did not reach finality it might at least be said that they had laboured and others had entered into their labours.

When the issue was the testing of this or that procedure on the higher mental faculties it went without saying that the subject tested must be man himself. The minimum atmospheric pressure at which differential equations could be solved was not to be decided on a mouse. More than twelve years ago he himself essayed to discover whether the mental abilities of a party of researchers who went with him to Peru were of their usually high standard when living at an altitude of 15,000 ft. in the Andes. The results of suitable mental tests when tabulated showed little or no falling off as compared with those yielded by the same persons at sea-level. Yet the results of the tests were in a sense illusory, for while the work was as well done on the Andes as on the sea, the effort of doing it and the concentration required were enormously greater. Psychological technique since then had made great strides, but the difficulty of expressing in units which could be tabulated the amount which a given performance "took out" of the performer was still a very real one. He was told on high authority that an official of a copper corporation in Peru could write a difficult report as cleverly at Cerro de Pasco as in New York, but in New York he would do it in his stride, while at Cerro he would have afterwards to make a trip down the coast to recuperate.

COMMUNICABLE DISEASE

Finally the lecturer turned to the subject of disease, which in its simplest form might be no more than an upset of the balance of normal conditions in the body. A case in point was the effects of haemorrhage. The hydrostatic arrangements in the human body were of the same general scheme as in the higher animals, so that the effects of deprivation of blood could be studied quite well on animals, and all the relevant information obtained. It was true that it was an experiment on man which had given him a very broad hint that the volume of circulating blood could be adjusted within limits by the contraction of the spleen; but the proof came entirely from animals, more especially a very striking demonstration that quite a large volume of blood might be lost without prejudice to the actual amount of fluid in circulation. Not only could the effect of diminished blood volume be ascertained by animal experiments, but a great deal of information about possible causes. The production of histamine in wounded tissue, its effects upon the permeability of the vessel walls, and so forth, had all been discovered and demonstrated on

animals. But there were other and more complicated problems connected with the investigation of disease. In communicable diseases there were two problems: first, the organism or virus which was the essential cause, and, secondly, the intermediate host, if any, by which it was communicated. If the disease was one to which a great many forms of life were susceptible, the ground might be cleared by experiments upon animals. Such was the case with plague, the typical symptoms of which were shown by mice; rats, guinea-pigs, and rabbits when inoculated, while rats, mice, and monkeys, when fed on cultures of plague bacilli, acquired the disease and generally died with characteristic symptoms and lesions. When, however, the disease was one which was not known to reproduce its symptoms in any form of animal life, the human experiment was imperative. The history of trench fever was a case in point. In yellow fever, again, when the subject became ripe for experimental work, there was believed to be no experimental animal which could be used, for the simple reason that no animal was known to be capable of taking yellow fever. It was possible, however, since there were numerous strains of yellow fever, to take advantage of human volunteers in working up from the harmless to the harmful.

To sum up, purely objective experiments did not, as a rule, demand the use of man; in a great many cases the relevant information could be obtained on animals. Experiments on sensation and on mental perception must usually be carried out on man himself. As regards the communication of disease, if animals showed the symptoms of the malady they could be used for clearing the ground; if they did not, resort must be had to human experiment. The proof that plague could be communicated to man was first supplied by a worker who injected himself with blood from a plague patient. If to-day the matter could be settled with a high degree of certainty on rats and monkeys, would not such act, though one of heroism, verge on unjustifiable suicide? Condemned criminals had been mentioned as possible subjects for experiment, but Professor Barcroft, owing principally to the obvious abuses to which such a course was open, not to speak of the paucity of condemned criminals, was against such forms of experiment. The Research Defence Society, he said in conclusion, was pledged to animal experimentation, because it was thought that many of the problems could be solved most readily and humanely by that method, but any other method which would be of use was welcomed none the less. With the policy of waiting for the illuminating accident, of folding the cards and wrapping the talent in the napkin, they would be nothing to do.

A vote of thanks was accorded to Professor Barcroft on the motion of the Hon. Sir Arthur Stanley, seconded by Professor A. V. Hill. The latter mentioned that Professor Barcroft's experiments had been done largely by himself. Outside the hall leaflets were distributed warning Professor Barcroft with doing certain mutilating experiments, and he was asked by a member of the audience whether he admitted the charge. He replied that while the individual statements, or some of them, in the leaflet might be correct, the general implication that he tortured animals was quite untrue. Not long ago an anti-vivisectionist asked permission to inspect his animal houses. He replied that permission could be given to inspect the animals except those which had actually been under experiment. The anti-vivisectionist accepted the limitation, made his inspection, and professed himself very pleased with the condition of all the animals he saw. But in fact, unknown to the visitor, all the animals which had actually undergone experiment were included among those he inspected!

The issue of *La Medicina Ibera* for May 17th contains an illustrated description of the Spanish Health Congress which was recently held at Madrid. There was an attendance of 1,400, and 280 papers were presented. The next congress will be held in 1937 at a place to be arranged by the executive committee.

KING EDWARD'S HOSPITAL FUND

The annual meeting of the General Council of King Edward's Hospital Fund for London was held on June 5th. The Prince of Wales presided, and read a message from the King expressing his satisfaction at the news that the hospitals appeared to have fared even better in 1933 than in 1932.

PRESIDENT'S ADDRESS

The Prince announced that the Fund had again maintained its ordinary distribution at £300,000 entirely out of annual income. Another £8,000 had been issued in pension scheme grants, together with £12,000 from the special pensions reserve, the total of the two distributions amounting thus to £320,000. The net income of the year, £308,000, was an increase of £5,000 over that of 1932. Legacies, which for six years past had never provided less than £58,000 annually, and had averaged £68,000, totalled £80,000 in 1933. There were some decreases in annual subscriptions (£2,000) and in income from investments (£11,000), but the Fund's capital had been increased by the reversion of £136,000 under the will of Lord Mount Stephen, and a gift of freehold property valued at £18,000, to be called the William and Francis Radford Endowment. The Prince called attention to the great amount of administrative work involved in distributing the annual £300,000. This required a whole twelve months' examination of the affairs of the hospitals by the Distribution Committee, the Hospitals Economy Committee, the Revenue Committee, and the Visitors. The Fund had also come to exercise some of the functions of a kind of central body for the voluntary hospitals of London, using its influence while carefully respecting their individuality and freedom. No fewer than eight separate subjects had been taken up by the Fund last year, as the result of communications from responsible correspondents who had wished to approach the hospitals through a central agency. Staff help had also been given to the London Voluntary Hospitals Committee, the representative body which consulted with the London County Council about the provision of hospital accommodation in the county. The Parliamentary Committee was actively concerned with the problem of payment for the treatment of motor accident casualties, and was reviewing the question of private Bills promoted by individual hospitals which could not otherwise provide pay-beds for patients of moderate means, and the advantages to be derived from a general Bill which would deal with them all. The Out-patient Arrangements Committee was issuing a second edition of its hospital out-patient time table, designed to ensure that patients need not have to wait through having come at the wrong hour. It had also presented a report on the ways in which the District Nursing Service could be used to relieve out-patient departments, and was at present studying time-saving methods at the dispensary stage of out-patient procedure. Here again members of the Committee were visiting hospitals to study the procedure directly.

STRENGTH OF THE VOLUNTARY SYSTEM

Although the exact figures for 1933 were not yet available (His Royal Highness continued) it was already clear that the voluntary hospitals had had an aggregate balance of income over expenditure for the seventh year in succession, and that the last year's balance would prove to be the largest of the series. There were fewer hospitals with deficits for the year, and more with surpluses, than at any time since the war. There had been a considerable increase in income, which was now about £4,000,000 in London alone. This was partly due to exceptionally large legacies, but other voluntary income was keeping very steady. Out of the £4,000,000 about £1,800,000 came from voluntary sources, made up of large and small sums, and not including gifts for building or endowment. In addition to this steadiness of voluntary income, the payments of patients had increased, and large amounts were being raised for building schemes. The broad fact was that, during the past few years, between two and three million pounds a year in London alone had come from that stream of voluntary gifts which had so often been said to be drying up—a kind of drying up which would excite the envy of the Metropolitan Water Board. The

hospital service in this country had the advantage of being partly voluntary and partly centralized under the county authorities. There was thus provided a unique opportunity of combining large-scale efficiency with the qualities which came from individual freedom and initiative and were especially important in medical work.

VARIOUS REPORTS

Mr. E. R. Peacock, honorary treasurer of the Fund, moving the adoption of the accounts, said that the increased income had enabled the Fund to provide £5,000 more than in the previous year for pension grants, and also to meet the cost of removal to new and larger offices, which were not out of proportion to the continual increase in the work. The balance sheet had now a separate schedule for the gifts for special purposes, the increase in the number of which was a welcome mark of the confidence in the Fund felt by donors. The Chairman of the Management Committee (the Earl of Donoughmore) reported on an application from the Central Council for District Nursing in London, together with a report by the Out-Patient Arrangements Committee, on the work done by district nurses, in relief of out-patient departments. He moved that the question of a grant should be referred back to the Management Committee for their consideration and for further report to the General Council, and that in the meantime the report be published. Sir William Collins, chairman of the Central Council for District Nursing, acknowledged gratefully the praises for the work of the district nursing service which had been forthcoming from the Prince and from the Out-Patient Committee. He hoped that some grant might now perhaps be received.

Reports of Societies

OTO-LARYNGOLOGICAL MEETING AT BIRMINGHAM

At a summer meeting of the Sections of Otolaryngology of the Royal Society of Medicine at Birmingham University on June 8th and 9th, the chair of the Otolaryngological Section was taken by Mr. W. J. HARRISON, and a discussion on the subject of nerve anastomosis was opened by Sir CHARLES BALLANCE.

Nerve Anastomosis

He said that since 1895 surgeons had been uniting the peripheral end of a divided nerve of the neck to the central end of some other divided nerve. Though after such operation the recovery of the muscles of the face was remarkably satisfactory when compared with the preceding paralysed condition, it was not a perfect recovery. He therefore determined to investigate, by experimental means, as to the best means of operating for facial palsy. Thirty experiments were carried out, and at the end of six months thereafter the voluntary movement and the faradic response were, in several of the animals, normal, the muscles on both sides of the face contracting simultaneously. But when the facial nerve was grafted to the hypoglossal, the descending hypoglossi, or the glosso-pharyngeal nerve, associated movements, varying from slight closure of the eyelids to contractions involving other muscles of the face and pinna, were present. Four years ago he accepted the invitation of Dr. Arthur Duel of New York to work with him on the subject in the surgery of the latter. After nearly a year of experimentation the idea of employing a nerve graft in the Fallopian canal was evolved. Monkeys were the experimental animals. Sir Charles declared that there was no such thing as anastomosis of nerves. The distal segment of a nerve degenerated, and at the end of fourteen days it could be said to be a bundle of tubes containing the broken-down fatty elements of the nerve sheath. In man, the radical mastoid operation should be done before commencing to remove the outer wall of the aqueduct. Obviously, decompression was the course to adopt. The best means of determining whether the operation had been followed by harmonious functioning of the two sides of the face was by the expressions

of emotion. For the use of degenerated grafts instead of fresh grafts Dr. Duel was answerable. The degenerated grafts consisted of a series of tubes filled with fatty masses due to the breaking up of the sheaths. The use of this graft might determine the return of faradic excitability in the muscles of the palsied face in as short a time as a month. In thirteen of the series of twenty-two experiments on baboons spontaneous contractions of the face muscles were observed, and in eight of the thirteen the facial nerve had been grafted to another nerve of the neck. In the remaining five nerve grafting was done. After operations for facial paralysis in humans spasm of muscles was not noted, but it was in the case of monkeys.

Sir HAROLD GILLIES described by means of a cinematographic film his experiences with the fascia lata graft, which was attached to temporal muscle flap. Though it was essentially a palliative procedure, its use had been established, and in cases which seemed likely to recover it constituted a great aid to such recovery. The graft could be taken by either of two methods: by the open, necessitating a long incision in the thigh; or by the closed—that is, making a nick, and inserting a ring cutter inside. The most frequent sites for placing these fascia lata strips were the centre of the lower lip, the centre of the upper lip, and the angle of the mouth. For paralysed eyelids he used the temporal muscle slip plus its own temporal muscle fascia.

Many members discussed these contributions.

Phonation and Articulation

Considerable time was devoted to the question of phonation and articulation. Normal phonation was dealt with by Mr. STEPHEN JONES, who supported his paper by a number of diagrams. Mr. V. E. NEGUS also spoke on disorders of phonation, emphasizing the importance of the thyro-arytenoid muscles in talking and singing, and their function in imparting elasticity to the margins of the glottis. The vocal cords, he submitted, were not necessary for phonation. Miss FRED A. PARSONS, who is in charge of the phonetics clinic at Queen's Hospital, described her method of re-education of the faculty of speech after various operations on the mouth and throat, and demonstrated successful results in several children and in a woman 56 years of age. Part of this success was attributable to the ingenuity with which she managed to maintain the lively interest of her pupils, every few days seeing a new device for them to practise. Mr. BRAYSHAW GILHESPY pointed out that the pitch of consonants was mostly in the region of 8,192 double vibrations per second (tuning fork C₄), the vowel sounds being caused by a much lower rate—that is, 400 to 2,000. If hearing for notes below 2,000 double vibrations per second was lost, the patient was confused in his effort to distinguish certain sounds of vowels. People with nerve deafness failed in reference to their consonants.

Other Papers

Dr. T. C. GRAVES (Birmingham) read a paper on "Sphenoidal Sinus Infection in Relation to Mental Disorder," especially in reference to two female patients, both of whom had to be certified. In both, the mania was found to be due to the existence of closed sinus foci of infection, which brought many ills in its train. In both, treatment of these foci resulted in the ultimate discharge of the patients—one, aged 25, in seven months, the other, aged 41, in three years eight months. Dr. Graves explained that these cases were reported in continuation of the work being done at the mental hospital on these lines.

Mr. MUSGRAVE WOODMAN (President, Section of Laryngology) read a communication on "The Control of Air Pressure in the Lungs after Tracheotomy." The paper was based on a case of chronic obstruction of the larynx. After tracheotomy a wide-bore tube was tied in, and relief was instantaneous, but the patient's happiness lasted only a few hours, for at the end of that time he began to get waterlogged—he had cough, and mucus and saliva streamed out of the tracheotomy opening; he developed oedema of the lungs, became collapsed, and died, not of pneumonia, but of lung collapse. Mr. Negus had

shown that the primary function of the larynx was sphincteric, not vocal, and the question arose as to whether, in carrying out tracheotomy, the sphincteric control was too suddenly cut out. To obviate this he had devised, and had used for two years with excellent results, a simple valve, which he showed. It enabled the opening to be gradually widened by the nurse, but never to the full extent of the inside bore of the tracheotomy tube. It must be applied immediately after the tracheotomy—that is, for the period of crisis due to the change induced by the operation. Mr. V. E. NEGUS, discussing the device, agreed as to the need for immediate application. It regulated the intake and egress of air, and at the same time controlled the pulmonary circulation. If warm air were used, the advantage would, he thought, be increased, and he suggested that if springs could be attached it would be better still. Dr. P. WATSON-WILLIAMS stressed the importance of the adjustment, after the operation, of the proportion of CO_2 in the blood. Mr. STIRK ADAMS asked whether the valve was likely to be of value in chronic cases, and the PRESIDENT replied that it was specially meant for acute obstruction and the tracheotomy done for that.

Many cases were shown at Queen's Hospital, and members dined together, and afterwards attended a performance of *Henry V* at the Memorial Theatre, Stratford-on-Avon.

CANCER OF CERVIX AFTER ARTIFICIAL MENOPAUSE

At a meeting of the Midland Obstetrical and Gynaecological Society, held in Birmingham on May 14th, with the president, Dr. C. E. PURSLOW, in the chair, Mr. S. W. MASLEN JONES read a short paper on "Carcinoma of the Cervix following Production of Artificial Menopause by Radium," and described a recent case of his own.

The patient, aged 48, 7-para, had a history of increasing losses for several months; she was too fat for accurate bimanual examination or abdominal section. She was treated by curetting and intrauterine radium (2,400 mg. hours). The curettage showed no evidence of malignancy. Two years later the bleeding recurred, and she was found to have an inoperable carcinoma of the cervix, which was again treated by radium. It was too early as yet to say what the ultimate result would be.

Mr. Maslen Jones said that he regarded this case as being of particular importance in view of the increasing use of radium to stop bleeding of this type. It had the same disadvantages as had a subtotal compared with a total hysterectomy, in that it left the patient with a risk of developing carcinoma of the cervix, although the urgent symptom of bleeding was equally well relieved by any of the three methods. He did not agree that the presence of malignant disease could always be excluded by histological examination of material removed at curettings. He felt that in many cases the use of radium merely suppressed a symptom, leaving a diseased organ behind, and that if the patient was a good operative risk the method of choice of producing the menopause should always be a total hysterectomy. He also mentioned the danger of a "flare up" of latent pelvic infections after the use of radium.

Mr. A. B. DANBY thought that the use of radium in this case might have produced a stricture of the cervical canal, and the carcinoma developed as a result of irritation by pent-up discharge. Mr. H. L. SHEPHERD said he had known a carcinoma of the body of the uterus develop two years after the use of radium for menopausal bleeding. This case was successfully treated by panhysterectomy. He thought, nevertheless, that radium was definitely indicated in most of these cases, as the bleeding was due to abnormal ovarian activity, which was directly destroyed by radium. Mrs. BERTRAM LLOYD said that even total hysterectomy was no sure guarantee of safety for these cases, as she had known a carcinoma develop in the vaginal vault twenty years after total hysterectomy. Mr. MASLEN JONES, in replying to the discussion, said that the cervix appeared to be healthy when he first applied the radium. He thought that the deeper layers of the endo-

metrium, which were essential for a diagnosis of malignancy, were often left behind when curetting.

Obstetrical Rarities

Mrs. BERTRAM LLOYD described a case of recurring inversion of the uterus.

The patient was a 1-para, aged 24, in whom the inversion occurred before separation of the placenta. Her doctor peeled off the placenta, replaced the uterus, and sent her into hospital. On admission she was very shocked, and the fundus of the uterus was at the level of the umbilicus. Puerperium was normal until the fourth day, when the fundus of the uterus again appeared in the vagina. It was replaced under an anaesthetic with great difficulty, and kept in position by an intrauterine pack. The rest of the puerperium was normal.

Owing to improvements in obstetrical technique inversion of the uterus was becoming much rarer, and had a lower mortality rate. Mrs. Bertram Lloyd thought that in her own case the inversion was not replaced fully at the first attempt.

Mrs. Bertram Lloyd described also a case of quadruplets occurring in a 2-para aged 23. The condition was diagnosed radiologically; the patient had a mild toxæmia in the later weeks.

Labour started about one week before term, and the patient delivered herself rapidly of four living male children, three of which had one placenta, the presentations being footling, vertex, shoulder, and breech. The total weight of the babies was 16 lb. 14 oz., and of babies and placenta 20 lb. 10 oz. The first stage of labour was painless, and of unknown length. The second stage lasted three hours twelve minutes, and the third stage eighteen minutes. One child (the largest) died next day, but the other three did well. The mother had a normal puerperium.

Miss B. M. WILLMOTT described a case of contraction ring recurring in successive labours in a 2-para aged 29.

At the first labour at term, fifteen months previously she was sent into hospital on account of obstructed labour due to a contraction ring gripping the neck of the child. The second labour, also at term, was normal until the head showed at the vulva, when no further advance occurred, and exploration of the uterus showed again a ring gripping the neck. The treatment adopted was lower segment Caesarean section through a vertical incision. Mother and child recovered normally.

AN EPIDEMIC OF PUERPERAL FEVER

At a meeting of the North of England Obstetrical and Gynaecological Society at Leeds, on May 11th, with the president, Professor DANIEL DOUGAL (Manchester), in the chair, Mr. D. W. CURRIE (Leeds) gave a report on a recent epidemic of puerperal fever, with notes on some cases of puerperal peritonitis.

The epidemic, he said, had lasted from the end of February to the middle of March, and was due to a haemolytic streptococcus. Ten women were affected, and four died. Of the patients recovering, one had a positive blood culture and another peritonitis. As a result of his investigation Mr. Currie found that: (1) The hospital was over-full for several days, the average daily in-patients being about 120 for 108 beds. The number of patients in the labour department varied from nine to fifteen for ten beds. (2) Three patients were in the labour department for over three days, and were frequently moved from the first-stage ward to the labour ward and back: although the linen was changed at each move it was possible that a septic patient soiled more than one bed. This danger was obviously apt to occur in a large central labour ward such as the one involved, which has six beds. (3) One definitely septic patient was taken after delivery to a clean lying-in ward. She should have been sent to the isolation block, or at any rate to a side ward. (4) There was often delay in transferring feverish patients from the large lying-in wards to the side wards. This was due to the difficulty of managing the beds owing to overcrowding, but probably explained the infection of the two last patients, both of whom developed peritonitis, which proved fatal in one case. Commenting on the seriousness of a contact epidemic, Mr. Currie deprecated the practice of admitting "failed forceps" and other

probably infected cases into the labour ward with clean cases. He also stated that the blankets and the bed-pans had come under suspicion as possible vehicles of contagion.

Mr. CURRIE then gave a brief account of seventeen cases of puerperal peritonitis operated on by him in the last four years. Clinically they were divisible into three groups: (1) peritonitis following abortion, (2) atypical peritonitis occurring early in the puerperium, and (3) typical peritonitis appearing late in the puerperium. In the atypical group there were nine cases with one recovery. The most constant signs were distension and free fluid. Other points were sudden rise in temperature and pulse rate, slight superficial tenderness, and diarrhoea. The treatment in each case was laparotomy and drainage. The fluid in the cavity was usually serous, with pus flakes in the pelvis: until lately a tube had been left down to the pouch of Douglas and removed after three days. Subsequent drainage was slight, yet post mortem the peritonitis had advanced to the stage of localization. Latterly the tube had been inserted just into the cavity and left for a week; this was done in the patient who recovered, and thin, serous fluid drained for three or four days, then changing to thick pus. Another patient was operated on on the third day, after complaining of severe abdominal pain. She had typical signs of appendicitis with peritonitis, and the appendix was gangrenous; she recovered. Three patients late in the puerperium had signs typical of peritonitis. All three had local abscesses, and recovered after drainage. Four cases were post abortum. This class was less dangerous, because the infection tended to be limited to the pelvis. Two were drained by posterior colpotomy, and recovered; two patients died after abdominal drainage.

Dr. T. N. A. JEFFCOATE (Liverpool) read a paper entitled "Endometriosis as a Manifestation of Ovarian Dysfunction"; Mr. A. GOUGH (Leeds) described a case of menstruation starting at the age of 29; Mr. W. GOUGH (Leeds) showed specimens of a double monster, and gave an account of a large cervical fibroid which had obstructed labour; and Dr. E. A. GERRARD (Manchester) read a communication on dystocia due to rigid cervix following colporrhaphy.

CAESAREAN SECTION

At a meeting of the Edinburgh Obstetrical Society on May 9th, with the president, Dr. OLIPHANT NICHOLSON, in the chair, Drs. HAULTAIN, ROBERTSON, and DEWAR contributed a paper on a study of Caesarean section. The authors stated that 463 cases would be considered altogether, with special reference to the late results of 174 operations, this being the number of answers received from a questionnaire sent to all patients who had a Caesarean section operation performed at the Royal Maternity Hospital, Edinburgh, during the years 1925-31, inclusive. Indications and immediate results were shortly dealt with. Attention was then drawn to the late results in regard to the effect that the operation seemed to have on the general health of the mother and child, on the menstrual function, fertility, pain, and bladder or bowel dysfunction. It was found that the general health of the mother was usually excellent in the years following the operation, and only 10.9 per cent. stated that they were not in good health, but as a number of these women suffered from cardiac disease a degree of bad health was only to be expected. The general health of the babies was good, and compared very favourably with the Registrar-General's statistics of infantile death rate from 1 month to 5 years. In regard to menstruation it was found that only 15 per cent. suffered from any abnormality of their periods, but it was interesting to note that the cases of amenorrhoea and scanty menstruation following the operation were as common as those of menorrhagia. Dysmenorrhoea was present in 7.5 per cent. of cases, and was chiefly premenstrual in type. The most interesting result of the investigation, however, was the fact that in 62.7 per cent., where operation could have been followed by a pregnancy, no pregnancy resulted. This seemed to be a very high sterility rate, which was difficult to account for. The fact that

fourteen patients were delivered naturally for the pregnancies following Caesarean section showed that the old saying "Once a Caesarean, always a Caesarean" was by no means the case in this series. Pain was found to be present and to be probably or possibly due to the operation in 19.6 per cent. of cases, but in only 8 per cent. was the pain sufficient to make the patient seek medical advice. Urinary symptoms were present in 12.8 per cent. of cases, the predominant complaints being frequency and painful micturition. Constipation was prevalent as a new symptom in 12 per cent. of the patients operated upon, and could be traced as a cause of pain in a number of the patients who complained of such. The question of Caesarean section being done in first or second pregnancies when alternative methods of treatment might be considered was discussed fully, especially with regard to the fact of the low fertility rate following such an operation.

Non-infective Vaginal Discharge

Drs. CRUICKSHANK and SHARMAN (Glasgow) then gave a communication on vaginal discharge of non-infective origin. They stated that an excessive discharge per vaginam might arise from any one of three sources—vagina, cervix, or uterus. The tubular glands of the endometrium were the source of a small quantity of watery and highly alkaline secretion from the normal uterus. The secretion from the racemose glands of the cervix was thick, mucoid, normally small in amount, and definitely alkaline, the pH ranging from 8 to 9. The normal vaginal "secretion"—not a true secretion, as there were no glands in the vaginal epithelium—was white, cheesy, highly acid in reaction, and consisted of epithelial squames, Döderlein's vaginal bacilli, some transudate, and lactic acid. The lactic acid, which was responsible for the high acidity, resulted from the breaking down of glycogen in the vaginal epithelial cells, probably by bacterial action. These conditions were found in the vagina during reproductive life and for a short period after birth, when glycogen was also present in the vagina. The deposition of glycogen there was probably controlled by the oestrogenic hormone. In the study of a series of cases of leucorrhoea in virgins it was thought that a bacteriological and chemical study of the discharge might afford a basis for diagnosis in the investigation of its nature and source. As a result of the laboratory examination they were able to classify a series of over forty cases of vaginal leucorrhoea into two categories—(1) infective and (2) non-infective. The infective group were mostly infections with *Trichomonas vaginalis*. Among the non-infective cases hormonal disturbance was often strongly suggested, either by the individual's "make-up" or by gross menstrual dysfunction. Spontaneous remission of the discharge tended to occur at intervals. The average age at onset was low—19 years. Sometimes the complaint dated from puberty, and in three of the series excessive discharge was noted before menstruation had begun. In four out of five cases examined excess of oestrin was present in the urine, while radiological examination showed diminution of the sella turcica in three out of five cases. On vaginal examination no lesions, inflammatory or otherwise, were discovered. The laboratory findings, which included microscopic study of a fresh drop of the vaginal secretion in saline, estimation of the hydrogen-ion concentration by means of the capillator indicator (British Drug Houses), and repeated examinations of smears and cultures from the vagina, cervical canal, and uterine cavity were summarized as follows:

	Non-infective	Infective
Secretion	Whitish, viscid, cheesy	Grey-yellowish (fluid, frothy)
Smear	Grade I flora (epithelial cells and Döderlein's vaginal bacilli)	Grade II or III flora (pus cells trichomonas and mixed bacterial flora)
Culture	Döderlein's bacilli	Profuse, mixed
Reaction (average pH)	4.4 (4.2 to 4.7)	5.6 (4.9 to 6.0)

Drs. Cruickshank and Sharmar pointed out that excessive discharge of non-infective origin might occur in non-virginal patients, and its occurrence in pregnancy was very common.

CORRESPONDENCE

Memorial to Sir Walter Fletcher

SIR.—The public life of this country suffered a loss of more than common magnitude through the death of Sir Walter Morley Fletcher, K.B.E., M.D., F.R.S., first Secretary of the Medical Research Council, on June 7th, 1933. He was then in his sixtieth year and in the height of those powers which he had used without stint in the service of science and of mankind. The ideal that he held before him, in words which were frequently upon his lips, was the advancement of knowledge for the relief of human suffering. He strove ever towards this, both in his years at Cambridge as a brilliant investigator and an influential teacher of youth, and later in the administration of the public support provided for medical research and in measures for bringing the results of scientific work more effectively to the assistance of the State.

Walter Fletcher gave richly to the common weal, and it is proper that some worthy tribute of an enduring kind should be paid to his memory. The desire to take part in this will be widespread among those who were able truly to appreciate his great labours in the cause of medical science, and will be felt not least by the many research workers who were directly indebted to him for help and inspiration: it will extend, also, to others in different spheres of life who were privileged to enjoy that friendship for which he had so great a gift, and throughout a wider circle of those who admired his vigorous personality and his mastery of practical affairs.

It is considered that the tribute should consist in the first place of a personal memorial, and, secondly, of the inception of some scheme for the furtherance of the cause which Sir Walter Fletcher had so much at heart. It is therefore proposed first to commission a portrait bust, to be placed in a suitable setting in the entrance hall of the National Institute for Medical Research at Hampstead. The remainder of the sum collected will then be used as a fund for building—at the farm premises of the National Institute at Mill Hill—a Walter Fletcher Laboratory, to be devoted particularly to those nutritional studies in which he was so keenly interested. This will not only provide an appropriate memorial, but it will make an urgently needed contribution to the national equipment for work in what is at present among the most important of all branches of medical research.

In view of the wide utility and public value of the second part of the memorial, it has not been thought desirable to suggest for individual subscriptions any limit such as might have been fitting for a tribute of a purely personal character. It is strongly hoped, however, that this will in no way deter those who may wish to have a share in the personal memorial but are of necessity restricted to giving quite small sums. All subscriptions should be sent to the Secretary, Fletcher Memorial Fund, 38, Old Queen Street, Westminster, S.W.1.—We are, etc.,

STANLEY BALDWIN.
F. G. HOPKINS.
D'ABERNON.
MILDMAY OF FLETE.
C. S. SHERRINGTON.
ALAN GREGG.
DAWSON OF PENN.
H. J. WARING.

C. J. MARTIN.
T. R. ELLIOTT.
ROBERT MUIR.
HARRIETTE CHICK.
G. M. TREVELYAN.
M. R. JAMES.
A. E. BOYCOTT.
H. H. DALE.
E. MELLANBY.

London, June 7th.

Classification of Mental Disorders

SIR.—You published on June 2nd two pages relating to the classification of insanity, together with its introduction and an accompanying commentary. May I ask you for space for a personal criticism? I may state that I was the honorary secretary (ten years) of the Medico-Psychological Association, which covers the period in which the old classification of mental disorders—now to be discarded—was propounded. I was also the lecturer on mental diseases (fifteen years) to St. Bartholomew's Hospital, and before that (three years) at the Westminster Hospital, and I therefore claim to write with some experience.

The classification of insanity has always been a difficult task, because the phenomena of defect or disease implied by the term impress most students of mental diseases differently. So much is this the case that every teacher has produced a classification of his own, sooner or later to be varied or abandoned as an unsolved jigsaw puzzle. To one observer the most important matter is whether the patient will get well or not, and the classification to him (representative of many general practitioners) is into curable and not curable. Even to-day the weekly report of the resident physician of a well-known mental hospital to his committee is that so many of the patients are curable, whilst so many are incurable. The seriousness or the severity of the attack has also given rise to a classification into benign and malignant or into acute and chronic, whilst the element of time—namely, recent and chronic—has also been employed to qualify the form of insanity.

A pathological classification based upon changes in the brain would naturally be the ideal and logical one. We know what the exact underlying pathology of diphtheria, pneumonia, consumption, general paralysis, and lockjaw may be, and the treatment is adopted accordingly, but up to the present time we have found no scientific correlations between morbid cerebral and morbid mental states.

A classification according to age or to the period of life at which an attack may occur has also been presented, as well as an aetiological one with very varied syndromes, yet such was accepted by Skae and by his pupil Clouston; but the one depending upon symptoms, and described as the "clinical," still remains—with modifications—the most acceptable scheme. As insanity is an affection of the mind influencing conduct it would appear that a psychological classification would help to separate and make clear the various departures from the normal, and many attempts have been made to secure a helpful psychological classification, but the results have been disappointing, thus leaving us with the one based upon clinical findings, which has the merit of being the only practical and understandable classification. This one, the clinical, in spite of the fact that it includes divisions which are not mutually exclusive—a fundamental necessity of every scientific classification—has obvious practical advantages. It nevertheless presents overlapping symptoms: in some of the groups, for instance, mania occurs in the delirium of toxæmia, in general paralysis, in the alternating stages of recurrent insanity, and dementia may not only be a terminal stage of melancholia and mania, but may occur as a primary and a gradually deteriorating mental state.

The classification presented in the *British Medical Journal* of June 2nd, said to have been accepted by the Royal Medico-Psychological Association, has much to recommend it, but it has a strong Continental flavour, in that much of it is the outcome of the teachings of Freud. It was his pupil Bleuler who adopted the term "schizophrenia." There is much dispute even to-day as to the exact connotation of this term, and much confusion still attaches to it. Another term, "paraphrenia" (not an affection of the diaphragm!), not only includes the acute hallucinatory psychoses in the new classification, but also all the eccentrics, and it is in no way a subdivision of the schizophrenics as is claimed.

Owing partly to the expositions of Freud and partly also to the extended experience of mental disorders acquired during the war, a desire has arisen for a more modern classification, and one is now presented with eleven divisions and several subdivisions. The first division is (A) mental deficiency, expressed in English, Greek (oligophrenia), and Latin (amentia), but to be used preferably in Greek. The term "oligophrenia" was advocated thirty-five years ago by Andriezen, but was not accepted, and many aments possess elementary, though arrested, minds. I am of opinion that teachers and medical superintendents who will be responsible for compiling the future statistics would naturally prefer the English equivalents, which would also be in harmony with the legal definitions of the Mental Deficiency Acts, 1914 and 1927.

I pass over the second division (B), merely remarking that the Mental Treatment Act, 1930, which sanctions the reception of voluntary boarders, will need an extension of the class "neuroses and psychoneuroses." The anxiety states (b) might well include states of doubt, anger, and fear, for it is certain that many cases will come under this group. Also compulsions (c) would be more comprehensible as impulses, thus recognizing the pathological affections of the will; for conduct is the result of the struggle between the impulse to act and the will-power to control the act.

The third division (C) is entitled "schizophrenic psychoses" and includes paraphrenia, a term which requires a fuller definition than is implied in the term "schizophrenia." Kraepelin (its inventor) defined paraphrenia as a disturbance of the intellect with but little interference with or affection of the will and feeling. As already stated, the term is wide enough to include the oddities, singularities, and the fantastic persons we meet, and its significance is no more a splitting up of the mind than is schizanthus (applied to a leaf) a splitting up of the flower. The schizoid group, by some authorities, is even made to represent the arrest of intellectual development described as idiopathic idiocy. Paraphrenia, if included at all, might be more aptly classified under the fourth division (D) psychopathic constitution, an indefinite heading, which would be more clearly and better defined under delusional insanity, (a) systematized, (b) unsystematized—a term sanctioned by long usage and described in every English textbook, but which disappears in the new terminology.

The fifth division, (E) affective psychoses, might also be better described as the emotional psychoses, with subdivisions into (a) mania or exaltation, (b) melancholia or depression, and (c) recurrent or alternating forms, so there would be no need for the Greek term "cyclothymia."

The tenth division, (J) dementia, in my opinion needs subdividing into (a) primary and (b) secondary or terminal. Dementia praecox is preferred by many practical alienists as classified under dementia rather than under the so-called schizoid group.

I regret to find that the term "delirium" is omitted from the classification. It is the earliest and most invariable symptom of confusional insanity, and should be bracketed under (F) confusional states.

Apart from the uneasiness, and even the fear, which many medical men (and others) entertain about introducing the Greek gods and heroes into their patients' families, whether they be Oedipus, Electra, Narcissus, or any other, I fail to see the necessity for complicating an English terminology with the use of classical names when the English equivalent can express the full meaning equally well. Also, it would be absurd and unreasonable to expect students of mental disorders to diagnose a case of mental disease in hieroglyphics, such as "E a ii . 8 b c & 1 a," as is suggested, and I trust the new classification may be amended before it is finally accepted as *ex cathedra* with the sanction of the Royal Medico-Psychological Association. I have trespassed at such length upon the hospitality of your columns that I shall refrain from the infliction upon your readers of proposed criticisms on Part II of the classification, as I had intended.—I am, etc.,

ROBERT ARMSTRONG-JONES,
M.D., D.Sc., F.R.C.P.

London, June 9th

Psychological Effect of Hysterectomy.

SIR,—I was much interested in Dr. Winifred Coppard's letter under the above heading in the *Journal* of June 9th (p. 1048), and would refer her to my Hunterian Lecture on "Myomectomy" (*Lancet*, 1931, i, 171). Therein I discussed the psychological effects of hysterectomy, and pointed out the grievous results that may follow it in certain cases.

For many years I have strenuously advocated myomectomy in preference to hysterectomy in all those cases in which the removal of the uterus is liable to be followed by undesirable psychological effects. Conservatism on these grounds is most certainly desirable in nearly all cases of fibroids under 40 years of age, and in a certain number over that age. By the technique which I now employ I find it possible to conserve any uterus, irrespective of the number and position of the fibroids, and that without an operative risk greater than that of hysterectomy.—I am, etc.,

London, W.1, June 8th.

VICTOR BONNEY.

Value of Auscultation in Acute Abdominal Conditions

SIR,—I was glad to read Mr. T. G. Illtyd James's remarks on the value of auscultation in his interesting article, "Observations on the Acute Abdomen," published in your issue of June 9th. He revives a method of examination suggested by Robert Hooke¹ in 1705, when he wrote "that it may be possible to discover the Motions of the Internal Parts of Bodies . . . by the sound they make that one may discover the works performed in the several Offices and Shops of a Man's Body and thereby discover what Instrument or Engine is out of order, what works are going on at several times and lie still at others."

The first accurate observations on the rhythmical sounds of the stomach and small intestine were published by Cannon² in 1905. Two years later I published in the *Guy's Hospital Reports* some work carried out with the help of F. Cook, A. Neville Cox, H. Gardiner, E. G. Slesinger, and A. H. Todd,³ then students at Guy's, which showed that the sounds heard over the caecum as a result of the passage of fluid faeces from the terminal ileum through the ileo-caecal sphincter undergo definite variations in the course of the day. The clinical application of the knowledge thus gained on normal individuals led me to publish a paper in the *British Medical Journal* for November 28th, 1908, on "Abdominal Auscultation as an Aid in Diagnosis."

Two points only are worth adding to Mr. Illtyd James's observations. The first is that in peritonitis the sounds disappear in the neighbourhood of the lesion before they disappear from the rest of the abdomen. Thus gastric sounds continue after the complete disappearance of caecal sounds in peritonitis resulting from a gangrenous appendix, and sounds may persist for a short time after the perforation of a gastric ulcer, though the stomach sounds have completely disappeared. In duodenal perforation, however, the caecal sounds disappear as early as the gastric sounds, owing to the tendency of the escaped material to pass towards the right iliac fossa.

The second point is the importance of the sudden disappearance of caecal sounds as evidence of perforation of a typhoid ulcer; the lesion is almost always in the neighbourhood of the ileo-caecal junction, so that perforation leads to reflex paralysis of the terminal ileum

¹ Hooke, R.: *Method of Improving Natural Philosophy*, London, 1705, p. 39.

² Cannon, W. B.: *Amer. Journ. Physiol.*, 1905, xiv, 339.

³ *Guy's Hospital Reports*, 1907, lxi, 389.

and spasm of the sphincter. I referred to a case of typhoid fever in which I had auscultated over the right iliac fossa at each visit and had always heard the typical caecal sounds. The patient, who was very ill, complained one day of abdominal pain. His pulse was found to have risen slightly, but the temperature was unaltered. There was a slight increase in the rigidity of the abdominal wall, but no distension. I saw him two hours after he first complained of pain. No caecal sounds were heard on listening for two minutes, although occasional gurgles were still audible in other parts of the abdomen. A perforation was diagnosed, and at the operation two were found in the ileum within an inch of the caecum, and spreading peritonitis was present.—I am, etc.,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, June 11th.

Diverticulitis

SIR.—Mr. Harold Edwards, in his clinical review of diverticulitis (*Journal*, June 2nd, p. 973), rightly says that "the role of the surgeon in the treatment of diverticulitis is largely confined to the treatment of its complications." He then mentions five cases in which a radical type of operation was performed, four of which "were progressing dangerously towards one of the complications"—namely, obstruction, perforation, abscess, and colo-vesical fistula. Any case of acute diverticulitis may be complicated in one of the four ways mentioned, and it becomes a nice point in surgical judgement to decide in any case whether the danger is sufficiently great to justify an operation. Fortunately, the great majority of cases, if treated by medical measures on the lines laid down by Dr. Spriggs—whose writings on this subject might with advantage have been included in Mr. Edwards's somewhat meagre bibliography—will clear up without any operation.

A more serious difficulty, in my experience, lies in the diagnosis, and a surgeon may open the abdomen in a case of acute diverticulitis under the mistaken impression that he has to deal with a leaking growth or an acute pelvic appendicitis. The very fact of exploring the abdomen adds a new factor—the probability of post-operative distension. In the presence of a potentially obstructive lesion at the lower end of the colon, post-operative distension may lead on to a dangerous ileus. These cases, like those somewhat vaguely labelled by Mr. Edwards as "progressing dangerously towards one of the complications," demand a further surgical measure. Mr. Edwards recommends a permanent type of colostomy, to be left open for a minimum period of twelve months, and condemns a caecostomy except as a possible prelude to the radical operation. He says: "Apart from the distress it causes the patient, caecostomy gives only very imperfect drainage to the colon, and has a very limited effect upon the inflamed distal portion"; and he quotes one case in which a recurrent attack of acute diverticulitis occurred fourteen days after caecostomy had been performed. He does not tell us what use was made of the caecostomy. I agree with Mr. Edwards that a temporary caecostomy gives imperfect drainage to the colon, for which reason I never now use it as a prelude to a radical operation either for a growth or for diverticulitis of the descending colon. But my experience teaches me that when used as a safety-valve against obstruction, as a means of lubricating the large intestine with paraffin, and when combined with the medical regime laid down by Dr. Spriggs, temporary caecostomy is the operation of choice in the group of cases under discussion. I venture to think that the distress caused to a patient

by a temporary caecostomy, which need not be left open for more than three weeks to a month and which heals spontaneously within a few days of removing the tube, is infinitely less than that of a permanent colostomy, which is to be left open for a minimum period of twelve months and requires a second operation to close it.—I am, etc.,

Reading, June 6th.

J. L. JOYCE, F.R.C.S.

Hyperpiesia

SIR,—I have read with much interest Dr. C. P. Donnison's article in the *Journal* of April 21st (p. 704), on "The Cause of Hyperpiesia," and must congratulate him on the exceedingly able way he has set out his thesis. At the same time I do not think his vision is all-embracing of the subject.

Any conception of hyperpiesia as due to the vaso-constriction action of a hormone must take cognizance of the vaso-dilating complementary hormone or hormones. Cannon's emergency reaction, as being associated with an overplus of adrenal activity, does not satisfy one.

Adrenaline is produced by the appropriate glands, but new work referred to by Dale in a recent number of the *Lancet* informs us that a product which is either adrenaline or something biochemically indistinguishable from it is liberated from all sympathetic nerve endings when these nerves are stimulated. Furthermore, Dale states that the direct antithesis to adrenaline—to wit, acetylcholine—is liberated at the vagal nerve endings when these are stimulated. Acetylcholine is a very valuable vaso-dilator in addition to being a stimulator of bowel activity in contradistinction to the paralysing influence of adrenaline.

Cannon's response can only satisfy one if the emotional stress (1) both stimulates the sympathetic and depresses the vagotonic systems, or (2) depresses the vagotonic only, allowing unbalanced sympathetic activity. In these ways one can explain the difficulty of detecting extra circulating adrenaline blood content.

There may be no excess but simply a lack of the acetylcholine buffer, and this may not be a temporary state secondary to mental stress, but a continuous one acting over years. Only in this way, to my mind, can physiological quantities of adrenaline produce what we loosely term "essential hypertension." Acetylcholine may not be the sole agent involved. Vagotonine, a pancreatic vaso-dilator, may be at fault, or adenosine, the vaso-dilator described by Dale as present in all muscles (where vaso-dilatation is such an asset) in abundance. Kallokrein must also be considered produced, I believe, when the blood is acidified.

Dr. Donnison's article is of great interest, but I feel that while hypertension may spring from root causes such as he describes, the net result produced from these causes is an imbalance between vaso-dilator and vaso-depressor activities, and, decidedly, this does not necessarily imply an over-production of the latter substances. Unbalanced physiological quantities will suffice.—I am, etc.,

J. DRUMMOND, M.D., F.R.C.P.Ed.

Durban, S. Africa, May 22nd.

SIR.—In the *Journal* of May 19th (p. 919) appears a letter from Dr. Herbert Brown in which he states, *inter alia*, his opinion that alcohol is not a contributory cause in hyperpiesia. This is not the generally accepted view, and many patients are ordered to abstain from alcohol in any form, which removes another of the few pleasures left to advanced age. I have waited in vain to see some

of your many readers join issue with Dr. Brown on this matter, and I would be glad to learn whether or not the profession accepts the accuracy of his observations.—I am, etc.,

London, W.C.1, June 5th.

GRAHAM GRANT.

Silicosis in India

SIR,—With reference to the leading article on silicosis, in the *Journal* of April 14th (p. 676), I wish to inform you that recently the Mysore Government appointed a special committee, consisting of the chief medical officer of the Mining Board Kolar Gold Fields, the local medical officer of the Mysore Government, and the physician of the Krishnarajendra Hospital, Mysore, to investigate the question of the prevalence of silicosis among the miners in the Kolar Gold Field area. The committee conducted a preliminary investigation, and unanimously arrived at the conclusion that silicosis does occur among the underground workers. Through the courtesy of the managing agents—Messrs. John Taylor and Sons, London—the available material was submitted to Dr. L. G. Irwin, chairman of the Miners' Phthisis Medical Bureau, South Africa, for opinion. Dr. Irwin, after a careful examination of the material supplied, has come to the conclusion that the pathological and radiographic evidence "appears to create a *prima facie* case that instances of silicosis do occur among the underground workers in the Kolar Gold Fields."

The committee is, however, of opinion that the incidence of the disease in the Kolar Gold Field is much smaller, and that it takes a much longer time to develop signs and symptoms, than in South Africa. This is evidently due to the fact that the percentage of free silica contained in Kolar rock is 5 to 20, as compared with the much larger percentage of 43 to 98 obtaining in South African samples. Further investigation is in progress. Under the circumstances I feel it necessary to contradict the statement made in the article referred to that "in the Kolar Gold Field, India, where the rock contains a large amount of quartz and sericite is absent, silicosis has hitherto inexplicably been unknown."—I am etc.,

S. SUBBA RAO,

Bangalore, May 21st.

Senior Surgeon, Mysore Government.

Pituitary Enlargement

SIR,—The recent work upon the pituitary gland and its surroundings, and your informative leader in the *British Medical Journal* of October 28th last, "The Hypothalamus and the Pituitary," induce me to send you some notes of a case of pituitary enlargement which caused a condition of gigantism and blindness, the latter recovered from with dramatic suddenness.

A coloured boy of 10½ years was led to my rooms on August 3rd last by his mother, who told me that for three years he had been getting dull and stupid, and frequently fell asleep. His vision was reduced to counting fingers at two metres with the right eye; the left eye could not tell light from darkness. He was very dull and listless, and seemed much too big for his age. Height, 5 ft. 1½ in.; weight, 104 lb. Admitted same day to hospital, and head x-rayed the afternoon of following day. The picture showed marked enlargement of the pituitary fossa.

Next morning the aspect was changed completely to brightness, and he said he could see well and wanted to go home. His vision had returned to 6/60 left eye. Wassermann reaction negative both for blood and for cerebro-spinal fluid, and urine normal. Three months later he looked in excellent health. Right vision = 6/12; left vision = 6/9. Fields of vision full.

Present condition: Headaches troublesome for some weeks; increased somnolence. Said to be "lazy, and won't listen." Right vision = 6/24; left vision = 6/9. Pupils active, fields full. Fundi show a certain amount of optic atrophy, noticeable mostly to the temporal side of disks. Knee-jerks very feeble. Weight 125 lb., height 5 ft. 4 in., and looks like a well-set-up boy of 15 or 16 years.

From a study of available literature prognosis seems unfavourable. A ruptured cyst would account for the dramatic change which followed the use of x rays.—I am, etc.,

E. A. SEALE,

Grahamstown, S.A., Ophthalmic Surgeon, Settlers' Hospital.
April 27th.

Criticism of Ante-natal Work

SIR,—I have read and re-read Mr. A. J. Wrigley's most able article in the *Journal* of May 19th, and feel I should like to comment thereon.

As I happen to have the privilege of conducting the ante-natal clinic at the Christiana Hartley Maternity Hospital in the Borough of Southport, I feel that, with others, I come under the lash of his censure, but I am still of opinion that the ante-natal period of midwifery is all-important, and if this work be conscientiously carried out it can result in nothing but good for all concerned. From the replies to his article, on May 26th and June 2nd, I think he must have produced an impression different from that intended.

My experience of ante-natal work—which is, of course, very small—has impressed me in two ways: (1) the need of constant practice necessary for gaining any information from abdominal palpation, and (2) the need of an infinite amount of patience in dealing with it. I do not think it is fair to expect that a general practitioner or midwife with, say, fifty cases a year—and that is above the average, I think—could, on palpation, say with much assurance what was the lie of the child in many cases. Therefore, I maintain that at the ante-natal clinic, with constant and regular practice, this art is much more likely to be acquired. A local colleague once said to me that it was absurd to say I could diagnose an occipito-posterior position from abdominal palpation, and that the late Professor Leith Murray said he could not. I met Professor Leith Murray some time after and asked him if that were correct. He said: "Yes, it is. I used to be able to do so when I was constantly doing ante-natal work, but even after my summer holiday I came back to it feeling strange, and now that my work is chiefly gynaecological I cannot do it."

As regards the toxæmias, just a word of explanation is required on a point here. Mr. Wrigley states:

"That eclampsia is certainly not a preventable disease, however, is suggested by a recent case at St Thomas's Hospital. A primigravida was examined at 10 o'clock in the morning. She felt perfectly well, and urine and blood pressure examinations showed no abnormality. Eight hours later she had an eclamptic fit."

Does this prove the point? Does preventive maternity start *after* symptoms have developed?

Minor degrees of disproportion raise another question. To my mind a decision on what to do with the borderline case is very difficult. I think the assumption Mr. Wrigley credits us with is rather extreme. Rather let him say that from our conscientious examination of the case, failure to induce may be disastrous to mother and child. Therefore, after mature deliberation, and as the foetal head increases a good deal in diameter in a week or a fortnight, we will take what appears to us, appreciating the risks involved, to be the safer course and induce by the stomach-tube type of bougie. It is more conservative

for the baby and probably offers less risk to the mother than craniotomy. Here Mr. Wrigley quotes Professor Browne. I see also that the former holds his F.R.C.S. Has he never operated on a case of "appendicitis" with a healthy appendix? It is human to err, but because of that one mistake is he going to refuse to remove his next patient's appendix, which is possibly diseased, so that the cause of death is entered in the right column? Ante-natal work is in its infancy compared with surgery, and yet an error in judgement under most exacting circumstances is considered such bad practice that a suggestion for its suspension is recommended.

Finally comes the problem of external cephalic version. Mr. Burns, in a recent paper, condemned this as a routine, and I think Mr. Wrigley does the same, the main reason, so far as I can gather, being the danger of separating the placenta. The latter quotes a case where the foetal heart was heard before version and a macerated foetus was the result. Was the foetal heart not heard or listened for after version? Was auscultation of the foetal heart not performed between version and maceration? Can the placenta be detached during version without causing haemorrhage? Is it not possible in doing version to twist the cord round the babe? I have no authority for saying so, but I suggest that this is a possible cause of asphyxia of the child, particularly during delivery, although no violent or prolonged efforts at version have been made, and no anaesthetic used. In my ignorance, probably combined with good luck, I thought separation of the placenta during version was a textbook bogey. I wonder if Mr. Burns or Mr. Wrigley has ever experienced it.—I am, etc.,

Southport, June 5th.

A. S. GARDEN, M.D.

Prevention of Puerperal Sepsis

SIR,—May I be allowed to point out an error which appears in the interesting article "Prevention of Puerperal Sepsis in General Practice" by Dr. W. H. F. Oxley in the *British Medical Journal* of June 9th. In quoting a paper of mine (*Lancet*, September 14th, 1929) he states that "at Guy's Hospital in the years 1863-75 there was intervention in 1.35 per cent. of all labours, whereas in 1928 the rate was 18.6—fourteen times as much." The reference should read as follows: "whereas in 1928 the rate was 8.86—about seven times as much." Although this error does not make any essential difference to the argument which follows in his paper, I am sure that Dr. Oxley would not wish this obvious slip to pass without correction.—I am, etc.,

London, W.1, June 9th.

G. F. GIBBERD.

Capacity for Work after Fracture of Spine

SIR,—In reply to Mr. Paul Bernard Roth's inquiry in your issue of June 2nd, the twelve cases I referred to in my series of 270 as doing their ordinary work were injured as follows: six had wedge fractures; five had comminution of bodies; one had a wedge fracture in addition to several transverse processes. These men were, or had just been, doing their old work at the time of my examination during the five years in which my statistics were made. There were probably many more who by now have resumed their old work, but I have no figures available to show how many.

My experience has been similar to Mr. Roth's—namely, that only a few of the patients with comminuted fractures resume full work, but where there is only a simple wedge fracture quite a number do so.—I am, etc.,

Cardiff, June 6th.

OWEN L. RHYS.

Osteopathy

SIR,—I have read with interest the letter of Mr. A. S. Blundell Bankart (May 19th), and I think that medical men should be further acquainted with the truth about this movement. The Registration and Regulation of Osteopaths Bill not only seeks to place osteopaths on a register, but to give them all the privileges of a medical practitioner. They will have power to sign certificates of birth and death. They will be allowed to administer anaesthetics and perform "minor operations." They will also enjoy the medical man's privilege of exemption from jury service. The period of study for qualification as an osteopath is given in the Bill as 4,422 hours. It would seem that one could qualify in about two years. I agree with Mr. Bankart that this appears to be an "American stunt." The passing of this Bill would produce a third-rate medical service, which might well prove a serious danger to the public weal.—I am, etc.,

Louth, Lincs, June 9th.

RALPH MORTON, F.R.C.S.

SIR,—A short time ago I saw a patient who, after an accident, had been treated by an osteopath for a "displaced bone" in the spine. The "highly developed tactile sense" of the osteopath revealed to him a displaced sixth cervical vertebra—a displacement not visible by x ray—but failed to reveal a fracture of the transverse process of the third—easily visible by x ray.—I am, etc.,

London, W.1, June 11th.

F. A. BEARN.

Junior Appointments in a Mental Hospital

SIR,—The following notes, made four years ago at the end of nine months in a temporary appointment which I secured in a mental hospital in order to obtain some special experience of mental disease and its treatment, may have a certain value commonly ascribed to first impressions: in any case I hope they may prove of interest to young medical graduates who are wondering what to do next.

In general municipal hospitals junior medical officers, being clinicians almost exclusively, have in certain respects more fascinating employment than their seniors, whose daily task includes much routine administration. In mental hospitals, on the contrary, so far as my experience goes, there falls to the junior medical officer only the duller work. All new cases are admitted into certain special wards under senior officers; this arrangement, most advantageous, and perhaps essential for the patients' welfare, militates strongly against the junior doctors. It is difficult to develop the keenest clinical interest in general medical or surgical cases whose notes and preliminary treatment have been already dealt with fully by a colleague; it is even harder to acquire such interest in mental patients who, after a variable time in the admission wards, have been segregated into the chronic wards, where but a small proportion of the patients are of recoverable type. So far as my experience goes, these chronic wards only are allocated to the junior members of the medical staff in a large mental hospital.

To the beginner with a flair and enthusiasm for mental work these conditions cause but slight discomfiture. Chronic wards mean easy duties, which provide ample leisure to observe interesting cases in other wards, thus furnishing wide experience of mental disease as it exists in mental hospitals. Moreover, he must prepare for the D.P.M., without which he is ineligible for promotion. His clinical ardour therefore finds sufficient sustenance during his period of waiting for wards giving responsi-

bility for new patients. But such enthusiasts are in the minority in the personnel entering the mental-hospital service. I suggest that many men, though without special interest in mental work, might advisedly enter the service on a temporary basis. I refer in particular to men who, while reading for higher qualifications, require to hold a bread-and-butter appointment, and are not averse to one offering also some experience of the neglected subject of mental disease. Apart from tea and night rounds, which occupy about twice weekly an extra portion of the orderly duty days, the ward work of the junior medical officer generally finishes before lunch; and the morning round, however conscientiously performed, is not exhausting. Since the chronic mental wards give relatively little opportunity for general clinical medicine and surgery, only men who have finished their house jobs, and require leisure chiefly for concentrated reading, are advised to take a temporary mental hospital appointment.

I maintain that this one-sided consideration of the interests of the medical graduate does not entail disregard for the chronic mental patients, for the man who earns his living while attempting to take higher qualifications seldom neglects the duties for which he is paid. Moreover, it appears impossible for large mental hospitals to keep an energetic medical staff up to its full numbers unless recruited partly on a temporary basis; certainly there are not enough suitable posts for a staff composed entirely of active men whose clinical interests centre mainly on mental work. Another point, which scarcely requires amplification, is that the greater the number of men who have held temporary mental hospital appointments the greater will be the diffusion of knowledge of mental disease (the Cinderella of medical science) throughout the medical profession, in particular among the most important group—that of the general practitioners.

I conclude with the sincere hope that, on achieving his primary object of a higher qualification, the junior medical officer who has failed meanwhile to acquire enthusiasm for mental work will make an early change from his temporary appointment to new fields: of endeavour, for, unless combined with some other absorbing interest, the light duties and pleasant life of a junior medical officer in a large mental hospital readily engender a habit of placid laziness, which in a few years too often leaves its owner in a stagnant rut.—I am, etc.,

WILLIAM G. PATTERSON, M.D., M.R.C.P., D.P.H.

Weybridge, June 4th.

The Cancer Problem

SIR,—Any theory of cancer must conform to reality. Dr. Jordan, in his letter in the *Journal* of March 3rd (p. 403), holds that our highly sophisticated diet must play a prominent part in producing susceptibility to cancer. Here he ignores a well-known fact, repeatedly stressed by the Board of Control in the blue book, that in mental hospitals the incidence of cancer is much lower than in the general population. In these hospitals, nowadays, the diet is fully up to the general standard, both in quality and in variety. In the Norfolk County Mental Hospital, where I work, the diet is certainly better than that of the class from which the majority of patients are drawn—namely, agricultural labourers—yet there are few cases of cancer. During the eleven years 1923–33 inclusive, there have been on the female side, with an average of 652 resident, 409 deaths, with only nineteen of these deaths due to cancer. The average age for the 409 deaths is 59.8 years. I imagine that with a death age as high as this the cancer incidence would be much higher among the general population. Of the nineteen cancer deaths three were due to sarcoma, the remaining sixteen being due to carcinoma, and in eight of these the site

was the gastro-intestinal tract, in seven the breast, and in one the ovary. Post-mortem examination was performed in 50 per cent. of the total deaths. Mr. Duncan Fitzwilliams (June 2nd, p. 1004) seems to hold that cancer is a necessary concomitant of advanced age; but here, and also in other mental hospitals, there are many old people and yet comparatively few deaths from cancer.

Cancer from betel chewing and from smoking clay pipes, the latter, I believe, now uncommon, are due to a known irritant; and are analogous to the industrial cancers, also due to known irritants. What we want to find is the *unknown* irritant that is responsible for the abrupt rise in the cancer death rate that occurred in the latter third of the nineteenth century, the time of the introduction of the gas ring and the electric kettle; the rise has continued ever since. The only environmental difference I know of between patients in mental hospitals and in others is that, in the former, meals are rarely eaten at more than a luke-warm temperature, and I believe that the increasing habit of repeatedly ingesting very hot meals and fluids is the unknown irritant, and that this habit is responsible for the increase of cancer in the general population.

In regard to the incidence of cancer among primitive peoples during two years' service on the Zambesi River, 1898–9, and later during three years in the Cape Province, my recollection is that the general consensus of medical opinion, both in Nyasaland and at the Cape, was that in natives living under native conditions cancer was infrequent. This point the principal medical officer of Basutoland could doubtless clear up, for in Basutoland is a circumscribed native race living under native conditions with very few Europeans, and yet with a most efficient white public medical service, which issues the equivalent of the Registrar-General's report that Mr. Fitzwilliams requires.—I am, etc.,

A. W. B. LIVESAY, F.R.C.S.ED.,

Thorpe, Norwich, June 9th.

Surgeon Captain R.N. (ret.).

SIR,—Dr. Arbour Stephens's very interesting letter on industrial cancer and blood pressure (June 2nd, p. 1008) prompts me to put forward a very vague and somewhat unscientific theory. It must be clearly understood that for all I know this theory may have been put forward by others.

I have thought for some time that carcinoma may be due to a deficiency of some substance we will call x , manufactured by the epithelial cells themselves. This substance may control the proper functioning, and even some part of the life of the cells. When, due to some damage or due to a using up of this substance in overworked cells, x comes to an end, the growth factor then comes into force, and tries hard to manufacture more of this substance by the simple means of producing more and more cells. But this becomes a vicious circle, as the new cells developed inherit the defect, and in turn divide and divide again in a desperate attempt to find the elusive x . These cells are carried about the body, and each small deposit goes on increasing in size, and reproduces cells of the same type as their great-grandparents.

Would it not be possible to secure an extract of, say, mammary gland for carcinoma of the breast, the extract to be made from the udders of young cows that have calved once? I will leave the details of manufacture to the chemist. This extract, given to the patient in suitable quantities, might replace the used-up endogenous x , and so put a stop to the accelerating mitosis going on in the body. The main point in all this is that carcinoma may be purely a deficiency disease—not a vitamin deficiency, but a deficiency from inside the individual cell that starts the trouble.—I am, etc.,

Chnsthchurch, Hants, June 7th.

EDWARD F. HUNT.

Carbon Tetrachloride Poisoning

SIR,—With reference to the annotation in the *Journal* of May 26th (p. 953) on carbon tetrachloride poisoning, I wish to point out that the statement there made—that specimens of carbon tetrachloride contaminated by carbon disulphide are extremely toxic—has no scientific authority. This question is fully discussed by me in a joint article entitled "The Toxicity of Carbon Tetrachloride and its Allied Halogen Compounds," which appeared in the *Journal of Tropical Medicine and Hygiene*, dated September 15th and November 1st, 1933. In the article referred to it is stated:

"Owing to the fact that carbon tetrachloride is produced commercially from carbon disulphide (CS_2) certain authors, apparently overlooking the well-recognized chemical and pharmacological affinities of the chlorine substitution products of the aliphatic hydrocarbon series, have suggested that the toxic effect of carbon tetrachloride depends in whole or in part on the minute traces of carbon disulphide which, owing to its origin (from carbon disulphide), it often contains, and even hypothetical and unidentified sulphur derivatives other than carbon disulphide have been postulated as the cause of this toxicity, though Dale (*British Medical Journal*, July, 1924), quoting King, categorically states that the whole of the sulphur derivatives in carbon tetrachloride exist in the form of carbon disulphide alone. These suppositions lack all scientific foundation, since:

"(1) Carbon disulphide has been used in considerable doses with safety in veterinary and human medicine, and can be added in quantities of 1 to 5 c.c.m. without ill effects to carbon tetrachloride administered to experimental animals, including monkeys.

"(2) The lesions produced by carbon tetrachloride [that is, acute necrosis of the liver and (occasionally) kidneys] are identical with those produced by other closely allied members of the chlorine substitution products of the aliphatic hydrocarbons such as chloroform (which are not manufactured from carbon disulphide and are consequently sulphur-free) and are altogether different from those produced by carbon disulphide.

"(3) There is no sulphur compound known to science which is lethal to an adult of 60 kilos in doses of 1/40,000 c.c.m., this being the amount of sulphur derivatives present in 5 c.c.m. of carbon tetrachloride purified for internal use, containing 1 in 200,000 parts of carbon disulphide as shown by the potassium-plumbite test (*British Medical Journal*, 1924, ii, 218)."

For the sake of those unacquainted with the toxicology of carbon disulphide a short account of it is reproduced below from the same article:

"Carbon disulphide . . . is a clear volatile liquid with a characteristic smell. It is extensively used in the arts as a solvent for sulphur, phosphorus, and rubber. In veterinary medicine it is widely used as a remedy for bots in horses, the dose for a horse being 20 to 24 c.c.m. It is also effective in horses against gastrophilus and ascaris, and has been used as a remedy against liver-flukes in sheep. In human medicine carbon disulphide has been used as a remedy for diarrhoea in doses of 30 c.c.m. of a 3.5 per cent. solution (equivalent to 1 c.c.m. of pure carbon disulphide), four to five times a day. It has also been used in 5 per cent. solution hourly in pneumonia and as an inhalation in tuberculosis.

"Carbon disulphide acts principally on the blood and nervous system, producing in acute poisoning haemolysis of the red blood corpuscles and unconsciousness. This action is attributed by Kolbert to its power to dissolve lipoids. It has also been stated to cause methaemoglobinemia. It has no characteristic effect on the internal organs, and does not produce acute necrosis of the liver. Post-mortem examination reveals no characteristic pathological changes in the viscera but the veins are found distended with dark fluid blood.

"In acute poisoning by carbon disulphide, which is rare, there are collapse, unconsciousness, spasmodic convulsions, rapid feeble pulse, slow and stertorous breathing, lessened body temperature, cold and clammy skin, dilated pupils, and insensitive conjunctivae. A case is on record of the swallowing of two ounces (60 c.c.m.) of carbon disulphide with recovery.

"In chronic poisoning, which is found chiefly in workmen exposed to the fumes of carbon disulphide in factories, there is a complex series of symptoms, which may be divided into two stages: the stage of excitement, followed by that of depression. In the first place there is headache with indigestion, loss of appetite, nausea, and vertigo, with symptoms

of over-stimulation of the nervous system, as evidenced by voluble talking, singing, immoderate laughter, or weeping. The sensitiveness of the skin is increased, burning and creeping sensations alternating with numbness in the hands and feet. This peripheral neuritis is followed by 'foot-drop' and 'wrist-drop.' The field of vision is restricted for all colours, and amblyopia and scotomata without retinal changes are common. The red blood corpuscles are greatly diminished. Pains in the limbs are a constant feature, and some observers have recorded spasmodic contractions of certain groups of muscles. In the stage of depression there is a general anaesthesia of the skin and mucous membranes, and in advanced cases there is pronounced mental and muscular weakness."

—I am, etc.,

J. WALKER TOMB,

Director, Endemic Diseases Section,
Department of Public Health.

Cairo, June 2nd.

Ephedrine in Asthma

SIR,—Drs. J. B. Christopherson and Marjorie Broadbent (June 2nd, p. 978) mention the use of sodium iodide with ephedrine in the treatment of asthma. It appears probable that the action of sodium iodide depends mainly on stimulation of thyroid activity, and that equally good results might be obtained by the administration of tab. thyroid. B.P. It has been found that thyroid feeding increases the effect of pyrogenic substances (β -tetrahydronaphthylamine, T.A.B. vaccine), while thyroidectomy diminishes the response.¹

As the effect of these substances appears to depend on their stimulation of sympathetic activity it occurred to me to test the effect of combining thyroid administration with ephedrine medication. The results obtained were definitely better than those from ephedrine alone. In one adult 1/2 grain dose of ephedrine hydrochloride twice daily gave little relief, but 1/4 grain dose at night with 1 grain of thyroid (B.P.) in the morning kept him free from attacks for some months. An attempt to reduce the thyroid to 1/2 grain produced a slight attack. Toxic effects have not been troublesome, with the exception of nocturnal excitement, which may be produced by even 1/2 grain dose in an adult.

In conclusion, I should like to mention that the best sympathetic stimulant is cold, which can generally be obtained by good ventilation and underclothing.—I am, etc.,

Bradford, June 9th.

H. S. RUSSELL, M.D.

The Ubiquitous Acid-fast Bacillus

SIR,—The following incident, which I am asked to publish, further illustrates Dr. Gregory Kayne's valuable contribution to the *Journal* of April 28th (p. 734).

During a hot, dusty khamseen day in Cairo, while M.B. examinations were in progress, I cleared my throat into a sink in my laboratory. Curious to know what one swallows in dust, I whipped up the sputum with a platinum loop on to several slides and stained these (including a Ziehl-Neelsen). The slides show an acid-fast, alcohol-fast bacillus—morphologically identical with the tubercle bacillus—in every third field. An assistant, like myself, disliked their appearance in my sputum. That I had been infected by the tubercle bacillus I was not prepared to believe! After examining all the stains, reagents, and bottles, I finally made swabs from the sink bottom to find the *fons et origo* of my anxiety. This particular sink, very little used and not properly cleaned, had a surface film of acid-fast bacilli very useful for teaching purposes.—I am, etc.,

Cairo, May 28th.

W. LEONARD FORSYTH,
Bacteriology Department, University
of Egypt.

¹ Cramer: *Fever, Heat Regulation, Climate and Thyroid Adrenal Apparatus*, p. 51.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

In the House of Commons this week the committee stage of the Finance Bill was concluded. The Ministry of Health Estimates were down for June 14th to permit a discussion on slum clearance, but a debate on the Home Office Estimates was substituted. Discussion was also arranged on a report from the Committee of Privileges.

The South Devon and East Cornwall Hospital, Plymouth, Royal Albert Hospital, Devonport, and Central Hospital, Plymouth (Amalgamation, Etc.) Bill was reported to the House of Commons with amendments from a Select Committee on June 7th. This Bill has passed the House of Lords.

The Licensing (Permitted Hours) Bill passed through committee, and was read a third time in the House of Commons on June 7th.

On June 12th the Betting and Lotteries Bill and the Workmen's Compensation (Coal Mines) Bill were considered on report in the House of Lords, and the Licensing (Permitted Hours) Bill was read a second time.

Compensation to Doctors for Road Accidents

In Standing Committee of the House of Commons, on June 7th, the following new clause to the Road Traffic Bill on the "Payment and insurance in respect of emergency treatment of injuries arising from the use of motor vehicles on the road" was considered:

(1) Where medical or surgical treatment or examination is immediately required as a result of bodily injury (including fatal injury) to any person caused by, or arising out of, the use of a motor vehicle on a road, or in a place to which the public have a right of access, and the treatment or examination so required (in this section referred to as "emergency treatment") is effected by a registered medical practitioner, the owner of the vehicle shall, on a claim being made in accordance with the provisions of the next succeeding section, pay to the practitioner, or, where emergency treatment is effected by more than one practitioner, to the practitioner by whom it is first effected:

(a) a fee of twelve shillings and sixpence in respect of each person in whose case the emergency treatment is effected by him; and

(b) a sum, in respect of any distance in excess of two miles which he must cover in order to proceed from the place whence he is summoned to the place where the emergency treatment is carried out by him and to return to the first-mentioned place, equal to sixpence for every complete mile and additional part of a mile of that distance.

(2) Where emergency treatment is carried out in a hospital (that is to say, an institution, not being an institution carried on for profit, which provides medical or surgical treatment for in-patients) the provisions of the foregoing subsection with respect to the payment of a fee shall have effect with the substitution of references to the hospital for references to a registered medical practitioner.

(3) Liability incurred under this section by the owner of a vehicle shall, where the event out of which it arose was caused by the wrongful act of another person, be treated for the purposes of any claim to recover damage by reason of that wrongful act as damage sustained by the owner.

(4) A policy of insurance or a security in respect of third-party risks shall not be deemed to comply with the requirements of Part II of the principal Act unless the owner of the vehicle to which it relates is specified therein for the purposes of paragraph (b) of subsection (1) of section thirty-six, or of section thirty-seven of the said Act, as the case may be, and, notwithstanding anything in the proviso to paragraph (b) of subsection (1) of the said section thirty-six, any liability which may be incurred under this section by the owner shall be deemed to be a liability required to be covered under that paragraph.

Debate in Committee

Mr. GUY, who, in the absence of Sir Francis Fremantle, moved that the clause be read a second time, said the purpose of the clause was to provide payments to hospitals and doctors. If one of the amendments to it were accepted payments would also be made to an ambulance association which provided emergency treatment or first aid. A formidable number of people in each year received first-aid treatment from doctors, hospitals, and ambulance associations, but in the majority of cases none of these received any payment for the

services rendered. The British Medical Association mentioned one instance of a practitioner who treated 100 cases caused by motor accidents during a year but only received payment in four of them. Last year Parliament provided for certain payments to hospitals in the Road and Rail Act, but no provision had been made for emergency treatment by doctors nor to the hospitals for first aid. The clause proposed a fee of 12s. 6d.; that was not extravagant. It had been put into two Bills which passed through the House of Lords recently, one of which incorporated the whole of the two clauses Mr. GUY now proposed to add to the Road Traffic Bill. The proposal had received consideration in responsible quarters, and had considerable backing throughout the country. If the clause were adopted, and a pedestrian were injured in a motor accident and received first-aid treatment at a doctor's house, the owner of the motor car involved in the accident would have to pay the sum of 12s. 6d. to the doctor concerned. In the provision made in the Road and Rail Act in respect of hospitals these payments were conditional on the admission of negligence on the part of the motorist. In the present proposals the payment was to be irrespective of negligence. The total cost would be in the neighbourhood of £250,000 yearly, probably less. If the motorist were covered by his insurance company something like 2s. 6d. would be added to the premium.

A later clause provided that a claim might be made at the time of treatment, and that if the payment was made the question would be ended. Failing that, a claim should be made in writing within seven days.

Sir E. GRAHAM-LITTLE supported the clause. He said the King Edward's Hospital Fund for London and the British Hospitals Association urged the adoption of a clause which was to follow the one now under discussion. Mr. STANLEY, the Minister in charge of the Bill, said the second clause had nothing to do with emergency treatment, but allowed the hospital to recover up to £50 for any person injured in a road accident.

Sir F. SANDERSON said it was vital that the responsibility of insurance should not be passed on to the owner of the car instead of on the user as the present clause would do. Mr. STANLEY agreed with Sir Frank Sanderson that it would be necessary to make an amendment in this sense. The Act of 1930, he said, did not put an onus on any man as the owner of a car but as the potential user. He (Mr. Stanley) could not accept anything which would create a breach of that principle. There was no liability on the man who owned a car to insure. Everybody recognized the great hardships caused to doctors by the additional calls through road accidents and the difficulty they had in getting payment for their work. The Standing Committee would like to do what was possible to help the doctors, but the principle of law which the amendment would alter was a very large one. It was the principle that a man was liable only for his own negligence. Under the new clause the motorist would be liable whether at fault or not. He might prove that all the blame for the accident rested upon the cyclist or the pedestrian, but that would be no defence. Mr. GUY had argued that the clause would not imply any hardship on the motorist, but he had not disclosed to the committee that there were in his name two other amendments which would extend this principle. He confessed it was a shock to him to see the new clause which had been put down in respect of hospitals. He should resist to the utmost these further extensions of the principle. The committee might well feel that the grievance of the doctors was so substantial, and the proposed burden on the motorist so light, that the clause should be passed, but the committee would only be safe in doing so if at the same time it determined it would not allow this breach of principle to be further and further widened. He was not opposing the clause as it had been moved; in this case he himself was prepared to overlook the breach of principle.

Mr. STOREY said if the burden was not to be put upon the motorist it would fall upon the doctor and the hospital, and there was no more reason why they should have to bear it than the motorist who was not negligent. The latest figures from the King's Fund showed that the cost of attendance on motorists, which was not recovered at present, was about £180,000. If that were distributed over all the motor licences in the country it would only take 1s. 7d. per head to cover

it. That figure showed that the second clause put down would not extend very far the principle to which Mr. Stanley took exception. In practice the cost of the compensation to hospitals to be proposed in the second clause would not amount to £180,000, because all cost of treatment over £50 would be ruled out from recovery, and he knew of cases where the cost had run up to £165. Sir GIFFORD FOX said the committee hoped the Bill would reduce the number of accidents, and it might perhaps follow that the insurance companies might not require to increase premiums. Sir WILLIAM BRASS complained that pedal cyclists were not to be affected by this clause, nor were tramways, although over 1,000 pedal cyclists were responsible for fatal accidents during the year.

Major HARVEY said he was president of more than one hospital, and had every sympathy with doctors and hospitals, but he failed to see why the motoring public should pay extra to insurance companies to pay the doctors' expenses for accidents which were not the motorists' fault. Mr. D. GRENFELL also opposed the clause, and said he would be glad to see a device for compensation to doctors from the Road Fund. Major LLOYD GEORGE said he did not agree that there might be a danger of doctors not attending accidents if they were not paid. No other profession in the world did so much for nothing. That made it all the more incumbent on the committee to find some scheme by which the doctors could be sure of payment. Mr. TURTON said the new clause by itself would have little financial effect in doctors' accounts, and would promote hostility. He thought the cost of the driving licence should be increased from 5s. to 7s., and the increase should be devoted to the hospitals. That was a contribution which the motorist would be glad to pay. In Mr. Turton's opinion the grievance of the doctors was nothing like that which was suffered by the hospitals on the main arteries of traffic.

Mr. STANLEY said that he objected to the clause failing any assurance by the promoters that if he accepted it they would not press either the amendment or a new clause. Mr. GUY agreed that the new clause dealing with hospitals would make a much more substantial change. In many cases, where first-aid or emergency treatment was rendered, and where negligence was established or was admitted by the motorist, the doctor or the hospital had not received a penny. The new clause would enable the doctor to recover payment in a considerable number of cases where under the existing law of negligence he would be able to recover damages.

On a division, fourteen votes were cast for the clause and nine against it; the clause was read a second time and added to the Bill.

The Standing Committee of the House of Commons gave further consideration, on June 12th, to the Road Traffic Bill.

Sir W. BRASS moved an amendment to make the new clause applicable to all kinds of vehicles. Mr. GUY said that the promoters of the clause would not resist the amendment. Mr. STANLEY expressed surprise at this decision. The clause, he said, was inextricably bound up with compulsory insurance under the Act of 1930, and it was fantasy to bring under the clause persons who were not compulsorily insured.

The amendment was negatived by 22 votes to 8.

Mr. STANLEY moved an amendment providing that liability for payment for emergency treatment should be placed on the user of the motor vehicle at the time that the accident occurred. Doctors and hospitals would not suffer in any way by confining the claim to the person using the vehicle at the time of the accident.

The amendment was agreed to.

Colonel CROOKSHANK moved an amendment providing that a voluntary ambulance association should be entitled to claim a fee of 10s. in respect of each person transported. Mr. STANLEY said that an ambulance association which performed voluntary work was in a different position from medical men and hospitals. The services which ambulance associations rendered were limited by the funds which they had at their disposal, and if they got more money they could extend their activities. Hospitals, on the other hand, had to maintain certain general services, and if they gave emergency treatment that might involve them in heavy liability. Doctors in many cases received no remuneration for the services which they rendered. Sir F. FREMANTLE supported the amendment,

and thought it was not at variance with the principle of the clause.

The amendment was negatived by 29 votes to 9 and the clause as amended added to the Bill by 28 votes to 7.

Sir E. FREMANTLE moved a new clause providing machinery for the recovery of claims on the part of doctors and hospitals. The clause was read a second time and added to the Bill.

The committee adjourned before reaching the proposed new clause dealing with payments to hospitals for treatment of road casualty cases, to which reference had been made in the discussion.

Compensation to the Injured Party in Road Accidents

Lord DANESFORT, in the House of Lords on June 7th, moved the second reading of the Road Traffic (Compensation for Accidents) Bill. He said its object was to secure in proper cases adequate compensation for pedestrians, pedal cyclists, and other non-motoring persons who were killed and injured on the roads. Under the existing law the compensation was entirely inadequate. The principle of the Bill was that the injured party was not bound to prove negligence on the part of the motorist before launching his claim. When a similar Bill was introduced in June, 1932, the Lord Chancellor had said: "This is not a new principle, but a principle which has been in our law for generations, and it does not seem to be a very alarming or revolutionary change to apply it to a potentially dangerous machine like a motor vehicle." Lord Danesfort recapitulated the progress made on the Bill of 1932, and on a similar one in 1933, which had been referred to a select committee with Lord Iveagh as chairman. The hospital clause contained in the latter was so favourably viewed by the Government that it was inserted in one of the Government's own Bills, which was passed. That was why this clause was omitted from the present Bill. Lord LAMINGTON supported the Bill, and commended the principle introduced in the Irish Free State by which the insurer in cases of road traffic accidents was only paid money when he had compensated the person injured. Lord HOWE opposed it. After further discussion it was read a second time by 19 votes to 4, and referred to a committee of the whole house.

Duty on Arc-Lamp Carbons

In the House of Commons on June 4th, in committee on the Finance Bill, a debate arose on Clause 4 (increase of customs duty on arc-lamp carbons). Mr. DAVID GRENFELL moved an amendment to reduce the duty on arc-lamp carbons of more than 14 millimetres in diameter from 5s. to 1s. 6d. per lb. He said that in hospitals and clinics the lighting, which had become a general feature of medical therapeutics, was done by these arc lamps. The duty, which under the Bill was raised to 5s., was onerous. Sir P. HARRIS, in supporting the amendment, said in the treatment of skin diseases electricity was of benefit, and the electric carbon had been an effective contribution to medical science and the work of hospitals. The consulting engineer of St. Bartholomew's Hospital had told him that he had made long and laborious experiments in carbons, and had found that the imported article was the only carbon which could be relied on to give perfect treatment, without risk or danger to the patient, and to the satisfaction of the doctor.

Dr. BURGIN said that an analysis of the quantity of carbons consumed in this country in a normal year showed that the consumption of hospitals was something under 2 per cent. Fully 85 per cent. was used by the cinematograph industry. The duty was put on at the joint request of the makers of the article and the consumers of 85 per cent. of it. The case for the duty was clearly made out, all the normal safeguards to see that interests were not affected had been obtained, and undertakings were given by manufacturers that prices would be reduced. Sir ARCHIBALD SINCLAIR said Dr. Burgin had made a great point that the hospitals had not gone to the Board of Trade to make representations, but the hospitals would be reluctant to mix themselves up in a matter which had become one of political controversy in the House of Commons. As their interest in it was only 2 per cent. the hospitals might well have thought that it was not a matter in which they would care to join in opposing the duty. But that did not alter the fact that the

duty would, to some extent, raise the cost of light therapy in this country.

The amendment was negatived by 243 votes to 45.

On the motion that the clause should stand part of the Bill, Dr. Burgin explained that the object of the duty was to encourage the manufacture in this country of an article, the raw material of which was lamp-black, of which there was an adequate supply. It would be made free of foreign control, and the duty was granted under conditions by which the consumer was protected. The clause was carried by 247 votes to 45.

Water Supplies

In reply to Mr. Bernays, on June 7th, Mr. SHAKESPEARE said the position regarding water supplies in the North and East, Wales, and in the West, as well as in part of the Midlands, was generally better than it was a month ago. The South and South-East had not shared in the improvement. He had no reason to think that water undertakers would not be able to meet the situation, provided consumers played their part by reasonable economy in the use of water. Such co-operation so far accounted largely for improved conditions. In rural areas with defective supplies the authorities should expedite methods for permanent schemes with the grant available under the Rural Water Supplies Act.

Sir HILTON YOUNG told Mr. Joel, on June 7th, that he was not aware of any empty or relatively empty reservoirs in the country, though in some areas reserves were seriously low. Active steps had been taken in these areas to conserve supplies, with the co-operation of consumers, and to augment them. Further powers could be obtained expeditiously under the Water Supplies (Exceptional Shortage Orders) Act recently passed.

Children's Allowances and Cost of Minimum Diet

The House of Lords, on June 6th and 7th, discussed the Unemployment Bill on the motion for second reading. Lord MARLEY opposed the Bill, and said that when a Labour Government came in it would be repealed. The low benefits to be paid meant nothing else but insufficient food. The means test had been maintained with inadequate children's allowances. Under the means test there was left to a family to expend on rent and food a sum which experience had shown was quite inadequate. The British Medical Association appointed a committee on nutrition, which reported that for a child of 1 to 2 years the minimum sum necessary was 2s. 8d., for a child from 3 to 6 years 3s. 4½d., and for a child from 8 to 10 years 4s. 2d. The Bill allowed 2s. Even if a child were given one pint of milk a day and nothing else that would come to 1s. 8d. a week. What was left of the 2s. when they had given the pint a day? The report stated that one pint of milk a day from the age of 1 to 5 years, and half a pint a day to 10 years, constituted a sufficient and safe quantity, but more could be given with advantage. The committee of the British Medical Association said that during the compilation of these diets constant vigilance had been exercised to keep the cost down to the minimum which permitted the purchase of an adequate diet. It had not been possible to prepare a diet for a child alone at a less cost than 2s. 6d. a week. The present head of the medical service of the London County Council, Mr. Somerville Hastings, gave, in an article in the *Lancet* about a year ago, a report of an examination in which he undertook of twenty-one unemployed families on the means test. Fifty-three children were examined, and thirty-three were found to be undernourished. The sum available for food, warmth, and clothing in these families varied from 1s. 4d. to 4s. 6d. a head, and averaged 2s. 5½d. per family. In Merthyr, where about 90 per cent. of the miners were unemployed, the infantile mortality rate was 73 per 1,000, compared with 65 per 1,000 in the rest of the country. That was 8 per cent. higher because the children had not enough food to live on. The rate had, it was true, been reduced in the last two years from 129 to 73 per 1,000, but the medical officer of health, in making the report, gave a warning that while the drop was gratifying it was too early yet to attribute very great significance to it. He

maintained that insufficient food for the people was the cause of the higher death rate of children under 1 year. This was having an effect on tuberculosis. The Committee on Malnutrition found that in the three years 1925 to 1927 the death rate from consumption in the depressed areas was 61 per million greater than in the more fortunate areas. Since unemployment had become much worse, the figure had risen to 95 per million.

Lord ELTON referred to statistics published last September by the Chief Medical Officer of Health, Sir George Newman, which showed that during 1932, in the period of the deepest depression, the two most characteristic tests of malnutrition—infantile mortality and deaths from tuberculosis—had not only decreased, but were the lowest on record. The Chief Medical Officer compared the figures in two groups of industrial areas, one with a heavy and the other a light incidence of unemployment, and arrived at the result that not only were the mortality and other rates in the bad area not inferior to those in the good area, but, on the average, the improvement in the area where the incidence of unemployment was heavy was actually greater than in the area where it was light. Lord Elton said he did not suggest that that was typical, but at any rate it gave grounds for optimism, and a Bill which so conspicuously increased the generosity with which benefit rates were administered was not the best occasion for Lord Marley to treat them to a speech 75 per cent. of which was a description of the awful results of malnutrition, which undoubtedly existed, which had existed under all Governments, and which they hoped this Bill was likely to decrease.

The Bill was read a second time without a division.

Milk Bill: Second Reading

The Milk Bill introduced by Dr. Elliot came before the House of Commons for second reading on June 7th. Dr. ELLIOT said the Opposition had placed an amendment on the paper taking exception to the rate at which the Government was proceeding in the campaign for cleaning up the herds. The proposals of the Government of Northern Ireland went much further than those which had been laid before the House of Commons. In Northern Ireland the sale of liquid milk for consumption below Grade C was prohibited. Even on the Grade C milk a levy running as high as 3d. a gallon was provided for, to be used to assist the better qualities of milk, and the cows would be inspected twice a year. These drastic proposals went far beyond what the United Kingdom Government could introduce immediately in this country. Clause 6 of the Bill provided for Exchequer payments to the Government of Northern Ireland to be used for assisting milk producers in that country. Explaining other clauses of the Bill, Dr. Elliot said the present danger was that a still lower level of prices in the milk industry would lead to a diminution in the supply of home-produced milk. The Bill enabled the Minister to spend up to £750,000 during four years in such a way as he thought would improve the quality of milk for human consumption. It would amend Section 3 of the Milk and Dairies Amendment Act, 1922, to enable the Minister to revise the designations of milk. It contained provision for increasing the demand for milk, but did not refer specifically to milk in schools. The assurance he gave on February 22nd that the programmes of milk marketing boards would be required to contain provisions for the supply of milk to schools at reduced rates still stood; he did not think it necessary to incorporate a clause in the Bill. He was assured by his technical advisers that the Government was proceeding as rapidly as was reasonable towards the eradication of disease from herds. The Cattle Diseases Committee suggested that large municipalities should have the right to require that after two years all milk, except sterilized milk, sold within their boundaries, and not derived from tubercle-free herds, should be pasteurized, but that the power to exercise that right should be deferred for three years. Five years would elapse before the committee considered it was possible to arrange for any large supply of tuberculosis-free cattle. The Government programme provided for the payment of premiums to attested herds. That should bring perhaps a thousand herds in the first year. A general

campaign of slaughter and killing of affected cows in this country was not possible because of the lack of milk that would ensue.

AMENDMENT FOR REJECTION

Sir STAFFORD CRIPPS, for the Labour Opposition, moved a reasoned amendment to reject the Bill on the grounds that it sought to encourage the output of milk products in preference to increasing consumption of fresh milk by children in public elementary schools, and that it failed to make adequate provision for the eradication of disease from cattle. He quoted a declaration made by Lord Moynehan at the Mansion House nearly two years ago that the drinking of contaminated milk caused a large proportion of surgical tuberculosis and some medical tuberculosis. The lack of inspection of herds under the existing inspectorate in county areas called for far more drastic action than Dr. Elliot proposed to take. The Labour Opposition believed the Minister should take powers similar to those he had for dealing with foot-and-mouth disease—the right to condemn and the right to isolate, with administration through a central inspectorate under the Livestock Department of the Board of Agriculture. It was unnecessary to wait until all the herds in the country were cleaned up before considering the wider distribution of liquid milk. By other means the milk could be made safe for children. If 90,000,000 gallons annually were taken for distribution to children that would create a habit for liquid milk, and the supply could be financed at no greater cost than was proposed in Dr. Elliot's scheme.

Sir FRANCIS ACLAND said that to clean up the herds by eliminating reactors to the tuberculin test would be slow and uncertain. He doubted if by that process half the herds would be clean in twenty-five years. Immunization by inoculation would be speedier and more effective, and he thought the country was near to it. If those responsible would consult Dr. Nathan Raw and Dr. W. M. Crofton, and would conduct experiments with proper scientific controls, they would quickly discover methods of building up herds immune from subsequent infection. The inoculation must be applied to newborn calves. Mrs. WARD said there was no alternative to cleaning the herds. One could not be certain in buying pasteurized milk that it was free from tubercle bacilli. Doctors were much divided in opinion on this subject. If cattle were tested with tuberculin two months passed before the final result of the test was available. In six months, if the cattle were again tested, some which had been found free from tubercle would react as a result of the irritation set up by the previous injection. Mr. RICHARD RUSSELL said there was no tuberculous milk unless there was a tuberculous condition of the udder, and that was not found in more than 5 per cent. of cows. Pasteurized milk alone would starve a child. It had to be supplemented by cod-liver oil or by citrus fruit. The only way to safeguard the supply was to clean up the herds by dealing with the rising generation of cattle. Calves should be taken away from any possible source of contamination.

Sir ERNEST GRAHAM-LITTLE said the cleaning up of herds could not be applied against every disease derived from milk. It had been applied practically only to tuberculosis. The method was expensive, the results, to a certain degree, satisfactory. Samples of certified milk showed an incidence of about 2 per cent. in milk supposed to be free from tubercle—a relatively small incidence—but no freedom was secured by that method from other diseases of milk, which were becoming more frequent and more widely recognized. Milk tanks were almost uniformly infected with tubercle before pasteurization, as was proved in tests supervised by officers of the laboratory of the Royal Veterinary College. Treatment by heat destroyed the bacilli of tubercle, of the *Brucella abortus*, and of septic sore throat. To say pasteurization destroyed the value of milk was fallacious. Medical authorities were agreed that in pasteurization they had an economical method of rendering milk safe and clean. It had become the opinion of the medical profession that to distribute milk of any kind in the raw state, even tuberculin-tested milk, was unwise. Sir Ernest added that he believed an immediate distribution of milk would improve the nutrition of the children, and that at relatively small expense safety could be secured from any disease infecting the milk. He denied that pasteurization encouraged uncleanness in the distributors of milk.

Mr. DREWE said many farmers, when they had cows tested, put the reactors on the market, and so freed their own herds. He asked if the Minister could arrange to give greater compensation if the farmers slaughtered the cows which, in the opinion of a veterinary surgeon, ought not to go on the market. Mr. TOM WILLIAMS said medical associations like the Royal Society of Medicine and the Royal College of Surgeons were satisfied as to the nutritive value of fresh milk, and desired to recommend greater consumption, but were afraid to do so because they knew that the milk supply in this country was not so pure as it ought to be.

Mr. SKELTON, replying for the Government, said that calculations of the cost of supplying milk to school children must allow for most careful handling of the milk from the time it left the farm until it was presented to each child in a sealed bottle. That could not be done for 3d. a gallon. The Government, while developing the supply of milk for school children, also kept in mind that milk was the raw material for industries which it would not allow to be destroyed. In the cleaning up of the herds the Government already had powers of slaughter, but believed that to encourage the cleaning up it must make it worth while.

The second reading was carried by 190 to 47.

Reduced Telephone Charges to Doctors

Introducing the Post Office Estimates in the House of Commons on June 6th, Sir KINGSLEY WOOD announced reductions in telephone charges, and said he proposed to introduce a new business rate for doctors, district nurses, and others to whom the telephone was mainly a means of communication from outside callers, these subscribers originating few calls themselves. For these a fresh form of tariff was proposed, intermediate between the two main business and residential tariffs. It would be called the "Small User Business Rate." The rental per quarter in the provinces would be £1 6s., in the four large cities £1 9s., and in London £1 12s. These subscribers would be subject to an increased charge of 50 per cent. on the first forty-eight call units a month. Their total bill would never be more than that of the ordinary business user, and for limited use it would be appreciably less.

On June 11th Sir ROBERT HAMILTON asked what the rental charges would be under the proposed new scale for a doctor's telephone in a country district in Shetland, now charged at £12 per annum. Sir KINGSLEY WOOD said he understood Sir Robert to refer to a subscriber who did not come within the ordinary tariff conditions, but paid a specially assessed rental. Whether any rental reduction could be made in such cases was under consideration.

Atmosphere of the House of Commons.—On June 5th Mr. ORMSBY-GORE told Mr. Bernays that he had recently had analyses made of the air in the chamber and lobbies of the House of Commons at different times of the day. He was further carrying out a similar but more complete survey of the ventilation of the whole building, as a result of which he hoped it might be possible for more definite conclusions to be reached. His personal impression that the air was unsatisfactory had not been confirmed by the scientific and technical experts who had investigated the matter. Sir WILLIAM DAVISON asked if Mr. Ormsby-Gore was aware of the practice which obtained some years ago in the House of providing streptococci with bowls of broth from time to time in order to test their numbers and strength, and if any recent provision had recently been made for similar trials. No reply was given to this question.

Blood Test in Drunkenness.—In reply to Mr. Hales, on June 7th, Sir JOHN GILMOUR said evidence from a blood test was sometimes given in this country where drunkenness was an element in a criminal charge, but he had no power to require any person to submit to such a test.

Opponents of Vaccination.—Sir HILTON YOUNG told Mr. Groves, on June 6th, that he had seen the resolution passed at the annual meeting of the National Anti-Vaccination League. He would consider receiving a deputation from the opponents of vaccination before introducing legislation on the subject.

Universities and Colleges

UNIVERSITY OF OXFORD

The following have been elected to the Board of the Faculty of Medicine by the General Medical Electorate: C. F. T. East, D.M., and C.P. Symonds, D.M., New College.

UNIVERSITY OF CAMBRIDGE

The Vice-Chancellor gives notice that a congregation will be held on Saturday, August 4th, at 2 p.m. No degrees will be conferred at this congregation except upon persons qualified to proceed then to medical or surgical degrees.

The Faculty Board of Medicine has appointed Dr. G. Harrison Orton a member of the Committee for Medical Radiology and Electrology until December 31st, 1934, in the room of the late Dr. Stanley Melville.

At a congregation on June 8th a Grace was approved for conferment of the degree of Master of Arts, *honoris causa*, upon Sir Charles James Martin, C.M.G., D.Sc., F.R.C.P., F.R.S., who is now resident at Cambridge and engaged in research there. The degree was conferred that day.

The title of the degree of M.D. has been conferred by diploma on Mrs. A. G. Dauncey of Newnham College.

At the congregation on June 8th the following medical degrees were conferred:

M.B., B.Chir.—*H. T. Cox, W. R. Billington, R. V. Payne, H. D. White, W. Wilson, J. L. Parker.
B.Chir.—*E. J. Neill, *W. E. Tucker.

*By proxy.

UNIVERSITY OF LONDON

The University Court on June 6th was informed that the Kent County Council, acting on the recommendation of its Education Committee, had decided to make a grant of £40,000, payable over ten years, towards the cost of erecting new University buildings on the Bloomsbury site. The Court has conveyed most cordial thanks to the Kent County Council and Education Committee for this munificent gift.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—*†R. H. R. Belsey, *†§ E. W. Bintliffe, *†§ Edith J. R. Browne (University Medal), *†A. M. R. Cann, *†D. R. Davies, *†R. R. Henderson, *†E. G. Jones, *†L. E. Jones, *†Beryl Twyman, *†§ Sylvia V. F. Wolfe, Mary A. C. Adams, J. L. Bates, Mary A. M. Bigby, Eileen A. Chennell, J. A. Chivers, J. G. R. Clarke, Doris Cohen, Beryl D. Corner, C. F. Critchley, E. A. Danino, D. M. Dean, C. B. Dharmasena, I. Doniach, O. G. Edholm, R. T. Elven, Nancie I. Faux, Constance E. Field, J. M. Flower, H. E. D. Gale, C. J. Gavey, N. Green, J. T. Griffiths, Hilary Gunton, R. M. Haines, S. T. Hayward, Alice M. Head, G. F. Henderson, E. F. Hewlitt, A. C. Howard, H. C. Hugh, N. M. Jacoby, Elizabeth M. James, Margaret H. James, H. W. E. Jones, W. S. G. Lawson, H. B. Lee, Rosamund M. I. Mackay, G. A. Mais, S. P. Mason, P. H. Nankivell, Doris E. Oxford, H. Royle, G. C. Sawyer, Margaret H. Scott, C. Seeley, H. L. Selwyn, R. Shackman, J. V. Shennit, D. G. Snell, W. P. Stamm, *†G. Stamford, Mary G. Tate, W. P. McK. Teller, T. P. J. McQ. Thomas, A. S. Thorley, W. W. Elizabeth B. White.

The following candidates have passed in one of the two groups of subjects:

Group I.—S. H. Alavi, G. W. Bender, D. M. Blomfield, J. A. Brocklebank, I. A. Cathie, Enid S. Davies, Audrey P. Dence, D. G. ff. Edward, Evelyn J. Forgan, W. T. J. Fowler, Joan I. Franklin-Adams, D. B. Hyslop, A. D. Ilii, F. A. Jones, Margaret M. C. Loudon, J. I. Maran, G. D. Morgan, Barbara G. Morton, F. E. Norris, D. S. Piper, Irene E. Sandford, K. G. Seager, H. W. G. Staunton, D. L. McK. Stewart, H. A. Thomas, Sarah C. B. Walker, M. E. Wigfield.

Group II.—H. H. Atkinson, E. A. Bisson, Muriel Boycott, D. J. T. Brinkworth, R. Bruce, R. Carpenter, R. F. Clarke, C. W. J. Claydon, D. W. A. Degazon, Lynette Dowsett, H. D. Fairman, E. D. Falconer, T. F. R. Griffin, A. W. T. Houghton, Joyce B. Jewson, W. L. Kerr, G. A. Killoh, J. R. Kingdom, K. A. Litter, S. Lee, C. F. Mayo-Smith, R. H. Purnell, D. C. Reavell, J. D. Richardson, A. T. Roden, Catherine L. Simmons, B. W. Smith, M. C. L. Smith, E. J. Somerset, W. H. C. Spooner, K. F. Stephens, Margaret E. Sutherland, R. E. Thomas, W. F. Townsend-Coles, R. J. Vakil, E. C. Zorab.

* Honours † Distinguished in Medicine. ‡ Distinguished in Pathology. § Distinguished in Surgery. || Distinguished in Obstetrics and Gynaecology.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council on June 11th Dr. Edward Mellanby, F.R.S., late Professor of Pharmacology in the University, and now Secretary of the Medical Research Council, was appointed Emeritus Professor.

Obituary

Dr. AGNES BRYCE SMITH, who died last month in the Royal Isle of Wight County Hospital, received her medical education at King's College Hospital, London, whence she graduated M.B., B.S.Lond. in 1923, and obtained the diplomas M.R.C.S., L.R.C.P. in the same year. After holding the post of house-physician to the hospital, she was appointed house-surgeon to the Royal Isle of Wight County Hospital at Ryde. After two years of institutional work she started private practice in Ryde, and was then the only woman medical practitioner in the island. A short time afterwards she was appointed visiting anaesthetist to the County Hospital. Her practice developed steadily, and she gained the friendship and respect of her brother practitioners in the island. Two years ago she had to cease work owing to the onset of a long and trying illness, and death ensued at the early age of 35. She was the only daughter of the late Dr. A. S. Smith of Chagford, Devon, and her brother is also in the medical profession.

We regret to record the death of Dr. EDWARD BERESFORD COLLINGS at Barnsley on June 2nd, at the age of 71. He was born in 1863, and, after studying at the Leeds School of Medicine, obtained the M.R.C.S. and L.R.C.P. diplomas in 1891. He went to Barnsley from Bath in 1893, in partnership with his brother-in-law, the late Dr. White, and for forty years had been medical officer to the Poor Law Infirmary. Dr. Collings was an enthusiastic swimmer, and taught the art to many children. His proficiency in that particular sport was responsible for the saving of two lives in December, 1915, when, while on the way to visit a patient, he found that a woman who could not swim had jumped into the canal to the rescue of her 12-year-old son. Dr. Collings plunged in, and brought mother and son to the bank. He had been a member of the British Medical Association since 1907, and during the war served in France as a temporary captain in the R.A.M.C.

Medical News

The eighth annual Macalister Lecture will be delivered by Dr. Robert Hutchison on "Praise and Dispraise of Doctors" at the National Temperance Hospital, Hampstead Road, N.W., on Thursday, June 21st, at 9 p.m. All medical practitioners and their friends are invited.

On Wednesday, June 27th, at 5 p.m., at the house of the Royal Society of Medicine, 1, Wimpole Street, W., Dr. William Allen Pusey of Chicago will deliver the Prosser White Oration on "Disease, Goad of the Mind, Especially the Stimulus of Disease in the Development of the Mind," before the St. John's Hospital Dermatological Society.

A meeting of the Eugenics Society will be held at the Linnean Society's Rooms, Burlington House, Piccadilly, W., on Tuesday, June 26th, at 5.15 p.m., when Professor F. A. E. Crew will speak on "The Inheritance of Educability in the Rat." Sir Humphry Rolleston will take the chair.

The annual meeting of the Incorporated Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded will be held at the Mary Dendy Homes, Sandebridge, on June 19th, at 2.30 p.m., with the Lord Mayor of Manchester in the chair. The Ashby Memorial Hospital, the farm and gardens, and the new homes will be open for inspection after the meeting; tea at Warford Hall.

The annual dinner of the West London Medico-Chirurgical Society will be held at the Trocadero Restaurant, W., on Wednesday, July 4th, at 8 p.m. The annual general meeting of the society will be held at West London Hospital on Friday, July 6th, at 5 p.m.

A tabular statement of post-graduate courses and lectures to be given in London during June and July appeared in last week's *Supplement* (p. 269). The programme drawn up by the Fellowship of Medicine (1, Wimpole Street, W.) includes lecture-demonstrations at 11, Chandos Street, W., June 19th and 26th, at 2.30 p.m.; a fortnight's course in children's diseases at the Children's Clinic, June 25th to July 7th; and another in cardiology at the National Heart Hospital during the same period; a course in medicine and surgery at the Metropolitan Hospital, June 30th and July 1st; and a course in ophthalmology at the Central London Ophthalmic Hospital, July 2nd to July 7th.

At the meeting of the National Smoke Abatement Society, held in Caxton Hall, Westminster, on June 8th, Dr. H. A. Des Vœux said that it was in this hall that he had originally put forward his idea of a campaign for the prevention of the smoke nuisance. The various papers read at the meeting were concerned chiefly with the control of domestic smoke by the use of smokeless fuels and gas coke in the open-grate fire. Among those present were the two representatives of the British Medical Association—Mr. Bishop Harman and Dr. Clark Trotter.

The Royal Sanitary Institute (90, Buckingham Palace Road, S.W.) announces that the health exhibition to be held in connexion with the forty-fifth congress of the institute will be accommodated in the Colston Hall, Bristol, from July 9th to 14th.

The fourth conference of the International Association of Preventive Paediatrics (medical section of the Save the Children International Union) will be held this year at Lyons on September 27th and 28th. The subjects to be discussed and the names of the rapporteurs are: (1) "Prophylaxis of Malaria in Children"—Professors Cacace (Naples) and Gillot (Algiers), with whom will be associated Dr. Larrouy (a British rapporteur will be named later); (2) "Prophylaxis of Rickets and Convulsions"—Professors Adam (Danzig) and Monrad (Copenhagen). Those who desire to be present at the conference, as well as to take part in the discussions following on the reports, are requested to communicate with the secretary of the I.A.P.P., 15, Rue Lévrier, Geneva, Switzerland.

A congress of the International Society of Geographical Pathology (which was founded in 1927 by Askanazy, supported by Aschoff) will be held at Utrecht from July 26th to 28th. The subjects for discussion are cirrhosis of the liver, arteriosclerosis, and the organization of the society.

The fourth congress of the International Office of Documentation for Military Medicine will be held at Liège from June 28th to 30th, when the following subjects will be discussed: medical aspects of aviation, organization of the sanitary service at the base, critical study of the international registration of wounds and diseases in the war of movement, immunization against infection of wounds, disimpregnation of the linen and clothing of the gassed, bacteriological warfare, processes of disinfection, and interchange of sanitary formations during a campaign. Further information can be obtained from the director of the International Office, Lieut.-Colonel Voncken, Hôpital Militaire, Liège.

The seventh congress of the French Paediatric Association will be held in Paris from July 9th to 11th under the presidency of Professor Ombredanne, when the following subjects will be discussed: pathology of Meckel's diverticulum; the influence of climatological and meteorological conditions; and tuberculous filterable viruses in infantile pathology.

The issue of the *Schweizerische medizinische Wochenschrift* for May 12th is dedicated to Professor F. R. Nager, who founded the university oto-rhino-laryngological clinic at Zürich in 1909.

The issue of *Paris Medical* for June 2nd is devoted to infectious diseases.

The Institute of Medical Psychology (the "Tavistock Clinic"), Malet Place, W.C.1, has received an anonymous donation of £300 "to start research work on the remedial

treatment of children who suffer nervous troubles as an after-effect of assault." Investigation of this particular problem will be begun immediately.

The centenary of the Royal Society of Medicine of Ghent was celebrated on May 27th and 28th, under the presidency of the gynaecologist Dr. van Cauwenbergh.

The Secretary of State for Scotland has appointed Dr. W. N. J. Chapman to be a Deputy Commissioner of the General Board of Control for Scotland in the room of Dr. H. F. Watson, resigned.

Dr. Fanny Halpern, assistant in psychiatry at the Vienna University, has been appointed professor of psychiatry at Shanghai University.

Professors Danielopolu of Bucarest and Bensis of Athens have been elected foreign corresponding members of the Académie de Médecine.

Professor Egon Pribram of Frankfurt has been elected a corresponding member of the Paris Society of Surgery.

The following appointments have recently been made in the German faculties of medicine: Dr. Heinrich Eymmer of Heidelberg, professor of obstetrics and gynaecology at Munich in succession to Professor A. Döderlein, Dr. Helmuth Bohnenkamp of Giessen, professor of internal medicine at Freiburg i.B., and Dr. Martin Schubert of Nanburg, professor of dermatology at Frankfurt.

The Italian Central Institute of Statistics, in the last census of April 21st, 1931, reported that the number of Italian citizens over 90 years of age was 10,522, of whom 4,420 were males and 6,102 females.

The number of cases of small-pox notified weekly in the United States has shown no appreciable change since the beginning of the year, the average number being 150. The disease is of the mild type, and no fatal cases have occurred.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **THE EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE BRITISH MEDICAL JOURNAL, *Abbey West, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Abbey West, London.*

MEDICAL SECRETARY, *Medicine West, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (Telegrams: *British, Dublin*; telephone: 61250 Dublin, and of the Scottish Office, 7, Drumshagh Gardens, Edinburgh (Telegrams: *Autocast, Edinburgh*; telephone: 24321 Edinburgh).

QUERIES AND ANSWERS

Pruritus with Jaundice

"P. J. M." writes: I have a patient with jaundice (apparently intrahepatic in type) who suffers from almost intolerable itching. The condition in general is improving, but the itching still remains. Local applications are of value only for a comparatively short time. Injections of insulin and auto-haemotherapy have had no effect. I would be very grateful if any of your readers could suggest some other methods of relieving this very annoying symptom.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 316.

BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, JUNE 23rd, 1934

MUSINGS IN THE GARDEN

FIFTY YEARS' ASSOCIATION WITH THE TUBERCLE BACILLUS*

BY

SIR ROBERT PHILIP, M.A., M.D., LL.D., F.R.C.P.

EDINBURGH

It has fallen to my lot to enjoy the pleasures of fifty years' relationship with the tubercle bacillus. As an undergraduate I was reared in the pre-bacillary school, on the pathological doctrines of Virchow and his disciples, as expounded by D. J. Hamilton, and the clinical teaching of Williams, Wilson Fox, and Niemeyer. My graduation coincided with the announcement of the discovery of the tubercle bacillus. No need here to dwell on the completeness of the proof and the perfection of the demonstration—the enigma of the ages unfolded in eighteen pages, and tuberculosis relegated definitely to the group of infectious diseases.

As it chanced I came into close touch with the subject while working on the Continent (1882-3). I had my first glimpse of the bacillus in the embryological laboratory in Vienna, where I happened to be working on the development of the trachea. The beauty of the demonstration and the collateral facts awakened my interest beyond recall. That interest has remained unbroken throughout the years, and is to-day no less keen than at the beginning.

Call of the Bacillus

The more one thought of the subject the more obvious it became that tuberculosis as a disease due to infection by a definite organism had to be combated broadly on lines similar to those which had been successfully adopted in the case of other infections. This meant the opening up of a fresh field with wide possibilities. Embryology, gynaecology, and other specialties which had drawn one to Vienna got the go-by. The return to Edinburgh was less encouraging. Little was accepted as tuberculosis apart from the obvious case of advanced "consumption" or "phthisis." Everybody knew everything that was to be known about tuberculosis. If we were to get a move on, the first necessity seemed to be the establishment of a centre for the collection, grouping, and observation of cases at different stages of disease. It was not easy to get the idea understood. The need for such a centre was not admitted, nor were existing medical institutions willing to co-operate. There was a good deal of active and passive opposition.

It became clear that a new type of institution had to be erected to meet the objects in view. Hence the establishment, in 1887, of the Tuberculosis Dispensary as a centre of diagnosis, observation, and guidance, and, more generally, of information in all matters pertaining to tuberculosis as an infective disease. The wide scope and the utility of the institution showed themselves quickly. Within three years of its establishment it was possible, from an analysis of the first 1,000 cases, to deduce many interesting conclusions, and by means of a spot

* Allude to the Tuberculosis Society of Scotland on the occasion of assuming the honorary presidency of the society.

map to illustrate the widespread distribution of the disease in the community. This enforced the desirability of the notification of tuberculosis.

It took long, however, to have the value of the central institution recognized and the pattern adopted. In a discussion at the British Medical Association at Carlisle in 1896 on "Tuberculosis: Its Prevention and Cure," the new procedure was developed by me at some length, but the objective of such purposive effort towards the prevention of tuberculosis seemed to be regarded as of little significance, and no allusion was made to it in the printed report of the meeting. It is pleasant to recall that at the meeting I met Calmette for the first time; he had come to speak on the subject of antivenene. Our meeting had interest in the light of subsequent events.

Gradually the conception of the tuberculosis dispensary as the centre of activities caught on, and dispensaries, of varying quality, were established in several countries from 1901 onwards: in France under the influence of Calmette, Richet, and others, in Belgium (Malvoz), and presently in London, where the first tuberculosis dispensary in that city was established at Paddington in 1909. Thereafter, through the activity of the Central Fund for the Establishment of Tuberculosis Dispensaries in London, eleven dispensaries were erected in metropolitan boroughs.

All the time the field of operations of the tuberculosis dispensary was becoming wider, and its significance more apparent as the nodal point in any system for the treatment and prevention of tuberculosis as a communal disease. And so, gradually, there was developed what has come to be known as the Edinburgh scheme—tuberculosis dispensary, sanatorium, hospital for advanced cases, colony, etc.

From 1930 onwards I was fortunate in having opportunities to press the subject in a large number of cities at home, on the Continent, and in Canada and the United States. Then followed the work of the Departmental Committee on Tuberculosis under the chairmanship of Lord Astor, and ultimately the adoption of the uniform tuberculosis scheme throughout Great Britain.

Early Inquiries

In spite of the prevailing view, already referred to, that phthisis was worn threadbare, many clinical and bacteriological questions presented themselves in the early days. The laboratory was at first a very simple affair, adequate for the demands then made on it, including the development of methods of staining, enrichment methods for more easy detection of the bacillus, and various procedures for the rearing of cultures from discharges. Those questions included, more particularly, an inquiry into the actual cause of death in tuberculosis

—the subject of my M.D. thesis in 1887—which led to the conclusion, on experimental grounds, that death from tuberculosis is essentially referable to intoxication, which affects the circulation by way of the neuro-muscular system.

And here let me say that the existence of a well-equipped laboratory in close relation with tuberculosis clinical material is a primary need if valuable opportunities for the advance of knowledge are not to be lost. Further, there is much to be said for the establishment—at least in relation to every teaching centre—of an institution on the lines of Southfield, Edinburgh—that is a sanatorium-colony, where cases of tuberculosis at all stages and at all ages, from infancy to advanced life, can be under observation side by side. Only thus can the natural history of the infection be thoroughly appreciated.

As a learned physician and biologist of the first century A.D., Dioscorides, has said: "Any one who wishes to be a skilful herbalist must observe each plant at every stage of its growth and in various localities."

Notification

The facts obtained within three years concerning the distribution of tuberculosis in the city and the study of environmental conditions impelled me in an address in 1890 to press strongly for the compulsory notification of pulmonary tuberculosis:

"Were it adopted we should soon have most valuable confirmation—or let us suppose the opposite, although I do not think this latter likely—of the statements which have been made regarding the communicability of consumption and the tendency to its occurrence in certain houses and districts. Edinburgh will make a big move, and a move, I make bold to say, which will be speedily followed by many, if her medical officer of health will stimulate the authorities to this further development."

The immediate result was curious. Meeting the medical officer of health coming down the Mound two days afterwards, he remarked: "Don't throw yourself against a stone wall." And eighteen years later, the Chief Medical Officer of the Local Government Board of England, in his volume on *The Prevention of Tuberculosis* (1908), concluded that "it would be inexpedient, unwise, and of relatively little use to advise the general adoption of compulsory notification of phthisis. Public opinion is not ripe for this step, and such notification would remain to a large extent a dead letter." The "inexpedient, unwise, and relatively useless" procedure became the law of the land in 1912. Notification has developed without serious hitch, and, notwithstanding imperfections of personnel and machinery, has played an important part in the control and eradication of tuberculosis.

Tuberculin

It was during the meeting of the International Congress of Medicine in Berlin, in the summer of 1890, that I first heard whispers that Robert Koch was about to add to his earlier laurels by the discovery of a cure for tuberculosis. The actual announcement of tuberculin followed in December of that year. I recall, vividly, the hurried race from Edinburgh to Berlin during the winter session, and the warmth of excitement which contrasted amazingly with the icy coldness of Berlin at that season. Tuberculous patients—mostly in advanced stages—and doctors alike, who had flocked to the capital, were elated with high hopes. The medical world of Berlin itself was ranged in two camps, that of Koch with flying banners, and the other, conservative, swayed by attachment to the older conception of the disease. Yet, curiously enough, it was Professor Virchow himself—great protagonist of the older group—who generously introduced me to Professor Koch,

who in turn gave me a small flask of tuberculin for use "primarily in the interest of the Victoria Consumption Dispensary."

You are all more or less familiar with the "ups and downs" of the controversy which raged for long regarding tuberculin in the realm of therapeutics. As one who, ever since the announcement in 1890, has retained unflinching belief in the greatness of the discovery—second only to that of the tubercle bacillus itself—I crave you will bear with me when I emphasize, in a few words, its far-reaching significance in relation to our knowledge of tuberculosis. I shall confine myself to two broad considerations.

Tuberculin and the Epidemiological Conception of Tuberculosis

From the epidemiological side the knowledge obtained by means of tuberculin has revolutionized our entire outlook on tuberculosis. That seems a strong statement. If it not a whit too strong. The application of tuberculin throughout the countries of the world has burst the conception of tuberculosis as a disease—admittedly infective—occurring in certain individuals, especially at certain age periods, and more prevalent in certain climates.

It has demonstrated the universality of infection, sooner or later, under ordinary conditions, in civilized lands. It has demonstrated that, for the most part, the infection is contracted early in life, and it has shown that the influence of that infection—for better or for worse—is maintained throughout the life of the individual. It has convincingly proved that neither latitude nor climatic conditions, as such, seriously alter liability to infection and the consequences of infection. It has shown us that these are dependent, on the one hand, on the presence of infected persons or cattle in the community, and, on the other, on environmental conditions of varying kinds, which may favour or antagonize the effect of infection in the given individual.

Tuberculin and Diagnosis

The diagnosis of the disease in the individual has, through tuberculin, been placed on an entirely different plane from that previously possible. Observations in the experimental animal and in cattle, as in the human subject, have shown that the fact of infection may be determined within a very short period of the date of infection. The value of this in relation to experimental work is of first-class importance. For the farmer the tuberculin reaction is the basal fact on which rests the possibility of establishing a tubercle-free herd. It is indeed fundamental to the eradication of tuberculosis from the bovine population, an attainment pre-eminently desirable from the agricultural, not less than from the medical, point of view.

With these facts in mind it seems extraordinary that, in spite of strong and repeated advocacy of the application of tuberculin to the human subject, the efficacy of the proposal has been so little appreciated. We know that tuberculosis is likely to occur sooner or later in all family groups. We have in our hands a means of determining exactly—that is, within a few weeks—the date when infection is contracted. This knowledge is pregnant with meaning for the future of each individual; it makes possible the interpretation of events, the significance of which would otherwise be missed. The means by which the information is obtained is simple, free from pain, and free from risk of any kind.

My plea has long been that this test—confirmatory or otherwise of an event of such importance—should be carried out in routine fashion by every family practitioner at successive intervals from the period of infancy onwards. The chief value of the test lies in the determination of the approximate moment of infection. To wait

for the application of the test until some doubtful issue presents itself, or until school age, is to wait too long and to lose most of the advantage. From the moment that a positive reaction has first been given both doctor and parent are placed in possession of an invaluable key to the meaning of further events in the child's life. From countless observations I am convinced that, if the key be understood and applied properly, it is possible thereby to anticipate and exclude the graver consequences of the initial infection. I confidently look forward to the time when such procedure will form part of the ordinary preventive practice of the family practitioner. Recognition of the possible effects of tubercularization, and the timely adoption of methods of *detubercularization*, would mean the gradual disappearance of the grosser forms of tuberculous disease—both skeletal and visceral.

Turn again, for a moment, to the immediately therapeutic side. This was the central point round which the more material expectations revolved when tuberculin was first announced. In 1890 clinicians and pathologists were chiefly concerned with pronounced changes in tissue and function. The debacle which followed was chiefly due to exaggerated hopes. It seems almost incredible to recall the aspect of patients who, in late stages of disease, flocked to the tuberculin flask as to a sacred pool of healing. The diseased lung, frequently disorganized beyond recall, was to be reintegrated as by magic and the flickering life of the intoxicated body refreshed and stabilized at command. The unscientific attitude met its nemesis in the post-mortem room. Professor Virchow said to me he had never seen such grossly congested organs in all his pathological experience.

The effective value of tuberculin had not yet emerged—although in justice to Koch it should be recalled that, from the first, he spoke of its application to early cases. Time was required for the realization that the value of tuberculin lies essentially in its power of early detection, and that its properties are exercised especially in the way of limitation and prevention of spread.

Looking through the records of the continuous use of tuberculin during more than forty years, in hospital and private practice, I remain deeply impressed by the mass of evidence pointing to its therapeutic efficacy. It will suffice to recall that I have seen tuberculous disease in almost every part of the body yield remarkably during the continued use of tuberculin. By way of examples may be cited tuberculous ulceration of the epiglottis (on account of which tracheotomy had been performed); tuberculous infiltration of the ventricular band, obstructing respiration to such an extent that thyroidectomy had been recommended; renal tuberculosis with involvement of ureter and bladder; large tuberculous masses in the abdomen; and glandular tuberculosis (in some cases with alarming pressure symptoms), for which extensive operation had been repeatedly undertaken. Many such cases have reported themselves from time to time without any sign of retrogression.

Examination of Contacts

One of the earliest developments in connexion with the tuberculosis dispensary was the systematic examination of family groups, or, as it was called in early days, the "march past" of the contacts. The "march past," as we baptised it for rhetorical purposes, was anything but a formal affair. It took time and involved careful discrimination on physical evidence—all this before the introduction of tuberculin tests. It was the careful systematic examination of these family groups which led me to lay especial stress on thorough examination of the lymphatic system at every available point, and enforced the significance of minor degrees of glandular enlargement.

It was especially interesting to observe the support obtained by the tuberculin test for views regarding the wide dissemination of tubercle among children which had been formed by me in pre-tuberculin days by application of the older physical methods. Resting on earlier methods one had made the statement (vide *The Anti-Tuberculosis Programme: Co-ordination of Preventive Measures*, Washington, 1908) that 30 per cent. of school children (unselected) presented stigmata of tuberculosis. These figures, when reported, were made light of by some authorities. When tuberculin came along, its application in routine fashion among children went to show that the percentage reported as tuberculous on the older line of evidence was much within the mark. The systematic examination of contacts with the aid of tuberculin is one of the most vital parts of the work of the tuberculosis dispensary, and will continue to be so until such time as it becomes the duty of the family doctor to make the routine tuberculin tests at the successive intervals of which I have just spoken.

Mode of Entrance: Misleading Conceptions

The extended observations it has been possible to make during so many years—clinical, pathological, and experimental—have growingly ripened my belief that the view usually held regarding the contraction of tuberculosis by the entrance of bacilli through the respiratory tract, with resulting primary focus in the lung, is narrow and misleading. Repeated experimental observations have convinced me that tubercle bacilli can pass into the body by a variety of channels, and that, while the passage of tubercle bacilli through the skin is commonly associated with induration at the point of inoculation, the passage of bacilli may occur through mucous membrane at almost any point, leaving little register of disturbance at the point of entrance.

All these observations go to emphasize the views I have taught for many years, and which I developed in the introductory address given to this society at its first meeting in November, 1921. In that address I summarized the conclusions previously formed by me as to the stages of infection in tuberculosis, and to these I adhere to-day:

"While, if entrance occurs through the skin, the event is commonly registered by a definite sore, an obvious lesion is seldom traceable when inoculation has been effected by way of the mucous membrane, as may be the case at any point in the alimentary tract from the lips to the anal orifice, or in the respiratory tract from the nostril to the ultimate alveolus.

"The absence of local lesion is likely when infection occurs, as it oftenest does, during the tender period of developing childhood. At that date the mucous surfaces are rapidly absorbent and succulent, and the entrance of the tubercle bacilli may leave little, if any, trace. Theoretically, especially at that age, the possibility of entrance at any point of the mucous surface must be admitted, but the greater vulnerability of certain points, notably the tonsillar region, including the posterior nares and fauces, will be kept in view."

Since the date of the first meeting of the society I have repeated a number of observations on slightly varied lines. They all lead to the same conclusion, that, by whatever channel the tubercle bacillus obtains access to the body, whether through the skin or mucous membrane, its further passage throughout the system is effected for the most part by lymphatic spread. This is the case in the infant and young child, as it is the case in the calf and other animals. In both instances I am satisfied that the tubercle bacilli are not, for the most part, swallowed or inhaled (as is usually believed), but are introduced by more immediate passage through the buccal or nasopharyngeal mucous membrane from the contents

of these cavities, to which bacilli have obtained entrance in the course of fondling, feeding, etc. The commonly accepted division of the channels of infection into respiratory and alimentary is, in my judgement, arbitrary, and untenable in view of the facts. That infection can be effected in the experimental animal by either route there is no manner of doubt. It must be kept in mind, however, that the conditions under which spontaneous infection is effected differ widely from the methods of the experimental laboratory.

Undue Dominance of the Lung in the Problem of Tuberculosis

Paradoxical as it may seem, the tuberculous lung has been a chief obstacle to the development of a scientific conception of the natural history of tuberculosis. From earliest times the attention of the physician—as also of the man in the street—was directed towards the classic picture of the consumptive patient gravely ill or dying from disease which was apparently centred in the lung. "Phthisis" was regarded as essentially a disease of the lung.

In the circumstances it was most natural for the pathologist, like the clinician, to direct his attention to the lung as the chief subject of investigation. Generation after generation has approached research from the same angle. Observers have differed only at successive periods in their interpretation of the morbid appearances. The dominating position accorded to the lung has obscured the truth. The clinician has seldom got away from the lung as the central feature for study and care. Tuberculous manifestations elsewhere have been regarded as complications of what was conceived to be the primary or essential lesion. Face to face with appearances which implied, or might imply, tuberculosis in other parts of the body, he has continued to turn to the lung for corroboration or otherwise of the diagnosis. And at the post-mortem table there has been much the same outlook.

This faulty attitude has been strongly impressed on me as a physician by the frequently recurring reference from colleagues in special departments regarding obscure conditions of ill-health, or less common appearances in particular organs, as to whether the lungs showed evidence of primary disease. This outlook has continued throughout successive decades in my experience, and is still largely prevalent. It is a grave misconception of the order of events.

The misconception has not only coloured observations at the bedside and in the post-mortem room: even the experimental pathologist has been influenced unduly by the older line of thought. It was assumed that the diseased lung became infected by the direct entrance of the bacilli through the respiratory passages. Attempts to reproduce the disease were arranged on these lines; I did a good deal of that sort of thing in the early days. With the quantities of bacilli used for experiment it was speedily found, as might have been expected, that pulmonary tuberculosis could be produced in this fashion. On the other hand, it was speedily shown that when tubercle bacilli were introduced in quantity into the gastro-intestinal tract, tuberculous infection was likewise readily induced—some observers regarding it as the readier avenue. Thus arose the opposing doctrine of respiration *versus* ingestion. Nor has the difference between the two schools been adjusted.

Again, the assumption that infection is effected for the most part by way of the respiratory passages led to the vexed question of "dust" *versus* "droplets." Here, too, confusion of issues occurred, and the very natural conclusion resulted that either means was possible, provided that the dust or droplet contained the essential tubercle bacillus.

Lessons of Comparative Pathology

The sequence of events in the human subject is not dissimilar to that in cattle. Involvement of the lung is, for the most part, a late visceral manifestation of an infection contracted very simply at a much earlier date. The prevailing habit of separating between pulmonary tuberculosis and non-pulmonary, which at one time may have served some purpose, is unscientific and misleading. No less so is the curious habit adopted by many of speaking of "surgical" tuberculosis as opposed to "medical."

Similarly fallacious is the attempt to associate certain manifestations of tuberculosis too precisely with one or other type of bacillus. Twenty-five years ago, the last time I met Robert Koch, he denied most stoutly, and with not a little heat, that bovine infection of the human subject could result in pulmonary tuberculosis. Involvement of the lungs, he maintained, was always referable to infection by the human type. He regarded the two or three isolated statements made up to that date that bovine organisms had been recovered from pulmonary tuberculosis in man, as due to inaccurate observation. To-day, thanks especially to the insistent labours of Drs. Stanley Griffith and Munro, we have abundant proof that Koch's dictum was wrong.

In this connexion the post-mortem appearances in cattle at various ages are of particular interest, as is likewise the sequence of events in the inoculated animal. I have seen a congenitally affected calf, born of a mother whose uterus was literally studded with tubercle, presenting on the fifth day after birth, as the sole evidence of disease, a tuberculous gland at the hilum of the liver and another in similar relation to the spleen. We have fed a calf, born in a tubercle-free herd, and ascertained by tuberculin test at the date of experiment to be non-tuberculous, with milk to which an emulsion of tubercle bacillus (human) had been added, and in due course the tuberculin reaction became positive, and post-mortem examination revealed tuberculosis limited to the retropharyngeal gland.

Frequently at the slaughterhouse calves of 2 to 3 months old are to be seen with the lymphatic system literally packed with tubercle, and yet not a trace of involvement of lungs or pleura which, in the adult cow, constitutes ultimately the characteristic lesion. (For abundant opportunities for observation in this sphere I have been much indebted to the kindness of Mr. Arthur Gofton, F.R.C.V.S., chief veterinary inspector at Edinburgh.) The lessons of the slaughterhouse are most convincing—namely, that, apart from congenital disease, which is relatively uncommon, infection in the bovine species and in pigs commences in the glands related to the buccal cavity and the pharyngeal region, and this is followed by gradual extension throughout the lymphatic system. The mediastinal glands of the young bovine, which by reason of their size are much more easily studied than those in the human subject, may frequently be found grossly involved by tubercle, while hardly a trace is to be found in the lung.

The sequence of events in bovine tuberculosis is of particular interest. Prior to the recognition that tuberculosis in cattle was due to Koch's bacillus, emphasis was chiefly laid, and, indeed, is still laid by clinical veterinary officers, on the characteristic involvement of lungs and pleura. Yet the collective facts of that jealously guarded post-mortem theatre, the slaughterhouse, afford convincing evidence that involvement of the lung and pleura is actually one of the later results of tuberculous infection. Pulmonary tuberculosis is to be expected in the tuberculous cow, but it is relatively uncommon in the young calf.

I have no wish to press the facts of comparative pathology beyond the legitimate limit. They should not, however, be lightly discounted. They should be kept well in view in interpreting the facts of human pathology.

Better Perspective

I am, of course, well aware that the majority of opinion, pathological and clinical, favours—almost takes for granted—the view that human infection occurs generally by way of the respiratory passages, and that the primary focus of disease is to be expected, and is generally to be found, within the lung. I have followed with close interest the observations of distinguished workers in this part of the field, among whom members of this society hold an honoured place.

None the less, in this moment of recollection and survey, it seems right to make it clear that, starting both on the clinical and on the pathological side with the belief that in the great majority of cases the lung was the seat of primary infection, I have been constrained by an overpowering weight of evidence in my own experience—clinical, pathological, and experimental—to relegate the lung, from this point of view, to a secondary place. From what I have said regarding the undue dominance of the lung in current thought regarding tuberculosis it must not be supposed that I make light of the preponderating place properly accorded to pulmonary tuberculosis in the sphere of practical medicine. It is all the other way. As things now stand, pulmonary tuberculosis, which commonly occupies the final act in the tragedy begun by the silent entrance of the bacillus into the human body, demands still the utmost attention. So long as the entrance of the bacillus remains unwatched and unnoticed, and its progress remains unchecked, so long will the story of disaster tend to develop and pulmonary disease continue to be frequent.

The resources of medicine have, however, shown that the invading organism may be checkmated at many points before the last act is reached; and to effect this is the chief aim of the preventive measures which are embodied in the tuberculosis scheme of this country. And happily, even when the curtain seems raised for the last act, many variations have now been introduced into the old-world story. Pulmonary tuberculosis has been largely robbed of its more ominous features by early diagnosis, by the adoption of the physiological measures of the sanatorium, and by methods of frontal attack which are now possible by the combination of surgery with medicine. Thanks to modern technique, "defeatism" has disappeared and disaster is daily averted.

It is long since I satisfied myself, from innumerable observations, that infection in the child is effected, for the most part, neither by respiration nor by ingestion, as generally understood, but by more immediate recurring contact between the child and the infected individual, as in fondling, kissing, feeding, etc., and, likewise, of course—as most convincingly demonstrated by John Fraser, Mitchell, and others—through less direct contact with the cow by means of infected milk. Introduced from whichever source, the bacilli entering the mouth or nose tend to linger about the gums (teeth), and especially about the faucal and nasopharyngeal regions, from which they may pass through the mucous membrane without very obvious disturbance, and thence reach the lymphatic circulation; while in other cases the bacilli may pass lower down in the gastro-intestinal tract in swallowing tubercle-containing milk. Sometimes, doubtless, entrance may occur through the respiratory passages, but, on many grounds, I believe the latter to be relatively infrequent.

The first evidence that infection has been contracted may be found most frequently in enlargement of one or more, often several, glands in the neighbourhood of the

point of entrance, especially cervical glands. The enlargement is, as a rule, slight, and discoverable only by careful palpation along the likely lymphatic lines (not usually the obvious swelling, discovered by the observant mother, or the gross disturbance which commonly leads to a visit to the surgeon). The lymphatic involvement I have in view is of finer character, progressing insidiously from point to point. The search for this forms the first line of investigation in the case of a young child. By the time this glandular involvement is determinable the tuberculin reaction will generally be found positive, and the fact established that the child has been "tuberculized."

I might cite endless examples from children in illustration of these significant points. Let me recall to you a remarkable illustration from comparative pathology which carries the evidence further than is commonly possible in the child. The case, that of a cow, was recorded some years ago to the society by Dr. Simpson and myself (*Transactions*, 1924-5). The animal, one of our tubercle-free herd, which had always passed the tuberculin test, was grazing one day in a certain field into which, through carelessness on the part of a neighbouring dairy-keeper, a sick cow, recently under treatment for "pneumonia," was allowed to enter. "The dairy-keeper's cow was discovered there in a dying condition the following morning and, immediately after removal, died from generalized tuberculosis. These two cows, after the invariable manner of their kind, were seen to have licked each other by way of greeting. They were in contact in the field together nine hours." Our own cow, which on April 24th and on all previous occasions had passed a double tuberculin test, was tested some months after the incident referred to, on October 24th, and gave a very positive reaction. It was slaughtered immediately thereafter, and the necropsy showed definite tuberculous involvement limited to the retropharyngeal glands.

Let me resume briefly as follows. Tuberculosis, like other infective processes, is of simple origin. There is a moment in time when the tubercle bacillus passes the protecting barrier—the mucous membrane most commonly. This is followed by a latent period (primary incubation) while the bacillus is establishing itself within the lymphatic circulation. After an interval, not very certainly defined (perhaps three or four weeks) objective evidence may be found (clinical or post-mortem) in glandular enlargement, isolated or spreading. At this stage the process may be, or at least may appear to be, arrested.

Later, with wider extension throughout the lymphatic system, all kinds of incidents may occur—for example, extension of infection through propinquity, rupture into some passage, sac, or viscus (or there may be local exudation), any of these giving rise to obvious clinical effects. Finally, with the passage of bacilli into the blood stream, whether by the natural channel or more abruptly, as by entrance from a caseating focus or in the course of surgical operation, the final catastrophe of miliary spread is made possible.

The points in time at which such incidents occur, or reactivation of an existing focus takes place, vary endlessly, according to the resistance offered by the infected individual. This in turn is largely governed by environmental conditions (using that term in a wide sense), at successive age periods, or through accidental circumstances such as the advent of other infections—for example, measles, whooping-cough, and, it may be, through injuries. The occurrence irregularly of reactivation or extensions is usually registrable by clinical signs and symptoms. On the vexed question of the part played by the fresh entry of tubercle bacilli from without, time will not allow me to enter. In no subject in medicine

is it more desirable to maintain the biological outlook. We must think in terms of decades and generations. Once the tubercle bacillus has obtained a foothold whether, as rarely, during intrauterine life or at some subsequent date from infancy onwards, the possibilities resulting from bacillary implantation are manifold, and should be kept in view by the thoughtful physician without fuss or exaggeration.

If the influence of the harboured bacillus be frequently beneficial, making for immunity against further attack from outside, it is to be borne in mind that the bacillus is highly resistant, and may remain dormant for many a day, encapsuled perhaps in some out-of-the-way corner, still capable of reactivity and reproduction, and, given favouring conditions, of spread in all sorts of directions. No need for me in a company like the present to dilate on those favouring conditions which occur in numerous ways and at numerous stages in conventional human life. These occurrences explain much that were otherwise hard to interpret in the life-history of the tuberculous individual

and in mortality tables. It is when you have watched in countless cases the "ups and downs" in the persistent struggle between the invading bacillus and the resisting forces of the host—strong or weak as these may be from time to time—that you begin to understand the mystery of the drama of tuberculous infection, action and reaction, and the interlocking of successive events.

These are a few of the reminiscences and musings which remain with me from fifty years' wandering up and down in the wonderful garden. These rambles have occupied a large part of my life and have brought both pleasure and solace. You have given me the privilege of recalling these happy times aloud. Your kindness in inviting me and in listening has enhanced the pleasure of recollection. I hope that I have not wearied you or unwittingly trodden on anyone's toes, or seemed to make light of the labours of others in the garden. Their friendliness and good will have made me happy, and my admiration of their successful efforts has been unbounded.

PARASITIC DISEASES COMMON TO MAN AND ANIMALS*

BY

THOMAS W. M. CAMERON, M.A., D.Sc., Ph.D.Ed.
RESEARCH PROFESSOR OF PARASITOLOGY, AND DIRECTOR, INSTITUTE
OF PARASITOLOGY, MCGILL UNIVERSITY, MONTREAL

Human beings have acquired their parasites from two main sources: from their own simian ancestors and from environmental circumstances, the most important of which is association with animals. It is not always possible to place any given parasite immediately in its own special category—inquiries into the distant origin of animals and plants must always contain an element of speculation—but most of them can be catalogued with some degree of accuracy. To the first category belong such parasites as malaria, filaria, and pinworms, while to a borderline group between it and the second category belong the hookworms and similar forms, which have very close relations in domesticated animals, but which, acquired in very early days, have now become exclusively human. It is interesting to observe that the human *Ascaris* and *Necator* are probably undergoing a reverse process of evolution, and are becoming parasites of pigs as well as of man.

The purpose of this paper is to discuss parasites which even now are being carried to man from animals, especially animals to be found in Canada. In parenthesis it may be mentioned that all such forms as occur in animals in Britain also occur in Canada. Like the white man in North America, they also were immigrants. However, this continent provided its own quota, and the forms discussed here include a few which are not found in the United Kingdom.

For purposes of convenience we may consider these parasites in the following groups: (I) those which live as adults both in man and in animals; (II) those which live as adults in man and as larvae in animals; and (III) parasites which live as larvae in man and as adults in animals.

GROUP I

The group of parasites living as adults in man and in animals can be subdivided into two, the first division including forms which are sufficiently frequent in human

beings to be considered as "normal," and the second including forms only rarely found in man, which are obviously "accidental" parasites.

"Normal" Parasites

The broad tapeworm (*Diphyllobothrium latum*) of man and carnivores has been known for a long time in Europe, where its modern endemic focus is in the Baltic area; it also occurs, however, in Switzerland and Ireland. It was introduced to the North American continent many years ago, and is now located mainly around the Great Lakes and other lakes from Ontario to Alberta. A number of cases of infection with this parasite have been recorded from New York, but the source appears to be pike from the Great Lakes. The incidence of the tapeworm in Canada is rapidly increasing, and the fact that it infects a variety of wild mammals, such as bear and mink, as well as domesticated ones makes control much more difficult.

The eggs of the tapeworm are passed in the faeces into water, where in due course they hatch. The larvae are swallowed by minute water fleas (*Diaptomus oregonensis*), in which they undergo a certain amount of development: this is completed when the first host is swallowed by a fish. Quite a number of fresh-water fish can serve in this way, but the most important is the pike (*Esox lucius*). The infective stage is reached in the fish, especially in summer, and particularly in medium-sized or smaller specimens. Infection results, of course, from eating raw or improperly cooked fish. This worm is generally associated with a form of anaemia, but the latter is certainly not present in all cases, although there is evidence that the worm does cause a small increase in size of the red cells. There is a distinct eosinophilia in the early stages of the infection; this reaches its maximum about the time of maturation of the worm, after which it rapidly diminishes almost to normal.

The presence of the parasite in Canadian fish is of some importance, and every effort should be made at control: (1) by keeping summer-caught pike off the market; (2) by cooking or freezing fish for consumption by both man and animals; (3) by discouraging the feeding of raw fish to dogs; and (4) by periodically dosing the latter for tapeworms. In the presence of wild reservoir hosts absolute control is difficult, but any steps to prevent the pollution of lake water with infected faeces should be of assistance in reducing the incidence.

The human whipworm, *Trichocephalus trichiuris*, which is quite cosmopolitan, but nowhere very common or serious, also occurs in pigs, while the dwarf tapeworm, *Hymenolepis nana*, which is fairly common in the Southern States, is probably identical with the form found in rats and mice in Canada. The dog flea occurs

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frequently on man, and the human flea on the dog, so that both of these parasites may also be included in this section. The human lice, on the other hand, are peculiar to man, and none of the animal forms can find more than a very temporary lodging on him.

Abnormal Parasites

A very large number of parasites of animals have at one time or another been recorded in man. Many of these are of purely academic interest, but a few occur with sufficient frequency to enable us to regard the animals as "reservoir hosts" for these parasites.

The number of species of *Paragonimus* is still far from being settled, although the consensus of opinion is that probably all are variants of a single form. However, it seems advisable to retain the name *P. kellicotti* for the species of lung-fluke which occurs in North America. Here the normal host is the mink, but it is also common in the musk-rat, and it has been recorded from pig, dog, cat, wild cat, goat, and man. Its distribution in Canada is still very incompletely known, but it seems to be fairly widespread, especially in the east.

The eggs, coughed up, are swallowed and passed to the exterior in the faeces. In about three weeks they hatch, and the larva gains admittance to the operculate snail *Pomatopsis lapidaria*. This snail is amphibious, so that the eggs on damp ground, as well as in water, have an opportunity of continuing their life-cycle. From three to four thousand cercariae emerge from the snail in about three months after infection, but they develop further only if they are able to penetrate into the thin chitin between the segments of crayfish (*Cambarus spp.*). In the second intermediate host they proceed to the heart region, where they become encysted. (In the Asiatic species they are often found in the musculature.) These continue to develop after encystment, and several weeks may elapse before they become infective.

Infection is by eating the crayfish in an uncooked condition, when the young flukes penetrate the intestinal wall and migrate directly to the lungs. Needless to say, many worms never reach their final habitat, and they are occasionally found alive in various other parts of the body.

Human beings may act as accidental hosts for the liver-flukes of sheep, but this is very rare, and there is reason to believe that many of the recorded cases, which were diagnosed from the presence of eggs in the droppings, were not really infected. The eggs are merely contaminations of liver eaten as food, and are in course of leaving the body. The liver-flukes usually found in man and carnivorous animals belong mostly to the family Opisthorchidae, and while the only genus commonly seen in human beings is *Opisthorchis* (including *Clonorchis*) there is every reason to believe that, given the opportunity, any one of the members of this family could attack human beings. All appear to be fish-carried, and in certain parts of the Far East and in Northern Asia and Northern Europe, where conditions are quite analogous to Northern Canada, human infections are very common. The two genera so far found in North America are *Opisthorchis* and *Parametorchis*; there is increasing evidence that the latter is of considerable importance to dogs in the North. A heavy infection causes progressive weakness, emaciation, and anaemia, and its significance in an animal which provides the sole method of transportation for many months of the year can well be understood.

The members of this family, in addition to the usual snail intermediary which all flukes require, have a second intermediate host in fish. The cercariae which escape from the snail encyst on scales or in the flesh of various species of fish, and the definitive host is infected by eating this. The available evidence suggests that any fish-eating animal may be infected. Man owes his freedom, as a rule, to cooking, as heat quickly destroys the cysts. For this reason fluke is not common in human beings here, but it must be admitted that very little search has yet been made for it. Accordingly, the parasites must be considered as of potential human, as well as actual veterinary, importance.

Dipylidium caninum is an exceedingly prevalent parasite in dogs and cats, which also occurs in children; in fact,

it is probably the commonest human tapeworm seen in Great Britain. The intermediate stage is found in fleas and dog lice, and these are occasionally swallowed by children. It is not a very dangerous parasite, but its presence in children indicates that, hygienically, all is not as it should be. Children also become infected with several species of ascarid worms found in dogs and cats. Here, of course, infection is produced by swallowing the embryonated egg, and implies opportunities for faecal contamination of food or utensils.

The genus *Trichostrongylus* includes a number of very small parasites related to the hookworms living in the alimentary tract from the stomach to the caecum. They have a wide geographical range and live in a great variety of mammals. Their main hosts are domestic ruminants and, possibly, horses, but there are a number of records from man; probably these could be greatly increased if examinations were made more frequently. The life-cycle is somewhat similar to that of the hookworm, except that infection is mainly by ingestion. The eggs resemble those of the hookworms, but can be fairly easily distinguished. It is doubtful if these parasites do much harm to human beings.

Man is sometimes infected with mange mites from the lower animals (particularly *Sarcoptes*), chiefly from horses, cows, and dogs. All the species in this genus are similar morphologically, but strains appear to have evolved for each species of host, and so human infections are generally very amenable to treatment with sulphur dressings. The human strain is much more resistant to treatment, however.

GROUP II

Of the parasites living as adults in man and as larvae in animals *Taenia solium* and *Taenia saginata* are both exclusively human parasites in their adult state. The larva of the former, however, is found in pigs (*Cysticercus cellulosae*), whereas that of the latter occurs in cattle (*Cysticercus bovis*). Their distribution, therefore, corresponds with the distribution of these two animals, but their frequency depends on whether or not meat products are habitually eaten uncooked or only slightly cooked. *Taenia solium* is, accordingly, commoner in Germanic and similar communities, whereas *Taenia saginata* is more often seen than *Taenia solium* in Anglo-Saxon peoples. Both occur in Canada, although their distribution is somewhat erratic. Osler found *Taenia solium* in Montreal, and there are recent records of its local frequency in the Slav communities in the west. It is, of course, a rare parasite in Great Britain and elsewhere among people of British extraction—reports to the contrary notwithstanding—because of their habit of overcooking pork. *Taenia saginata* is found in Great Britain, and, although we have little information of its exact distribution in Canada, it also is most frequent in the west; however, it is quite generally distributed elsewhere, although never very common, as in Britain. *Taenia solium* is quite a dangerous human parasite, as its larval stage can develop in man as well as in pigs; it does not always choose the musculature, but is found subcutaneously or in the central nervous system. Quite a number of cases of lunacy are attributable to it. There is no such danger with *Taenia saginata*.

The Trichina Worm

The most important of the parasites which produce trichinosis in man is the trichina worm, or *Trichinella spiralis*. The parasite itself was only recognized in 1828, when Peacock observed the larvae in London, but it was thirty years later before Zenker was able to show its connexion with the serious disease with which we now associate it; at one stage it caused more public apprehension in Germany than did cholera. For some ten years American pork was excluded from Germany on this account, and from this the present very efficient American system of meat inspection directly resulted.

Canadian as well as British meat inspection ignores the possibility of trichina infection of pork, and no attempt is made to search for it. However, in Europe, elaborate measures are taken and large staffs and special apparatus are employed for this purpose. The importance of trichina

infection depends entirely on the habits of the people. Where raw, undercooked, or smoked pork is customarily eaten it is a parasite to be feared, and it is in nations with such habits that we encounter it most commonly. Where, however, as in Anglo-Saxon countries, it is customary to overcook all pork and pork products, the dangers are negligible; this precaution is probably more effective than the most perfect system of meat inspection, which, after all, may merely lead to a sense of false security. In the United States, where a fair proportion of pigs are infected, there have been about 2,000 human cases reported since 1842, although the actual numbers infected but not diagnosed must be very much higher. Most cases are traceable to the consumption of raw sausage or ham, usually prepared at home or in small establishments. Where pork is prepared on a large scale the dilution of the worms is generally such as to make infection negligible and too small in amount to cause disease. Practically all these American cases were confined to people who had still retained their Central or South European habits, while those of British or French origin were not affected. Quite a number of cases have had their origin in the eating of bear flesh, and we have found the trichina worm in a variety of wild carnivores. It is, of course, essentially a parasite of flesh-eating mammals, and in certain parts of the United States it is fairly common in dogs and cats.

Generally, the disease is chronic in the pig; in fact, there may be no symptoms at all and the flesh is unchanged macroscopically. It is unnecessary here to discuss the course of the disease in man, but it may be of interest to draw attention to the frequent diagnosis of typhoid fever or "ptomaine" poisoning in the acute cases, and to "rheumatism" in the subacute later stages of trichinosis. Like most parasitic infections, in the earlier stages there is observed considerable eosinophilia, which, in this case, may reach as high a figure as 40 per cent. Sir William Osler was probably the first to draw attention to the great diagnostic value of this fact.

The distribution of the trichina worm in Canada is unknown, as it is in Great Britain. Human cases are occasionally recorded, but it must be remembered that symptoms are directly proportional to the numbers of parasites ingested. Cases with slight infection probably show no symptoms at all, are not likely to come to the attention of the physician, and still less likely to be diagnosed as trichinosis.

GROUP III

All the parasites living as larvae in man and as adults in animals are obviously "accidental" forms, although some are of very great importance, such as hydatid cyst, fluke larvae causing cercarial dermatitis, and hookworm and other larvae causing "creeping disease."

Hydatid Infections

Echinococcus granulosus as an adult lives in carnivorous animals, the dog being considered the commonest host, but wild Canidae are often infected and play no small part in its spread; cats are only infrequently infected. The intermediate hosts are legion; practically any mammal may harbour the hydatid cyst. Sheep are most often infected, but horses, pigs, and wild ruminants, such as the moose, are also important hosts. The disease is therefore essentially one of pastoral countries. There sheep constitute a large reservoir from which dogs are continually infected, and the opportunities for human infection are thus enormously increased. Although in human pathology hydatid is generally studied in the adult, it is in youth or even in infancy that the disease is usually contracted. Accordingly, in most cases, the cyst of the adult is one already old—a fact which explains the great proportion of abnormalities found in human hydatids.

It has been considered that drinking-water was the commonest source of infection, but echinococcus eggs, like most other helminth eggs, do not float in water in the state in which they are usually passed in the faeces. The drinking of surface water should not, therefore, cause infection. Contagion occurs most frequently through contact with dogs, especially by acquiring dried eggs on the

hands from a dog's coat contaminated with dried faeces. Faecal contamination of foodstuffs, particularly vegetables, is also probably a common source of infection.

Cercarial Dermatitis

The infective stages of a number of trematodes gain admission to the host by actually penetrating the skin. The most important of these are the blood-flukes or bilharzia worms. If they penetrate the skin of the correct host they continue to develop to maturity; if, however, they happen to have entered the skin of an unsuitable host, they die. Unfortunately, whether they are in the correct host or not, they cause a pronounced reaction at the site of entry, and the name "cercarial dermatitis" has been given to the resulting lesion.

There are no human flukes in north temperate climates which have such a mode of entry, but quite a number of wild birds and mammals are so affected. Their larval stages are common in many lakes, both in Canada and in the United States, and closely related forms occur in many parts of the British Isles and elsewhere. These minute cercariae have consequently become a considerable source of annoyance to bathers, and in some localities are so bad that fully half the people entering the water become affected. The condition starts with a prickly sensation a few minutes after exposure to infection, and urticarial blotches quickly develop round the site of entry. The itching may be intense, and papules or even pustules appear. In as little as four or five days the sores disappear with simple treatment, but in some cases they persist from four to seven weeks. The lesions vary to some extent with numbers, dirtiness of the water, and scratching, as well as individual susceptibility, but the history generally makes the origin of the disease obvious.

Analogous to cercarial dermatitis is the condition called "creeping eruption," in which a variety of parasites of lower animals penetrate the skin of man, and, finding the environment unsuitable, move about in or under the skin. Chief among these are immature hookworms of dogs and cats. While a number of these are present in northern latitudes, we have few records of the condition from there. It has been shown that relatively high temperatures, sufficient to cause visible perspiration, are favourable for the disease, and this may account for the fact that it is most frequently found in the south.

CONCLUSION

Of the parasites commonly found in man in north temperate climates only pinworms (possibly ascarids) and lice are exclusively human. Practically all the others are associated in some way or another with lower animals. The broad tapeworm carried by fish is also found in dogs, cats, and wild carnivores; the whipworm occurs in pigs; the two taenias and the trichina worm are conveyed to man by pork or beef; and hydatid cyst is the larval stage of a dog tapeworm. All of these, as well as cercarial dermatitis, are of considerable public health interest. Of potential importance in Canada are the lung-flukes and liver-flukes of carnivores, *Dipylidium* (the common urban tapeworm of dogs and cats), and the mange mites. It must be remembered, however, that modern parasitology is still a very young subject, and as it develops many more forms will probably have to be added to this list. Most of these parasitic diseases are easily preventable; in fact, the evolution of modern civilization and the activities of the sanitarian, the veterinarian, and the cook have already done much to reduce their incidence. Many, however, are still with us, and it is important to know not only where they occur but how frequently they occur, in order that adequate public health measures may be taken. Bacterial diseases are coming more and more under control, and the education of the public has done much to bring this about. Similar steps with regard to the animal parasites should have similar results, and there are signs that such steps would be not inopportune. These are particularly necessary in communities where habitations are widely scattered and sanitary services, so effective in our towns, are still in a rudimentary state.

ANGULAR PREGNANCY: A CLINICAL ENTITY

BY

J. M. MUNRO KERR, M.D., F.R.F.P.S.G., F.C.O.G.

REGIUS PROFESSOR OF MIDWIFERY, UNIVERSITY OF GLASGOW; CHIEF OBSTETRIC SURGEON, GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL

AND

DAVID FYFE ANDERSON, M.B., M.C.O.G.

ASSISTANT TO THE REGIUS PROFESSOR OF MIDWIFERY, UNIVERSITY OF GLASGOW; ASSISTANT OBSTETRIC SURGEON, GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL

It is a common experience in medical practice that specific clinical rarities are seldom encountered singly. A striking illustration of this is furnished by the two cases to be described, which were admitted into our unit of the Glasgow Royal Maternity and Women's Hospital within a period of twenty-four hours. They proved to be examples of that rare variety of gestation designated "angular" pregnancy, which we are inclined to think has never received sufficient recognition as a definite clinical entity.

CASE I

A woman, aged 32, pregnant for the sixth time, was sent into hospital on November 12th, 1933, as a case of ectopic gestation. The fifth pregnancy, in 1929, had ended as an abortion at two months. In each of the first four deliveries, three of which were instrumental and the fourth spontaneous, the noteworthy feature was delay in the third stage. With each pregnancy there was complaint of increasing weakness. Menstrual periods had been irregular as regards both frequency and duration, but the patient was quite definite that the last occurred on July 28th. On the morning of admission there was a sudden gush of watery discharge (suggestive of rupture of the membranes), and acute pain developed in the right side of the abdomen. Pain thereafter was persistent; the patient felt cold and shivery, but she did not have any vaginal bleeding.

On admission she appeared to be extremely ill, being cold, pale, restless, and complaining of severe abdominal pain, mainly right-sided. There was no distension of the abdomen, but a rounded swelling, tender to touch, was present on the right side. The lower part of the abdomen was also tender, and marked Blumbergism was evident. No dullness was detected in the chest, but the respiratory murmur was harsh and accompanied by a few coarse rales. Bimanual examination showed that the cervix was closed, and that the size of the uterus corresponded to the stage of gravidity suggested by the period of amenorrhoea—namely, fifteen weeks; in addition, there appeared to be a cystic swelling to the right of the uterus.

A provisional diagnosis of ectopic pregnancy or ovarian cyst with torsion of the pedicle was made, and, in view of the evidences of peritoneal irritation, immediate laparotomy was performed under general anaesthesia. No blood or free fluid was found in the abdominal cavity. The ovaries were healthy, and the tubes, while somewhat congested, presented no abnormality. The intestines were normal and the appendix unoccluded. Examination of the uterus, which contained no fibroids, showed marked elongation of the right cornu, and the diagnosis of angular pregnancy was established. The abdomen was closed.

The following day, November 13th, at 11 a.m., the patient had a rather prolonged rigor during which the temperature rose to 106°. The sputum, scanty and muco-purulent, was found to contain abundant pneumococci of Type IV. With the subsidence of the rigor, the temperature fell abruptly to normal and remained so. Incidentally, had serum been administered without typing the organism the satisfactory result would probably have been ascribed to that agent. Complete abortion occurred on November 14th at 2 a.m., after which the patient felt much better. Subsequent progress was uneventful, and she was dismissed well on December 2nd.

CASE II

A primigravida, aged 21, was admitted to hospital on November 13th, 1933, on account of violent, cramp-like pains in the lower abdomen, especially on the right side. The pregnancy had been uneventful until six days previously, when she had had her first experience of these violent pains. At that time her doctor had noticed that there was tenderness over the uterus, which extended to the right side. He had also noted the hardness of the uterus, and what appeared to be a purulent vaginal discharge, but there was no haemorrhage. With rest and thorough evacuation of the bowels the severe pain passed away, but the cramp-like ones persisted, culminating in the violent right-sided abdominal pain which necessitated removal to hospital. The patient mentioned that, from the onset of pregnancy, she had experienced pain radiating down the posterior aspect of the left thigh, but this did not incapacitate her in any way, and was probably unrelated to the obstetric condition.

She was afebrile on admission, but the pulse rate was increased. Inspection of the abdomen revealed a swelling lying obliquely towards the right side. Palpation confirmed this observation, and demonstrated the marked tenderness, especially over the upper pole, which occupied the right side of the abdomen below the umbilical level. On bimanual examination the elongated and tender right cornu of the uterus was made out, the patient was deemed to be about nineteen weeks pregnant, ectopic pregnancy and other abnormalities were definitely excluded, and angular pregnancy was diagnosed. Repeated examination of the urine for pus cells and organisms yielded negative results. The sedimentation rate of the erythrocytes was normal. Four days after admission the patient was seized with acute right-sided abdominal pain, which caused her to be doubled up. Temporary relief followed a large bowel movement, but the severity of the pain afterwards necessitated the administration of morphine.

The patient was allowed home on November 23th, and was kept under close supervision. Occasional bouts of right-sided abdominal pain occurred, but on the whole she remained fairly comfortable. The uterus continued to occupy its oblique position as the right-sided enlargement became progressively more marked. It was determined that, after the delivery of the child, the uterus should be manually explored in order to localize the placental site. On March 19th, 1934, she was readmitted on account of the recurrence of cramp-like abdominal pains; in addition, she complained of constant generalized pain in the abdomen and lumbar region. She was now thirty-five weeks pregnant; the uterus was lying obliquely, with the upper pole to the right, over which there was exquisite tenderness, and this part of the uterus was so tense as to suggest the presence of the foetal head.

On March 21st, at 7 a.m., the patient complained of severe abdominal pain, which increased in severity until at 10.30 a.m. she was in such agony that morphine had to be administered. The uterus at this time was uniformly tense and tender, but no contractions were observed. Definite labour pains began at 9 p.m. At 12.15 a.m. on March 22nd the cervix was found to be practically fully dilated, and the membranes were artificially ruptured. An hour later a male child, 17 inches long, and weighing 5 lb. 1 oz., was delivered with forceps. After extraction of the child, the uterus continued to lie markedly towards the right side. According to plan a hand was introduced into the uterus; the placenta was found to occupy the elongated right cornu, while the corresponding left cornu at a lower level was quite clear. Bystanders with a hand on the abdomen had no difficulty in appreciating the difference in level of the cornua, and the ease with which the observer's fingers could be felt in the left as contrasted with the right cornu was striking. The placenta measured 9 inches by 4½ inches, and had the shape of a large kidney; there was no evidence of retroplacental haematoma.

The progress of the patient was entirely satisfactory, and she was dismissed well on March 31st. Involution was progressive, but the marked elongation of the uterus to the right side, together with tenderness to the most gentle touch, remained noteworthy features for the first five days of the puerperium.

Remarks by Professor Munro Kerr

Many years ago I directed attention to the subject of angular pregnancy—namely, that particular variety of gestation in which the zygote becomes implanted in the angle or cornu of the uterus. The exact implantation site would appear to be either directly over the tubal opening, or, more probably, in the interstitial portion of the tube immediately external to that opening. The condition is quite distinct from the typical interstitial variety of ectopic pregnancy, for the ovum develops not in *substantia uteri* but towards the uterine cavity. The term "angular" has been employed by several writers in order to distinguish it from "interstitial" pregnancy on the one hand and "cornual" pregnancy on the other, as the latter term is often used to describe a pregnancy in a horn of a uterus bicornis.

In addition to the two cases described, I have seen four which were definitely proved examples of angular pregnancy, and a number not so typical but nevertheless suggestive of this specific abnormality. One of these four cases I described many years ago, but the story bears repetition, and is as follows:

I was asked by a medical friend to see his wife, as he feared she was threatened with an abortion. I had attended the lady at her two previous confinements—one seven and the other four years previously. When I visited her she gave me the history of a period missed. She also told me that ten days after the period was expected abdominal pain and haemorrhagic vaginal discharge appeared. The discharge was not great, but the pain was sometimes severe, and was more marked towards the left iliac fossa. Upon making a vaginal examination I discovered that the uterus was enlarged, and at the left cornu in the neighbourhood of the tube I could detect a small localized bulging. I told her husband of my fear that there might be an extrauterine pregnancy, and that I was chiefly alarmed because it was so close beside the uterus. My fear appeared to be fully justified when, two days later, a cast complete except at one corner was expelled. I thought I would have to open the abdomen at this stage, but my friend requested me to delay doing so. We were, however, prepared for any possible sudden call to operate; the patient was watched very carefully, and all discharges kept. Four days later a small piece of membrane, which just completed the sac that was expelled, came away in the vaginal discharge. Attached to this little piece of decidua was the ovum, which, unfortunately, I lost.

The two cases recorded above and the others I have encountered have all shown similar features: (1) pain; (2) lateral distension of the uterus in the region of the uterine cornu; and (3) tendency to abortion. The pain, as these recorded cases illustrate, may be very severe; indeed, in all the cases I have seen pain has been a pronounced feature. The reason for the pain can only be surmised. Round the tubal ostium there is a very abundant distribution of circular muscle fibres. Again, the blood supply is rich in that region, so that haemorrhages into the uterine wall or beneath the placenta are prone to occur. This is probably the explanation also of the tendency to abortion with this implantation. Of these six definite cases three terminated in abortion.

The outline of the uterine distension is characteristic: an elongated, distended lateral sacculcation of the uterus at one cornu. Furthermore, it is very tender to pressure. In the case recapitulated the distension was no greater than the size of a walnut (examined under anaesthesia). In another case—an abortion at four months, which I removed with my fingers—I was afraid that I might perforate the uterine wall. From my experience the condition most commonly first attracts attention, as in the two cases here recorded, between the twelfth and twentieth weeks of pregnancy. It is obvious that the condition very closely simulates ectopic pregnancy,

pregnancy in a rudimentary horn, a fibromyoma undergoing degeneration, an ovarian cyst with torsion of the pedicle, appendicitis with lateral flexion of the uterus, or pyelitis complicating pregnancy.

Scattered through obstetric literature are references to angular pregnancy. Paul Bar, Howard Kelly, and I directed attention to it long years ago. Few obstetricians, however, appear to recognize the condition as a specific clinical entity. Modern textbooks, even those of considerable size, make little if any reference to it. For example, the subject is not mentioned in Williams's *Obstetrics*, and is only briefly referred to in the sixth edition of DeLee's textbook. Several examples of cornual and angular pregnancy have been described in foreign journals, but British literature appears to be singularly lacking in such references. The two cases here described and most carefully investigated by myself and my staff cannot be unique experiences. As previously stated, I have already encountered four exactly similar. Many other obstetricians must have dealt with cases of a like nature; we should feel grateful if they would furnish a summary of their observations.

ACUTE EPIDURAL SPINAL ABSCESS

BY

LEONARD ABRAHAMSON, M.D., F.R.C.P.I.

HONORARY PHYSICIAN, RICHMOND, WHITWORTH, AND HARDWICKE
HOSPITALS, DUBLIN

A. A. McCONNELL, F.R.C.S.I.

HONORARY SURGEON, RICHMOND, WHITWORTH, AND HARDWICKE
HOSPITALS, DUBLIN

AND

G. R. WILSON, L.R.C.P. AND S.I.

The epidural space lies between the dura mater and the periosteum lining the bony walls of the vertebral canal. Dandy,¹ writing in 1926, deprecates the lack of anatomical description in current textbooks, and discusses the appearances of the space in a cadaver. He attaches great importance to variations in size. Absent over the cervical enlargement, and nearly so over the lumbar swelling, the epidural space becomes deepest where the spinal cord or the mass of its roots is smallest—that is, in the upper dorsal and lower lumbar sections. According to this author the space exists only on the dorsal aspect of the dura, the ventral dura being closely applied to the bones of the vertebrae and their ligaments. The experience of one of us (A. A. McC.) suggests that in the thoracic region of the cord the ventral dura is less firmly adherent than elsewhere.

Pathology

The epidural space is occupied by a loose meshwork of areolar tissue, which, by virtue of a feeble blood supply, offers a favourable site for infection. Epidural spinal abscess, known also as suppurative peripachymeningitis, and by the more generic but less accurate term "external pachymeningitis," is an uncommon but important disease. Many of the recorded cases have been discovered at necropsy, and although there is a record by Traube as long ago as 1871 the condition occupies little or no space in the textbooks.

Dandy classifies the causes into two groups:

1. Extension from a neighbouring focus of infection—namely, boils, or anthrax of the nape of the neck; extrapleural suppuration; osteomyelitis of a rib; osteomyelitis of the vertebrae.
2. Metastatic infection from a distant source.

In a third group no primary focus can be detected. The infectious agent is most often the *Staphylococcus aureus*, though the *Staphylococcus albus* and other organisms may occasionally be found.

Owing to the looseness of the dorsal epidural space the abscess almost invariably lies posterior to the cord, except where it is secondary to disease of the vertebral bodies. For the same reason spread may occur with great rapidity. In a case described by Mixer and Smithwick² the abscess extended from the fourth cervical vertebra to the sacrum. These authors emphasize the danger of secondary meningitis in those cases in which a ventral abscess was associated with vertebral osteomyelitis: whilst present in two cases of ventral abscess it was absent in eight cases of dorsal abscess. Insistence is laid on the importance of early recognition and drainage of epidural abscess secondary to infection of vertebrae.

Compression of the spinal cord inevitably follows abscess formation, but the severity of the myelitis is out of all proportion to the amount of compression.

This is well borne out by reports of Hassin,³ and of Ayer and Viets.⁴ When examined at necropsy the cords were not badly compressed, but in section showed marked softening. To explain this finding Hassin suggests that substances from the epidural space may travel along the spinal roots. Allen and Kahn⁵ attribute cord softening to interference with blood supply.

Diagnosis

The diagnosis of epidural abscess may offer considerable difficulty. A survey of the literature reveals the fact that in most of the cases the diagnosis was either missed or was made too late for successful surgical intervention.

Dandy found that, of twenty-five collected cases, in only four subjected to operation was a diagnosis even suspected before the necropsy findings, and with the exception of one case there was no evidence to indicate that the nature of the lesion was more than roughly guessed. On the other hand, Bunch and Madden,⁶ in a later series of nineteen cases, including two of their own, report operative intervention in sixteen. In some of the reported cases a diagnosis was made of meningitis, in others of myelitis. Allen and Kahn offer as differential diagnosis: poliomyelitis, leptomeningitis, tumour of the cord, and abscess of the cord.

From the clinical aspect pain is the earliest and the most important symptom. It is severe and persistent, and is felt not only in the back, but along the distribution of nerve-roots, irradiating at times to the lower limbs. There is often a latent period, even up to several days, before motor symptoms appear. On the other hand, but rarely, paralysis may occur and reach completeness after some hours. Complaint may be made of stiffness and tenderness in the back and neck, with pain on movement. With the appearance of paralysis there is implication of the sphincters, with difficulty of micturition and defaecation. Disturbance of sensation may appear, and extend upwards. General septic symptoms vary in severity.

Röntgenological examination is not helpful, except in cases in which osteomyelitis of vertebrae has been present for some time. Lumbar puncture may show pus from the epidural abscess, or evidence of compression in the fluid from the subarachnoid space, and these help materially in diagnosis. That it is not an altogether innocuous procedure is shown by records of two cases in which it was followed by septic infection of the meninges. Careful technique should help to minimise, if not to eliminate, the risk. In cases in which neurological findings are inconclusive in regard to localization, recourse should be had to radiography following intracisternal introduction of lipiodol.

The mortality of epidural abscess in the untreated is, as far as published results go, 100 per cent. Of sixty

cases collected by us from the literature, operation was performed in thirty. Of these, twenty survived. In many cases recovery was incomplete.

Case Report

The patient, a schoolgirl aged 14 years, previously healthy, complained of vague pain in the back on July 23th, 1933. She appeared rather seedy and listless, but went about as usual. The pain increased steadily until the fifth day, when one of us (G. R. W.) was called in. The pain was described as severe, situated over both sacro-iliac joints, and radiating round the body at the level of the iliac crests. The most striking thing was the child's attitude. She was standing up and was suspending herself from the mother's shoulders. She said that this was the only position which gave relief. There was no limitation of movement, except that flexion of the neck hurt the lower part of the back. There was no tenderness over spine or pelvis. The tongue was furred. Temperature 99° F., pulse 104.

That night she complained of pain in the legs as well as in the back. The pain steadily increased, and was hardly modified by various drugs, including morphine. On the following day pain was persistent, eased somewhat by sitting in a chair. One of us (L. A.), called in consultation, suggested a diagnosis of osteomyelitis or periostitis of the spine. The next day there was complaint of pins and needles, mainly in the left leg. The day after this a second consultation was held. The patient was sitting up, and on getting back to bed for examination complained of a severe spasm of abdominal pain. Simultaneously, the lower abdominal muscles were seen to stiffen. Tendon reflexes were exaggerated in the lower limbs. Constipation was marked. A tentative diagnosis was made of epidural spinal abscess, probably secondary to an osteomyelitis. Arrangements were made for removal to a nursing home for full investigation. On the following morning, nine days after the onset of pain; numbness developed in both legs, with inability to move the right leg. Retention of urine was noted. The patient became very restless and occasionally delirious. Temperature 100.4° F., pulse 130, respirations 32. X-ray examination of the spine was negative, and, surgical treatment being considered advisable, one of us (A. A. McC.) was called in.

At this time—the early afternoon of August 5th—the patient complained of agonizing pain in her back and round her body, just below the umbilicus. She looked anxious; breathing was rapid and shallow. Tongue coated; colour good. She had free movement of head and neck, though flexion of the latter produced pain referred to the lumbar region. Abdominal reflexes were absent, with the exception of a slight upper left reflex. Slight tenderness was felt in lower dorsal and lumbar regions, described as "different from higher up." Left leg flaccid; could move great toe, flex ankle, and make an attempt to lift the leg. Plantar stimulation caused withdrawal and marked contraction of the hamstrings; no Babinski's sign. Knee-jerk and ankle-jerk absent. Right leg powerless and flaccid; there was just the slightest movement of the great toe. Stimulation of the sole produced the same response as on the left side. In both legs the sense of position was present. Sensation was normal except over the upper part of Scarpa's triangle on the left side, which was anaesthetic to cotton-wool and to pin-prick. Anal reflex present. Kernig's sign negative. The girdle pain, just below the level of the umbilicus, suggested a localization as high as the tenth dorsal segment of the cord, as did also the presence of an upper abdominal reflex, with absence of the lower reflexes. The anaesthesia in the upper part of Scarpa's triangle suggested involvement of the second lumbar nerve root.

Operation.—Lumbar puncture was done in the recumbent position, with local anaesthesia. When the spine was opened the patient complained of pain down both legs and all over them; no tension of fluid (50 mm. water); no change on jugular compression; fluid slightly yellow. As we could not place absolute reliance on the patient's localization of the girdle pain and as the upper left plantar reflex was so slight, lipiodol was injected by sub-arachnoid puncture. Asepsis was maintained and anaesthesia completed with ether. Patient

grams, taken by Dr. McDonough, showed that the lipiodol was arrested at the level of the eighth dorsal vertebra. This confirmed the clinical localization, and the laminae of the eighth, ninth, and tenth dorsal vertebrae were therefore removed. Mr. A. Chance assisted. As soon as the ligamentum subflava was opened a gush of thick pus welled up, chiefly from the left side. When the dura pulsated freely the wound was drained, and partially closed. A posterior plaster case was applied. A pure culture of *Staphylococcus aureus* was grown from the pus, and a vaccine prepared.

Subsequent History.—On the day following the operation there was complete flaccid paraplegia, with total absence of response to all forms of stimulation. Sensation was unimpaired except over Scarpa's triangle on the left side. On the next day voluntary movement of the left great toe returned; stimulation of the sole produced slight movements of the toes. Painful flexor spasms occurred, chiefly in the left leg, and recurred periodically for seventeen days. Eleven days after the operation good movement was noted in the left leg at all joints. Knee-jerk and ankle-jerk present; slight ankle-clonus. Normal plantar response. No movement in right leg except slight movement of great toe. Knee-jerk and ankle-jerk exaggerated; ankle-clonus. No plantar response. Light touch present over both limbs. Sense of position of toes accurate in left foot, usually accurate in right foot. Sixteen days after the operation voluntary movement appeared in right leg, and improved from day to day, though there was no power yet to flex the hip or knee. Left leg movements were fairly good, but the patient made no attempt to move either leg unless told to do so. The temperature, which had oscillated at first between 100° and 103° F., gradually subsided in the third week, and the pulse rate, at first 120 to 130, descended to normal. The bladder condition remained unchanged. The wound looked clean, but discharged freely. The general condition improved, and toxic symptoms disappeared.

On September 3rd the patient began to pass urine at will. On October 1st the power of walking began to return. The gait was spastic. A month later she was able to walk about a quarter of a mile; gait slightly spastic; tendon-jerks slightly increased; transitory ankle-clonus. Shortly after this slight girdle pain returned at the level of the lower chest, disappearing in the erect position. This passed off following the extrusion of a spicule of bone from the sinus. Further progress was uneventful, and at the end of April, 1934, the patient is normal in every way.

Summary

We present a case of epidural spinal abscess in which recovery followed a surgical operation. The interesting features of the case were as follows:

1. The intensity of the pain, which at its height defied all drugs, including morphine.
2. The radiation of pain round the trunk.
3. The relief afforded by the adoption of an attitude which relaxed the spine.
4. The evidence of anterior root irritation, as shown by sudden stiffening of abdominal muscles.
5. The almost complete absence of anaesthesia.
6. The latent period of eight to nine days which preceded paralysis.
7. The fact that adequate drainage was secured by the removal of three laminae. Operations on a much more extensive scale are described in the literature.

Our experience with this case suggests that removal of a large number of laminae is unnecessary. This is of obvious importance in regard to operative risk.

REFERENCES

- 1 Dandy, W.: "Pachymeningitis Externa," *Arch. of Surg.*, 1926, xlii, 477.
- 2 Mixer and Smithwick: *New England Journ. Med.*, 1932, ccvii, 126.
- 3 Hassin: *Arch. Neurol. and Psychol.*, 1928, xx, 110.
- 4 Ayer and Viets: *Boston Med. and Surg. Journ.*, 1916, clxxv, 864.
- 5 Allen and Kahn: *Journ. Amer. Med. Assoc.*, 1932, xcvi, 877.
- 6 Bunch and Madden: *Trans. Southern Surg. Assoc.*, 1933, xiv, 535.

TETANUS IN TOY-PISTOL WOUNDS

BY

WILLIAM BROWN, M.D.

ASSISTANT SURGEON TO OUT-PATIENTS, GLASGOW ROYAL INFIRMARY

The prophylactic use of antitetanic serum has proved so useful in cases where infection is suspected that the following case, illustrating a rare mode of infection, is worthy of notice so that early treatment on prophylactic lines can be instituted and a probable catastrophe prevented.

Case Record

An otherwise healthy boy of 8 was admitted to the Glasgow Royal Infirmary on December 9th, 1933, suffering from tetanus. The following history was obtained.

On December 2nd, 1933, he was playing with a toy pistol and some blank cartridges, for which he had exchanged a magic lantern with another boy. The pistol went off unexpectedly, and he sustained a wound of his left index finger, for which he was treated at home by his mother. On December 9th, seven days later, he developed stiffness of his jaws, and the family doctor was called in. He diagnosed tetanus, and sent him into the Royal Infirmary at once.

On admission there was well-marked trismus, associated with tenseness of the neck and back. There was also slight head retraction. He could open his mouth half an inch. He had slight convulsions, associated with some degree of opisthotonos. The left index finger was seen to have a septic wound at the base.

The boy was put into a side room with the blinds drawn and antitetanic serum administered at once. His condition gradually became worse, and on the third day the left index finger was amputated. He died quite suddenly the following day.

Serum Treatment.—On admission he was given 40,000 units of antitetanic serum intramuscularly and 20,000 units intrathecally. Next day he was given 120,000 units intramuscularly and 80,000 units intrathecally. On December 11th he had 10,000 units intramuscularly, and on the 12th 12,000 units intramuscularly and 40,000 units intrathecally. On the 13th he was given 80,000 units intrathecally.

The cerebro-spinal fluid showed nothing on culture or smear. No cultures were taken from the wound on the finger either before or after amputation.

In an endeavour to discover the source of infection I obtained from the procurator-fiscal one of the two remaining cartridges. The police were unable to trace where the cartridges were bought. However, I managed to buy some of a similar make in a shop. The original cartridge and some of the bought ones I gave to Dr. Robert Cruickshank, bacteriologist to the Glasgow Royal Infirmary. Others I sent to Dr. Clark Trotter, medical officer of health for Islington, at his own request, and he had them examined by Professor James McIntosh, director of the Bland-Sutton Institute, Middlesex Hospital. Professor McIntosh reports as follows:

"The wads were made of a rough type of paper. The cultures grew staphylococci, streptococci, coliform bacilli, and diphtheroid bacilli. No *Bacilli tetani* grew."

Dr. Cruickshank reports as follows:

"None of the bullets examined bacteriologically gave a growth of *B. tetani* either by cultural methods or by pathogenicity tests, nor were there organisms of an associated nature, such as *B. sporogenes*, which would have suggested the possible presence of *B. tetani*. The organisms recovered were aerobic and spore-bearing bacteria such as might be found in dust and in the atmosphere. On physical examination of the cartridges there was no evidence of any material—for example, horse-hair felt—likely to harbour *B. tetani*."

Tetanus infection from blank cartridge wounds has not received much attention in this country, although it has been known for some time in the United States, where

it was common following the celebrations of Independence Day on July 4th. In America,¹ in 1903, despite official warnings, over 400 patients died from tetanus due to this cause alone. The incubation period was short and the disease very virulent. In the majority of cases the wounds were in the hands. Recommendations were made regarding the sale of toy pistols and blank cartridges and the giving of antitetanic serum in all wounds of this nature. This reduced the mortality to three in the 1914 Independence Day celebrations.

Miss Smith² reported four cases with three deaths, occurring in London in 1932. The wadding of the blank cartridges was examined for *B. tetani*, but none were found. However, other anaerobes were isolated, particularly *B. sporogenes*. She points out that this does not exclude *B. tetani*, as it is difficult to isolate *B. tetani* from mixed company. In America, following the 1903 cases, a large number of blank cartridges were examined, but in no case was *B. tetani* found, although one culture, inoculated into rats, caused death from convulsions. Other instances of death from tetanus associated with toy-pistol wounds were reported by Stokes,³ Schofield,⁴ and Clark Trotter.^{5,6} In Dr. Clark Trotter's case the cartridges were examined by Professor McIntosh, and *B. tetani* was found. It was observed then that only in those cartridges with a wad containing hair felt was the organism obtained. Dr. Clark Trotter remarks that thorough sterilization, before being used as a wad, is the only certain way of preventing these accidents.

There is, of course, no direct evidence that the tetanus infection in this case was derived from the cartridge, but the frequency of tetanus after wounds due to the use of toy pistols and blank cartridges suggests that either the infecting organisms were already present in the cartridge or that the type of wound, associated with mild sepsis, may predispose to tetanus infection. The rarity of tetanus seen at the out-patient department of a large hospital, such as the Glasgow Royal Infirmary, which deals with a very large number of street accidents, would suggest that either of these two reasons is correct. It is important that the general public and the medical profession should be aware of this possible danger from toy-pistol wounds, so that early treatment can be given, as, once the disease is established, the prognosis is well-nigh hopeless.

I am indebted to Mr. Dunbar of the Glasgow Royal Infirmary for allowing me to publish this case, and to Professor McIntosh and Dr. Cruickshank for the bacteriological examinations, and also to Dr. Clark Trotter for sending me a copy of his annual report.

REFERENCES

- ¹ Dolley, D. H.: *Journ. Amer. Med. Assoc.*, 1905, xlv, 496.
- ² Smith, Gwendoline: *Lancet*, 1932, i, 1201.
- ³ Stokes: *Times*, November 16th, 1933.
- ⁴ Schofield: *British Medical Journal*, 1933, ii, 1182.
- ⁵ *Ibid.*, 1933, ii, 985.
- ⁶ Trotter, G. Clark: Annual Report of the Metropolitan Borough of Islington, 1932, pp. 43 and 44.
- ⁷ *Journ. Amer. Med. Assoc.*, 1923, xli, 547.

THE TREATMENT OF PNEUMOCOCCAL EMPYEMA WITH BILE SALTS

BY

B. R. SWORN, F.R.C.S.

HONORARY ASSISTANT SURGEON, STAFFORDSHIRE GENERAL INFIRMARY
AND

T. V. COOPER, M.B., B.S.

ASSISTANT BACTERIOLOGIST, STAFFORDSHIRE COUNTY COUNCIL

The lysis of pneumococci by bile was noted by Neufeld¹ over thirty years ago, and Levy² in 1907 proposed its use as a differential test between pneumococci and streptococci of the *viridans* group. Many workers have sought for a chemotherapeutic agent in the treatment of pneumococcal infections—notably Lamar,³ Morgenroth and Levy,⁴ and Felton.⁵ Cocchi⁶ in Italy and Thomson⁷ in this country have described the treatment of pneumococcal empyema by aspiration of the pus followed by the injection of a solution of sodium taurocholate. This method appeared to offer so many advantages that we decided to try it, and in our first cases we used the 20 per cent. solution of sodium taurocholate recommended by Cocchi.

It has been customary for some years in this laboratory to add 0.1 c.cm. of a 10 per cent. solution of sodium desoxycholate to 5 c.cm. of broth culture (brought to pH 7.8) as a test for pneumococci. Lysis should occur within five minutes. This modification of the classical test was made following the suggestion of Mair,⁸ and laboratory experience of the varying potency of individual samples of commercial sodium taurocholate. In addition, there is the advantage of using a substance which is chemically pure. We accordingly decided to try this salt clinically.

Before doing this we made *in vitro* experiments to compare the lytic potency of the sodium taurocholate in use with that of sodium desoxycholate. A thirty-hour broth culture of the strain of Type I pneumococci, recovered from one of the cases undergoing treatment,

was used. Before adding the substances under test the broth reaction was adjusted to pH 7.8. It was found that whereas 0.2 gram of sodium taurocholate (1 c.cm. of a 20 per cent. solution) was required to produce lysis in 5 c.cm. of the broth culture, 0.0125 gram (0.25 c.cm. of a 5 per cent. solution) of sodium desoxycholate achieved the same result—that is, the sodium desoxycholate is sixteen times more potent.

We endeavoured to assess the toxicity of the desoxycholate by animal experiment. Three 250-gram guinea-pigs were taken. The first received 1 c.cm. of a 10 per cent. solution intraperitoneally, and death occurred in twelve hours. The post-mortem revealed intestinal necrosis with haemolysis. The second received 1 c.cm. of a 2.5 per cent. solution intraperitoneally with no observable ill effect, while the third received 1 c.cm. of a 10 per cent. solution intramuscularly into the thigh and survived. We realized also that absorption might produce severe haemolysis, for *in vitro* experiments showed that it is over a hundred times more haemolytic for washed sheep's red corpuscles (fragility 0.65-0.5) than sodium taurocholate. For these reasons we have not injected sodium desoxycholate into an empyema until the presence of frank pus shows that a definite abscess cavity has formed.

Method of Use and Results

The technique of the treatment of empyemata by the injection method is simple. The presence of pneumococci in the pus must first be confirmed, since it is only on these organisms that lysis takes place. The abscess cavity is then aspirated again, and as much pus as possible drawn off. With the needle still in position the solution of sodium desoxycholate is injected, and we have used from 5 to 20 c.cm. of a 5 per cent. solution of the salt.

The best results seem to be obtained by repeating the aspiration and injection daily, or every other day, in the early stages, but the length of time that can be

allowed to elapse can be gauged by the general condition of the patient, the amount of pus withdrawn, and the results of microscopical examination and culture of the pus. We have found radiograms of the chest of considerable assistance in estimating the quantity of fluid present. It is essential that strict surgical asepsis must be maintained, as it is very easy to introduce secondary organisms where frequent aspiration is being undertaken, and if this occurs it will, of course, necessitate the institution of continuous drainage. The use of a trocar and cannula has been advocated for puncture of the chest wall in order to prevent the carriage of a punched-out portion of skin by an exploring needle, but we have not found this necessary. In a favourable case the temperature rapidly falls, the general condition of the patient improves, and the pus becomes thinner. In some cases the salt tends to jellyfy, particularly where relatively large quantities of the solution are injected into a small quantity of pus, but we have not found that this has interfered materially with aspiration.

Cocchi has suggested that the bile salts, besides causing lysis of the organisms, may have some action in producing liquefaction of the fibrin, which is usually formed in such large amounts in the pleural cavity. Certainly we have never found the needle to block during the aspiration, and at the end of treatment the clinical signs and clearness of the chest to x rays indicate a small degree of pleural thickening. The latter is, however, probably due partly to the avoidance of secondary infection and the absence of irritation caused by a drainage tube. Examination of the pus during the course of treatment showed characteristic changes. At the commencement microscopy revealed 95 per cent. polymorphonuclear pus, with the field crowded with diplococci. The first change noted was a marked reduction in the number of organisms and disintegration of the cellular constituents. Finally, the aspirated material consisted of amorphous debris with no intact organisms, but revealing occasional swollen cocci on prolonged search. Under these circumstances cultures were negative.

Although we have only had the opportunity of employing sodium desoxycholate in two cases it seems to offer both practical and theoretical advantages over sodium taurocholate, and in view of this we feel justified in bringing it forward in the hope that it may be subjected to a more extended clinical trial than we are able to give.

Case Records

Case 1.—M. E., aged 4½. Admitted January 9th, 1934, with signs of a left-sided empyema following pneumonia. Temperature 101–102° F., pulse 130–146. Chest aspirated, and 80 c.cm. of purulent fluid withdrawn. Culture showed pneumococci Type I. On January 12th 45 c.cm. of thick pus removed; 5 c.cm. of 20 per cent. sodium taurocholate injected. Aspiration and injection repeated daily, and by the 17th the temperature was normal, pulse 80–100, and the pus thin and sterile on culture. The frequency of aspiration was reduced. On February 2nd 200 c.cm. was withdrawn, and culture showed numerous pneumococci. Two days later, although the general condition remained satisfactory, the temperature began to rise, and ranged from 99° to 100° in the evenings, and the pulse varied between 100 and 120. It was about this time that we started a fresh batch of taurocholate, but the exact date is uncertain. This taurocholate was tested against cultures of the organism, and gave apparently satisfactory results. The boy continued to have an evening rise of temperature, and rather rapid pulse throughout the month of February, but his general condition remained surprisingly good. The pus withdrawn was rather thicker again, and pneumococci were usually grown on culture. On March 3rd we decided to try injections of sodium desoxycholate, and he was given 10 c.cm. of a 5 per cent. solution. The temperature was normal on the evening of the 5th (two days later), and did not again rise above

the line. The pulse rate fell, to reach normal a few days later. The amount of fluid on aspiration rapidly decreased, and was sterile on culture. Treatment was stopped on March 15th, but a week later a few cubic centimetres of serous fluid were withdrawn. He was discharged on March 17th, and a radiogram at this time showed a practically clear left base. He was seen after a month's interval, and had remained perfectly fit.

Case 2.—H. T., aged 15. Admitted March 18th, 1934, three weeks after the onset of pneumonia, with signs of right-sided empyema. Very cyanosed and toxic. Temperature ranging between 101° and 103° and pulse 120–130. On aspiration 23 oz. of pus were removed. Culture showed pure growth of pneumococci Type I. On March 19th 12 oz. of pus were removed and 10 c.cm. of sodium desoxycholate injected. The aspiration and injection was repeated every second day, and although the amount of pus withdrawn fell in about a week to 50–60 c.cm., he had all the signs of a solid right lung, and the temperature persisted between 99° and 100°. There had been complete absence of sputum during the course of the pneumonia, but he now began to bring up fairly large quantities of thick, muco-purulent sputum, which contained abundant pneumococci. We decided the condition was one of unresolved pneumonia, and that the pleural cavity was being continually reinfected from the underlying lung. In view of this, and as his general condition was much improved, we attempted to keep the empyema under control by repeating the aspiration and injection every few days, and the amount of pus drawn off varied from 10 to 60 c.cm. Although the direct smear showed a greatly reduced number of organisms the culture remained positive. He was given the usual medical treatment, and the signs in the right lung cleared very slowly. Coincident with this the sputum decreased and the temperature returned to normal. By April 26th the right lung seemed sufficiently normal to suggest that the empyema might remain sterile. The cavity was aspirated, and 15 c.cm. of 5 per cent. desoxycholate injected daily for four days. The temperature remained normal, and the cultures became sterile. On the last aspiration, on the 29th, only a few cubic centimetres of fluid were withdrawn.

In view of the fact that simple aspiration alone will sometimes cure a pneumococcal empyema in children it seems worth while to record the case of an adult treated by aspiration and injection of bile salts.

Case 3.—A. P., aged 21. Admitted January 15th, 1934, with signs of left-sided empyema following pneumonia. General condition very poor. Temperature 101°, pulse 120. On aspiration 200 c.cm. of straw-coloured fluid was removed. Abundant organisms seen on smears. Culture: pneumococci Type I. January 20th: On aspiration 350 c.cm. of pus was obtained, and 10 c.cm. of 20 per cent. sodium taurocholate injected. January 22nd: jelly-like pus was aspirated (30 c.cm.), and 10 c.cm. of taurocholate injected. The temperature was now normal, and smears of the pus showed no organisms, although a few pneumococci were grown. January 23rd: brownish fluid was aspirated (250 c.cm.), and 10 c.cm. of taurocholate injected. Temperature normal and cultures sterile. January 25th: 100 c.cm. of blood-stained fluid was withdrawn. No injection was given. Cultures of this fluid were sterile. The patient was aspirated on two subsequent occasions, and a small quantity of sterile fluid was withdrawn. Radiograms at this time showed "unexpanded lung left base." He was discharged on February 11th, and seen again four weeks later, when he was quite well, and a radiogram showed the left lung practically clear.

We wish to thank Dr. John Menton, county bacteriologist, for his advice and assistance.

REFERENCES

- Neufeld, F.: *Zeit. Hyg. u. Infektionskr.*, xxxiv, 454.
- Levy, E.: *Virchows Arch.*, clxxxvii, 327.
- Lamar, R. V.: *Journ. Exper. Med.*, xliii, 1; *ibid.*, xiv, 256; *ibid.*, xvi, 581.
- Morgenroth, J., and Levy, R.: *Berl. klin. Woch.*, xlviii, 1560.
- Felton, L. D.: *Journ. Infect. Dis.*, xxxvii, 199.
- Cocchi, L. A.: *La Pediatria*, clx, 1162.
- Thomson: *Proc. Roy. Soc. Med.*, xxvi, 1538.
- Mair, W.: *Biochem. Journ.*, xi, 11; *System of Bacteriology*, Medical Research Council, vol. ii, p. 168.

Clinical Memoranda

VOLVULUS OF THE CAECUM COMPLICATING LABOUR

This case is interesting owing to its rarity and the difficulties to which it gave rise in diagnosis.

A primipara, aged 23, about thirty-eight weeks pregnant, and with slight pelvic contraction, was admitted to the Mothers' Hospital, Clapton, at 11 p.m. on November 14th, 1933; suffering from abdominal pains, which she thought were the beginning of labour. The pain was most marked under the right costal margin, and was sometimes colicky in nature and sometimes continuous. Uterine contractions could be felt, and she was thought to be in labour. The note "pains good" appears on her chart for that night.

Owing to the unusual nature of the pain she was seen next morning by the senior honorary obstetric surgeon, who did not consider there was any immediate indication for interfering with the course of labour, but advised that she should be carefully watched. The condition remained more or less the same until the following morning, but the abdomen was noticed to be getting more distended. Vomiting was present, but not to a greater extent than may occur during uncomplicated labour, and the vomited material was a clear fluid. The bowels did not act, and there was no result to an enema.

I saw the patient for the first time at 1 p.m. on November 16th, and I thought then that her condition suggested a pulmonary lesion, or possibly an obscure toxæmia, rather than an acute abdomen. She had been dyspnoeic since the early morning, and looked drowsy and somewhat cyanosed. Her temperature was 100°, her pulse 120, and her respirations 28. She resented abdominal examination, but there was no obvious resistance, and there was a conspicuous lack of tenderness on pelvic examination. The head was high and the cervix undilated. The patient was seen at 5 p.m. by the consulting physician, who considered the signs in the chest were due to collapse of the lung from increased intra-abdominal pressure rather than to a primary pulmonary lesion, and advised laparotomy. It was also felt that a Caesarean section would be the safest method of delivery in view of the patient's condition.

I operated at 9 p.m., there having been no result to further enema. A little turbid fluid escaped on opening the abdomen, but it was impossible to trace its origin until the uterus had been emptied by Caesarean section. With the hope of lessening the risk of infection here, the uterus was everted and painted with violet-green before being incised, and was swabbed out with it before being sutured. A volvulus of the caecum was found, the caecum being enormously distended. Its walls were deep purple in parts, and showed areas of superficial necrosis where the peritoneal coat had split. A Meckel's diverticulum was present, looking like a tightly blown-up finger of a rubber glove. The volvulus was untwisted without difficulty, and any doubtful areas of the caecum were oversewn. The abdomen was closed without drainage, a caecostomy being performed.

The patient made very satisfactory progress for the first five or six days, although she had a rapid pulse. After this, however, her temperature became irregular, and finally she developed a cystic swelling on the left side of the abdomen. On December 8th I operated again, and drained a large pelvic abscess, well shut off by adhesions, the pus lying partly in front of and partly behind the uterus. The left tube and ovary were more or less disintegrated, the greater part of the tube having sloughed off the uterus. The right tube and ovary were inflamed but seemed recoverable, and were left *in situ*. The patient ultimately did well, and was discharged cured with a healthy baby on February 2nd, 1934. The caecostomy wound had still not healed, owing to the development of a large polypus, which I shall remove later if necessary. Her convalescence was delayed by a *B. coli* infection of the urinary tract, and also by the original wound breaking down.

Since writing in the above report I have had the patient back in hospital to excise and close the colostomy wound. The polyp proved to be a polypoid diverticulum of the right fallopian tube (confirmed by microscopical examination).

The fimbriated end of the tube was closed. The ovary had regained its normal appearance. I removed the polyp and did a salpingostomy, and an inflation test three weeks later showed that the opening had remained patent.

This case illustrates the difficulty that may be met in diagnosing an acute abdominal condition when it occurs during labour (it is well known that the symptoms of acute appendicitis occurring then may be almost completely masked), and it bears out the maxim that where there is any reason to suspect such a condition then, or during pregnancy or the puerperium, it is much safer to do a laparotomy, even should the operation prove to be unnecessary. By far the most striking symptom in this case was the intense dyspnoea, which finally became so marked that the patient could hardly bear to be moved.

MARGARET M. BASDEN, M.D.,
F.R.C.S., F.C.O.G.

Obstetric Surgeon, Mothers' Hospital, Clapton.

CARCINOMA OF THE APPENDIX

This case is published as a plea for the routine examination of every appendix removed, whether it looks diseased or not.

A single woman of 35 years, well nourished, was admitted on account of abdominal pain and vomiting; the temperature and pulse were normal, the abdomen resistant in the right iliac fossa but not rigid; there was a history of chronic constipation.

A laparotomy was performed and the abdominal viscera examined and found to be normal; a perfectly normal-looking appendix was removed. After operation the appendix was slit up along the lumen, and this was possible except for the last quarter of an inch at the tip; the section was completed from the outside.



The above diagram shows the appendix in sagittal section; the growth at the distal end did not interfere with the contour of the appendix, and felt rather like a faecolith; on cutting, there was a gritty sensation on contact with the scalpel. The patient made an uninterrupted recovery.

The microscopical report was as follows: "The section shows a carcinoma which is infiltrating the muscle and sub-mucous coats of the appendix. There is some alveolar formation, but no lumina can be seen. In other places the cells are arranged in large masses. Most of the cells are tending to a columnar type, and are producing globules of mucus. This growth probably arose from appendicular mucous membrane, and does not appear to be very malignant."

Two months later the patient again presented herself, complaining of constipation, swelling of the abdomen, and vomiting, rather suggestive of obstruction. Immediate laparotomy was carried out; it was found that a knuckle of small intestine had gone into a retroperitoneal fossa behind the caecum. This was released, and she made a good recovery. At this operation a careful survey of the abdominal cavity was made; there were no enlarged glands, and no secondaries in the liver or on the peritoneum. She has been seen at intervals during the past six months, and apart from her habitual constipation remains well; her abdomen is flat and soft.

The point debated in regard to after-treatment was: should the patient have a course of deep x-ray therapy? This was decided against, chiefly because the patient might become aware of the nature of her complaint and give it an undue significance, and because of the good prognosis in similar cases.

ROBERT RUTHERFORD, F.R.C.S.,

National Surgical Institute, 111 Finsbury
Square, E.C.2, London.

HEMLOCK, Uxbridge.

Reviews

FASCICULUS CESTRIENSIS

From time to time, outside the ranks of consulting practitioners, there arise in this country men who by their intrinsic merit and character become in the course of years masters of medicine to their colleagues, and stand in the position of father in a professional sense to the doctors of a wide area. In the publication of *Fasciculus Cestriensis*¹ the doctors of the county of Cheshire, through the Panel Committee, seek to pay tribute to such a man in the person of Sir William Hodgson, who having just celebrated his eightieth birthday still presides as chairman over the Panel Committee and County Council of Cheshire.

In its manner and content this book adopts a new and original method. The first portion is concerned with a biographical sketch of Sir William Hodgson's public and professional life. After a childhood of by no means uneventful changes, we follow his student career at St. Thomas's Hospital, and Glasgow, Edinburgh, and Dublin, under the influence of men such as Barnes and Lister, to the field of general practice, which to him seemed to open the widest door to the many-sided interests of his knowledge and abilities. Soon after starting practice in Crewe we find him deeply immersed in local political and industrial problems. These controversies gave early proof of his powers as an organizer and fighter, and introduced a new force and spirit both in the council chamber and in the big industrial organizations of the district.

The establishment of county councils in 1889 and his election as member for Crewe widened his sphere of usefulness in public affairs and opened fresh fields for the forceful pursuit of his ideals. Mayor of Crewe in 1892, and later chairman of the Licensing Justices, no side of public life failed to feel his influence and profit by his wide knowledge of human affairs. As champion of the local profession in the bitter controversy associated with the establishment of national health insurance he set the seal on his popularity with the doctors of the county. In recognition of his long and arduous public services he was knighted in 1920, and seven years later the Freedom of Crewe was conferred upon him on the occasion of the jubilee of the incorporation of the borough.

Such is a brief sketch of the biography here set out, which must leave two impressions in particular on the minds of those who read the full narrative. First, the wonder that one man, none too robust in health, should find time to accomplish so much in a lifetime. To establish and maintain a large practice, to take part in sport and recreation in addition to this large share in public life, might well seem impossible to most men. Here is a lesson in the value of time, and one more example of the truth of the saying that it is the busy man who has time to do things. The other impression is a reminder that in all the complicated organization of public affairs, with its committees, councils, and the like, we must look to the individual to supply the driving force. However big the machine the man with certain qualities will never fail to make his influence felt.

It is in the second portion of this book that a new feature is presented. There is added a sheaf of clinical memoranda compiled by fifty and more Cheshire doctors. These are intended to provide a record of the state of medicine in the county at the present time, a state which Sir William has done so much to foster. The

monographs vary in length and quality from a full article on a given subject based on specialist study to the merest clinical note, and all are readable.

The whole book is a striking local tribute to an outstanding member of the profession. It will claim attention outside the county of Cheshire, and we congratulate those responsible for its production.

ABDOMINAL DIAGNOSIS

Les Diagnostics Chirurgicaux au Lit du Malade,² by M. BARTHÉLEMY, deals entirely with problems of abdominal diagnosis, discussing them purely from a practical standpoint. It is intended for advanced students, and especially for those who are already engaged in practice. It is illustrated by descriptions of cases which have occurred in the author's practice, and, indeed, it closely resembles the running commentary which a surgeon is accustomed to give when taking his students round the hospital wards. It commences with a discussion on abdominal wounds and injuries, followed by some considerations regarding hernia. The complications of gastric ulcer, haemorrhage, perforation, and subphrenic abscess are discussed in very brief terms, and a few more pages are given to stenosis of the pylorus. Affections of the biliary passages and the pancreas are discussed at somewhat greater length, as are also the clinical forms of appendicitis. Chapters following on cancer of the colon and affections of the rectum complete the first part of the work. The whole of the second part is devoted to gynaecology, so that this subject is dealt with in far greater detail than is general surgery. The fact that nearly a quarter of the text is devoted to affections of the uterus indicates very clearly the predilection of the author.

An attractive feature of the book is the series of rough sketches by which it is illustrated. Although very rough, and in some cases even crude, they indicate most clearly the intention of the author, and are probably of greater practical value than more carefully executed drawings. We can imagine that the book will be of real value to many surgeons who are working on their own away from the larger centres, and especially to those who have to deal with the more pressing emergencies of gynaecology.

SEX TEACHING

A small book by THEODORE F. TUCKER and MURIEL POUT, entitled *Awkward Questions of Childhood*,³ will be found a help to many parents and teachers. The experience of the authors, as evidenced by this and a previous book on *Sex Education in Schools*, has mainly been with elementary school children; and this experience, together with a considerable period of experimental talks and teaching, entitles what they say to be received with respect and to be regarded as having some authority, as founded upon a practical basis and designed to meet real requirements. The book consists of an introductory chapter on "Some Principles of Sex Education," a number of answers to specific questions which are commonly asked by children of various ages, and two supplementary chapters dealing respectively with the subjects of masturbation and adolescent friendships. Each of the answers suggested in the main portion of the book is followed by a section giving to parents and teachers some reasons for the answers recommended, together with additional information

¹ *Les Diagnostics Chirurgicaux au Lit du Malade*. Par M. Barthélemy. Paris: N. Maloine. 1933. (Pp. 306; 101 figures. 45 fr.)

² *Awkward Questions of Childhood. A Practical Handbook on Sex Education for Parents and Teachers*. By Theodore F. Tucker and Muriel Pout, B.Sc. London: Gerald Howe, Ltd. 1934. (Pp. 162. 3s. 6d. net.)

³ *Fasciculus Cestriensis in Honour of Sir William Hodgson*. Issued on the occasion of his eightieth birthday, May 13th, 1934. Copies will be on sale at 15s.

relevant thereto, such as may enable them to appreciate more fully the nature of those answers, and perhaps help them also to meet any supplementary questions. It is recognized, of course, that not every question will be asked by every child; indeed, it is probable that some of them are asked by very few children. The authors, however, give a place not only to the universal "Where do babies come from?" but to the occasional "What is birth control?" or "What are venereal diseases?" The answers set out are for the most part wise and sufficient. Parents and teachers will be advantaged, not necessarily by adopting them, but at least by considering them. There is some tendency to prolixity and undue repetition, especially in the introductory chapter and in a few of the sections for those who give the answers. And it may be doubted whether there is any great value in the two answers which introduce to the boy or girl the mention of chromosomes. This can scarcely be effective except in the course of some regular instruction in general biology. So also doubt may be expressed as to the wisdom of the suggestion that the unwanted child should always be avoided, and of the statement or implication that deaf-mutism is always directly inherited. Of the general value of the book, however, there can be no doubt; and its emphasis on the importance of positive teaching and frank answering, as contrasted with avoidance, prohibition, and negation, is fundamental.

THE LAW OF INDUSTRIAL DISEASES

Doctors and lawyers concerned with administering the Workmen's Compensation Acts have to face a difficult task in applying the numerous sections, schedules, appendices, regulations, and decisions which contain the law relating to industrial diseases. Several good textbooks have been written on the Act itself, but many practitioners—in particular, medical referees and certifying surgeons—need a fuller explanation of this particular aspect. Mr. C. H. SPAFFORD has taken Sections 43 and 44 and written a very clear and concise commentary⁴ on them, and has considered the effect of the most recent decisions by the Court of Appeal and the House of Lords. He devotes a chapter to the certificate of disablement, its contents, the conditions under which it is conclusive, and the remedies available when it is defective. The appeal to the medical referee is fully discussed, and legal readers will find the chapters on determining the employer who is primarily liable, and the joinder of previous employers, of great practical value. As a book of reference the volume has considerable advantages over the existing textbooks because of its clarity and orderly arrangement. The only criticism that can fairly be made is in respect of the price, which seems very high for a small octavo volume.

A SHORT HISTORY OF MEDICAL SCIENCE

Dr. G. B. GRUBER, professor of pathology in the University of Göttingen, has published, under the title "An Introduction to the Spirit and Study of Medicine,"⁵ an interesting course of lectures delivered to students commencing their medical education. They comprise a short explanation of the manner in which medicine advanced to its present position.

The first lecture gives a general review of the development of biological science up to the time of Galen. The

succeeding fifteen hundred years are barely noted, and the second lecture deals with Vesalius—his work and its consequences. Subsequent lectures deal in turn with the development of the medical sciences. Thus the history of the fundamental sciences of histology, physiology, psychology, and genetics is treated first, to be followed by an account of such applied sciences as pathology, bacteriology, pharmacology, and hygiene. The final papers are devoted to a consideration of the relations between the medical profession and the rest of society. The subjects discussed under the last heading include the cloud of cults and quack systems which compete with modern medical science by pandering to primitive superstitions; the medico-legal obligations of doctors; and matters bearing upon medical ethics.

The volume is a small one of about 250 pages, but within this compass the author provides a very readable survey of the wide range of topics upon which he touches. The general conception and purpose of the work seem excellent. The evolution of modern medicine, and in particular its spectacular growth during the past century, is not only a study of great general interest, but also one with which all medical students ought to have an acquaintance. From time to time we hear a complaint that medical history is tending to lose its way in masses of personal detail about the careers and discoveries of great men. However that may be, there is ample room for general surveys such as Dr. Gruber gives here, providing a picture of the development of scientific ideas.

THE PATIENT'S CONSTITUTION

The medical practitioner is continually confronted with the problem of bodily constitution in the treatment of his patients, and he gets very little help in this matter from medical textbooks. The subject is treated inadequately, for the sufficient reason that the factors which determine individual constitution are extremely complex, and have only in recent years received satisfactory analysis. A very useful book has been issued by Professor NÄGELI under the title of "The General Doctrine of the Constitution,"⁶ providing a lucid account of what is known on the subject at the present time, with special reference to its bearing on medicine. It is deserving of careful study by medical practitioners. The problem of constitutional differences is one of "variability," and as the latter has been elucidated almost exclusively in the sciences of botany and zoology the medical man needs to revive his interest somewhat in those subjects in order to understand the doctrine. The author has for some years endeavoured in his lectures to merge medical science in the larger conception of natural history, and the present work is written apparently with a similar intent.

After discussing the definition of "constitution," the author enters in detail into the kinds and causes of variability, giving examples in botany, zoology, and man. Then follow special articles on hybridization, germinal induction, the hereditary transmission of acquired characters, race and constitution, and the influence of sex and age. The final chapters deal with the constitution and special diseases—namely, tuberculosis, pernicious anaemia, haemophilia, chlorosis, and the psychoneuroses. Apart from its bearing on medicine, the work will appeal strongly to all who are concerned with such subjects as evolution, palaeontology, and racial differences; and to the general reader from its inherent interest. Probably there is no other book in which the subject is so fully and clearly explained.

⁴ *The Legal Aspect of Industrial Disease*. By C. H. Spafford, Barrister-at-Law. London: Butterworth and Co. (Publishers), Ltd. (Pp. 263. 21s. net.)

⁵ *Einführung in Geist und Studium der Medizin*. Von Prof. Dr. G. B. Gruber. Leipzig: G. Thieme. 1934. (Pp. xxvii + 244. Kart., M.4.80; geb., M.5.70.)

⁶ *Allgemeine Konstitutionslehre in Medizinischer Betrachtung*. Von O. Nägeli. Berlin: Springer. 1934. (Pp. 189; 32 figures. RM.15;)

Notes on Books

The tenth edition of the late Professor CUSHNY'S *Text-book of Pharmacology and Therapeutics*¹ has been prepared by Professors C. W. EDMUNDS and J. A. GUNN. These authors undertook the difficult task of continuing the textbook eight years ago, and were responsible for the ninth edition, which appeared in 1928. Their general aim has been to preserve not merely the critical spirit of the book, but also the text as far as this is possible. Recent advances in pharmacology have, however, necessitated the rewriting of many sections, such, for example, as those on iron, bismuth, liver extract, and the barbiturates. In general, the whole volume has been carefully revised and brought up to date, but its size has only been increased by forty pages. The editors are to be congratulated on the skill and care they have expended in bringing the textbook up to date whilst preserving its characteristic form.

*Individual Psychology and Practice*² includes four contributions written by clinicians associated with the Adlerian movement. Dr. C. M. Bevan discusses the relationship between medicine and psychology, stressing especially the desirability of attempting some degree of integration between the various schools of dynamic psychology with a view to forming a liaison society between official medicine and general psychological thought. Dr. H. O. Woodcock writes on "The Tyranny of the Invalid"; Dr. F. A. Leighton on "The Purpose and Some Neuroses"; and Dr. F. Marjory Edwards discusses "The Psychological Approach to Gynaecological Problems." These clinical studies usefully exemplify the therapeutic aims and methods of the Adlerian school.

To one of the many series of short monographs now appearing in France, this one being entitled "New Therapeutics," Dr. F. RATHERY has contributed a modest booklet of fifty pages on "The Treatment of Juvenile Albuminuria." This subject requires a discussion of the causation of albumin in the urine, and leads to a diversity of methods, involving diet, hydrotherapy, and drugs, according to the many different diseases of which this condition is a symptom. The best sections are those on the treatment of albuminuria due to acute nephritis, and on orthostatic albuminuria, which opens with the wise remark, "In reality orthostatism favours the accentuation of all albuminuria."

*Metabolism Problems*³ is a small volume in which are printed a series of addresses given at the opening of the Summer University at Santander, by Professor S. J. THANNHAUSER of Freiburg. He deals with the following subjects: purine metabolism, the chemistry of the pigments of the blood and the bile; the site of formation of bile pigment; the causation of jaundice and disorders of cholesterol metabolism. All of these are difficult subjects, and in most of them knowledge is advancing somewhat slowly. The author gives a clear picture of the present state of knowledge, and in particular explains fully the chemical relationships of the complex substances whose fate he discusses. For example, he points out curious relationships between adenosine phosphate and the digitalis glucosides, both of which have the common property of exerting a selective action on heart muscle. The subject of chemical pathology is naturally difficult because the chemical substances which are studied are mostly of an exceptional complexity, but the author gives a very clear and interesting account of the problems which he considers.

¹ *A Textbook of Pharmacology and Therapeutics, or the Action of Drugs in Health and Disease.* By the late Arthur R. Cushny, M.A., M.D., LL.D., F.R.S. Tenth edition, thoroughly revised by C. W. Edmunds, A.B., M.D., and J. A. Gunn, M.A., M.D., D.Sc. London: J. and A. Churchill, Ltd. 1934. (Pp. 786; 75 figures. 25s.)

² *Individual Psychology Pamphlets, No. 12* London: C. W. Daniel Company. 1934. (Pp. 57. 2s. 6d. net.)

³ *Le Traitement des Albuminuries Juveniles.* Par Dr. F. Rathery. Paris: J. B. Baillière et Fils 1934. (Pp. 52. 8 fr.)

⁴ *Stoffwechselprobleme. Vorträge aus dem Gebiete der Physiopathologie.* Von Professor S. J. Thannhauser. Berlin: J. Springer, 1934. (Pp. 101. R.M.4.80.)

The richly documented monograph on Angina Pectoris¹¹ by Dr. GREGORIO N. MARTINEZ, professor of clinical medicine at Cordoba in the Argentine Republic, contains a full and up-to-date account of the history, aetiology, pathogenesis, symptomatology, diagnosis, prognosis, and treatment of the condition, with a record of forty-nine personal cases in patients aged from 16 to 74, illustrated by electrocardiograms. A bibliography of 652 references, in which British literature is well represented, is appended.

*Keith Lucas*¹² is an outline, but in some ways quite as pleasing as a full-dress edition, of a projected memoir of a physiologist of outstanding ability who lost his life in an aeroplane accident in 1916 when 37 years old. The late Sir Walter Fletcher had collected eight appreciations of various phases of Keith Lucas's life from his friends, and had written two accounts of him as an undergraduate and as a Fellow of Trinity College, Cambridge. Professor E. D. Adrian, the pupil and colleague, who in 1917 edited Keith Lucas's Page May Lecture (1914) on "The Conduction of the Nervous Impulse" (vide review in these columns, 1918, i, 84), has now added a sympathetic estimate of his physiological activities at Cambridge during the ten years 1904-14, and writes with a personal touch that is particularly attractive; no one, he says, "who worked with him could think of Keith Lucas except as a friend." His work was entirely devoted to the properties of nerve and muscle. The late Professor H. H. Turner, who was a lifelong friend, and who, with three other contributors, has followed Keith Lucas behind the veil, shows that his versatile genius was largely that of an engineer. This, as is brought out by the three contributors writing on his work in the war, was of invaluable service to the efficiency of the Royal Flying Corps.

The *Proceedings* of the third conference of the International Association of Preventive Paediatrics have now been issued, and the volume contains an account of the two discussions held at Luxembourg in September, 1933. The first of these dealt with the prophylaxis of infantile paralysis and the second with the prevention of what is termed "influenzal diseases in early childhood," although what is meant is the wider subject of catarrhal infections of the respiratory tract. This produced a particularly valuable discussion, emphasizing the danger to the young baby of even simple nasopharyngeal infections among the nursing staff.

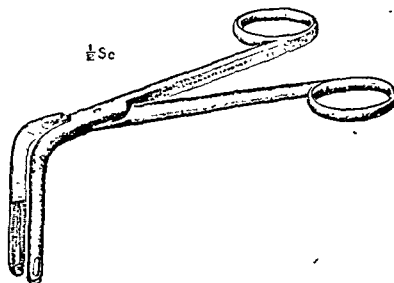
¹¹ *La Angina de Pecho.* By Gregorio N. Martinez. Buenos Aires: Humberto Andreetta. 1933. (Pp. 280; illustrated.)

¹² *Keith Lucas.* Cambridge: W. Heffer and Sons, Ltd. 1934. (Pp. 131. 5s. net.)

Preparations and Appliances

PYELO-LITHOTOMY FORCEPS

Mr. W. K. IRWIN, F.R.C.S. (London, W.), writes: Owing to a slight oversight the first pattern of the pyelo-lithotomy



forceps made to my design was illustrated in the *British Medical Journal* of June 9th (p. 1034). The new model is now shown in the accompanying illustration. It is obtainable from Messrs. Down Bros., St. Thomas's Street, S.E.1.

CONFERENCE OF VOLUNTARY HOSPITALS

A Conference of Voluntary Hospitals in Great Britain and Ireland was held in London from June 13th to 16th under the auspices of the British Hospitals Association and the Incorporated Association of Hospital Officers. It was attended by some 500 delegates of both bodies, and at meetings held at the Guildhall and in the halls of the City Companies a number of papers were read on matters of hospital administration and policy. In the afternoons various London hospitals were visited.

The conference was opened on the first morning by H.R.H. THE PRINCE OF WALES, who was received by the Lord Mayor and the Hon. Sir Arthur Stanley, who acted as chairman of the conference. The Prince expressed his pleasure at meeting such a large gathering of friends of hospitals, and briefly commented upon the various subjects on the programme. He said that one matter in which he himself had been specially interested was the problem of the out-patient department, apropos of the valuable report recently issued by King Edward's Hospital Fund for London. Another matter of great importance to the health services of the country and to the future of the voluntary hospitals was the co-operation between the voluntary and municipal hospitals. The growth in size and complexity of the buildings necessary to provide accommodation for the sick and departmental facilities for their treatment had made the task of hospital building one of very great difficulty, and the conference would have the benefit of a special discussion on the hospital and its architect. The small hospitals had not been forgotten in arranging the programme. Throughout the length and breadth of the land there were some 400 hospitals of small size, all doing good and unceasing work. These hospitals, placed as they were on the main lines of traffic, had had to face a heavy responsibility in connexion with the treatment of the accident cases which were brought to their doors, and he was glad to know that Parliament was now endeavouring to devise legislation which was designed to relieve them of their burden so far as finance was concerned. His Royal Highness also commented on the fact that hospital administration on the Continent was to be the subject of another discussion, for, he said, the hospital world was without national boundaries, and in Great Britain they did not believe that they had nothing to learn from other countries and other systems.

THE OUT-PATIENT DEPARTMENT

LORD MACMILLAN took the chair at the first discussion, which was on the out-patient department, a subject which, he said, to those engaged in the practical work of hospitals, presented one of the most important and difficult problems of administration. The problem had two aspects, one of policy and the other of method. The questions of policy were of this order: whether the out-patient department as now run in most hospitals was best performing the functions which it was designed to serve, from the point of view of attendance by the right type of patient, both in respect to economic status and to the ailments from which those who attended were suffering. The handling of patients in the out-patient department was itself a very difficult problem. It was impossible to deal with it on a merely mechanical and arithmetical basis. The uncertainties of the cases which had to be dealt with must interpose, and the out-patient must resign himself to some period of waiting. He referred appreciatively to the work of the Out-Patient Arrangements Committee, presided over by Sir John Rose Bradford, which was continuing the work of the committee of inquiry set up by the King Edward's Hospital Fund. One of its labours had been to devise standard forms for doctors in sending patients to out-patient departments, and another had been to draw up model time-tables for use in the departments.

THE EARL OF ONSLOW, who acted as chairman of the Out-Patient Committee, said that one of the chief causes of the crowded attendances was the popularity of the

hospitals and their out-patient departments. These departments had the fullest confidence of the public, and it seemed that there were a great number of people who might just as well go elsewhere for their treatment but preferred to go to the hospital. While undoubtedly a certain amount of waiting was unavoidable, much could be done by time-saving methods and also by reducing the number of patients. Old-fashioned and inadequate accommodation was responsible for a good deal of difficulty. It had been asked whether hospitals could not adopt the appointment system, but he thought there would be trouble in carrying that out, partly because of the unpunctuality of patients and partly because such a system would hinder the proper allocation of patients as between consultants and assistants. Hospitals might arrange to provide consultants with secretarial assistance, which would go some way towards alleviating the problem. As for lessening the number of patients treated in hospital, he noticed that the British Medical Association advocated that, except in cases of emergency, no person should be accepted for treatment at a hospital unless he brought with him a doctor's letter. If this was carried out rigidly and logically it would make the out-patient department of all hospitals a purely consultative institution. As a counsel of perfection there was much to be said for it, but he thought it was impossible to make the out-patient department purely consultative. The necessity of obtaining a doctor's letter would be very unpopular. A patient might have the feeling that his doctor did not understand his case, and that he would like a second opinion from the hospital, but he would be deterred if it meant that he had to go to his doctor for a letter before obtaining such second opinion.

AVAILABILITY OF HOSPITAL SERVICES

SIR ROBERT BOLAN, in initiating a brief discussion, laid down four propositions which it seemed to him emerged from the report of the King Edward's Hospital Fund Committee. These were: (1) that the out-patient departments, generally speaking, were so overcrowded that the consultants and specialists working therein were not utilized to the best advantage; (2) the net result of this overcrowding was delay and waiting on the part of patients; (3) the co-ordination between the general medical practitioner services to the community outside the hospital and the consultant and specialist service within the hospital was not yet sufficiently developed; and (4) the only remedy was to educate the hospital-going public by co-operative and sustained effort on the part of the hospitals and the medical profession. The team work in a large hospital, which was so invaluable, inevitably meant delay, but it had also to be remembered that the consultations with the other consultants and specialists and the particular services available at a well-equipped hospital could furnish the required service to the patient in as many hours as it needed days in the case of the private citizen seeking medical aid in the usual way. Some economy of time might be made, and a great deal of exasperation saved, if a fuller use were made of informative and directional signs for the benefit of those who were not regular habitués of the hospitals. Was it too much to hope that in the ideal hospital of the future the anxious patient would encounter an experienced and courteous usher, with sufficient subordinate messengers to deal with those who could not find their way without personal assistance? The matter of dispensing had aroused some criticism and attention. The prescription habit in the British nation had become very much more common since the period of national health insurance, and some large hospitals used the prescription system extensively instead of maintaining large dispensaries. The day had gone by for such slogans as "The ever-open door," "Free service to all," "No one turned away," because these gave rise to the mistaken impression that the hospital was available for all kinds of services, and that was an uneconomic proposition. The time had come to teach the hospital-going people what services were available in the hospital, and how such services differed from the kind of services obtained at the hands of the

general practitioner outside. With regard to doctors' letters, Sir Robert Bolam affirmed that the proportion of doctors who resented having to refer their patients to a hospital or consultant was negligible. In ordinary life the general medical practitioner was the sifter of cases. A good many matters he could deal with personally himself. Others had to be referred to consultants and specialists for admission to nursing homes or hospitals. It would seem that to use a consultant or specialist as the sifting agent in a general hospital was to put him to do general practitioner work. One would be far from denying that there were a good many who would do this very well, but was it in fact what the consultant was appointed for? Most hospitals relegated the sifting process to a junior member of the staff, and that junior member was acting in such a capacity as a general medical practitioner. It followed that as much of this discriminating process as possible should be done before the patient reached the hospital, and therein lay the value of the doctor's letter. The residuum of persons who had difficulty in finding a doctor to recommend them to a hospital nowadays must be very small. It was only where the public medical assistance was not fully developed that such could be the case. It was not beyond the bounds of possibility that a public authority should make an arrangement with the hospital to provide a public assistance medical officer to take part in dealing with such cases. In conclusion, the hospital habits of our people would not be changed in a few days because decisions were made and principles enunciated, and whatever the plight of the institutions or the wish of the profession might be in this matter we would be well advised to recognize the essential conservatism of the rest, and be satisfied with reasonable progress towards the consultative ideal to be attained within the next four or five years.

THE PRIVATE PRACTITIONER

In further discussion, Sir HENRY BRACKENBURY replied to Lord Onslow's comments on the British Medical Association proposition that the out-patient department should be confined, or almost confined, to consultative work. There were actually hospitals which had converted their out-patient departments practically into consultative departments, so that the proposition was not as impracticable as might be supposed. But the fundamental idea was that the hiatus between the field of hospital work and the field of private practitioner work should be eliminated. One of the present evils was that the hospital field of work and the private practitioner field had been to a large extent divorced from one another. In some ways that had been the fault of the teaching hospitals in the past, but he was sure that the young student just qualified and the resident medical officer in the hospital had got into their heads somehow or other that the general practitioner outside was somebody who was not very well worth considering, and need not be considered very much in relation to the amount of work which they had been accustomed to observe from the hospital staff point of view. That was a wrong notion; the general practitioner outside in his ordinary surroundings was much more capable of dealing with and helping the patients who came to the out-patient departments than anyone else. Therefore it was of the utmost importance that the general practitioner outside, doing the domiciliary work, should be considered an essential part of, and in very close association with, the work of the hospital itself. From that point of view there was much to be said for insisting that before the patient went to hospital the opinion of the general practitioner should be considered. Not only so, but when hospital attention was no longer necessary for the patient, although he was still not perfectly recovered, it was most desirable that he should be referred to the general practitioner for care instead of being continued in the out-patient department of the hospital. It should be primarily the family doctor to whom such patients were referred, and not primarily the district nurse.

Time did not allow any further discussion, but the applause which greeted Sir Henry Brackenbury's remarks suggested that this point of view was not unacceptable to hospital administrators.

CO-OPERATION BETWEEN VOLUNTARY AND MUNICIPAL HOSPITAL AUTHORITIES

At a later session, under the chairmanship of Lord RIDDELL, the subject of co-operation between voluntary and municipal hospital authorities was discussed.

Sir GEORGE NEWMAN, in an opening paper, gave a table representing the present hospital accommodation in England and Wales. This showed that the number of hospitals provided by local authorities was 858, with 143,494 beds, and the voluntary hospitals numbered 988, with 71,956 beds. Of the local authorities' hospitals, 326, with 57,129 beds, were provided under the aegis of the public health, and 532, with 86,365 beds, under the aegis of public assistance. Of the hospitals not provided by local authorities, 663, with 49,673 beds, were general, and 325, with 22,283 beds, were special.

It was clear, said Sir George Newman, that the only sensible course to pursue was to develop a practical and unified system of co-operation between these two classes of hospitals. As a result of the Act of 1929, many of the former Poor Law hospitals had become municipal hospitals for the benefit of the public in need of medical treatment, and not, as formerly, for the destitute poor only. Thus there had been created the beginnings of a national hospital system. As the municipal hospitals expanded there might seem to the casual observer to be less need of the voluntary hospitals. Which was the wiser: to put all hospitals, voluntary and municipal, on a municipal basis of rates and taxes, and allow the voluntary movement to disappear, or to combine the two in one co-operative hospital system? He was strongly in favour of the latter course, and believed that a co-operative system was likely, if properly organized, to be more economical in the long run than a rate-aided State system without the voluntary element, and it provided for the peculiar English genius a practical compromise between collectivism and individualism. He asked the gathering to consider what the voluntary hospital had done. It had encouraged the pioneering spirit of discovery which had strangely but steadily led English medicine hitherto. For more than 200 years it had provided ways and means for the foundation and development of all the great schools of medicine in the universities, and in its atmosphere had been trained, among others, all the doctors for all the municipal hospitals. A teaching hospital, like a university, lived by unhampered freedom of thought, and in their national hospital system the English people would do wisely to provide ample room for the exercise and application of the voluntary system. But the ever-widening and important medical needs of the population had not been met in the past, and could not be met in the future, wholly by voluntary hospitals. The municipal hospital represented the formulated will of a free people. It was a hospital provided by the State, deriving its sustenance from rates and taxes, its direction from the elected representatives of the municipality, and its authority from Parliament. It was between these two types of national institutions that the Act of 1929, followed by the Minister's circular, had sought to ensure co-operation. The authorities and the voluntary hospitals had not put into the fullest operation of which they were capable the powers afforded by that Act. But more had been done by the State in support of voluntary hospitals than some persons appeared to assume. Financial grants had been furnished by local authorities for new buildings and equipment. Special grants had been made for the treatment of various conditions. Only a few days ago a county council made a grant of £10,000 towards the rebuilding of a voluntary hospital. The London County Council was paying grants at a yearly rate of £250,000 to voluntary hospitals, and upwards of £125,000 was paid last year by approved societies for the in-patient treatment of insured persons in those institutions. Further, there had been much interchange of function, of the services of consultant staff, and of the use of special beds, apparatus, or installations as between the two types of hospitals. It could not be said that even yet in all areas there was real and effective consultation or co-operation. Such consultation was a statutory obligation, but it could not take place until

the voluntary hospitals of the area and their medical staffs had established a representative committee, had informed the local authority of its existence, and were prepared, jointly with the authority, to consider the institutional and hospital requirements of the district.

NO WASTEFUL COMPETITION

In conclusion, Sir George Newman permitted himself four general observations. The greater the good will and genuine desire for co-operation for the common good, the more fruitful would be mutual consultation. The survey reports of the medical officers of the Ministry showed that the desire for co-operation was widespread, and that many forms of practical co-ordination were being practised on both sides. But there was some fear on the part of voluntary hospital representatives that local authorities intended to compete unduly with the voluntary hospitals. As a fact, however, public authorities could not afford to engage in wasteful competition or the duplication of existing facilities. The local authority, while it should not attempt to compete, had a definite statutory responsibility to the community to supplement the work of voluntary hospitals and fill gaps which the latter were unable to fill, or had not in fact filled. It was obligatory upon the authority to consult with representatives of the voluntary hospitals when providing, allocating, or adapting its accommodation in discharge of the functions with which it was entrusted, and it was obvious that such consultation should take place before the decisions of the authority had been reached, and not only afterwards. Finally, the local authority should do all that was practicable, with foresight and prudence, to foster and aid appropriate voluntary organizations in its area, both for hospital services and for the development of public health provision of the people, which were implicit in the new organization laid down by the Act. On their part also the voluntary hospitals in every area should create competent and representative bodies to organize and co-ordinate their own work and to consult with the local authority on hospital needs.

Lord COZENS-HARDY said he was taking the voluntary hospitals a very long time to realize the enormous changes in the hospital system of the country which must ensue from the Act of 1929. The voluntary hospitals had been inclined to be suspicious of that Act and of the wide powers and duties which it conferred upon local authorities. The Act itself limited compulsory consultation to a narrow field, and the extent of co-operation would depend upon the attitude of the Ministry and the direction in which the Ministry encouraged the local authorities to move. The early circulars of the Minister seemed to point in the right direction, but not perhaps so clearly as to remove suspicion from the minds of the voluntary hospitals. A clear pronouncement, such as had been given by Sir George Newman, that there were important functions, such as teaching and research, which the voluntary hospitals could best perform in the interests of the community, was to be welcomed, also that the hospital service as a whole could not produce its best results without close and continuous co-operation between the local authorities and the voluntary hospitals. What was needed was something more than a mere "Section 13 body" but a joint committee between the local authority and the voluntary hospitals meeting regularly to consider everything bearing on the hospital service as a whole. Proposals for extensions, whether by the local authority or by the voluntary hospitals, should be considered by some such committee before action was taken.

CO-OPERATION OF HOSPITALS IN MENTAL HYGIENE

Mr. L. G. BROCK (Chairman of the Board of Control) gave some practical illustrations of co-operation between voluntary hospitals and municipal institutions in the field of mental hygiene. For some years there had been a growing co-operation between the London mental hospitals and the London medical schools. The mental hospitals realized that many of their patients were physically very sick people, so that an arrangement had grown up whereby there was an informal alliance between the mental hospital

and the medical school, the latter providing the consultants who came regularly to visit new patients in the mental hospitals, while the mental hospitals provided the psychiatrists for the instruction of the medical students. A second form of co-operation was in the provision of out-patient mental clinics by voluntary hospitals, following the passing of the Mental Treatment Act.

Dr. C. E. S. FLEMING said that it was for the voluntary hospitals to adopt and adapt such of the methods of the municipal hospitals as they could usefully employ, including co-ordination and co-operation, and economy in buildings and maintenance. They prided themselves upon their "voluntaryism," but it must be remembered that a volunteer was of no use unless he was a member of an organized army. Voluntary hospitals must cast aside that parochialism which had been their weakness in the past, otherwise they would not be able to hold their position in the hospital service of the country. Already the municipal hospitals were in close competition with them on one point—namely, in the open market for medical officers—and as to whether the prestige of the voluntary hospitals would enable them for long to obtain the men and women they wanted he was rather doubtful.

A number of lay hospital administrators from various parts of the country contributed briefly to the discussion. A Gloucestershire representative urged the importance of endeavouring to get the chairman of the voluntary hospital elected a member of the local authority. Following on this point a Mexborough representative said that four members on his board of management were members of the West Riding County Council, and one of them was chairman of the Public Health Committee. A Sheffield representative said that his was one of the first cities to create a co-ordinating committee between the municipality and the voluntary hospitals. There were four voluntary hospitals in Sheffield, and they were all represented on a committee which included also representatives of the municipality, and the chair was filled in alternate years by a municipal and by a voluntary hospital representative. An arrangement was also in being whereby a considerable number of patients coming to voluntary hospitals were transferred to municipal hospital beds.

Lord RIDDELL, in closing the discussion, referred to the excellent results which had already been achieved by the Joint Hospitals Committee in London.

THE COTTAGE HOSPITAL

Other discussions at the four days' conference must have briefer mention. Mr. W. M. GOODENOUGH, honorary treasurer of the Radcliffe Infirmary, Oxford, read a paper on the function of the cottage hospital. Its main function, he said, was to deal with minor medical and surgical cases which did not call for special treatment, but it might have a further use for convalescent cases, and perhaps as a residential centre for district nurses. Lord HORDER, who took the chair at this discussion, referred to the various therapeutic assets of a cottage hospital—its quietness, its proximity to patients' friends, and its adaptability to the work of routine observation. Dr. C. E. S. FLEMING preferred the term "district hospital," which suggested that it was for the people of the district and staffed by district practitioners. Specialist members of the staff of the central hospital should be available, but only for the purpose of consultation or emergency operation. There was a tendency in some of these hospitals to expect the work to be done by members of the staff of the central hospital. One objection was the possibility of complications arising after operation, when the specialist himself was not present; another was that the extra equipment and nursing for this kind of work imposed an unusual strain on the small hospital. On the other hand, minor cases—a term the speaker disliked—were pre-eminently suitable for the care of the practitioner at the district or cottage hospital. These small institutions were distinctly needed for the completion of the hospital service of the country, and it might be very dangerous to interfere with their development by rigid rules.

HOSPITAL ADMINISTRATION ON THE CONTINENT

Dr. RENÉ SAND, technical counsellor of the League of Red Cross Societies, gave an address on the situation of hospitals on the Continent. His account of the municipal hospitals of France was a little depressing. Too economical administration, overcrowded wards, non-recognition of hospital technique, superannuated buildings, lay superintendents—"nobody is satisfied, but the system is such that nobody could be." Improvements were, however, taking place. In Paris the maternity hospitals and many surgical departments now ranked as excellent. Lyons was building well-equipped hospitals. The new hospital in Rheims kept half its patients in single rooms, and no ward had more than four beds. Nancy and Strasbourg had models of hospital administration and building. Lille was planning a huge hospital centre of 5,000 beds in two buildings of thirty floors each, walled entirely by steel and glass, and ventilated by conditioned air. New resources were being opened up by sickness insurance funds, which paid for the hospital treatment of ten million members, and the insured population was insisting on better hospital conditions.

In a brief survey of other countries, Dr. Sand said that Italy was rapidly renovating its hospitals: eight great hospitals had been opened in recent years, eighteen were being built, and many more were planned. Rome, Milan, Turin, Venice, and Naples would soon have a complete and modern hospital system. Spain was making great strides, and there were few out-patient clinics in the world to rival the Red Cross dispensary in Madrid. In Austria there was a hospital plan for the whole country, which was divided into hospital districts. In Scandinavian countries the planning, maintenance, and administration of hospitals had been for centuries the function of the State, the countries, and the great cities. In these countries, as well as in Germany, Holland, and Switzerland, the hospital superintendents were generally doctors. He had visited only a few hospitals and maternity institutions in Soviet Russia, and he spoke of them highly. In Germany the economic crisis had compelled some hospitals to close wings and curtail staff, but difficulties there as elsewhere had the advantage of fostering initiative and devotion.

HOSPITAL ARCHITECTURE

Mr. STANLEY HALL read a useful paper on hospital architecture. The choice of a building committee, he declared, was almost as important as the choice of an architect. The most satisfactory way of co-ordinating the various interests was to appoint a technical committee of physicians and surgeons, who would report to a very small lay committee directly responsible to the board. The work of the technical committee should be to obtain from all the specialists their requirements as to particular departments, to decide upon the order of urgency, and to determine, and if necessary to limit, the requirements of each specialist. The total number of beds required must first be settled; then the question of the number of patients for each nursing unit, which was a very important instruction for the architect before planning his ward blocks. The number and disposition of the operating theatres had next to be settled. A grouping of theatres into one unit was advantageous economically; twin theatres could often share one large sterilizing room and plant. The accommodation of students in theatres in teaching hospitals was a tax on the resources of the architect. Casualty and out-patient departments were various in their methods of working. The number of medical and surgical consulting rooms must be settled according to the number of honorary officers and assistants who would be holding sessions at the same time. Mr. Hall dealt with other points of detail, such as the housing of the nursing, domestic, and administrative staff, the boiler-house and other services, and the pathological block. Having cut out the parts of the jigsaw puzzle, the next business was to place them in their correct relation. The casualty and out-patient departments must be easily accessible to the public.

THE ALMONER'S WORK

The final discussion was on aspects of almoner's work. Miss CHERRY MORRIS, lady almoner of St. Thomas's, said that the ideal of the almoner was to secure the maximum of necessary information with a minimum of inquiry. She must be just alike towards the patient and towards the hospital, must not make demands on patients which would entail too great a sacrifice, and must not let herself be deceived by plausible persons. The future of almoners' work was threatened by a real danger, just because the almoner had shown herself too good a financier. In the minds of certain people—and some of the medical profession were not blameless—the financial side had been stressed to the exclusion of everything else. The question before hospital boards was often not whether the almoner would increase the efficiency of the hospital, but whether her department could be made to pay. If this tendency grew the consequences would be serious. Medical men would lose what was potentially a valuable auxiliary service in the treatment of the sick, for the almoner's profession would cease to attract to its ranks the best type of educated woman.

GUILDHALL BANQUET

A Guildhall banquet, over which H.R.H. The DUKE OF YORK presided, and which was attended by about 600 guests, was held in connexion with the conference. The Lord Mayor and Lady Mayoress were present, and in every part of the hall one saw people prominent in hospital administration and service. The Duke of York spoke of the great work of the voluntary hospitals in tending the sick and suffering, educating medical students, and investigating the causes of disease. On many occasions since the war, he said, members of his family had been associated with appeals for funds, and had been in a position to appreciate at first hand the results of this work. He felt that in difficult times the way in which the public had contributed to hospitals had been quite wonderful.

LORD STANMORE, treasurer of St. Bartholomew's, said that although the financial difficulties of the voluntary hospitals were very much to the fore, even during the blackest financial period of this century the hospitals as a body had ended each year with a substantial credit balance, and in the history of any individual hospital over a period of years the balances of the credit years weighed down the scale against the balances of the years of deficits. The threat of closing down was often heard, but instances of any institution closing down for lack of funds were almost unknown. He spoke also of the elasticity of the voluntary system. While it clung to certain traditions, it had been able to adjust itself to conditions which in any progressive country were constantly changing. It could not, of course, meet all needs. There were those for which only the State could provide, and the voluntary hospitals were anxious to co-operate in every possible way with the State; but within their own boundaries they could and did provide that which from time to time was found to be necessary. He referred especially to the provision of hospital beds for those who had in the past been accustomed to be treated in times of sickness in their own homes.

LORD HORDER, in responding to the toast of "The Guests," said that many of those present were rather incongruously described as guests. Sir Holburt Waring, President of the Royal College of Surgeons, for example, had been intimately associated with hospitals throughout his career, and Sir Henry Brackenbury, Chairman of Council of the British Medical Association, had with others on that body done much to formulate a hospital policy in which the general practitioner had his place. The British ideal of the voluntary system was a noble one, but it needed watching, and its friends were not altogether happy in all respects, especially with regard to the undignified manner in which financial support was sometimes sought. Although he personally felt that the voluntary system, breathing as it did the spirit of freedom and independence, would and must go on, this did not mean that some methods employed on its behalf were of permanent value, or that it would not have to adapt and change itself to changing conditions.

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THE WAR AGAINST CANCER

Dr. Jacques Bandaline's monograph on the international war against cancer,¹ to which the Joest Prize for 1933 has been awarded by the Académie des Sciences Morales et Politiques, was originally written to appear in connexion with the International Cancer Congress held at Madrid in October, 1933. Its preparation has occupied the author's whole time since 1926, and it provides an exceedingly interesting and complete summary of cancer research up to the date of its appearance. Only those who have themselves been employed on literary research work can appreciate the magnitude of the task undertaken by Dr. Bandaline, the almost infinitely scrupulous attention to detail and the linguistic attainments which have made its publication possible. The author is to be warmly congratulated upon the successful achievement of a truly herculean task. Work of this kind is, we think, but seldom appreciated at its true value, and too often there is a tendency to undervalue the inestimable importance of scientific literary research work. Laboratory and clinical investigations are of necessity scattered among a vast number of publications, which, needless to say, are written in as many languages as there are nationalities represented. Any comprehensive review of such work requires, in addition to an adequate knowledge of several foreign languages, a critical examination of the scientific value of the papers laid under contribution, and thus a combination of attainments of no common order.

In Dr. Bandaline's work the reader will find a historical summary of the cancer question, commencing with a brief account of mention of the disease in the Rig-Veda and the Ebers papyrus, through the Greek period and the Latin and mediaeval schools up to the present time. Obviously we have not space at our disposal for even a cursory glance at these matters, which in themselves are of absorbing interest. Passing to the eighteenth century we read how, probably owing in part to error of diagnosis, the disease was regarded as contagious, a view which led to the infliction of unnecessary cruelties upon the unfortunate sufferers from a terrible disease. They were excluded from the general hospitals—in France at any rate—and forced to shift for themselves as best they could. It was to a canon of Rheims, Jean Godinot, that we owe the foundation of the earliest cancer hospital, which was opened in that city in 1740, and was equipped with the modest number of twelve beds. Even then the dread of the infectious nature of the fell disease alarmed the citizens, and in 1779 the hospital was moved to La Buërie in connexion with additions to the Hôpital St. Louis.

At that time, of course, nothing was known of the nature of infection or of the methods by which it could be dealt with, so that the citizens of Rheims must not be judged too harshly for the infliction of cruelty which had its origin in panic and ignorance. To France, therefore, must be accorded the honour of having provided the first hospital for the treatment of patients suffering from cancer, to the special investigation of which Dr. Bernard Peyrille of Lyons devoted his attention. In England the place of honour must be accorded to the Middlesex Hospital, with the formation in 1791 of its Cancer Charity, which has devoted unremitting attention to the subject up to the present time.

From time to time theories of the causation of cancer were propounded and methods of treatment suggested, but it was not until 1901, when the work of the Danish pathologist Jensen appeared, that the modern era of scientific and systematic research commenced. In this country the Imperial Cancer Research Laboratories were opened in 1902, and at intervals institutions upon similar lines have been formed in most civilized countries. Dr. Bandaline has obtained official information upon the work of these bodies in no fewer than sixty-one different States, so that his book gives a view at once comprehensive and authoritative of cancer research work all over the world. In many, at any rate, of these countries the question of educating the public upon the subject of cancer has been assiduously pursued, and in the present state of our knowledge this is undoubtedly the sphere in which the general practitioner can contribute assistance of inestimable value in the world-wide campaign against cancer. By emphasizing the fact that cancer, *if taken in time*, is frequently amenable to treatment by modern methods, and that radiotherapy in many cases has supplanted those mutilating and devastating operations which were formerly regarded as necessary, he can reassure those who are in doubt but are afraid to face the truth. The remarkable results which have followed the use of radium and x rays in the treatment of, for example, cancer of the cervix uteri and of the tongue should be sufficient to demonstrate what has been achieved in this direction.

One of the great difficulties attending the treatment of cancer with any hope or possibility of success has been the delay, usually prompted by fear, in seeking medical advice. Not unnaturally both the patient and the family medical adviser felt that to get a definite diagnosis of cancer was equivalent to passing sentence of death. Delay means simply that a condition which in its early stage will respond to treatment has become so extensive or so disseminated that when submitted for expert advice it has become almost hopeless. In cases judged inoperable or incurable much can still be done by radiotherapeutic methods to render the patient's remaining span of life much more tolerable and often relatively comfortable. It has been shown how in the past a false conception of the infectious nature of cancer must have inflicted almost incalculable suffering; it is for us to see at the present time that

¹ *La Lutte Internationale Contre le Cancer*. Par Dr. Jacques Bandaline. Paris: N. Maloine. (135 fr.; abroad, 145 fr.)

equally unnecessary suffering is not caused by delay. Above all, even if the disease is not seen until it has become inoperable and apparently "hopeless," yet relief is generally possible, and that to an extent which must be seen to be believed.

HYPERINSULINISM AND DYSINSULINISM

The conception of hyperinsulinism and its establishment as a clinical entity was first considered by Seale Harris in 1923, soon after the general appreciation of the importance of the discovery of insulin itself. Since then many cases of hyperinsulinism have been described, which have varied from a transient postprandial hypoglycaemia to most severe hypoglycaemia with shock, convulsions, and coma. In a recently compiled series of 1,497 non-diabetic cases Harris found that the fasting blood sugar in fifty-one patients was abnormally high, and in sixty-seven abnormally low, from which he concludes that "hyperinsulinism occurs almost as frequently as hypo-insulinism." He recommends the estimation of blood sugar and glucose-tolerance tests in cases of unexplained nervous attacks, periods of unconsciousness and convulsions, and in cases where the diagnosis of grand mal or petit mal may seem a little doubtful. It is within the experience of everybody that many people complain of a "sinking feeling" between meals, and that such persons soon learn that the ingestion of chocolate or food of carbohydrate nature rapidly relieves them. Physiological hyperinsulinism is readily seen in many cases after the test dose of glucose in a sugar-tolerance test, the blood sugar at the end of two hours or so often falling much below the initial value. This used to be explained as a stimulus to the glycogenic function of the liver, but there seems now little doubt that it is due to a stimulus to the insulinogenic processes.¹ Harris suggests that such physiological hyperinsulinism, when excessive, may, by exhaustion of the islets, lead to diabetes, and by the stimulus of excessive hunger (a symptom of hypoglycaemia) lead to the exogenous obesity which so often precedes diabetes. Such cases are readily treated by restriction of the insulinogenic stimulus—namely, carbohydrate—and more frequent feeding. Very severe cases may need glucose. Such excessive hypoglycaemic responses may arise from factors other than the secretory activity of the islets of Langerhans—for example, inadequate function of the adrenals and the pituitary.

Most striking are those cases of hyperinsulinism which are attributable to an adenoma of the islet tissue. An addition to the reports of such cases has recently been made by Ross and Tomasch.¹ Their case was a man of 33 who had been brought to hospital as a "drunk," having fallen in the street and sustained considerable injuries about the head. After a series of investigations it was found that he was a case of hyperinsulinism, and that on a diet of 1,800

calories with 60 grams of carbohydrate he developed hypoglycaemia shocks (blood sugar 23 mg. per 100 c.cm.) every six hours or so. A striking feature in these patients is that glucose-tolerance tests give curves starting at hypoglycaemic levels but rising to very high values, and maintaining a diabetic character for some time, without, in some instances, giving rise to glycosuria. Laparotomy revealed a cystic nodule in the pancreas, the removal of which led to complete disappearance of the syndrome. Histological examination showed that the nodule was a tumour of the islet tissue. These authors confirm the finding of others that in hypoglycaemic coma the plantar response is extensor—of diagnostic importance particularly where diabetic coma might be suspected, the response in the latter being flexor. Recently a very thorough study of five adenomata of the islets has been made by O'Leary and Womack.¹ The best methods were used by these workers for demonstrating the characteristic granules of the islet cells, and careful comparisons with normal cells were made. The tumours were in general small, but in one instance the dimensions were 9 cm. × 9 cm. × 11 cm., the tumour being nodular and cystic. Certain definite differences were recorded between the histological properties of the granules in the tumour cells and those of normal islet cells, indicating that the syndrome of hyperinsulinism may be due to a modified form of insulin and not merely to an excessive secretion of the normal hormone. These findings were all the more interesting in that the pancreatic islets adjacent to the tumour islet tissue were quite normal in their histological characteristics. Autolytic changes produce marked changes in normal islet cells in a short time, but tumour islet cells are for some reason remarkably resistant to this process and retain unchanged their histological characters even after twenty-four hours in Ringer solution. The evidence goes to show that in the tumour the cells are all of the β -cell type, with greater or less modified staining affinities. The tumours all contained small ducts histologically akin to the smaller pancreatic ducts, and evidence was obtained of the differentiation of duct epithelium into islet tissue, which shows that the duct cells are capable of giving rise to both the externally secreting acinar tissue and the internally secreting islets.

TUBERCULOSIS IN CHILDREN

The correspondence which followed our last reference to this subject² was one indication of the increasing interest shown. It is perhaps disappointing that investigation in England of many of the difficult aspects of tuberculosis in childhood seems to lag behind that in other countries, notably Scotland, France, Germany; and the United States. Recently in these columns Dr. G. G. Kayne described³ how Professor P. F. Armand-Delille and his pupils in Paris are correlating the clinical and radiographic findings during life with the

¹ *Arch. of Path.*, March, 1934.

² *British Medical Journal*, 1933, ii, 1035.

³ *Ibid.*, March 3rd, 1934, p. 370.

¹ *Arch. of Surg.*, February, 1934.

pathological state discovered at necropsy. Somewhat similar work is described in a paper¹ from the departments of paediatrics and pathology of Yale University School of Medicine, one of a series of papers dealing with work made possible by a special research fund and carried out for the research committee of the National Tuberculosis Association. Dr. Margaret L. Bronson and her colleagues have studied the radiographic appearances of the chests of fourteen children, and have correlated these with detailed clinical and pathological data. The records in certain instances cover a period of years, with a whole series of x-ray examinations. A large group of radiograms from children with non-tuberculous conditions of the lungs was also taken into consideration. Since the study was essentially based upon the x-ray findings the details of the methods used are important. It is recommended that radiograms should be taken with the chest in the position of complete inspiration; six-foot target-film distance is held to be best; oblique views of the thorax to demonstrate the mediastinum are mentioned as important; and the necessity of enough exposure to bring out calcium deposits is emphasized. Various points of great importance emerge from these studies. For example, large homogeneous lobar shadows, mottled shadows (localized or disseminated), and even so-called "infiltration" may or may not be due to tuberculosis. The close resemblance between the radiographic appearances of non-tuberculous and tuberculous conditions means that the demonstration of cavity formation or of the presence of calcium becomes very valuable in favouring the latter. Another point well illustrated in the present series is that a radiogram is sometimes essentially negative, although the thoracic contents of which the film is a projection are extensively involved in proved pathological processes. A second paper² in this series deals with pulmonary tuberculosis in infants under 2 years of age. Dr. Ethel Dunham shows convincingly the paramount importance of direct exposure to infection from human sources. In the seven cases studied in detail in her series the mother was the source of infection in three, and in one case each the father, a sister, a nursemaid, and a cousin living with the family. Four of these persons were known to have positive sputa, and the other three died of tuberculosis subsequent to the exposure of the infants. A second point of interest emerging from this study is that, while the ultimate fate of such young subjects must remain doubtful until far more extensive follow-up investigations have been carried out, it is certainly becoming more and more realized that previous work, based so much upon hospital statistics, has exaggerated the mortality at this young age. Four of the seven children in this series are considered well some years after first coming under observation, two are still under treatment, and one died of tuberculous meningitis at the age of 5 years. A third study³ may also be briefly mentioned here. It concerns the somewhat vexed question of the relation of phlyctenular conjunctivitis to tuberculosis. Drs. M. Goldstein and C. L. Wood have studied seventy-one children from 10 months to 12 years of age with this condition of the eyes, and they adduce very strong evidence of

underlying tuberculous infection in the majority of cases. Tuberculin tests, x-ray examinations not only of the chest but also of the neck, abdomen, and the bones, in a search for a possible tuberculous focus, positive history of contact, and physical signs of tuberculosis, all came into consideration; the combined evidence makes an impressive and convincing case. The importance of radiological examination of the neck is a novel point, and it is interesting that the only x-ray evidence of tuberculosis was found in the neck and abdomen in eighteen instances—nearly 40 per cent. of the positive films.

ASPIRATION TREATMENT OF LARYNGEAL DIPHTHERIA

The investigation of cases of laryngeal diphtheria by means of direct laryngoscopy and their treatment by mechanical suction of recent years has made slow if definite progress. In this country the work of Joe¹ and Benson² has familiarized us with the procedure, and though a steadily diminishing incidence of croup appears to be one of the main features of the present epidemic type of diphtheria, and consequently not the problem it was a decade ago, it is gradually being taken up by the large infectious hospitals: the published results in Great Britain indicate that a properly cautious attitude has been maintained. It is agreed that valuable aid in diagnosis and treatment may be obtained, but in all series of cases a larger or smaller proportion have ultimately required intubation or tracheotomy. It is interesting, therefore, to compare these views with those of Lemariey and Hamon,³ who give an account of four years' experience of the procedure in Paris. Their technique is the same as generally practised, except that they prefer a suction cannula with a blind end and one or two lateral fenestrae near the tip instead of one with a terminal opening, and in addition to clearing out the larynx and trachea they apply suction to the main bronchi when necessary. Compared with the older operation of indirect intubation they claim advantages in respect of the fact that instruments are directly under visual control; the procedure can be applied to an oedematous and ulcerated larynx; hoarseness and aphonia are less persistent; and they have not encountered a single case of chronic stenosis. Heart failure, which Lemariey and Hamon regard as one of the most noteworthy complications during intubation, is rare in aspiration, and respiratory difficulties during suction can be quickly countered by the introduction into the trachea of a cannula transmitting oxygen. Their assertion that intubation renders the feeding of the child practically impossible is difficult to understand, but the easier feeding of the aspirated patient is also claimed as an advantage. They regard aspiration as the only rational method of treatment of tracheo-bronchial diphtheria, and believe that in cases complicated by bronchopneumonia aspiration of secretions followed by intratracheal oxygen is at least of temporary benefit. As a result of their observations Lemariey and Hamon have classified the various forms of croup as follows.

¹ *Amer. Journ. Dis. Child.*, 1934, xlvii, 104.

² *Ibid.*, 1934, xlvii, 149.

³ *Ibid.*, 1934, xlvii, 171.

¹ Report to the Metropolitan Asylums Board, December 10th, 1929.

² *Lancet*, October 31st, 1931, p. 956.

³ *Ann. d'Oto-laryngol.*, 1934, ii, 101.

In benign croup, membrane is present only on the epiglottis and the cords, the subglottic space being free. Results in this form are always favourable, and nine successful cases are reported. Severe croup is distinguished by extensive thick membrane involving the larynx, the subglottic space, and the upper part of the trachea, and four patients came into this category. All recovered—three after aspiration alone, but in one case tracheotomy had to be resorted to. Septic croup is defined as a condition in which mucopurulent membrane covers an oedematous ulcerated mucosa, and an associated bronchopneumonia is the rule. In seven such cases only two recoveries were obtained, all except one, a recovery, being complicated by bronchopneumonia. Tracheo-bronchial diphtheria is disclosed by the presence of membrane in the upper part of the trachea, by the aspiration of bronchial casts, and by the broncho-pulmonary type of dyspnoea: eight cases of this type are reported with four recoveries; three of the cases complicated by bronchopneumonia were fatal. The authors consider that it is in this form that aspiration gives the most striking results, since with intubation or tracheotomy the prognosis is hopeless or very gloomy. Infantile croup is relegated to a category by itself, and is distinguished by the gravity of the dyspnoea, stridor, and profound toxæmia. Three cases of this type succumbed to bronchopneumonia, one to heart failure, whilst one recovered. It is always difficult to prognosticate whether any given case of croup will require operation and will not yield to expectant treatment, but it is a fact that a proportion do. Taking the results of tracheo-bronchial diphtheria alone, however, the results are very encouraging. The authors expressly disclaim any intention of entering into the respective merits of intubation and tracheotomy, but they seem to have had an unfortunate experience of the former. It is curious, therefore, that they have not considered the method of direct intubation by means of the laryngoscope, to which several workers in this country have turned their attention.

TECHNICAL METHODS IN MORBID ANATOMY AND HISTOPATHOLOGY

Outlining a new editorial policy in the March (1934) issue of the *Journal of Technical Methods and Bulletin of the International Association of Medical Museums*, No. XIII, Dr. Robert A. Moore, for the Editorial Committee, points out that a distinct contribution to the systematic indexing of scientific material would be made if the periodical mentioned above were to confine itself exclusively to communications directly concerning these fields. He states that, though there are three large national journals dealing with morbid anatomy and histopathology in the English language, his alone is devoted to technical methods with special reference to museum and laboratory procedures. It is therefore intended to limit the scope of the bulletin of the association to museum and necropsy technique, photographic methods, microscopical technique (especially as applied to museum material), injection methods, and teratology, especially congenital anomalies of the heart. The bulletin is to be made an annual publication, and will still contain the proceedings of the association and reports on its special activities, more particularly those of the International Index of Medical Museums. The

present issue, which runs to 200 pages, includes editorials, descriptions of museums, book reviews, proceedings, and reports. A considerable number of pages are devoted to original communications on such subjects as museum administration, cataloguing, etc., museum and necropsy technique, photographic methods, microscopical technique, and a number of case records. The volume, edited, like its predecessors, by Dr. Maude Abbott, is well illustrated, and should prove of the greatest interest to those concerned with the teaching of morbid anatomy, histology, and pathology in general.

A NUTRITIONAL STUDY OF BELGIAN UNEMPLOYED

An investigation into the living conditions and budgets of insured unemployed in Brussels was carried out in 1932, and the sociological results have already been published. Bigwood and Roost now record the nutritional data under the title *L'Alimentation Rationnelle*.¹ The facts were obtained from a month's study (January to February) of nineteen families, chosen at random from the lists of unemployed, which comprised ninety-three persons. Quantities of foodstuffs bought or given were entered into notebooks. The analyses of foodstuffs used for computation were chiefly those of Van de Weyer for Belgian produce, with special analyses where necessary. Foodstuffs as consumed, probably did not vary more than from -3 to +3 per cent. from analytical tables. Refuse ranged from 7.5 to 14 per cent. of total foodstuffs as bought (average 11 per cent.), high percentages being obtained chiefly where the amount of potatoes was large. Plate-waste was calculated as 1 per cent., intestinal waste as 4 per cent.; protein and carbohydrate were calculated to yield four calories per gram, fat nine calories. Complete tables are given for each family for gross and net calories, grams of animal and vegetable protein, fat, and carbohydrate. The percentage amount of the total gross weight supplied by the various food groups averaged: meat, 9; cereals, etc., 55; vegetables, 6; fruit, 2; fats, 3; eggs, 1; milk, 18; cheese, 0; various, 6. Family coefficients according to different scales are compared, and that adopted takes the woman as unit and allows her 2,600 calories net, the unemployed man being allowed 2,400, or 0.90, and children scaled down according to age to 0.25 for a child under 1 year. The authors reckon that the League of Nations scale of calorie requirement is slightly below that of the Belgian people, as shown by Slosse's investigation into 1,065 working men in 1910. The net calories of the nineteen families varied from -33 to +30 per cent. on the Bigwood-Roost scale, five families being more than 10 per cent. below and therefore certainly receiving insufficient food. Protein averaged 81.5 grams per unit, with a range of 55 grams to 105 grams, of which the animal protein averaged 40 per cent. (range 27 to 52 per cent.). For each gram of protein the average intake of fat was 1.1 grams, and of carbohydrate 4.6 grams. The minerals per unit were: phosphorus, 1.44 grams; calcium, 0.74 gram; iron, 0.015 gram; calcium-phosphorus ratio, 1:1.95; calcium-protein ratio, 1:118. Of the vitamins the B complex was probably sufficient,

¹ *L'Alimentation Rationnelle et les Besoins Énergétiques d'une Population Ouvrière*. By Dr. E. J. Bigwood and G. Roost. With a preface by Ernest Mahaim. Bruxelles: Institut de Sociologie Solvay 1934. (25 fr)

A or D approximately half of standard requirements, C rather more than half, after allowing for loss in cooking. It must be borne in mind that the number of families studied is too small to allow of general conclusions being drawn. This study rather suffers from lack of sequence in arrangement and of clarity in the graphs. There are nearly a hundred tables, many of which need not have been included, while the addition of more tables summarizing the figures would be of great advantage.

VENEREAL DISEASE IN LITERATURE

In a paper read before the Medical Society for the Study of Venereal Diseases, on May 30th,¹ Dr. J. D. Rolleston maintained that in no department of medicine was a knowledge of the lay writers on the history of the subject more necessary than in the domain of venereal disease, inasmuch as the information both of a positive and of a negative character furnished by contemporary writers—poets, dramatists, novelists, and historians—formed a valuable supplement to that derived from the study of the medical works of the time. Systematic investigation of the references to venereal diseases in non-medical literature, side by side with study of the works of medical historians, had been undertaken by numerous professional writers from Astruc in the eighteenth century to Jeanselme at the present day. Dr. Rolleston then gave a survey of the references to syphilis, gonorrhoea, and chancroid. Syphilis was first considered under the headings of the Bible, classical antiquity, the Middle Ages, the Elizabethan age, the seventeenth century, the eighteenth century, and modern times. The conclusion reached was that there was no definite description of syphilis in Europe before 1495, whereas subsequently there was an immense amount of literature, lay as well as medical, dealing with various aspects of the new disease. The best-known foreign lay writers on the subject in the sixteenth century were Guicciardini the historian, Erasmus, and Rabelais. Though more than eighty years elapsed before the outbreak of syphilis at the end of the fifteenth century received attention in British medical literature, when William Clowes published his treatise on the venereal disease in 1576, several references to the new disease had appeared much earlier in the Scottish poets William Dunbar and Sir David Lindsay. In the Elizabethan age numerous allusions to syphilis were to be found in Shakespeare, as well as in the contemporary dramatists such as Chapman and Beaumont and Fletcher. The prevalence and severity of syphilis throughout the eighteenth century received mention in numerous non-medical works such as the stories, history, and philosophical writings of Voltaire, the *Mémoires* of Casanova, the novels of Defoe, Fielding, and Smollett, the poems of Swift and Gay, and the letters of Lord Chesterfield. The most remarkable feature of the belletristic literature of the nineteenth century connected with syphilis was that it contained for the first time descriptions of tabs and general paralysis, as shown by the allusions to the former in the works of Heine, Alphonse Daudet, Kipling, and Conan Doyle, and to the latter in Ibsen, Maupassant, and the De Goncourts. The antisiphilic campaign in the French plays and novels at the

beginning of the present century appears to have been inspired by Alfred Fournier. The earliest description of gonorrhoea is that given in Leviticus. From the middle of the sixteenth century gonorrhoea and syphilis were regarded as the same disease, the term "clap" being often applied to the necrotic lesions of tertiary syphilis and "pox" to acute gonorrhoea. The attempts made to prove the existence of syphilis in Europe before the end of the sixteenth century, as exemplified in Beckett's communications to the Royal Society in 1718 and 1721, were due to mistaking the description of gonorrhoea in the mediaeval documents for syphilis. After mentioning literary allusions to gonorrhoea and its complications, Dr. Rolleston maintained that the history of chancroid was probably as old as that of gonorrhoea, for it was known in ancient Greece and Rome. The first undoubted description of the disease, however, was given by Palladius in the fourth century A.D. Chancroid appears to have been frequent throughout the Middle Ages as well as in classical antiquity, but owing to the identification of syphilis and chancroid which took place within six years of the appearance of syphilis in Europe, it was not likely that any distinct description of chancroid would appear in non-medical literature.

DRAWING THE G.M.C.

One of the best of the London evening newspapers, if we are rightly informed, has embarked upon a little plan by which it hopes to "draw" the General Medical Council. The idea seems to be to publish in the gossip column, from time to time, paragraphs about medical men of greater or less celebrity, giving their names, ages, addresses, birthmarks, and so forth, in the agreeably intimate manner reserved hitherto for politicians, jockeys, actors and others who court the limelight of the Press. In this way it is hoped to divert the public and to provoke the G.M.C. into taking disciplinary action against the persons named. How long the game will continue we will not venture to predict. Our opinion, for what it may be worth, is that newspaper readers will begin to weary of it in a few weeks' time or less, and (if the analogy will not be taken in ill part) that the catspaws are likely to scratch the monkey before the monkey gets the chestnut.

VISIT OF MEDICAL SECRETARY TO GENEVA

The International Labour Office has lately been considering the question of the economical administration of medical and pharmaceutical benefits under social insurance schemes, and a preliminary consultation on this subject with experts in various countries has encouraged the Office to pursue its inquiry further. A committee of experts will meet in Geneva on July 9th to consider a draft dealing with economical prescribing under sickness insurance schemes, and the Medical Secretary, Dr. G. C. Anderson, has accepted an invitation to sit on this committee as the representative of the British Medical Association.

Sir Frederick Gowland Hopkins, P.R.S., has been awarded the Albert medal of the Royal Society of Arts for 1934 in recognition of his researches in biochemistry and the constituents of food.

¹ To be published in full in the *British Journal of Venereal Diseases*, the organ of the society.

THE IRISH SWEEPSTAKES AND THE HOSPITALS

[FROM A CORRESPONDENT]

A few notes on the twelfth draw conducted by the Hospitals Trust, Ltd., commonly known as the "Irish Sweep," in connexion with the Derby of this year, may prove of interest to those concerned with the conduct of hospitals in Great Britain. The total amount subscribed does not fall far short of three million pounds. Of this approximately £1,800,000 will be expended in prizes. The hospitals receive £519,489, and Government taxation amounts to £173,029. The remainder is absorbed by expenses and promoters' remuneration.

Reviewing the financial question of the Irish sweepstakes to this date we find that, apart from the figures relating to the draw quoted above, the total amount subscribed by members of the public throughout Ireland, Great Britain, and practically every other country over-seas is £30,000,000. Of this amount approximately £20,000,000 has been distributed in prizes. Experience shows that Great Britain has subscribed approximately two-thirds of the total and has received approximately two-thirds of the prize-money. Ireland's subscriptions and prize-money have each been about 7 per cent. of the total.

The Irish hospitals have received, from the first eleven sweepstakes, considerably over £6,000,000; from the latest sweepstakes they will receive, as mentioned above, a further sum exceeding £500,000. It is worth noting that while the first three or four sweepstakes gave assistance solely to the voluntary hospitals of Ireland the Government of the Free State subsequently took power to allocate part of the proceeds to institutions of a non-voluntary character, including the county hospitals, which have played so large a part in Irish Poor Law institutional treatment and accommodation.

At a later date, going a step further, the Free State Government constituted what was, in effect, a new commission, under the Minister of Public Health, to administer the available surplus accruing to the hospitals in general from the sweepstakes. It is this body which will receive and expend the half-million pounds available from the Derby sweepstakes of this year. As an example of the activity of this commission, and the way in which the money may be expended, it may be mentioned that on June 4th the Minister for Local Government and Public Health of the Free State, Mr. S. T. O'Kelly, laid the foundation stone of a £120,000 extension to Mullingar Mental Hospital, which is regarded as a notable advance in the provision of facilities for mental treatment in the Free State. One-half of the amount required has been found by a grant of 50 per cent. of the cost from the Hospitals Trust, through the agency of the Minister. This is an example of the way in which the Hospitals Trust and the relevant Government authorities are utilizing the proceeds of these sweepstakes to provide for increased hospital facilities as distinct from meeting current expenditure.

AN ENDOWMENT-POLICY

The movement which underlies the Irish sweepstakes aims not at meeting only immediate requirements but at providing endowments sufficient to maintain the Irish hospital system for all time. The promoters are not concerned with this year or next year, or the position ten years hence: their object is to ensure that no matter what happens—unless the whole financial structure of Western Europe and America should collapse—the Irish hospitals will be assured at least of a livelihood. That is one aspect of the sweepstakes question which every member of the medical profession in Great Britain should bear in mind. It is not a question of meeting an emergency but of making, so far as is possible, permanent provision for the financing of the hospitals. Lord Powerscourt's remarks at the opening of the Derby draw give a very clear indication of what is in his mind and in the mind of his associates for the future.

It should be noted in this connexion that under the earlier

legislation of the Free State governing these sweepstakes the Derby "sweep" would have been the last of the series, but in the interim legislation has been enacted which makes the system permanent.

A PLAN TO AID RESEARCH

Perhaps the most interesting point in the proceedings was the plea of the Lord Mayor of Dublin (Alderman A. Byrne) that in future some part of the proceeds of the sweepstakes should be earmarked for the finance of research work. In declaring the draw closed, on June 6th, Dr. R. J. Rowlette announced that a definite scheme for the promotion of medical research had been formulated for submission to the responsible Free State Minister. This scheme would provide for research not only in Ireland but in other countries. It would enable the ablest of their young medical men and women to travel to any part of the world in the interests of research. The Irish hospitals had to thank not only the people of Ireland but of every part of the world, and in the research scheme opportunities would be offered not only to Irish workers but to capable ambitious workers from other countries.

In a reference to the progress of the hospitals sweepstakes fund in past years, Dr. Rowlette said that a study was now being made of the whole hospital system of the country, and hospitals might be assured that proper demands would, in due course, be met from the accumulated funds. In the course of the next few years they would have well-built and well-equipped hospitals provided with endowments for the future.

CONGRESS ON LYMPHATISM

Under the presidency of Professor A. B. MARFAN an international congress on lymphatism was held at La Bourboule on June 9th and 10th. The papers presented at the scientific sessions were numerous, and dealt with many aspects of the subject.

SCIENTIFIC PAPERS

Under the general heading of "Aetiology and Pathology of Lymphatism" the president, Professor Marfan, opened the first day's proceedings with an important communication, in which he indicated the great difficulty he found over defining the term "lymphatism," and he offered as his own view that this word represented a state characterized by a persistent hyperplasia, more or less generalized, of the lymphatic glands and lymphoid tissue, resulting from a generalized reaction by the organs or tissues to the majority of prolonged injections or intoxications. Professor J. TAILLENS (Lausanne), in a spirited address, attacked the use of the term "lymphatism," stating that in his forty years' experience he had never met a case of this disorder. He believed that what was meant in most instances by the use of the word was a state of enlargement of the lymphatic tissue in the nasopharynx with the attendant possibilities of local and generalized infection. The second general division of the contributions was entitled "Forms and Varieties of Lymphatism." Professor P. LEREBOLLET (Paris) dealt with the condition of "status thymico-lymphaticus," affirming that enlargement of the thymus was not an essential part of this syndrome. Professor V. GILLOR (Algiers) discussed the relation between lymphatism and malaria, concluding that the one had nothing to do with the other. Professor E. GÖRTER (Leyden), accepting the view that lymphatism was part of the exudative diathesis of Czerny, brought forward evidence of endocrine disturbances in "lymphatic" children, more especially dysfunction of the adrenals. A study of the blood sugar levels after injection of adrenaline in such children showed less elevation than in normal controls. Dr. ALAN MONCRIEFF (London) briefly explained the current English view, which did not favour the use of the term "lymphatic diathesis," and pointed out that despite the absence of the word "lymphatism" from the medical vocabulary

Scotland

Changes in Glasgow Medical Faculty

At a meeting of the University Court of Glasgow University, held on June 14th, with the Principal, Sir Robert S. Rait, presiding, it was intimated that Professor Munro Kerr would relinquish the Regius chair of midwifery, and Professor Walter K. Hunter the Muirhead chair of medicine, from September 30th next. The Secretary of State for Scotland has announced that applications for the office of Regius professor of midwifery must be sent immediately, with copies of two recent testimonials, to the Private Secretary, Scottish Offices, Whitehall, London, S.W.1.

Welfare of the Blind

The annual conference of the Scottish National Federation for the Welfare of the Blind was held in Aberdeen on June 14th and 15th, and delegates numbering about 200 were received at a civic reception in the town and county hall. Mr. W. R. Halliday, Glasgow, in opening a discussion on the prevention of blindness, recalled that the Federation had been founded ten years ago at Aberdeen. He believed that in Scotland they were far ahead of other countries in the correct certification of blindness. The State was interested in prevention, since it could not afford to lose the potential productivity of any of its citizens. Industrial workers were continually exposing themselves to serious eye dangers, and people were constantly using the naked eye for work which demanded the use of glasses, while others failed to get proper advice and treatment in the early stages of eye disorders. A vigorous campaign of enlightenment, therefore, would be of great advantage to the community. He suggested that a Prevention of Blindness Committee for Scotland should be set up. Mr. C. H. W. Anderson, Edinburgh, said that such a committee ought to be named the Preservation of Sight Committee. A pamphlet on the care of the eye had been prepared by Dr. George Mackay, and distributed to the number of 20,000, and an illustrated leaflet, of which 14,000 copies were circulated, had been published by the Federation. In the course of the discussion the practice of purchasing cheap spectacles was condemned as detrimental to eyesight. On the second day of the conference Mr. William Edgar, president of the Fife Society for the Blind, read a paper on salesmanship by the blind. He said that most societies could give instances of blind persons earning their livelihood by the sale of goods. If this was to be a success, however, training must be practical and theoretical, and efficiency must be promoted by printing receipt slips, bill-heads, etc., in Braille. Captain J. Bell Cumming, Dundee, said that institutions in Scotland were at present finding full-time employment for about 1,000 blind persons, but he believed that salesmanship by the blind was beyond practical politics. At the annual business meeting it was agreed that the model scheme under the Blind Persons Act, 1920, should be sent to all affiliated bodies for their approval.

Care of Scottish Mental Defectives

At the recent conference in Edinburgh of the Scottish Association of Mental Welfare various problems of mental deficiency were discussed. Lord Polwarth said that there was no more difficult question at the present day than that of mental deficiency, and in Scotland they were conscious that there was a lack of accommodation for mentally deficient cases. Dr. M. Hamblin Smith, late superintendent of Birmingham Prison, in a paper on "The Medical Examination of Offenders," said that the most diverse

in Great Britain the common diagnosis of "T's and A's" in reality described very much the same sort of child discussed by Continental speakers. Professor C. COHEN (Brussels) described the campaign in Belgium established to deal with the anaemic, debilitated type of child who required convalescence in the country or at the seaside. The therapeutic aspect of the subject was dealt with in a series of papers grouped under the title "Treatment of Lymphatism." Dr. J. ANGLADA (La Bourboule) indicated the type of malady which would be benefited by a course of treatment at this spa. The waters, rich in arsenic, are drunk, injected subcutaneously or intramuscularly, employed as baths or douches, and used as sprays for the nose and pharynx. In addition, La Bourboule offers special facilities for physical treatment of children in organized heliotherapy, open-air gymnastics, and breathing exercises under medical supervision. Dr. J. HALLÉ (Paris) and Dr. P. FERREYROLLES (La Bourboule) described the results of sending children from Paris to La Bourboule. The public assistance officials of the former city have sent over two thousand children to the spa during the past twelve years, obtaining particularly good results in cases of asthma.

SOCIAL FUNCTIONS

This international congress was organized by the Institute of Hydrology and Medical School of Clermont Ferrand, the Mineral Water Company of La Bourboule, the Medical Society of La Bourboule, and the Municipal authorities of that town. It was attended by approximately 500 visitors, who were guests of the Mineral Water Company at a magnificent banquet at the Casino on the evening of June 9th. Visits were paid to the baths, and to the laboratories and wards of the local hospital, while there were many excursions to places of interest in the district, including the neighbouring spa, Mont Dore.

ROCKEFELLER MEDICAL FELLOWSHIPS

The Medical Research Council announces that, on behalf of the Rockefeller Foundation, it has made the following awards of travelling Fellowships for the academic year 1934-5. These Fellowships are awarded to graduates who have had some training in research work, either in the primary sciences of medicine or in clinical medicine and surgery, and who are likely to profit by a period of work abroad before taking up positions for higher teaching or research in the British Isles.

IAN AIRD, M.B., F.R.C.S.Ed., Demonstrator in Anatomy, University of Edinburgh, and Clinical Tutor in Surgery, Royal Infirmary, Edinburgh.

IAN ALFRED ANDERSON, B.Sc., M.B.Aberd., House-Physician, Royal Infirmary, Aberdeen.

ERIC GORDON OASTLER, B.A.Oxon, M.B.Glas., Professor of Physiology, St. Mungo's College, Glasgow, and Assistant Physician, Royal Infirmary, Glasgow.

WILFRED HARDING OWLES, M.A., B.Sc., B.M.Oxon, Resident Medical Registrar, Queen's Hospital, Birmingham.

HAROLD LEEMING SHEEHAN, M.Sc., M.D.Manch., Lecturer in Pathology, University of Manchester.

CLIFFORD WILSON, M.A., B.M.Oxon, Assistant in Pathology, London Hospital.

All the Fellows appointed this year will work at centres in the United States.

The third edition of the *Official Guide Book of Medical Post-Graduate Work in Hungary* gives a well-illustrated account of the various facilities which this steadily growing country offers for advanced medical training. There are four university centres—namely, at Budapest, Szeged, Pécs, and Debrecen. Medical practitioners from other countries are welcomed as students, and detailed information of the various courses of instruction and other opportunities available are obtainable from the headquarters of the Hungarian Medical Post-Graduate Committee, Maria-utca 39, Budapest. A post-graduate course for American practitioners has been arranged for September 10th to 15th.

estimates had been made as to the percentage of delinquents who came within the definitions given in the English Mental Deficiency Acts. These varied from 90 per cent. down to statements made by the managers of reformatory institutions that there were no mental defectives among their inmates. Both of these extremes came from America, but the speaker thought that most workers on this subject would agree that not more than 5 per cent. of delinquents were mental defectives, and that probably 3 per cent. was nearer the truth. He urged that in cases in which mental abnormality was suspected in an accused person the case should be adjourned until the question of the accused's mental condition had been settled. Probation was so easy and apparently so good a mode of disposing of cases of delinquency that resort was often made to it without due consideration of the accused person's mentality. Probation should, however, be made a serious affair, and should always be combined with measures of social rehabilitation. An apparently trivial offence might contain the germ of future difficulties of the utmost moment. Modern students of crime were often accused of wishing to pamper offenders, and it might be that many offenders would prefer to continue the present rough-and-ready measures, but the protection of society was the primary consideration. It would be an advantage, the speaker believed, if there were a psychological assessor in every criminal court. Professor James Drever said that he agreed that the problem of the offender was a psychological one, but at present there were not enough experts to carry out the psychological investigation required in all cases, and the general medical practitioner could not be expected to undertake mental examination any more than to perform a major surgical operation. He believed that more training in psychology and psychiatry should be given to medical students. Dr. W. A. McAllister said that he disagreed with those psychologists who traced everything back to some incident in childhood, for it was very often unnecessary to go far back for an explanation of some misdemeanour.

The High-grade Defective

At the afternoon session a discussion took place on the high-grade mental defective. Dr. W. G. Sym, who presided, said that by the high-grade defective was meant a person who might technically come into the category of feeble-mindedness, but bordered closely on the normal. Such a person did better when boarded out than when placed in an institution, but so long as he was not injurious to others or to himself there was no reason for any segregation. Dr. D. J. Forbes of Baldovan Institution, Dundee, said that at least 8 per 1,000 of the population belonged to the mentally defective class, but of these some 75 per cent. belonged to the higher-grade class. Accordingly the training of higher-grade defectives was a problem of much importance. The quiet and docile type was apt to find his way into an institution owing to unfortunate environment at home or incapacity for education, while the restless, unsettled type who fell into mischief was found in the delinquent class of the outside world. At the age of 16 a number of both classes were discharged from institutions, with a view to earning at least part of their own living and still having protection and supervision, and, when possible, the benefit of the After-Care Association. Dr. Kate Fraser (Edinburgh), dealing with boarded-out defectives, said that many were capable of carrying out useful work in community organizations. Last year over 1,000 certificated defectives were boarded out under guardians who were not relatives. The best type of home for defective boys was the small farm, where they worked in the fields along with the guardian. The girls were best placed in country cottages

or in village communities, doing work in gardens or on farms. Under these conditions the mental defective was treated as an ordinary human being, but success in this method of dealing with the mental defective depended upon patience and sympathetic understanding of the guardians. Miss Carmen Service (Paisley) discussed the relation of high-grade defectives to the community, and said that the friendly supervision of local care committees was most important. It had been found that the high-grade defective was well suited to take up work of a routine nature which was monotonous to those of higher intellect. The question of hostels for high-grade defectives deserved consideration, for the hostel was a useful step between an institution and the demands made by life in the community, and it was better than an unsuitable home.

England and Wales

The Harveian Society

The Buckston Browne annual dinner of the Harveian Society of London was held on June 14th in the Connaught Rooms under the chairmanship of Sir Buckston Browne, F.R.C.S., life-president of the society. The guests included the medical heads of the three Services, the President of the Royal Academy, the Regius Professor of Physic at Cambridge, the President of the Royal Society of Medicine, the President of the British College of Obstetricians and Gynaecologists, and the Editors of the *Lancet* and the *British Medical Journal*. After the loyal toasts had been honoured "The Society" was toasted by the Greek Minister, M. Demetrius Caclamanos, who expressed his delight at meeting members of a profession whose patron saints were Aesculapius and Hippocrates, and at enjoying the hospitality of a society founded in honour of the great English exponent of the Greek spirit in science. The chairman, in reply, thanked His Excellency for a charming speech seasoned with Attic salt. He himself, Sir Buckston said, was presiding on this occasion as the representative of the real president, Dr. Hope Gosse, who, though not able to be with them that night, was making a good recovery from his serious motoring accident. The society now numbered nearly four hundred members, and was full of life and vigour. William Harvey understood the value of professional intercourse, and would therefore have rejoiced in the discussions and banquets of the Harveian Society. Looking back over a long life, Sir Buckston Browne noted, with especial pleasure, the steady advance of the medical profession in social esteem. Mr. A. Dickson Wright, who proposed the health of the visitors in graceful terms, said that the Buckston Browne dinner was becoming one of the medical events of the year, and mentioned that their host and chairman was now celebrating the diamond jubilee of his entrance into the profession. Dr. F. M. R. Walshe, the Harveian lecturer, responded briefly in light vein. The Englishman's adulation of the amateur, he said, had gone so far that the expert was everywhere becoming an object of derision; magic and manipulation had to-day an unequalled opportunity. Mr. F. R. Mortimer, Master of the Barbers' Company, who also responded, touched on the long association, which came to an end in 1745, between surgery and the barber's craft.

The Drought: Emergency Measures

On June 13th the Minister of Health conferred on the question of urban water supplies with members of the Standing Conference on Water Supplies, whose representatives are drawn from various parts of the country. In welcoming the members Sir Hilton Young said that he had called them together to assist on questions arising

out of the drought. The objects in appointing the conference were to secure first-hand information of conditions, to enable him to assess the difficulties to be encountered, and to prepare measures for overcoming the difficulties. The conference gave a review of the position, which showed that, generally, conditions in the towns were fairly good considering the continued absence of rain. In some towns reserves were very low, but there was no reason to think that the water undertakers would not be able to meet the situation, if consumers played their part, with the aid of special additional powers for increasing supplies and improving distribution now readily obtainable under the Water Shortage Act passed last month. The relatively good position in the towns is due in large measure to the economies effected with the co-operation of consumers. In the area of the Metropolitan Water Board a reduction in consumption of over 10 per cent. has been effected by voluntary economies. There is, however, plenty of room for larger reductions, and efforts in this direction must not be relaxed, otherwise difficulties may ensue later in the summer and autumn which can be avoided if reasonable care is taken now. At some places substantial economies have been effected in trade, as well as in domestic consumption, without any curtailment of supplies needed for trade, which it is important to avoid, and where necessary water undertakers can assist by suggesting ways by which waste may be prevented. The following matters were referred to for more general attention. Water undertakers should keep the public informed in clear and simple terms about the manner and measure of the economies in the use of water required by the local conditions. At some places marked savings have been effected by the loan of qualified waste inspectors from large water undertakers to neighbouring small undertakers. Substantial savings can be effected by transport undertakings and private owners in washing cars. Attention was called to the economies that could be effected by public authorities in the use of water for such purposes as street washing and watering in public parks.

Out-Patient Time-Tables at London Voluntary Hospitals

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Restoration of the "Cut" in Northern Ireland

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estimates had been made as to the percentage of delinquents who came within the definitions given in the English Mental Deficiency Acts. These varied from 90 per cent. down to statements made by the managers of reformatory institutions that there were no mental defectives among their inmates. Both of these extremes came from America, but the speaker thought that most workers on this subject would agree that not more than 5 per cent. of delinquents were mental defectives, and that probably 3 per cent. was nearer the truth. He urged that in cases in which mental abnormality was suspected in an accused person the case should be adjourned until the question of the accused's mental condition had been settled. Probation was so easy and apparently so good a mode of disposing of cases of delinquency that resort was often made to it without due consideration of the accused person's mentality. Probation should, however, be made a serious affair, and should always be combined with measures of social rehabilitation. An apparently trivial offence might contain the germ of future difficulties of the utmost moment. Modern students of crime were often accused of wishing to pamper offenders, and it might be that many offenders would prefer to continue the present rough-and-ready measures, but the protection of society was the primary consideration. It would be an advantage, the speaker believed, if there were a psychological assessor in every criminal court. Professor James Drever said that he agreed that the problem of the offender was a psychological one, but at present there were not enough experts to carry out the psychological investigation required in all cases, and the general medical practitioner could not be expected to undertake mental examination any more than to perform a major surgical operation. He believed that more training in psychology and psychiatry should be given to medical students. Dr. W. A. McAllister said that he disagreed with those psychologists who traced everything back to some incident in childhood, for it was very often unnecessary to go far back for an explanation of some misdemeanour.

The High-grade Defective

At the afternoon session a discussion took place on the high-grade mental defective. Dr. W. G. Sym, who presided, said that by the high-grade defective was meant a person who might technically come into the category of feeble-mindedness, but bordered closely on the normal. Such a person did better when boarded out than when placed in an institution, but so long as he was not injurious to others or to himself there was no reason for any segregation. Dr. D. J. Forbes of Baldovan Institution, Dundee, said that at least 8 per 1,000 of the population belonged to the mentally defective class, but of these some 75 per cent. belonged to the higher-grade class. Accordingly the training of higher-grade defectives was a problem of much importance. The quiet and docile type was apt to find his way into an institution owing to unfortunate environment at home or incapacity for education, while the restless, unsettled type who fell into mischief was found in the delinquent class of the outside world. At the age of 16 a number of both classes were discharged from institutions, with a view to earning at least part of their own living and still having protection and supervision, and, when possible, the benefit of the After-Care Association. Dr. Kate Fraser (Edinburgh), dealing with boarded-out defectives, said that many were capable of carrying out useful work in community organizations. Last year over 1,000 certificated defectives were boarded out under guardians who were not relatives. The best type of home for defective boys was the small farm, where they worked in the fields along with the guardian. The girls were best placed in country cottages

or in village communities, doing work in gardens or on farms. Under these conditions the mental defective was treated as an ordinary human being, but success in this method of dealing with the mental defective depended upon patience and sympathetic understanding of the guardians. Miss Cairmen Service (Paisley) discussed the relation of high-grade defectives to the community, and said that the friendly supervision of local care committees was most important. It had been found that the high-grade defective was well suited to take up work of a routine nature which was monotonous to those of higher intellect. The question of hostels for high-grade defectives deserved consideration, for the hostel was a useful step between an institution and the demands made by life in the community, and it was better than an unsuitable home.

England and Wales

The Harveian Society

The Buckston Browne annual dinner of the Harveian Society of London was held on June 14th in the Connaught Rooms under the chairmanship of Sir Buckston Browne, F.R.C.S., life-president of the society. The guests included the medical heads of the three Services, the President of the Royal Academy, the Regius Professor of Physic at Cambridge, the President of the Royal Society of Medicine, the President of the British College of Obstetricians and Gynaecologists, and the Editors of the *Lancet* and the *British Medical Journal*. After the loyal toasts had been honoured "The Society" was toasted by the Greek Minister, M. Demetrius Caclamano, who expressed his delight at meeting members of a profession whose patron saints were Aesculapius and Hippocrates, and at enjoying the hospitality of a society founded in honour of the great English exponent of the Greek spirit in science. The chairman, in reply, thanked His Excellency for a charming speech seasoned with Attic salt. He himself, Sir Buckston said, was presiding on this occasion as the representative of the real president, Dr. Hope Gosse, who, though not able to be with them that night, was making a good recovery from his serious motoring accident. The society now numbered nearly four hundred members, and was full of life and vigour. William Harvey understood the value of professional intercourse, and would therefore have rejoiced in the discussions and banquets of the Harveian Society. Looking back over a long life, Sir Buckston Browne noted, with especial pleasure, the steady advance of the medical profession in social esteem. Mr. A. Dickson Wright, who proposed the health of the visitors in graceful terms, said that the Buckston Browne dinner was becoming one of the medical events of the year, and mentioned that their host and chairman was now celebrating the diamond jubilee of his entrance into the profession. Dr. F. M. R. Walshe, the Harveian lecturer, responded briefly in light vein. The Englishman's adulation of the amateur, he said, had gone so far that the expert was everywhere becoming an object of derision; magic and manipulation had to-day an unequalled opportunity. Mr. F. R. Mortimer, Master of the Barbers' Company, who also responded, touched on the long association, which came to an end in 1745, between surgery and the barber's craft.

The Drought: Emergency Measures

On June 13th the Minister of Health conferred on the question of urban water supplies with members of the Standing Conference on Water Supplies, whose representatives are drawn from various parts of the country. In welcoming the members Sir Hilton Young said that he had called them together to assist on questions arising

out of the drought. The objects in appointing the conference were to secure first-hand information of conditions, to enable him to assess the difficulties to be encountered, and to prepare measures for overcoming the difficulties. The conference gave a review of the position, which showed that, generally, conditions in the towns were fairly good considering the continued absence of rain. In some towns reserves were very low, but there was no reason to think that the water undertakers would not be able to meet the situation, if consumers played their part, with the aid of special additional powers for increasing supplies and improving distribution now readily obtainable under the Water Shortage Act passed last month. The relatively good position in the towns is due in large measure to the economies effected with the co-operation of consumers. In the area of the Metropolitan Water Board a reduction in consumption of over 10 per cent. has been effected by voluntary economies. There is, however, plenty of room for larger reductions, and efforts in this direction must not be relaxed, otherwise difficulties may ensue later in the summer and autumn which can be avoided if reasonable care is taken now. At some places substantial economies have been effected in trade, as well as in domestic, consumption, without any curtailment of supplies needed for trade, which it is important to avoid, and where necessary water undertakers can assist by suggesting ways by which waste may be prevented. The following matters were referred to for more general attention. Water undertakers should keep the public informed in clear and simple terms about the manner and measure of the economies in the use of water required by the local conditions. At some places marked savings have been effected by the loan of qualified waste inspectors from large water undertakers to neighbouring small undertakers. Substantial savings can be effected by transport undertakings and private owners in washing cars. Attention was called to the economies that could be effected by public authorities in the use of water for such purposes as street washing and watering in public parks.

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Reports of Societies

PREVENTION OF TUBERCULOSIS

ANNUAL CONFERENCE IN LONDON

The twentieth annual conference of the National Association for the Prevention of Tuberculosis was held on June 14th and 15th, in the Conference Hall of the London County Council, under the chairmanship of Sir ROBERT PHILIP. Since the national scheme for the prevention and control of this disease had been originally based on the recommendations of the Departmental Committee on Tuberculosis (1912-13), the proceedings were directed mainly to a review of the experience gained during twenty-one years.

Lord SNELL (Chairman of the London County Council) welcomed the conference, the work of which, he said, was of supreme social importance. London had now abolished any waiting by applicants for tuberculosis treatment. The selecting of some of the parks' staff from members of the Burrow Hill Colony had proved a great success.

Sir HILTON YOUNG, Minister of Health, paid a warm tribute to the work of the National Association, since its inauguration in 1898, in marshalling and instructing public opinion. Voluntary efforts had brought into being the first dispensaries and sanatoria. Then had followed the provisions in the Insurance Act for tuberculous insured persons, and the adoption by the Government of the findings of the Astor Committee. He reviewed the progress that had been made, and expressed regret that there was still much too great a tendency to ignore the early symptoms. There had been many factors concerned in the greatly reduced incidence of tuberculosis, but he was convinced that there would be no final success in the campaign against the disease until its slum breeding places had been eradicated.

EXPERIENCE OF TWENTY-ONE YEARS

Lord ASTOR (Chairman of the Departmental Committee on Tuberculosis) reviewed the history of the last twenty-one years, beginning with a reference to the work of that very composite body, which had from the first been much concerned with the respective merits of rival forms of treatment. Its recommendations, owing to the outbreak of war, had been stopped from coming into effect until 1919-21. The importance of prevention had been emphasized from the start, and many health measures in industry and elsewhere had owed their origin to the stressing of this outlook. Although over 40 per cent. of cows were infected, the number yielding infected milk was only 2 per cent., but about 5 per cent. of human tuberculosis was traceable to this cause. Some of the decline in the incidence of the disease in children was attributable to preventive measures in this sphere. Further improvement as regards the milk supply was rather retarded by differences of outlook in certain Government Departments. There were too many brands of tuberculin of differing potencies on the market, but all were at present recognized officially for testing purposes. There was also a variability as regards the skill of different veterinary practitioners, and so their results were not fairly comparable always. Standardization of tuberculin was an urgent need, with restriction to the employment of one type. Research had made great advances, and had been kept free from any departmental control.

Dr. A. SALUSBURY MACNALLY (senior medical officer, Ministry of Health) contributed details from the public health and medical aspects. After publication of the report of the Departmental Committee, and the then Local Government Board had begun to bring the recommendations therein into effect, the chief problem was found to be the provision of residential institutional accommodation. The outbreak of war arrested progress temporarily, but at its end the work was continued and extended. At present the obvious field for activity was the instruction of the general public as to the early signs

and symptoms of tuberculosis. The State had realized the existence of complex factors favouring the disease, such as certain forms of occupation, malnutrition, overcrowding, and bad sanitary environment, and it was appreciated that all measures directed towards the health and improvement of the nation generally were important contributions toward the prevention of tuberculosis. Anti-tuberculosis work was now regarded as an integral part of public health, and the medical officer of health could marshal and co-ordinate all branches of the service in the prevention of the disease. Every advance in treatment and all proved methods of therapy were brought to the notice of local authorities and their medical officers. Still more attention needed to be paid to the examination of contacts, and to the provision of adequate after-care for cases of arrested disease, with special reference to home surroundings and occupation.

Dr. N. D. BARDSWELL (principal assistant medical officer, L.C.C.) reviewed the treatment of tuberculosis in London since 1913, with special reference to the way in which all the existing efficient agencies, both voluntary and official, had been augmented and fitted into a comprehensive scheme. This now comprised a central co-ordinating authority at the County Hall which provided residential treatment, and thirty-five dispensaries in the various London boroughs linked up with neighbouring hospitals. A decline of nearly 40 per cent. in pulmonary tuberculosis, and of over 75 per cent. in non-pulmonary tuberculosis, from 1911 to 1933 was striking evidence of the improvement that had resulted. Although other factors were concerned in this falling incidence, which had, indeed, been observable since 1875, he believed that the special efforts directed towards the prevention of tuberculosis during the past twenty-one years had materially contributed to the diminution of the disease. In that period no body of sick persons in London had gained so much as those suffering from tuberculosis. The high ideal set before public authorities in 1913 that no tuberculous person in their areas should be unknown to them, or be without the opportunity of skilled advice and treatment, had been achieved in London. Collapse therapy had effected some remarkable successes, but necessitated a high degree of skill. It had not yet affected the statistics of the ultimate results of treatment, and was certainly not suitable for general use. The popularity of tuberculin treatment had gradually faded away, and was not to-day seriously considered as a cure. Boarding out of two groups of children was practised—namely, those living under specially dangerous conditions as regards infection, and those who would be left unattended if the woman of the household went away for treatment. The number dealt with thus each year was about 200. Of about 3,500 beds maintained by the London County Council for the treatment of tuberculosis, 1,500 were in institutions outside its own jurisdiction.

Sir JOHN ROBERTSON (professor of public health, Birmingham) emphasized the point that much more could yet be done to reduce the number of new cases. Statistics showed that the mortality from all forms of tuberculosis was 2½ times as great among the unskilled as among the middle class, and that the mortality among the skilled artisan was nearly double that in the upper and middle classes. More instruction should be made available, and much greater care should be taken of contacts than was the case at present in some areas. Young contacts should be kept under observation for as long as five years, and facilities be available for those who needed special treatment. Home visits were essential in these cases. Many industries employing young persons might be brought under the purview of the Home Office with a view to getting better conditions of work established. Clerks and shop assistants, who did not come under the Factory Acts, might with advantage be included for the purpose of tuberculosis prevention. It did not seem to be beyond the power of the present factory organization to require a health certificate of fitness to enter a particular employment. If there was found an undue incidence of the disease among those who had been healthy on entrance, some liability under the Workmen's Compensation Act would soon bring into operation improvement in the conditions of work.

THE TUBERCULOSIS DISPENSARY

Dr. G. LISSANT COX (central tuberculosis officer, Lancashire County Council), opening a discussion on the place and uses of the tuberculosis dispensary, said that this was essentially not a building but an organization made up of many factors, of which the human factor was not the least important. The dispensary unit should work in unity with the institutional unit, and it was the lack of this unity which was the real reason of much of the prevailing ineffective work. In London there were two controlling authorities—the metropolitan borough and the county council—where there should only be one. Further, administrative changes required to be made so that the tuberculosis officer should be at one and the same time a medical superintendent, visiting or resident, and the medical superintendent be in part a tuberculosis dispensary officer. He would thus see as a whole the complex problem presented by each patient, and consult with the family doctor. When first brought into being, dispensary units had been much too small, and this had probably been the cause of an unnecessarily low and ineffective standard of work. The size of a dispensary unit, measured by the population it served, should be about 200,000 in a rural area and 300,000 in an urban district. The very small local authorities of 50,000 to 100,000 population should combine for dispensary and institutional work. Each unit must have an x-ray plant available, and the tuberculosis officer should be able to interpret his own skiagrams. There must also be a room for artificial pneumothorax refills, and at the larger dispensaries a room or rooms for an artificial light clinic. The unit should be large enough to necessitate a graded staff.

Dr. D. MELVILLE DUNLOP (department of tuberculosis, Edinburgh) thought that in many instances the dispensary hours were too short and too crowded with work. Inflated attendances should be discouraged, and chronic bronchitic and asthmatic patients discharged. Secretarial assistance was often inadequate. The banding together of small dispensary units should be hastened. Treatment should be of a specific and not of a symptomatic kind. The tuberculosis officer should, however, be not only a clinician, but also a supervisor of public health requirements, the claims of the individual patient not being over-stressed to the exclusion of the claims of the community. The examination of contacts, and particularly of contact children, was one of the most important functions of the dispensary in the prevention of tuberculosis. Interviewing of the family enabled useful readjustments of the mode of life to be suggested. It was sad that the dispensary and the school medical service were so often segregated in watertight compartments, with little or no interrelation. Medical students might well attend in order to study the tuberculosis problem as it occurred in real medical practice.

In the general discussion which followed it was suggested that the dispensaries ought to be attached to the teaching and public assistance hospitals, tuberculosis officers looking forward to clinical rather than administrative preferment. Dr. J. G. WILSON of Cardiff thought that each of the three dispensary schemes did well in suitable areas. He had had personal experience of the excellent work of the Lancashire scheme, but the small unit of 54,000 had a specially intimate touch and good co-ordination, which he had found commendable apart from the admitted financial difficulties. The Welsh National Memorial was a magnificent machine, but lacked the personal touch. Other recommendations were the paying of more attention to signs of under-nourishment in contacts even in the absence of suspicious signs and symptoms, the reduction of hours of work in dust-laden atmospheres, and the substitution of the terms "dispensary" and "tuberculosis officer" by "chest or health centre" and "tuberculosis physician."

RESIDENTIAL INSTITUTIONS

Dr. JAMES WATT (medical superintendent, King George V Sanatorium, Godalming) opened a discussion on residential institutions by pointing out how great a change had been brought about in them by the big strides made in radiography of the chest and the advances in collapse therapy.

The work of an up-to-date chest hospital or sanatorium now revolved round its x-ray department. The consequent demonstration of pleural adhesions preventing satisfactory collapse of the diseased lung had led to the development of thoracoscopy, and the cutting of adhesions by electric currents. In a modern sanatorium collapse therapy was undertaken in from 20 to 50 per cent. of the cases. The sanatorium no longer resembled a convalescent home but a hospital; whereas formerly about 20 per cent. of the patients were confined to bed, it was now common to find only about 50 per cent. ambulant cases. One nurse to six beds was usual, and the cost had advanced from the Departmental Committee's estimate of £150 per bed to £500 or £700. Earlier and more frequent surgical intervention was now usual, and thoracoplasty, the most drastic form of collapse therapy, offered an almost equal chance of recovery to patients who under the old methods had no more than a one in four or one in five chance of survival. With this change in outlook, the sanatorium was now preferably situated on the outskirts of a town, easily accessible to visiting consultants. In addition to treating in-patients, it should be the centre for diagnosis, have an out-patient department for pneumothorax refills, and take over dispensary functions, including after-care. Dr. Watt thought that these changes had rendered the sanatorium a far more effective weapon against tuberculosis than it had ever been, and that its outlook for the future was very promising.

Dr. R. C. WINGFIELD (medical superintendent, Brompton Hospital Sanatorium, Frimley) thought that now in 1934 the old-style sanatorium was no longer the main treatment centre, but rather a polishing and testing centre where, under skilled supervision, the patient was tested and trained for his return to the stresses of everyday life, or was sent back to the hospital bed for more energetic treatment if required. There was no uniformity of sanatorium work in this country. In some areas, as in London, there were large sanatoria each designed for a particular type of case, serving the institutional needs of several districts, and working under an authority different from that of the dispensaries which they served. This divorce of sanatorium from dispensary treatment was very unsound. In Wales there was the same system, but the inclusion of sanatoria and dispensaries under the one authority allowed surer co-operation. In Surrey one large central institution was utilized more or less for all types of case, and was under the same authorities as were the dispensaries. Some sanatoria served more than one county, while the older proprietary institutions treated cases for many local authorities by private arrangement, and had no official relations with the dispensaries. Finally, the Lancashire method tended to multiply smaller institutions, but linked them as closely as possible with the dispensaries, in some cases placing both under the same medical officer. The independence and pre-eminence of the old-style sanatoria had been mistakenly perpetuated in most developments of the national tuberculosis scheme. This life-long disease was not cured by collapse therapy or sojourn in a sanatorium, and the dispensary, with its field work, must be the chief unit of a successful service. The present general tendency to starve the dispensaries financially for the benefit of the sanatorium was as unsound scientifically as it was practically uneconomic. At least as much money must be allocated by the public authority to its dispensary as to its institutional service.

Dr. J. B. McDougall (medical director, British Legion Village, Preston Hall) said that in the past too much attention had been paid to the purely medical aspects of tuberculosis and not enough to the important economic considerations. The failure of after-care committees in many parts of the country had been due to lack of financial support. After-care, using the term in its widest sense, had made less progress in efficiency than any other branch of the anti-tuberculosis scheme. The village settlement, as exemplified at Papworth and Preston Hall, where about £200,000 worth of goods was sold annually to the public, and approximately £50,000 was paid in wages to ex-patients, might be regarded as the ideal, but local authorities had been deterred in many cases by

financial considerations. There were many posts in sanatoria which could well be filled by ex-patients. Why should after-care schemes be condemned as uneconomic when this condition was not imposed on sanatoria? Without prolonged treatment it was impossible to obtain good results in at least half the cases. In the village settlement the family as a whole was cared for as carefully as the patient. The time had come for an organization like the National Association for the Prevention of Tuberculosis to place before local authorities, not one scheme, but the choice of one or more of a large number of schemes which had been successful in this and in other countries.

Dr. F. R. G. HEAF (medical superintendent, Colindale Hospital, Hendon) believed that tuberculosis hospitals should be situated near large towns, and be able to accommodate early febrile cases requiring rest in bed, cases needing special treatment, particularly major surgical operations; advanced cases with some prospects of improvement; and a certain number of hopeless cases. They should also be centres for research work. A unit for thoracic surgery became more efficient and economical the more it was used. These hospitals should therefore be used for the treatment of all forms of chronic pulmonary diseases, and it was a bad policy to send all advanced cases to one institution. Patients requiring routine rest and exercises should not be kept at a tuberculosis hospital, but centres of occupational therapy should be established at hospitals and in towns near to patients' homes. The establishment of rest homes for advanced cases with unsuitable homes of their own was recommended, some form of employment being provided. The ambulant advanced case was more dangerous to the community than the bed-ridden one.

CO-ORDINATION IN A TUBERCULOSIS SCHEME

The co-ordination of the several elements in a tuberculosis scheme was discussed by Dr. H. P. NEWSHOLME (medical officer of health for Birmingham), who said that in that city there had been no difficulty two years ago in charging the chief clinical tuberculosis officer with all aspects of tuberculosis work, including the control of statistical and other clerks, and of nurses previously under a general administrative officer, as well as the regulation of inspection of home conditions. The link with the general health activities of the city had been effectively forged by a regular weekly conference between the medical officer of health and the chief tuberculosis officer, and by contact between the latter and other officers engaged in administration as occasion arose. Action in regard to defective housing and the provision of better accommodation was followed up by the administrative staff, on receipt of information sent in by the tuberculosis department. In Birmingham the tuberculosis service had been welded into a unit which was unusually self-controlled and adjusted. Linked up with this was the high degree of co-ordination between the dispensary in its capacity as clearing-house and the beds for sanatorium and hospital cases, for children, for observation cases, and for surgical tuberculosis, as well as for the transfer of tuberculous patients to and from general and special hospitals, whether municipal or voluntary. The occupational scheme was established at the central sanatorium. The home conditions were reported directly to the dispensary, and housing defects were remedied through the general public health department; better housing was acquired through that department and the estates department, and shelters or bedding were distributed through the hospital steward's section of the public health department. Extra food was provided by special arrangements with food tradesmen, and monetary and other assistance by the public assistance department. Details were given of the close liaison built up between the tuberculosis work and the maternity and child welfare service, and also of the arrangements with the school medical service. Similarly good relations existed with general practitioners and the managements of the voluntary and municipal hospitals.

AFTER-CARE

A comprehensive account of the duties and possibilities of after-care was contributed by Miss EDITH MCGAW (honorary secretary, Paddington Tuberculosis Dispensary), who insisted that the care committee was as much an integral part of the tuberculosis dispensary as the dispensary was of the national scheme. Yet there were only about 150 care committees in the country in comparison with 750 dispensaries. Tuberculosis was a many-sided social problem as well as a medical question. The family, not the individual patient, was the unit. The re-creation of that family's home was as essential as the treatment of its members. Miss McGaw described the organization of the care committee, which she thought should preferably be small. Its members could give much help in the homes, including instruction about the cooking of food and the amount of clothing desirable. Outfits could be provided for patients proceeding to sanatoria, incomes augmented, and suitable employment found. Assistance for a time was often needed as regards the home work, and handicraft classes could be encouraged. A wider realization of the value of voluntary workers would have promoted the establishment of care committees, and brought nearer the day of the ending of tuberculosis.

Illustrations of the value of after-care in the Highlands were given by Miss A. E. WHITE, a nurse commissioner on the staff of the National Association.

CORRESPONDENCE

Endocrines—Fact and Fancy

SIR.—The departing steps of the postman coincide with the rustle of masses of falling envelopes; the recipient rapidly separates the obvious wheat from the chaff, the latter being without delay excreted into the suitable receiver. Only occasionally, as, for instance, when a dividend warrant has recently gone astray through not being marked distinctly enough on the outside "Not a circular," does the disillusioned victim inspect the ground-bait. Among the glut of prospectuses, appeals from hospitals, specious and insidious insurance propaganda, puffs of spas from home and abroad, and offers of samples of the "Stop me and try one" type, one cannot fail to be struck by the prevalent scientific journal issued by the big drug firm.

To what extent the profession is influenced by this type of publication as a form of post-graduate education is not for me to say, but at least it must be admitted that the thing is well done. Below a competently extracted account of Blosky's paper on the treatment of nervous affections of the urinary tract is a footnote to the effect that "Quieto" is the ideal sedative for spasmodic conditions; the reviewer of Jones-Robinson's monograph on gallstones casually mentions "Cholestero" as the perfect solvent of biliary concretions.

The preceding fiction is no exaggeration of the art at its most blatant. The more insidious form is found in the modern endocrine advertisement: here, indeed, is an appeal to scientific instincts and measured judgement. Such best-sellers as "Recent researches in endocrinology state—," "Every well-informed practitioner knows that—," "The modern treatment of — recognizes to the utmost the importance of taking into account endocrine influences," "The correlation of endocrine functions," etc., jostle each other in just the same way as do the established clichés of ordinary commercial advertisement. There is appropriate genuflection to every article of the creed. In the case in point, however (the endocrine preparations available to the up-to-date practitioner), there cannot be the slightest doubt.

The use of the extract of whatever gland is vouched for by Drs. A to Z (decorously concealed, of course, in deference to the G.M.C.), who have subjected it to rigorously conducted clinical trials in "this type of endocrine dysfunction," in "a series of cases of hormonal dyscrasia," "instances of glandular hypofunction," etc.; the unnamed investigators, with all scientific reserve and due reticence, even with obvious initial scepticism, report "Good results," "Appreciable improvement," and "Definite amelioration."

Of one particular aspect of glandular failure let there be not the least misgiving. In instances of middle-aged debility in the male, sometime neurasthenia, sometime "failure of gonads," occasionally starkly "impotence," the help is positive and unquestionable (shade of Brown-Séquard!), and there is quoted evidence from M.R.C.S., L.M.S.S.A., M.D., F.R.C.S., and even F.R.C.P., that aid is to hand for those with shirking endocrines. The scientific undercurrent is obvious, and combination of endocrines is the keynote. "Orchitic extract" (why from inflamed testicles?) is skilfully blended with correlated glands. One cannot fail to be touched by the obvious concern with which one firm refers to the way in which the "stresses of the winter" act upon the medical man, and suggests that a combination of testicle and adrenal, at a specially reduced rate for the profession, clearly meets the indications of the case. (It may here be noted sympathetically that the expense and care involved in putting up these preparations preclude the supply of clinical samples, which in any case are unnecessary, as the efficacy of the preparation has been demonstrated beyond doubt. Nevertheless, that the cost question is adequately understood as a barrier is evidenced by the announcement that "owing to increased consumption it has been found possible to reduce the cost of the series of 'umpteenth' injections necessary to obtain satisfactory clinical results from fifteen to twelve guineas.")

It is impossible to deal fully with the subject in the space available, but two other instances may be alluded to. There are, for example, parathyroid extracts. Their field of usefulness is widely indicated as ranging from paralysis agitans, chorea, and epilepsy, through colitis and duodenitis, to chilblains and varicose ulcers. There can again be no hesitation: there are favourable comments from Dr. M, from Dr. N there is enthusiastic support, and Dr. O has employed them with great benefit. Curiously, the preparation is an exsiccated gland for oral administration, by which route it is utterly inert! Finally, there are the baffling patients in whom our "practitioners even of long experience" cannot name any particular hormonal failure, but think there must be a "general failure of the endocrine functions." Even for such desperate cases of "Twilight of the Glands" there is hope, in a sort of *omnium gatherum* of endocrines, surely foreseen, as everything else, by the Bard.

"Fillet of a fenny snake,
Eye of newt and toe of frog,
Wool of bat and tongue of dog,

[Desiccated pituitary, adrenal cortex, desiccated brain, exsiccated lymph gland]

Adder's fork and blindworm's sting,
Lizard's leg and howlet's wing,
Scale of dragon, tooth of wolf"

(Exsiccated spinal cord, dried extract of testes, thyroid extract—put them all in!) This prescription, to be taken by the mouth, is found in the catalogue of a well-known firm.

The clinician may well cry "Halt," and say: "Insulin we know, thyroid we know, adrenaline and pituitrin we know, but what are these?" The time has surely arrived to ask for a clear evaluation of the usefulness and efficacy (if any) of the vast majority of endocrine productions of the present day, and, in particular, a

positive guarantee of the fundamental "replacement power" of the preparation. Do, or can, the physiologists speak with a clear and unanimous voice? It appears necessary, further, to settle the question whether clinical dogmatism and hypothesis, allied with commercial zeal, have outrun the limits of ascertained facts.

If the results of a recent transatlantic investigation are to be credited, in that any activity of most glandular preparations is due to a "hotting-up" with thyroid, we might seem to be in for a severe "debunking" of existing endocrine therapy.—I am, etc.,

London, W.1, June 16th.

C. JENNINGS MARSHALL.

Psychological Effect of Hysterectomy

SIR,—I was much interested in Dr. Winifred Coppard's letter (June 9th, p. 1048) on the psychological effects of hysterectomy. The following is a case which indicates at least the possibility of the operation being followed by no adverse effects of this nature.

The patient, a married nurse, a primipara, had a 10 lb. baby at the age of 36. Forceps were used. Afterwards she had a chronic pelvic discharge. Some three years later she had a three months' miscarriage, followed by severe menorrhagia, anaemia, backache, and chronic ill-health. The uterus was enlarged. Conservative treatment was tried without effect, and hysterectomy was advised and carried out. At operation a large uterus, with unhealthy mucous membrane, was found. One ovary was cystic and was removed, the other was left. The patient recovered quickly, and three months afterwards was not only running her house, but taking in and nursing convalescent patients. As regards intercourse, whereas before operation she had felt too ill and weary to be interested, afterwards she derived normal pleasure.

Now this patient was a member of a large family, and singularly well adjusted to life. Her whole history showed an adaptable disposition and an ability to tackle difficulties. Is not this the important factor? There are cases in plenty like Dr. Coppard's, where hysterectomy has been followed, not only by adverse psychological effects, but by definite mental breakdown; but so are there cases where the normal processes of puberty, childbirth, and the menopause have been followed by similar effects. Surely hysterectomy, like these latter, is only one of many precipitating causes which may be the last straw to a maladjusted personality. A knowledge of the psychological make-up of the patient should have its due place when deciding for or against operation.—I am, etc.,

Lincoln, June 11th.

MARION GREAVES.

Hyperpiesia

SIR,—Dr. Graham Grant asks in your issue of June 16th for opinions as to whether alcohol is a contributory cause in hyperpiesia. I imagine that no one can give a dogmatic reply to his inquiry, but it is quite certain that hyperpiesia of severe degree is frequently encountered in persons who have never touched alcohol, and that extreme hyperpiesia is not obviously more common amongst alcoholics than amongst the remainder of the community.

Of the therapeutic substances which are of value in the treatment of the condition the barbiturates occupy an important position, and I am personally of opinion that their little cousin alcohol is not infrequently of some value also; in stating this I am well aware that careful judgement is necessary in order that the dose permitted may have a sedative effect, and not, by depressing the centres of control, merely encourage the patient to indiscretion.—I am, etc.,

London, W.1, June 15th.

T. IZOD BENNETT.

"One-shot" Immunization Against Diphtheria

SIR,—I have read with much interest your leading article on diphtheria immunization in the *Journal* of June 16th (p. 1081). I have also read the M.R.C. report on active immunization against diphtheria, which prompted the appearance of your leader.

I note that you emphasize the possibilities of alum preparations of toxoids as potent diphtheria prophylactics for use in this country. This statement marks a definite advance in the attitude with which these powerful prophylactics are regarded by the medical profession, especially in view of the expression of opinion which recently appeared in a leading article in a contemporary British journal, to the effect that the preparation of such prophylactics had not yet reached a stage which would warrant their use on the general child population of Great Britain. It is usual in such commentaries to refer to the work of Saunders in Cork in a series of 579 children who were immunized by three injections of alum toxoid four subcutaneous abscesses were encountered. The leading article which is referred to above suggested that such results would not be tolerated in this country. The chief factors which have delayed a more general use of alum preparations here are three: (a) anxiety regarding the occurrence of the general and local reactions which are liable to appear in certain individuals on the injection of high-value toxoids; (b) the fear of subcutaneous "cold" abscesses at the injection sites; and (c) general apathy regarding the superiority of the newer prophylactics over the much-tried T.A.M.

Eighteen months' experience of high-value toxoids has convinced me that, either alone or with added alum, they will entirely replace the older preparations. As a continuation of my work on these toxoids, a preliminary account of which was published in the *Lancet* (1934, i, 678), I have been carrying out observations on their efficiency when combined with alum ("alum-formol-toxoid," A.L.F.T.), and papers are in preparation dealing fully with these results. Since, however, your leading article has laid special emphasis on the possibility of inducing immunity by means of one injection, it seems desirable to publish a brief note with reference to a few cases which have been dealt with from this standpoint.

So far I have carried out immunization by means of a single dose of prophylactic only on small batches of children, and seventy-five children have been dealt with. It is possible to give preliminary results in the case of fifty-nine children, each of whom received only one dose of A.L.F.T.

(a) Of seventeen children of school age eight were Schick-negative four weeks after the injection, and twelve were negative six weeks after the injection. The percentages negative at four and six weeks were therefore 47.0 ± 8.2 and 70.6 ± 7.5 respectively.

(b) Of twenty-two children in another batch, nine were negative four weeks after the injection. This gives a percentage negative of 40.9 ± 7.1 .

(c) Of twenty boys aged 15 to 18 years who resided in an institution seventeen were negative four weeks after the injection. In this case the percentage negative is 85.0 ± 5.4 .

Although this preliminary series is small, the probable errors show that the results are statistically significant. Expressed in another way, we may say that in any series of children of school age in this locality, each of whom receives one dose of A.L.F.T., the expectation is that in four weeks about 40 to 50 per cent. will be negative, and by the sixth week this percentage will have increased to about 70. In older children we might expect about 85 per cent. to be negative in four weeks. (These results refer only to individuals who were found to have a definitely positive Schick test before the injection was given.)

So far as reactions are concerned, my experience is based not only on these seventy-five children, each of whom received only one injection, but also on a further series of 227 persons,

each of whom received two or more injections. This makes 302 individuals in all. In each case preliminary Schick and Moloney tests were performed. Reactions of the toxoid type were encountered only in those cases in which this test strongly suggested that such reactions might follow the injection. None of these reactions was severe. More important perhaps is the fact that in no case has anything in the nature of subcutaneous abscess formation, as was found by Saunders with alum toxoid, been met with.

It should be remembered in assessing any results of single injections that a Schick test performed six weeks after the injection is equivalent, so far as the total time is concerned, to a similar test performed four weeks after the second injection where there is an interval of two weeks between the injections. These results strongly suggest that the efficiency of alum preparations is not merely an ideal of the future but is about to become an established fact.

In conclusion, may I point out that it is essential not to alienate the public. With these powerful prophylactics it is extremely desirable to avoid severe reactions. Although in some cases the Moloney test may be dispensed with when moderately powerful toxoids are used, the time is not yet ripe for immunization with alum preparations without its preliminary use. All the materials used in these investigations (both F.T. and A.L.F.T.) have been supplied through the courtesy of Dr. R. A. O'Brien of the Wellcome Research Laboratories.—I am, etc.,

Public Health Department,
Leeds, June 16th.

E. ASHWORTH UNDERWOOD.

Diphtheria Immunization

SIR,—In your very kind reference to our report on active immunization in your leader of June 16th it is stated that we argue: "artificial immunization may increase the 'virulent carrier rate' and the occurrence of diphtheria among the inoculated." I assume "inoculated" is a slip of the pen for "uninoculated." Because the whole thesis was that artificial immunization increases the virulent carrier rate in the protected children, which in turn increases the case rate among the unprotected members of the same community. I feel that attention should be drawn to this error, as the sentence, isolated from the context, would, as it stands, make a splendid piece of anti-vaccination propaganda.—I am, etc.,

R.N. Hospital, Chatham, June 16th. SHELDON F. DUDLEY.

* * Surgeon Captain Dudley is right. Owing to a typographical error inoculated was printed instead of uninoculated.—ED. B.M.J.

SIR,—In your leading article on diphtheria immunization you mention a scheme in "West Kensington." This scheme is not operative in West Kensington alone, but covers the whole of the Royal Borough of Kensington. The scheme was drawn up by the Kensington Division of the British Medical Association and the Council of the Royal Borough of Kensington.—I am, etc.,

J. COHEN,

London, W.2, June 16th.

Honorary Secretary, Kensington
Division.

Intracranial Injury in the Newborn

SIR,—Dr. Alan Moncrieff's valuable paper in the *Journal* of June 16th (p. 1068) will be welcomed by all who are concerned with the care of the newborn baby. The treatment suggested seems reasonable and is well worthy of thorough trial. But even if the results obtained with further experience do not support Dr. Moncrieff's optimism I would consider his paper important because it stresses a fundamental fact—namely, that the type of

intracranial trauma suffered by many infants should be described as cerebral congestion, oedema, and contusion rather than intracranial haemorrhage. I emphasized this point in 1922,¹ and it was again brought out by J. N. Cruickshank in the report on his extensive pathological investigations. My clinical experience in the Liverpool Maternity Hospital during the past fourteen years supports the view that the intracranial condition in many damaged infants is one which, while full of danger to life during forty-eight to seventy-two hours after birth, may resolve after this period has been successfully passed, and leave no permanent physical or mental disability.

We have got beyond the stage of believing that the death of a damaged infant is always a merciful release, and we are fully justified in employing every line of treatment likely to help the baby to survive the early period of danger, even though we may not be able to make an exact differential diagnosis between intracranial haemorrhage on the one hand, and cerebral congestion, oedema, and contusion on the other. I hope that Dr. Moncrieff's suggestion will receive trial in many places, and that the results will be reported.—I am, etc.,

Liverpool, June 18th.

NORMAN B. CAPON.

Criticism of Ante-Natal Work

SIR,—Mr. A. J. Wrigley's recent article on ante-natal care (*Journal*, May 19th, p. 891) is a timely reminder that its end-results, as judged by maternity statistics, demand a kind of stock-taking review. The system of preventive medicine which we call ante-natal care has now been in operation long enough to enable us to form an opinion of its value in preventing deaths and disability due to childbearing, and it is therefore right that we should stop to consider whether a method which must be inherently sound has or has not produced the results originally expected. Mr. Wrigley's article of criticism suggests that there has been a partial failure in the practical application of the method, and subsequent correspondence has shown that considerable interest has been aroused. It is fortunate that the Section of Obstetrics and Gynaecology at the forthcoming meeting of the British Medical Association is providing a session for the debate of so important a matter.

There is no doubt that the results, as set forth by Mr. Wrigley, must set us thinking hard. It is inevitable that those of us who are engaged in the teaching and practice of obstetrics regard ante-natal care as a vitally important part of our work, because it is obvious that the detection of abnormal conditions and their treatment, where possible, should necessarily lead to improvement in the end-results. And therefore, after so much energy and enthusiasm spent in teaching and writing, we must confess to something of surprise and disappointment when confronted with the figures of Mr. Wrigley's paper. Discussion of the details of diagnosis and treatment are, of course, inevitable, but before descending to this it would be well to consider whether the general teaching of students, the attitude of mind towards certain of the supposed abnormalities of pregnancy, the public administration of the system, and its partial adoption by individual practitioners, are each or all responsible for the failure to obtain the results we hoped for.

As the original enthusiasts and present teachers of the young student and post-graduates the obstetricians must necessarily bear the chief criticism. The other participants may rightly point to us and say that they are only doing what we have taught. We must examine ourselves, and ask ourselves whether, for example, it is really proper to regard the "high head" as a common indication of contracted pelvis and therefore of induction of labour or

Caesarean section. Public authorities might reconsider the capacity of a whole- or part-time ante-natal officer, who sees little or nothing of actual labour, to offer opinions on the prognosis of labour in a given case of doubt. All of us may ask ourselves if we have not elaborated a pseudo-pathology of pregnancy by our emphasis of details which have no real significance, so that our attitude of mind is biased in favour of an actually unnecessary interference. And, finally, is ante-natal care applied to the vast majority of pregnant women by individual practitioners who accept the responsibility of conducting labour? There is evidence published in recent departmental reports that many women have no supervision, and many more only a perfunctory attendance, which is of no real value whatever.

I feel that in this discussion it is useless to descend to recriminations, for all of us who practise and administer the ante-natal system are open to criticism for the partial failure that is now admitted by all who are not handicapped by an oblique vision of the problem. I am hoping that the Bournemouth meeting will yield criticism which is constructive, and will pave the way to a second phase of ante-natal care which will be based upon a better understanding of the pathology of pregnancy.—I am, etc.,

London, W.1, June 18th.

ALECK BOURNE.

Prevention of Puerperal Sepsis

SIR,—As a general practitioner I was much interested in Dr. W. H. F. Oxley's paper on "Prevention of Puerperal Sepsis" (*June 9th*, p. 1017), and agree with it all. I have two suggestions to make with regard to it. He is very keen on everything being left to nature as far as possible, there being very little vaginal examination. I have made inquiries at several hospitals, and find that students are always told to guide the forceps with the other hand in the vagina. This means an unnecessary insertion of a hand in the vagina. When it is known that the head is presenting, and that the os is dilated, it requires no force whatever to put on the forceps. They drop into place if handled properly. If they do not the operator is not skilled enough to be practising midwifery.

Dr. Oxley records twenty cases of pyrexia after abnormal confinements. In seven of them the hand was introduced into the uterus during or after the third stage of labour, in most cases due to a long-retained placenta or to unnecessary continual massage of the uterus. I have looked at all the books on midwifery which were found for me in the library of the B.M.A. I wanted to find out the treatment of the umbilical cord, and in all but one it was stated that it had to be tied in two places and cut in between. In *A Short Practice of Midwifery* (Jelllett) it is stated:

"It has often been suggested that the omission of the ligature on the placental side of the cord, by allowing the blood of the placenta to escape, facilitates the mechanism of the third stage of labour. If this is really so, such omission is advisable. If it is not, I prefer a second ligature."

Of course, it must not be done if there is a twin to follow.

For years I have not tied the placental side, but I do not know from whom I learned it. If those who wrote the book referred to had troubled to think about it they would have advised leaving the placental side unligatured. I must own it requires some imagination to reckon what happens in the placenta when the blood runs out of it. It certainly makes it smaller, and so the uterus has less to turn out. Also, I think, it must separate more easily from the uterus. None of the other mammalia in nature tie their umbilical cords! If it were always left free I believe we would have fewer cases of puerperal sepsis.—I am, etc.,

London, W.10, June 14th.

NORMAN H. JOY.

¹ *Journ. Obstet. and Gynaecol. British Empire*, 1922, xxix, 572.

SIR,—After reading countless articles on the prevention of puerperal sepsis in general practice, it is interesting and refreshing to read Dr. W. H. F. Oxley's lecture in your issue of June 9th. It is eminently helpful to the general practitioner. He describes a technique uncomplicated and easily carried out, instead of the masked, gloved, and gowned spectre which the bacteriologist would have us present to the already nervous young girl about to go through the trials of her first labour. He draws attention to the part played by the forceps in the causation of puerperal sepsis. This state of affairs is bound to continue so long as the forceps is regarded by many as a blessed instrument for the saving of time, and enabling the doctor to keep his appointments, social and otherwise.

The question of retained placenta is mentioned, the current treatment of which results so often in sepsis. The method described by Majon in 1826, by Jarcho in 1928, and later by Mr. Currie of Leeds in 1933, seems worthy of more general adoption. This consists in the injection of the umbilical vein with sterile saline under pressure. In Mr. Currie's series of fifty cases he showed that the method was simple, free from danger, and highly successful. It would be interesting to learn the results of this treatment in a large series of cases in hospital and general practice.—I am, etc.,

R. D. B. WRIGHT, M.B., Ch.B.

Hornsea, East Yorks, June 15th.

Injuries of the Knee-joint

SIR,—I was surprised to read Dr. Stewart's criticism, in the *Journal* of May 5th (p. 824), of Mr. T. P. McMurray's masterly exposition of this subject (April 21st, p. 709). It seems strange that a belief should still exist that injury to the semilunar cartilages ever occurs in other than the flexed position of the joint. I have always thought that this bogey had been finally slain in a paper read in (I think) 1911 by my old chief, the late Mr. A. M. Martin of Newcastle-on-Tyne, than whom few, if any, had greater experience of these injuries. There is nothing in Dr. Stewart's description of his cases to prove that the injury occurred in extension: the presence of locking in extension—he does not say full extension—is the best proof of its having occurred in flexion. In the absence of lateral mobility in a fully extended joint, injury to a cartilage is produced by the continuance of a force which has already caused severe damage to other structures.

I have radiographs of a complete external dislocation of the knee-joint, where the patient regained full function under the conservative treatment so ably advocated by Mr. McMurray. The dislocation I reduced with surprising ease. Both crucial and internal lateral ligaments were completely torn through. Mr. Martin examined the case with a view to suture of the ligaments, and decided against intervention. The limb was put up in poroplastic just short of extension, with the excellent result already mentioned.—I am, etc.,

G. STEWART WOODMAN, F.R.C.S. ED.

Chief Surgical Specialist to the
Government of Iraq.

Baghdad, June 7th.

Prescription of Thyroid

SIR,—I would not venture to trespass on your space if I were not convinced of the inaccuracy of part of the statement on page 1039 of your issue of June 9th with the implication of ignorance on the part of practitioners of medicine in prescribing this substance (tab. thyroideum B. P.): "Several firms, especially in the North of England, are now manufacturing twenty times as many . . . 5-grain tablets . . . as they did before." This is certainly not true in our own case, and the predominant

use of the lower range of dose is indicated by the fact that during the past year the total number of tablets made in the smaller doses—grains $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, and 3—outnumbered the 5-grain size by 27 to 1, and the strengths for the most part commonly asked for were the $\frac{1}{2}$, 1, and 2 grain.

Further, for a very great many years it has been the practice of this firm to recommend to medical men the desirability of ordering thyroid in terms of dried tissue. In 1923 I read a paper before a branch of the Pharmaceutical Society on "Ductless Glands and their Relation to Practical Medicine," in which I again drew attention to this point in the following words: "I should like to emphasize once more the fact that it would be an immense advantage if prescribers would forget altogether the relationship between fresh gland and dried gland and free their prescriptions from all ambiguity by stating their doses clearly in terms of thyroideum siccum."

The figures given above would seem to show that medical men drawing their supplies from us do not feel the difficulty set forth in your note, and we believe that if, in the South, the statement of dosage had been long ago confined to terms of the dried gland no such confusion in prescribing, as is said to exist, could possibly have arisen.—I am, etc.,

WILLIAM MARTIN, M.A., M.D.

Director, Brady and Martin, Ltd.

Newcastle-on-Tyne, June 12th.

SIR,—With reference to your article on the prescription of thyroid in the *British Medical Journal* of June 9th, it is a matter of great importance that this question of the relationship between dry thyroid and fresh thyroid gland should be made absolutely clear, because there is no doubt, as you say, that 5-grain tablets of dry thyroid are being frequently prescribed when fresh thyroid gland is intended. At the same time, there is one point in your article which is not quite correct. You state that the B.P. dry thyroid is five times as strong as the fresh gland preparation. The B.P. preparation is standardized to contain 0.1 per cent. of iodine in combination as thyroxine. The relationship to the fresh gland therefore depends entirely on the original iodine content of the gland from which the B.P. preparation is made, and may vary within quite wide limits. Usually one part of the B.P. dry thyroid is equivalent to much less than five parts of fresh gland, the average being probably about three parts. This makes a dose of 5 grains of B.P. dry thyroid equivalent to about 15 grains of the fresh gland.—I am, etc.,

Allen and Hanburys Ltd., Bethnal
Green, E.2, June 18th.

NORMAN EVERS,
B.Sc., F.I.C.

Diverticulitis

SIR,—I cannot agree with your correspondent Mr. J. L. Joyce (*Journal*, June 16th) that a temporary caecostomy is an adequate operation in cases of acute diverticulitis, where there is a threat of such complications as obstruction, perforation, or colo-vesical fistula. While caecostomy may enable the patient to get over the immediate crisis, the latter is almost certain to recur very shortly. If the object of the caecostomy is to enable the contents of the colon to be kept liquid, an appendicostomy is a more suitable procedure, but these complications of acute diverticulitis are very serious conditions, and a transverse colostomy, which completely prevents the faecal contents of the colon from reaching the damaged area, is, in my opinion, the only procedure which is likely to prevent such complications. A section of colon which has been so seriously damaged by acute diverticulitis that it is giving evidence of causing obstruction, or of being about

to perforate, is most unlikely to recover sufficiently in three weeks to resume its normal function.

In a great many cases, unless some form of operation to deal directly with the damaged bowel can be carried out, the colostomy will have to be permanent. After all, there is no form of medical treatment that can improve the anatomical abnormality produced by the diverticula, nor can diverticula, once formed, be made to disappear. All that medical treatment can do is to so alter the local conditions that the inflammatory manifestations have a chance of subsiding. The ideal treatment is a temporary transverse colostomy, followed, when all the inflammation has subsided, by a resection of the affected portion of bowel. Unfortunately, it is not very often that this is possible, and in many cases the patient has to be satisfied with a permanent colostomy, which, after all, is not too severe a price to pay for prolongation of life and absence of pain.—I am, etc.,

London, W.I, June 15th. J. P. LOCKHART-MUMMERY.

Ephedrine in Asthma

SIR,—The omission of a hyphen in the last word of my letter (June 16th, p. 1097) conveys a meaning which is the antithesis of that intended. The sentence should read: "In conclusion, I should like to mention that the best sympathetic stimulant is cold, which can generally be obtained by good ventilation and under-clothing."

The matter is of considerable importance, as I am certain that over-clothing is an important aetiological factor in the causation of asthma, particularly in children. This is very well seen in measles convalescents. Bronchitis in these cases generally occurs when the heat-regulating mechanism is unduly stressed by excessive clothing or an overheated sickroom. If one garment only is permitted, and the room temperature kept about 60° F., bronchitis is an extremely rare complication.

Reduction in clothing is necessary when thyroid-ephedrine treatment is used, as these drugs in combination appear to cause an increase in the metabolic rate, and I have known pyrexia to occur when heat loss has been restricted.—I am, etc.,

Bridford, June 16th.

H. S. RUSSELL, M.D.

* * We cannot find any authority, in the *Oxford English Dictionary* or elsewhere, for the use of a hyphen to distinguish between "underclothing" (the act of wearing few or insufficient garments) and "underclothing" (garments worn below the upper or outer clothing); or for a corresponding distinction between the two senses of "overclothing." But we willingly insert the two hyphens in order to emphasize Dr. Russell's point. Incidentally we might remark that during last week-end all underclothing was overclothing.—ED., B.M.J.

Ethyl Chloride Analgesia in Minor Surgery

SIR,—The question of time is an important one to the practitioner, and a simple, safe, rapid, and efficient analgesic would supply a long-felt want. For example, the cleansing of a wound, removal of a nail, extraction of a tooth, incision of a simple abscess or whitlow, or extraction of a splinter is often too petty to warrant the risk of a general anaesthetic, the bother of gas, or the time necessary to produce local anaesthesia. In consequence, the patient is often expected to put up with the pain.

A series of over two hundred cases has encouraged me to report on the practical utility of ethyl chloride analgesia. The dangers of ethyl chloride are well known. It is not my intention to deny or minimize those dangers, but to point out the enormous difference between the use of ethyl chloride as an anaesthetic and as an analgesic.

It may not be well known that all general anaesthetics produce an analgesic effect preliminary to and distinct from actual anaesthesia and relaxation. The former effect can be isolated from the latter and made use of, and is best obtained with a pleasant and non-irritating substance such as ethyl chloride. The method of administration is as follows:

Spray or drip ethyl chloride on a thin (eight-inch) sheet of cotton-wool, about four inches square, held on the palm of the hand. The area sprayed should be large enough to cover the nostrils and open mouth of the patient. Cease spraying when the moisture trickles through to the palm—this requires five to seven cubic centimetres. Place the moistened wool over the open mouth and nose of the patient, who may be sitting or recumbent. Tell him to blow ten or twelve times forcibly through the mouth fairly rapidly, explaining that at the end of that time he will be in a state to appreciate pressure but not pain. At the tenth breath do what is necessary as quickly as possible. The analgesia will last ten to thirty seconds, which is usually ample if everything has been got ready beforehand. If the operation is calculated to take about ten seconds only the cotton-wool should be removed at the tenth breath, otherwise it may be left on the face without danger, during the performance of the operation. As consciousness is retained the patient will, for example, open his mouth on being so requested, and will keep quite still while one or more teeth are being extracted.

This method of analgesia was introduced to me by Dr. Peake, a South African dentist, who has extracted several thousands of teeth by its aid. I have his assurance that he has never seen any ill effects from its use. My own more limited experience has been similar. The ethyl chloride is breathed through a thin layer of cotton-wool, and the administration is therefore as "open" as it could possibly be. Consciousness is always retained in some measure—it is impossible to anaesthetize anyone in fifteen or sixteen seconds. The subjective sensations vary. I have administered the analgesia to myself for a dental extraction, and suffered no pain whatsoever, experiencing dizziness and fullness in the head, and pressure on the jaw. In four or five seconds the patient is himself again—there are no after-effects, such as headache, nausea, or vomiting. In this respect I have found it not unsatisfactory to administer analgesia on a full stomach. I have repeated the analgesia on one occasion after a few minutes' pause with no ill effect, but doubt the advisability.—I am, etc.,

General Hospital, Northampton, M. AMOLS, M.B., B.Ch.
May 30th.

The Medical Charities

SIR,—As honorary secretary of the Royal Medical Benevolent Fund I feel that a reply to Dr. Arnold Gregory's letter in your issue of May 26th on this subject is desirable. All those who work for medical charities will be in sympathy with any attempt to improve the position, and I sympathize with his desire that the facts should be faced clearly and boldly, but his letter contains suggestions which might mislead some and possibly may have the effect of alienating sympathy among those who might deduce from his letter that the medical charities are unsatisfactorily administered.

If much ignorance still exists regarding the charities the fault cannot be laid at the door of the various organizations concerned: for no Press could have given greater or more constant publicity to the charities than the medical press has done for many years. The widespread organizations working under the Charities Committee of the B.M.A., under the administration of this Fund and of Epsom College by honorary local secretaries, have done all that is possible to bring our needs before the whole medical profession, and if the response is inadequate it is due to the apathy of the profession.

Dr. Gregory's suggestion for the formation of a capital fund of £25,000 surely implies that he is not cognizant of the magnitude of the work already being carried out. It will suffice to state that the invested capital of this Fund alone is £160,267, that the annual income derived from subscriptions is £11,856, and that the total amount distributed to beneficiaries in 1933 was £18,900.

In agreement with Dr. Henry Robinson, I urge concentration upon increasing annual subscriptions and legacies rather than any special form of intensive short-lived campaign. Success depends upon the good will of the profession and in the belief and knowledge that the charities are doing really useful work. We seek the interest of men and women who are willing to act as honorary local secretaries, as it is chiefly by personal persuasion that the subscription list can be improved.

I must reply to one criticism which appears in Dr. Gregory's letter—that the grants are pitifully meagre—since it is frequently used by others, often as an excuse for refusing to subscribe, on the grounds that a grant of £26 is so inadequate that such a fund is not worthy of support. While it is true that the Fund limits its grants to £40 per annum to a medical practitioner and £26 per annum to dependants, it is quite fallacious to suggest that our help ends there. Applicants in great poverty are advised and assisted in their applications to other medical charities and to non-medical charities. Our Ladies' Guild, an auxiliary of the Fund, assists not only with grants, but with food, coal, and clothing and with education, as these few examples show.

Widow, aged 66, is in receipt of Fund grant, £26; Guild, £12; Epsom Pension, £40. Total from medical charities, £78, in addition to outside charity, £10, and very small personal income.

Widow, aged 53, with three children; earning what she can by letting rooms; is assisted by medical charities, Fund and Guild, to the extent of £66 per annum.

Daughter, aged 60, with a private income of £12; is in receipt of medical charity, Fund and Guild, £65.

Widow, aged 67; some help from relations; medical charity, Fund and Epsom College, £66 per annum.

Widow, aged 74, in receipt of old age pension; medical charities, Fund and Epsom College, £71 per annum.

It should be appreciated that no applicant in great poverty is ever left to fend for herself on £26 per annum, for this grant does not reveal the full extent of the assistance which the Fund arranges; and, further, no deserving applicant has ever been refused help by the Fund, although in a few isolated cases applications of no great urgency may have been postponed to a future meeting.

It is frequently said that the percentage of medical practitioners who subscribe to medical charities is distressingly small, but it is overlooked that a very large number subscribe indirectly through a levy by their area Panel Committees; and that, in addition to the well-known central charitable organizations, some counties and districts have a medical charity of their own, the existence of which is little known to the profession in general.

If all these organizations are considered together the medical profession will be found to suffer nothing by comparison with the charitable records of other comparable professions in this country.

The need is undoubtedly great and is likely to increase. The immediate need for which I appeal is an increase in the number of annual subscribers, and I appeal to every subscriber to make a special effort this year to enrol at least one new subscriber, and further I appeal for offers of volunteers to act as honorary local secretaries.

The ultimate object for which we are all working is the achievement of such a financial position as would enable us to meet all our applications in that generous manner which we all desire. That object will, however, require in the future, amongst other things, a much

closer co-ordination between all medical charities, both collecting and distributing. These problems are outside the scope of this letter, which is intended to eradicate a possible wrong impression which Dr. Gregory's letter may have left.

The Committee of Management of the Royal Medical Benevolent Fund is only too aware that there is room for great expansion, but that depends entirely on money, but, with the present resources at their disposal, I submit that the work of the medical charities, of whose working I have intimate inside knowledge, is carried out not only efficiently but with that courtesy and kindness one is accustomed to associate with our profession.—I am, etc.,

R. M. HANDFIELD-JONES,

Honorary Secretary, Royal Medical Benevolent Fund.
11, Chandos Street, Cavendish Square, W.1, June 12th.

SIR,—The financial position of the medical charities has always been a disgrace to the profession. I am surprised that so little notice has been taken of Dr. Gregory's letter (May 26th, p. 962), and take it as evidence that the consciences of the individual members of the profession have not yet been awakened to the fact that it is the duty of every member to help his fellow members and their needy dependants in old age and infirmity. I do not approve of some of the methods of raising money, such as whist drives, lotteries, etc. From my limited experience of collecting I am sure that the personal canvass is the best method. I understand that commercial travellers have a box on the table at every ordinary dinner, and that a large amount is collected in this way. I would suggest that at every medical meeting there should be a box on the table for donations to the Charities Committee of the British Medical Association.

I had the curiosity to read the report of the Royal Medical Benevolent Fund, which has just been published, and count the number of subscribers from this town. There are about thirty-six, and they subscribed under forty guineas. In addition, the Panel Committee gave a donation of twenty-five guineas and the Association collected twenty-five guineas and tenpence.

I suppose there are about five hundred practitioners in Birmingham. There are over 450 panel practitioners, who receive over £180,000 between them. In addition, there are non-panel practitioners, physicians and surgeons, and specialists. Between them all under a hundred pounds was subscribed last year to the Royal Medical Benevolent Fund. Surely there is room here for a personal canvass.—I am, etc.,

Birmingham, June 17th. ROBERT ANDERSON, M.D.

The Services

HONORARY SURGEON TO THE KING

In the *London Gazette* of June 15th the War Office announces that Major-General H. R. Nutt, M.D., F.R.C.S., Indian Medical Service, V.H.S., is appointed Honorary Surgeon to the King, February 28th, 1934, vice Major-General J. D. Graham, C.B., C.I.E., M.B., Indian Medical Service (ret.).

SHORT-SERVICE COMMISSIONS IN THE R.A.M.C.

The following candidates who presented themselves in June, 1934, for short-service commissions have been granted commissions as lieutenants on probation in the Royal Army Medical Corps:

W. M. E. Anderson, M.B., B.Ch., H. B. Wright, M.B., B.Ch., J. Boyle, L.R.C.P., L.R.C.S., R. H. Foster, B.Ch.Camb., J. S. Ruddell, M.B., B.Ch., A. G. D. Whyte, M.B., B.Ch., A. L. Pennefather, M.B., B.Ch., C. G. O'Driscoll, M.B., B.Ch., D. T. Swift, M.B., Ch.B., F. E. Buckland, M.R.C.S., L.R.C.P., A. MacLennan, M.B., Ch.B., J. H. J. Crosse, L.R.C.P., M.R.C.S., J. Morgan, M.B., Ch.B., R. A. Stephen, M.D., E. H. P. Lassen, M.R.C.S., L.R.C.P., R. S. Vine, L.R.C.P., M.R.C.S., I. Buchanan, M.B., Ch.B., J. E. Jameson, M.R.C.S., L.R.C.P., N. W. Allen, M.R.C.S., L.R.C.P.

Medico-Legal

BUSINESS RELATIONS BETWEEN DOCTORS*

PARTNERSHIPS

If partners are well matched and work together, their combined strength is a great deal more than the sum of their individual resources. If partners are ill matched, they had far better separate. Many partnerships are wrecked by jealousy, but perhaps more of them founder because the partners never were at any time temperamentally fitted to work together. The bed-rock of a partnership is mutual good will, and intending partners should consider most seriously and at some length whether they will probably get on well enough with each other to work together for many years. If they have any doubt they should not start. Possible causes of disagreement should be frankly faced, discussed, and guarded against. Experience shows that most of the difficulties of working in partnership can be overcome if partners behave in the right way from the start. The best advice that can be given to an intending partner is to consult the secretary of his defence society or of the B.M.A. These officers are experts in medical business relationships, and can also recommend solicitors and accountants in whom the doctor can place every confidence.

A fruitful source of later discord is the discovery by the new partner that his share is not worth what he thought it was. His disappointment is very likely to lead him to express doubts of his partner's good faith, and a breach thus caused may easily widen into a rupture. The purchase of a share is governed by the same considerations as the purchase of a whole practice, which will be dealt with fully in a later section. The chief safeguards are thorough investigation of the accounts by an accountant who is expert in medical work, and careful local inquiry by an experienced medical agent.

When the intending partners have decided that they can exclude every likely cause of disagreement, they should approach a firm of solicitors with experience in medical work and have the agreement properly drawn up. They should not attempt to work together until this has been done. Sometimes partners let years go by before drafting, let alone signing, the agreement. If any disagreement arises the position is very complicated and disastrous litigation may develop.

The following experience¹ shows how badly a medical man may fare through beginning to work in partnership before the legal agreement is drawn up and signed.

There were two partners, A and B. B retired and X, another practitioner, agreed to buy, subject to certain conditions to which A agreed. No mention was made of any preliminary assistantship, and X understood that A had accepted him as a partner. B was about to undergo an operation, and was to arrange his affairs before he left the town, so X paid up the bulk of the purchase money and signed an agreement to take over B's house. X started work with A as a partner and worked for five weeks. He was introduced to A's patients as A's partner. He went on to the panel and his name was substituted for B's on the cards. A and X opened a common banking account, and steps were taken for X to take over B's share of the lease of a common surgery. After discussion with A, X caused to be printed 2,000 copies of a new joint account form, and A bought and paid for X's plate with both names on. X called on all the doctors in the town as A's new partner.

After five weeks, with A's consent, X went to London to make arrangements for moving his furniture in, and paid a locumtenent during his absence. On arrival in London he received a letter from A saying that he thought it would be a mistake to proceed further with the partnership, and that B had acted hurriedly. At the same time X learned that B was dangerously ill after the operation. X recovered his purchase money from B, but had to look elsewhere for a practice. He had to tell all his friends that the arrangement with A had fallen through; he had received a number of introductions to people in A's town, and he felt that he had suffered considerable moral damage, apart from out-of-pocket expenses and loss.

* The first of these articles, by a legal correspondent, appeared in the *British Medical Journal* of June 9th, 1934 (p. 1033).
¹ *Lancet*, 1926, ii, 150.

It is not at all improbable, however, that a court of equity would consider that A, by his conduct, had induced X to regard himself as A's partner, and that he would be liable for any damage to X caused by his subsequent withdrawal.

THE PARTNERSHIP AGREEMENT

Although the drafting of the partnership articles should be entrusted to a solicitor with special experience in medical work, it is desirable that intending partners should have a good idea of what the articles should contain. Many of the conditions of a properly drafted agreement are, at first sight, unnecessary and even unintelligible; to appreciate them the doctor must know their history and the results of omitting them in the past. Barnard and Stocker's specimen form of articles, with notes, are the best if not the only published source of this information. Briefly,² the agreement should define: the duration; the terms on which the in-coming partner shall acquire and increase his share; the mutual rights and duties of the partnership (the division of labour); the partnership property and expenses; the fees to be charged; the terms of dissolution and the restrictive covenants by which an outgoing partner shall bind himself not to compete with the remaining partners; and the mechanism for settling disputes. Provision should be made for the keeping of accounts, the division of profits, holidays, and the absence or incapacity of a partner.

Partnerships nearly always originate in the purchase by a junior of a share in the practice of a senior practitioner. The premium is usually paid in a lump sum, before the partners start to work together. There are good reasons for this custom. If the junior agrees to pay instalments and fails to pay them regularly, the senior will naturally be discontented and friction will arise. If he does pay them regularly, he may have so little money left that he cannot keep up a proper appearance or meet his tradesmen's bills, and the credit of the practice will suffer. As he gets no share of the money owing by patients at the time the partnership begins, he will not receive his full share of the profits for a considerable time. The same objection applies to admitting a partner who has borrowed money to pay his premium, unless he has borrowed it from a recognized society under its scheme for assisting young practitioners to start in practice.

DURATION OF PARTNERSHIP

In fixing the duration of the partnership the partners have to remember that the fundamental object of all their business arrangements with each other must be to preserve the goodwill and connexion of the practice, so that when the partnership is dissolved by death or some other cause, each partner shall be able to realize the proper value of his share. The risk of partners quarrelling and being unable to carry on together is always present, and it is essential that if this happens any partner shall be able to withdraw with as little damage to the practice as possible. One method is to give either partner the option of dissolving at certain fixed dates, such as the seventh, fourteenth, and twenty-first years, and to allow both to continue to practise in the district. The disadvantage of this method is that it holds out an obvious inducement to each partner to compete with the other to get as many of the patients as possible into his own hands, in order that when the next date comes round he shall find it worth his while to dissolve. Moreover, as each partner will be faced with a competitor on dissolution, his interest will not be worth nearly its proper value.

The agreement recommended by Barnard and Stocker is therefore that the partnership should continue for the joint lives of the partners, but that either shall be free to sell his interest at any time after the first few years, on giving six months' notice, the other binding himself to purchase it. Exactly how many years shall be allowed before either is free to sell will depend on the nature of the practice. The object is to give the junior a good chance of establishing himself. The outgoing partner covenants to give every possible assistance in the way of introducing his ex-partner to his patients and obtaining for him the appointments which he is relinquishing.

² *The Conduct of Medical Practice*, p. 50.

For details of this form of agreement readers are recommended to consult these authors' valuable textbook. Some authorities suggest that the remaining partner shall have the option of refusing to purchase, but this arrangement gives him such a stranglehold over the practice that a junior will be well advised not to consent to it. The position has, in practice, caused endless trouble.

MONEY MATTERS

The newcomer often agrees to pay a sum fixed by a competent valuer for his share of the surgery furniture, drugs, and appliances. This clause is another fruitful source of trouble, because the newcomer is apt to assume, not unnaturally, that the surgery furniture includes everything he saw in the surgery when he was first shown over it, while the senior may consider that many of the most desirable pictures, chairs, and rugs are his own property and remove them before valuation. The partners should agree on a schedule of furniture for the use of the valuer. Each partner usually provides his own motor car, but if the junior is only purchasing a small share the expense might be too much for him, and it would be better for him to contribute a fixed amount to the upkeep of the senior's cars in return for their use. It is usual for each to have his own surgical instruments.

The agreement will provide that the working expenses of the partnership, such as rent, repairs, supplies, and service, shall be paid out of the receipts, possibly from a joint banking account. The shares of the partners are defined, and each agrees to employ himself diligently in the practice and to do no other work, except, perhaps, look after a resident patient, and to accept or resign no appointment without the consent of the other partner. Although it may, at first sight, seem fair that if the senior is already a medical officer of health or a coroner he should keep the salary for himself, yet he is doing the work in partnership time, during which his junior partner is working to earn profits for both.

If the junior partner comes in with a smaller share than half, he will probably want to reserve the right of buying up to one-half as soon as possible. The senior will usually want to put off the increase as long as he can, and can justly argue that the junior will not be earning half the profits for a considerable time. Barnard and Stocker suggest that the junior should be given the option of increasing his share to one-half at any time after the number of years demanded by the senior, and sooner if, at the end of any year, the accounts show that he has earned in it as much as the senior. The purchase price should be based on the original valuation and not upon the receipts immediately before the purchase, for any increase in the receipts may well be due to the exertions of the junior as much as of the senior. Each partner usually agrees to provide a competent substitute if he absents himself or is incapacitated from doing his work.

DISSOLVING THE PARTNERSHIP

Power should be given to either partner to dissolve if the other is incapacitated for a stated time, or becomes lunatic, or breaks the agreement, or damages the interests of the partnership by misconduct, or is removed from the *Medical Register*. If a partner dissolves on any of these grounds, or the partnership is terminated by a partner allowing his share to be charged with debt or being bankrupt, the defaulting partner should be considered, for the purposes of the agreement, to have died on the date of dissolution. If the partnership is ended by misconduct or breach of agreement, the other partner is generally released from any obligation to buy the offender's share, but it is better to make some sort of positive arrangement as well. The ordinary form of articles does not provide for the senior partner losing patience with the partnership, throwing over the agreement altogether, reverting as much as possible to the state of things which existed before the junior man came, and defying him to do what he likes. Such things have been known to happen. The junior can then either dissolve the partnership, in which case the senior becomes a competitor and the junior's interest in the practice is almost worthless; or he can buy the senior out, which means that he will have to pay a large sum

(which he may not be able to raise) for a practice to which he has not been properly introduced. Neither remedy is at all attractive. One possible safeguard is to frame the covenant in restraint of future practice (about which more will be said in a later article, and the object of which is to prevent a partner from selling his share and then continuing to practise next door) so that if the partnership is ended by misconduct or breach of agreement the offender shall not be able to remain in competition with his former partner. A better precaution, and one advised by the solicitors to a large defence society, is to provide that the aggrieved partner may buy the share of the offender for half the sum which he would have had to pay if his partner had died.

The agreement should lay down the price at which the survivor shall or may buy the share of a partner who dies, at various stated times after the beginning of the partnership. The authors advise that the survivor should be bound to buy. He should have easy terms of payment, but the representatives of the deceased must have adequate security, and if he can neither pay nor give good security, he must take another partner who will provide the necessary capital. If he is given the option of buying or not, he is in a position to cause the representatives of his late partner considerable trouble by obstructing the sale of their interest without actually refusing a new partner. The agreement should also provide for the taking of the final general account, and contain a clause restricting an outgoing partner from practising within a stated number of miles from the place of the partnership. It may end with a provision that any dispute shall be referred for decision to an arbitrator.

Obituary

HENRY WATSON SMITH, O.B.E., M.D.

Medical Director, Lebanon Hospital for Mental Diseases

By the sudden death in England, on June 12th, of Dr. H. Watson Smith the Near East has lost one of its very few mental specialists and the Lebanese Republic an outstanding personality. In his twenty-five years as medical director he had built up the Lebanon Hospital for Mental Diseases at Asfuriyeh, near Beirut, and at the recent annual meeting of subscribers in London the Syrian head master of a large school near Jerusalem expressed the opinion that this voluntary international hospital was one of the two institutions in Syria and Palestine which stood head and shoulders above all others. So great has been its prestige under Dr. Watson Smith's direction that sufferers from mental diseases travel from Egypt, Iraq, Turkey, and Persia to be under his care. In the absence of any system of certification, cases are received in the early stages, and the results of treatment have been remarkable.

Henry Watson Smith was born near Aberdeen on February 6th, 1879, of Scottish parents. Having entered as a medical student at the University of Aberdeen he won several bursaries and gold medals, and graduated M.B., Ch.B. with honours in 1901. After holding house appointments at Aberdeen he was house-surgeon at the West Suffolk General Hospital, Bury St. Edmunds, for two years, then for eighteen months at Peckham House, London, and for the following three years second assistant medical officer at the Durham County Mental Hospital. It was on the strong recommendation of the last-named body that the London Committee chose him as the future head of its hospital on Mount Lebanon, and he took up his official duties in February, 1909, having first obtained the Turkish medical degree at Constantinople, since Syria was at that time under the Turks. Subsequently he added to his knowledge of French a thorough working knowledge of Arabic. His thesis on the aetiology and pathology of general paralysis of the insane gained him the M.D. Aberd. in 1912, but beyond

that he wrote little, for the time he could spare from the work of the hospital was devoted to teaching medical students at the (American) University of Beirut. He was appointed professor of psychiatry and neurology in 1926, and thenceforward held regular classes, both in Beirut and at the hospital six miles away. This teaching side of his work was the more important, since thirty-five years ago, when the hospital was founded, any care for mental sufferers in Syria was non-existent, beyond the cruel rites of exorcism practised by religious fanatics. The change of attitude in this matter in a generation has been revolutionary, and, apart from the actual results of treatment, the ideas for which Asfuriyeh has stood, and the example which it has set of scientific and humanitarian ways of thought and of treatment, have lifted it to a unique place in the country. In this result the personality of the director played a great part. Dr. Watson Smith is said to have been the only British subject allowed to remain in Syria during the war, and had it not been for the representations made to the Turks by him and his executive committee—that the hospital was international ground—being “wakf,” or dedicated to the use of mental sufferers of all nationalities in Syria—there is no doubt that Jemel Pasha would have carried out his intention of using the hill on which it stands for gun emplacements. As it was, he respected the site as a religious foundation, and authorized a certain supply of food, which kept alive most of the patients and staff during the war, when other civilians perished all around, by the thousand, of famine. In 1917, when the victorious British troops arrived, the director was able to receive and treat a large number of General Allenby's men at the hospital during a serious epidemic of influenza, in recognition of which he received the O.B.E. It was perhaps after this time that he began to show his special qualities as an administrator. Out of the meagre funds obtainable for some years from Europe and America, he contrived to restore and re-equip the buildings and develop the thirty-six acres of land, so that by 1924 the place was ripe for expansion. Pavilion after pavilion has been built, under his personal supervision, without architect or contractor, also a model steam laundry: an artesian well of 400 feet was bored and a scheme of olive planting, olive pressing, and soap making started. In November last came the crowning achievement—to be able to build a new house for women entirely out of local funds. The Scottish house was opened in November last by the President of the Lebanese Republic, and this event and the completion of Dr. Watson Smith's twenty-fifth year of service were marked by the bestowal upon him of the highest decoration given to a foreigner—the Médaille d'Honneur du Mérite libanais du deuxième classe.

The death took place, in a nursing home at Edinburgh on June 10th, of Dr. JOHN MACKAY of Dall-Avon, Aberfeldy, Perthshire. Dr. Mackay was born in 1847, and after receiving his medical education partly in Aberdeen and partly in Edinburgh he qualified L.R.C.P., L.R.C.S. at Edinburgh, and graduated M.B. at Aberdeen in 1875. He proceeded to the M.D. of Aberdeen in 1879. After a short time as assistant in a Durham practice he became assistant to the late Dr. Irvine Pitlochry. In 1880 he began practice at Aberfeldy as successor to the late Dr. Reid. Here he worked for over half a century, and, in addition, acted as medical officer of health for the burgh of Aberfeldy, and as parochial medical officer for the parishes of Logierait and Dull. He was also medical officer for the combination poorhouse of Atholl, Weem, and Breadalbane. Dr. Mackay was a keen member of the British Medical Association, and served a term as president of the Association's Perthshire Branch. He took a great interest in local public affairs; for many years he was a member and chairman of the School Board of Dall Parish. He was an early supporter of the Volunteer move-

ment, and maintained his connexion with the Volunteer Force for a number of years, retiring ultimately as Surgeon Colonel of the Fifth Volunteer Battalion of the Royal Highlanders (Black Watch). The interment took place at Aberfeldy cemetery on June 13th.

Dr. VINCENT WING TWINING, who died at Ryde on June 6th at the age of 73, was the youngest son of the late Dr. Edward Twining of Walthamstow. He received his medical education at Aberdeen, where he graduated M.B., C.M. in 1886. He was also a student at the Rotunda Hospital, Dublin. In 1893 he started practice at Llanwrtyd Wells, but removed to Salcombe in the following year on the death of his brother, Dr. A. H. Twining. There he remained until 1920, when he retired from general practice, and received various testimonials of friendship and appreciation from his colleagues and patients. He subsequently did occasional locum tenent work while his health permitted. Dr. Twining was for many years a member of the British Medical Association. His only son was killed in the war, but he is survived by his widow and a married daughter, who is also a member of the medical profession.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week passed the Finance Bill through report and read the Petroleum Production Bill a second time. The Estimates for the Ministry of Health and the Ministry of Labour were discussed. On the former, discussion was expected on water supplies and on slum clearance.

The Protection of Animals (Cruelty to Dogs) (Scotland) Bill was read a second time in the Lords on June 13th, and the Workmen's Compensation (Coal Mines) Bill a third time on June 14th.

The Statutory Salaries (Restoration) Bill was read a third time in the Commons on June 13th, and a first time in the Lords on June 14th.

The Gas Undertakings Bill was read a third time by the Commons on June 13th. It contains provisions against the imposition of conditions in leases or otherwise to prevent tenants of houses from receiving supplies of gas.

The House of Lords, on June 19th, read the Betting and Lotteries Bill a third time and the Statutory Salaries (Restoration) Bill a second time. The Unemployment Bill and the Licensing (Permitted Hours) Bill both passed through report.

On June 4th Lord Mamhead presided over a conference representing local authorities, medical organizations, newspaper proprietors, advertising agents, pharmaceutical manufacturers, distributors, vendors, and others interested to consider the Advertising of Medicines Bill, drafted by a committee under the chairmanship of Captain G. S. Elliston. All these interests reached a greater measure of agreement than had been attained hitherto. Several points were referred back to the drafting committee for further consideration. Until these have been settled no decision will be taken on the introduction of the Bill in the House of Lords or the House of Commons.

Compensation to Hospitals

Consideration of the Road Traffic Bill was resumed by a Standing Committee of the House of Commons on June 14th. A new clause dealing with remuneration for treatment, other than emergency treatment, rendered by hospitals, was brought up by Mr. Storey, who moved that the clause be read a second time. Its text was:

(1) Subject to the provisions of this Section where medical or surgical treatment is rendered to any person in any department of a hospital whether as an in-patient or as an out-patient in respect of bodily injury (including fatal injury) caused by or arising out

Sir GIFFORD FOX said he came from a corridor constituency where an abnormal number of beds were occupied

by road accident cases. Last year the Hanley District War Memorial Hospital admitted twenty-two such cases, three of which were fatal. These involved a total of 564 days in hospital. The cost of their treatment was £237, of which £29 was received from insurance under the Road Traffic Act and third-party risk, and £73 from other sources, so that the net cost to the hospital was £135. About 10 per cent. of the beds occupied in the year were used for motor accident cases, and only 12½ per cent. of the cost was recovered. He put his name to the clause because he felt it was the opinion of the community. If, as the Minister suggested, a central fund was set up, why could not a grant be made from the money paid by motor owners in taxation? Mr. TURTON considered it was wrong for Parliament to give 12s. 6d. to the doctor for emergency treatment and not to deal with the great loss which hospitals were suffering all over the country. Mr. STANLEY asked whether Mr. Turton would say that, having passed the hospitals clause, the committee must extend the principle in the case of an injured man treated in his own home. Mr. TURTON replied that there was a legal liability on members of a family to support a relative, as was made plain in the Lunacy Act. He rested the case of the hospitals not so much on legal liability as on grievance. Doctors had rich patients as well as poor, but some hospitals on main roads were so filled with accident cases that they could not take any paying patients. Co-operation, Mr. Turton continued, had already been tried. A large association in the North of England was presided over by Lord Harewood for that object. Money had been obtained for hospitals, but not nearly enough.

Sir JOSEPH LAMB appealed for the clause to be withdrawn. Mr. ALLAN REID, who said he had been twenty-eight years on the board of management of voluntary hospitals in his constituency, hoped that some way would be found to compensate both doctors and hospitals other than that suggested in the clause. He believed that if the principle were adopted it would be the first stage towards the extinction of the voluntary hospital. Mr. GUY said machinery was already set up under the Road and Rail Act for payment to hospitals for treatment of out-patients or in-patients. That was only where negligence was admitted or proved. The proposal was to use the same machinery but to make the payments irrespective of negligence. He had asked the Edinburgh Royal Infirmary how the existing machinery under the Road and Rail Traffic Act worked. It had been able to recover the cost of treatment in about half the cases, but encountered difficulty in cases where there was a doubt as to negligence. In these the insurance companies offered the injured person £25 without any admission of liability, and said that was conditional on the hospital withdrawing its claim. That put the hospital in an unfair position, because if the hospital insisted on claiming, the injured person did not get a penny unless he fought the action in court, and so he put the blame upon the hospital. He thought the Minister would agree that this point should be provided for. He understood that before long an "omnibus" hospital Bill might be introduced, and he asked the Minister to consider whether some new remedy for this difficulty could not be provided in such a Bill.

Mr. STANLEY replied that in the discussion certain principles had been propounded which he looked upon as extremely dangerous, particularly the statement that once the committee accepted the doctor's clause the door was wide open for every extension of the principle that lack of negligence was no defence. He must make it clear that if the clause was withdrawn that action was not taken because he had promised some concession in the future. He was not bargaining for the withdrawal of a clause which raised a wrong principle. Mr. STORREY said, in withdrawing the clause, he and his friends did not take back what they had said. They merely made their appeal to the Minister.

On the motion that the clause be read a second time the clause was defeated by 21 to 6.

A clause dealing with hours of duty and periods of rest for employees driving motor vehicles was moved and withdrawn. A clause to restrict pillion riding, and the carriage of second persons on pedal bicycles not specially fitted for such transport, was moved and added to the Bill.

The Bill was then reported to the House, consideration on committee having been completed.

Hours of Shop Assistants

Discussion of the Shops Bill was resumed in the House of Commons on June 14th before a Standing Committee. Mr. RHY'S DAVIES moved to leave out the provision in Clause 2 postponing for two years the introduction of a forty-eight-hour week for young persons employed in or about shops. He proposed to substitute the date June 30th, 1935. Mr. HACKING said the clause provided that in the transitional period of two years the maximum normal working hours should be fifty-two. The absolute limit, including permitted overtime, would be sixty hours in one week, which could not be worked on more than three occasions in the year. The committee rejected Mr. Rhys Davies's amendment by 18 votes to 3, but on the motion that Clause 2 stand part of the Bill the whole clause was deleted by 11 to 10. Mr. HACKING said the Government would ask the House during the report stage to restore the clause.

Consideration of the Bill was resumed in Standing Committee on June 19th. Clause 3 prohibits the employment of young persons between the hours of 10 p.m. and 6 a.m., except those engaged in the distribution of milk and bread, who are allowed to begin work at 5 a.m. The committee, by a majority of 17 to 9, gave the same exemption to distributors of newspapers. The committee adjourned until June 21st.

Aniline Dyes in Meat Marketing.—Dr. O'DONOVAN moved, in the House of Commons on June 7th, that an address be presented against a draft Order in Council under the Merchandise Marks Act, 1926, which was presented to the House on May 8th, 1934. He explained that this Order enjoined that imported frozen or chilled meat should bear an indication of origin branded or stamped, stencilled, or printed in ink or stain, durably and conspicuously, in letters not less than half an inch in height, at distances, in the case of chilled beef, of two inches in a line from the hock joint to the neck. This brand would withstand cooking, and would affect the appearance of the food, which was pleasurable to the healthy and necessary to the sick. A Government expert had given evidence that this meat might be stained with aniline dyes, dissolved in methylated spirit. If every butcher handling frozen mutton or beef appeared before his doctor every time he had a rash and complained it was due to aniline dye, the woes of all who had to sign certificates would be trebled. If a medical man suspected that a consumer of frozen meat had a stomach-ache due to aniline, the doctor would be compelled to notify the case at once under the London County Council General Powers Bill, which the House had lately passed. Dr. ELLIOT said the method of marking was already applied to home produce. There was no satisfactory alternative to marking the meat itself. The Order did not involve the use of aniline dye, and he had reason to suppose that soon after it came into force some such device as roller-marking by electricity would be in operation and would not involve the use of dyes. Dr. O'Donovan asked leave to withdraw his motion, but a division was challenged and the Order was approved by 95 to 22.

Malaria Outbreak in Bechuanaland.—Replying to Mr. LUNN, on June 13th, Mr. J. H. THOMAS stated that there had been an outbreak of malaria in districts of the Bechuanaland Protectorate. He had not received any detailed reports from the High Commissioner for South Africa as to mortality, but had no doubt these would be forthcoming as soon as the information was available. Prompt measures had been taken by the local administration to deal with the outbreak by sending medical officers and the necessary supplies of quinine to districts affected. Provision was made last year and this year for the relief of distress occasioned in the Protectorate by the disastrous drought in South Africa.

Research into Native Mentality in Kenya.—On June 13th Sir P. CUNLIFFE-LISTER told Dr. O'Donovan that he still awaited the views of the Governor of Kenya on the suggested research into native mentality on lines indicated by Dr. H. L. GORDON. He expected that the Governor would desire to consult his advisers.

Health of Children entering Elementary Schools.—Mr. RAMSBOTHAM told Viscountess Astor, on June 14th, that in the year 1933 95,328 children, or 16.3 per cent. of the children entering public elementary schools, whether at the age of 5 or earlier, were found to be in need of treatment for various defects, excluding uncleanness and dental disease. Information was not available in respect only of children entering at 5, or as to the number or percentage of entrants suffering from defects requiring observation.

Vermin in Transit to Housing Estates.—In reply to Mr. Caporn, on June 14th, Sir HILTON YOUNG stated that the Public Health Act, 1925, made provision for the compulsory cleansing by local authorities of premises used for human habitation which were infested with vermin, and for the cleansing, disinfecting, and, if necessary, destruction of verminous articles found in any such premises. He had no reason to suppose that these powers were inadequate. There was no power to deal with articles which were verminous when they were in transit to housing estates; he considered it more practical to catch them before they were removed. He had recently issued to local authorities a circular and memorandum on disinfestation.

Country Districts and the Drought.—Replying to Major Carver on June 14th, Sir HILTON YOUNG said that rain-water, with proper storage, provided a reasonably adequate supply of water in country districts where other supplies were impracticable. He was issuing a leaflet on measures for conserving rainwater. Where emergency due to drought arose, local authorities and other water undertakers, in co-operation with the Ministry of Health, took measures to meet it by fresh supplies and emergency methods of distribution, which were suitable to the special needs of the locality, and varied greatly. The engineering inspectors of the Ministry advised on the measures to be taken. Local authorities' schemes for boreholes for common use were eligible for grant, but to provide separate waterworks for individual houses was not properly a public service.

Road Accidents: Negligence Against Dead Persons.—The Law Reform (Miscellaneous Provisions) Bill, which had passed the House of Lords, was considered by the Commons on June 15th. Sir DAVID SOMERVELL, Solicitor-General, moved the second reading. He explained that it was based on recommendations by a committee set up by the Lord Chancellor, and was intended to remedy hardships resulting from the old legal principle that a personal action died with the person. The Bill laid down that all causes of action subsisting against or vested in a deceased person, except for defamation or seduction, should survive or against or for the benefit of his estate. The real urgency of the Bill was to deal with street accidents. The injured person would have the same rights where the negligent motorist was killed as at present where the motorist survived. The Bill also covered cases where the injured person subsequently died. Subject to exceptions and safeguards there would in that case be cause of action. Mr. RHYS DAVIES protested against the proviso that the Bill should not apply to Scotland. The Bill was read a second time.

Protective Measures in Gas Warfare.—Replying to Mr. Kirkwood, on June 18th, Mr. DUFF COOPER said that training in defence measures against gas attacks, whether from the air or otherwise, was part of the normal training of the Army. The voluntary aid detachments provided by the British Red Cross Society undertook to assist the medical services of the Army should they be required in time of emergency, and measures of protection in gas warfare formed part of the training given to those detachments. Army officers were accordingly allowed to assist in this training by giving lectures. Mr. Kirkwood's question averred that Army officers had given lectures at Maryhill Barracks, Glasgow, to members of the Red Cross and voluntary aid detachments on how to deal with victims of gas attack from the air.

Notes in Brief

The number of persons in receipt of poor relief in England and Wales on May 26th, 1934, excluding rate-aided patients in mental hospitals, persons in receipt of domiciliary medical relief only, and casuals, was 1,349,707. The corresponding number on May 27th, 1933, was 1,286,640.

The report of the chief inspector of factories and workshops for 1933 will be issued in the middle of July.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Appointments Committee of the Faculty of Biology "B" will shortly proceed to appoint two Demonstrators in the Department of Anatomy, whose duties will commence on October 1st, 1934. Applications are invited from candidates with laboratory experience, particularly in anatomy, physiology, pathology, embryology, or radiology. Facilities will be provided for research in anatomy and related branches of the subject. Particulars as to stipend and duties may be obtained from the Secretary General of the Faculties, The Registry, Cambridge, to which address applications should be sent by July 1st.

At a congregation held on June 16th the following medical degrees were conferred:

M.B., B.CHIR.—T. W. Smailes.

M.B.—J. S. Mitchell.

B.CHIR.—C. P. F. Boulden, S. A. Probert.

• By proxy.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

M.D.—H. Rogers (with distinction); F. H. Bodman, J. J. J. Giraldi, N. L. Price.

CH.M.—G. F. Langley (with distinction).

FINAL M.B., CH.B.—Part I: M. A. Nicholson, B. Ridgway. Part II: A. C. Molden (first-class honours with distinction in surgery, obstetrics, and public health), A. G. W. Branch (second-class honours with distinction in obstetrics), Rosalind M. S. Derham (second-class honours with distinction in public health), C. H. G. Price (second-class honours), Grace J. V. Ball, Dorothy E. Barber, Violet Fry, N. Greenberg, G. L. L. Gurney, T. R. V. Gurney, Gwladys R. Llewellyn, R. A. Mathews (with distinction in surgery and public health).

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council of the Royal College of Surgeons of England was held on June 14th, when the President, Sir Holburt Waring, was in the chair.

Appointments

The President reported his appointment of Professor William Wright as Thomas Vicary Lecturer.

A letter was read from Mr. Alan Newton, Censor in Chief of the Royal Australasian College of Surgeons, reporting the following nominations by the council of that College for the Primary Fellowship Examination, to begin in Dunedin, N.Z., on November 29th, 1934:—Assessor in Anatomy: Professor W. P. Gowland, F.R.C.S. Assessor in Physiology: Professor John Malcolm. Appointed to act as superintendent of the examination: Mr. Herbert Chapman, Registrar of the University of Otago.

Examiners

The following examiners were elected for the ensuing year:

Fellowship—Anatomy: J. B. Hume, Grant Massie, G. Gordon-Taylor, P. N. B. Odgers. Physiology: G. A. Buckmaster, D. H. de Souza, S. Wright, H. Hartbridge.

Under the Conjoint Board.—Elementary Biology: T. J. Evans, G. P. Mudge, C. C. Hentschel, A. J. Grove. Anatomy: W. E. Le Gros Clark, H. A. Harris, E. P. Stibbe. Physiology: A. St. G. J. McC. Huggett, Samson Wright. Midwifery: L. C. Rivett, M. Donaldson, A. C. Palmer, V. F. Lack. Pathology: C. E. Shattock, R. Davies-Colley, R. G. Canti, J. McIntosh. Diploma in Public Health: Part I, C. C. Okell; Part II, J. Fenton. Diploma in Tropical Medicine and Hygiene: Pathology and Tropical Hygiene, D. S. Harvey; Tropical Medicine and Surgery, G. C. Low. Diploma in Ophthalmic Medicine and Surgery: Part I, Sir Stewart Duke Elder, C. B. Goulden; Part II, R. F. Moore. Diploma in Psychological Medicine: J. G. Greenfield. Diploma in Laryngology and Otology: Part I, E. M. Woodman, S. R. Scott; Part II, T. B. Layton. Diploma in Gynaecology and Obstetrics: J. D. Barris. Diploma in Medical Radiology: Part I, J. M. Woodburn Morison; Part II, J. H. Douglas Webster.

Dental Surgery (Surgical Section)—R. J. Howard, C. E. Shattock, C. P. G. Wakeley, P. H. Mitchner, E. G. Slesinger, R. M. Vick.

Fellowship

Diplomas of Fellowship were granted to the following thirty-six successful candidates at the recent examination:

G. F. ... R. W. Doyle, W. Buckley, W. A. ... W. Holmes, C. E. P. Markby, J. K. ... W. C. Oldfield, G. T. Partridge, E. A. ... R. S. Lewis, H. R. Thompson, H. F. Moseley, H. J. B. Atkins, R. G. Pulvertaft, A. Hilmy, K. S.

Ayyar, D. B. McGavin, J. R. Vaid, R. D. Ayyar, S. Sunkavally, F. N. Chenhall, E. J. Collins, J. V. Guinane, A. I. Hunter, S. Krantz, J. P. F. Lloyd, A. Logan, C. J. Lord, S. B. Morris, D. G. Radcliffe, E. B. Whittingham.

Membership

Diplomas of membership were granted to H. C. Hugh, B. L. E. Wong, A. T. Roden.

APOTHECARIES' SOCIETY

In connexion with the International Conference on the Standardization of Vitamins meeting last week in London, under the auspices of the Health Committee of the League of Nations, the Master (Dr. J. O. Wakelin Baratt), the Wardens, and the Court of Assistants of the Society of Apothecaries of London held a reception at their Hall in Blackfriars on the evening of June 14th. Invitations were issued to various British workers in the field of vitamin research, and to physicians and physiologists who desired the opportunity of meeting the research workers attending the conference. Among the latter who attended the reception were: Professor E. Mellanby (Medical Research Council), Professor J. C. Drummond (University College), Professor H. von Euler (Stockholm), Professor L. S. Fridericia (Copenhagen), Professor B. C. P. Jansen (Amsterdam), Professor P. di Mattei (Pavia), Dr. E. M. Nelson (Washington, U.S.A.), Mme Randoim (Paris), Professor H. Steenbock (Wisconsin, U.S.A.), Professor A. Szent-Gyorgyi (Szeged), Dr. W. R. Aykroyd (League of Nations, Geneva), Dr. Harriette Chick (Lister Institute of Preventive Medicine), Professor J. C. G. Ledingham (Director of the Lister Institute), Dr. K. Coward, Professor A. Jung (Basel), and Dr. C. Lormand (Paris).

Medical News

The Board of Control (Caxton House, West, Tothill Street, S.W.1) has issued a revised list of medical practitioners in England and Wales who have been approved by the Board for the purpose of making recommendations under Sections 1 (3) and 5 (3) of the Mental Treatment Act, 1930. The names are given first in alphabetical order with full addresses, and are then regrouped geographically.

The annual general meeting of the Feyer Group of the Society of Medical Officers of Health will be held at 1, Upper Montague Street, W.C., on Friday, June 29th, at 4 p.m., when Professor Ulrich Friedemann will read a paper on "Malignant Diphtheria, with Observations on Cardiovascular Failure and Methods of Treatment." A meeting of the council of the group will be held at 3 p.m.

The annual meeting of the National Institute for the Deaf will be held in the Library, Baptist Church House, 4, Southampton Row, W.C., on Wednesday, June 27th, at 3 p.m., when Lord Charnwood will preside and give an address.

The Institute of Malariology, directed by Professor Bastianelli, has arranged a post-graduate course from July 16th to September 6th for Italian practitioners, and from July 10th to September 10th for foreigners, when lectures will be given by S. R. Christophers, S. P. James, G. Pittaluga, N. H. Swellengrebel, and Warrington Yorke. The fee is 200 lire. Further information can be obtained from the Society of the Institute, Policlinico Umberto I, Rome.

The Fellowship of Medicine announces that the next lecture-demonstration, in the series being given at 11, Chandos Street, W., will take place on June 26th at 2.30 p.m.; subject, "Nephritis." There will be no lecture on July 3rd, but the series will resume on July 10th; subject, "High Blood Pressure." There will be a week-end course in medicine and surgery at the Metropolitan Hospital, Kingsland Road, on June 30th and July 1st, and a week's course in ophthalmology at the Central London Ophthalmic Hospital from July 2nd to 7th. A week-end course in general medicine and surgery has been arranged at the General Hospital, Southend-on-Sea, on July 7th and 8th. Other forthcoming courses include urology at All Saints' Hospital, July 9th to 28th; dermatology at the Blackfriars Skin Hospital, July 9th to 21st.

A demonstration of dermatological cases will be given by Dr. O'Donovan at the National Temperance Hospital on July 14th at 3 p.m.

The British Health Resorts Association is holding a conference at Cromer and Sheringham from June 29th to July 1st, by invitation of the respective urban district councils and the local medical profession. There will be two discussions: one on "The Seaside Resort in the Treatment of Respiratory Diseases," opened by Dr. R. A. Young, followed by Dr. L. S. T. Burrell and Dr. A. J. Morland; and the second on "Climatic and Allied Factors in the Incidence of Disease and its Treatment on the East Anglian Coast," opened by Dr. R. Fortescue Fox, followed by Dr. F. W. Burton-Fanning, Dr. Wilfred Pearson, and Mr. L. C. W. Bonaciua.

Dr. O. Leeser of Stuttgart will give an address on "Constitution and Constitutional Treatment" at the London Homoeopathic Hospital, Queen Square, W.C., on Thursday, June 28th, at 5.30 p.m. Medical men and women wishing to attend are asked to notify the honorary secretary of the British Homoeopathic Society at the hospital.

The joint conference of the Federation of Cremation Authorities in Great Britain and of the National Association of Cemetery and Crematorium Superintendents will be held in the Council House, Birmingham, from June 25th to 28th. Sir John Robertson, M.D., and Sir Gilbert Barling, Bart., F.R.C.S., will contribute papers.

An International Congress of Medicine applied to physical education and sport, and organized by Professor Latarget, president of the International Association of the Medicine of Sport, will be held at Vittel from September 2nd to 4th under the presidency of Professor Paul Carnot. Further information can be obtained from the general secretary, Dr. Boigey, Société Générale des Eaux, Vittel, Vosges.

In *Nature* of June 16th H. Dam of Copenhagen describes a haemorrhagic condition in chicks closely resembling scurvy. As vitamins A, D, B, and B₂ were present in the experimental diet, and as vitamin C had no effect in controlling the symptoms, he concludes that the cause of the disease is a deficiency in an antihaemorrhagic factor different from vitamin C and occurring in cereals and seeds.

The issue of *Rassegna Internazionale de Clinica e Terapia* for April 30th is devoted to a description of the mineral spas of Italy.

The issue of *Medizinische Klinik* for June 8th contains a sympathetic obituary notice of Dr. William Welch by Professor W. Kolle of Frankfurt.

The Trustees of the Lady Tata Memorial Trust, on the recommendation of the Scientific Advisory Committee, announce the award of the following international scholarships, each of the value of £400, for the academic year 1934-5, for research work in diseases of the blood, with special reference to leukaemias: Dr. W. Büngeler (Danzig), Dr. L. Doljanski (Copenhagen), Dr. M. C. G. Israels (Manchester), Dr. C. Oberling (Paris), Dr. J. Engelbreth-Holm (Copenhagen), Dr. M. O. K. Jørgensen (Aarhus, Jutland, Denmark), Dr. R. Meier (Leipzig), and Dr. Lucy Wills (London).

The King has appointed Dr. J. Cran, O.B.E., V.D., to be a Member of the Executive Council of the Colony of British Honduras.

The following medical men were called to the Bar on June 13th: Dr. W. D. R. Thompson (Inner Temple), and Dr. W. A. McE. Stewart (Middle Temple).

The Nobel prize for literature for 1933 has been awarded to the Finnish novelist, F. E. Sillampee, who is a doctor of medicine, aged 45.

A Hispano-American Association for Medico-Biological Studies has recently been founded at Madrid, with Dr. Collazo of Uruguay as president and Professor Pittaluga of Spain as vice-president.

There has been a reduction of 35 per cent. in the number of fatal accidents in the New York State industries during the last four years.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, *British Medical Journal*, B.M.A. House, Tavistock Square, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1 on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The TELEGRAPHIC ADDRESSES are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Medisecta Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumshough Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Guava Leaves for Dysentery

"W. G. T." writes: Has any reader, with South African experience, knowledge of the treatment of dysentery with a decoction of guava leaves? I am given to understand that it is extensively used by the natives, and should like to know the strength and dosage used, and also if there are any harmful effects.

Insect Bite Causing Gangrene of Finger

Dr. EDWARD C. B. INOTSON (Jersey) writes: A very healthy man, aged 33, while picking gooseberries on June 10th, was bitten on the tip of the right index finger by a small black beetle; it was tiny, but stuck its proboscis in deeply, requiring force to remove it. He did not preserve the beetle. He came to me on the 13th. There was a sulcus in the finger and a ring of gangrenous skin surrounding and constricting the end of the digit, great pain, and swelling of the proximal end. I applied a kaolin poultice. On the 15th I divided the thick band of gangrenous skin which was strangling the finger. Kaolin was continued. On the 16th there was much improvement. Has anyone met with a similar case? And what is the creature which causes dry gangrene? I have never before encountered such a case.

Vaccine Treatment of Pertussis

Dr. GEOFFREY DUDLEY (Stourbridge) writes: In the *Journal* of June 9th (p. 1047), in the reports of societies, Dr. W. Gunn, discussing whooping-cough, is reported to have said that "Vaccines prepared from the Bordet-Gengou bacillus had proved useless—and occasionally dangerous—in treatment." I have used vaccine for treatment in many cases, apparently with success, and certainly without ill effect, but I should be glad to know what the possible dangers are.

Pruritus with Jaundice

Dr. S. LEIGH COX (Torquay) writes, in answer to the inquiry made by "P. J. M." in the *Journal* of June 16th, with reference to intolerable itching caused by jaundice: I have found that in similar cases the administration of calomel, 1/10 or 1/6 grain t.d.s., materially improves the pruritus. I usually recommend that the patient has a week "on" and a week "off" this regime, continuing the alternate-week system until relief is obtained. I find that small doses such as these are well tolerated, even where there is normally an idiosyncrasy to calomel.

Dr. F. B. JULIAN (Liverpool) writes: I would suggest dolichos pruriens. I have been able to control this maddening symptom with this drug when no other measure had the slightest effect. The tincture may be obtained from Messrs. Nelson, 73, Duke Street, Grosvenor Square, London, W.1, in the 1x potency. The dose is two to three drops thrice daily in water.

LETTERS, NOTES, ETC.

Reflex Effects of Head Posture

Dr. A. MURDOCH (Bexhill) writes: Is any significance to be attached to the results of the experiments on the decerebrate animal, and, if so, can they be applied in any shape or form to the prevention and treatment of disease? The decerebrate animal is an automaton to all intents and purposes, as the conscious directing faculty has been destroyed, but it presents certain constant characteristics—namely, (1) a greater degree of tonicity of all the voluntary muscles of the body, producing a greater degree of rigidity throughout the body; (2) what is most striking—a responsiveness of any alteration of the position of the head in its relation to the spine. If it is true of the decerebrate animal that the position of the head in its relation to the spine produces these responses throughout the whole body, does it apply to the cerebrate conscious animal man? The decerebrate animal cannot alter the position of its own head, but cerebrate man can, and yet for all practical purposes man does not alter the poise of his head from its habitual static position when engaged in any activity. Is the reason for this to be sought in the decerebrate animal experiments—namely, that if he were to alter the relative position of the head to the spine he would automatically alter reflexly all the relationships of his body parts, and thus produce a condition which is so unfamiliar to him as to prevent him from doing easily, if at all, what he intended to do? If this is so—and it can be shown that bodily conformation and the relationships of the internal organs depend on the position of the head—then, by altering the position of the head, changes in the bodily conformation and relationships of the internal organs can be effected and used in the prevention and treatment of disease. I have been prompted to write this letter because of a personal experience. I wished to know if any change took place in the position of my own stomach after a barium meal, when I changed the position of my head from a forward and upward position to a backward and downward position. Dr. Overend, the radiologist to the Buchanan Hospital, St. Leonards, and to the Bexhill Cottage Hospital, watched the screen and then took two photographs on the same film. He noticed that the level of the stomach varied as much as three inches in the two positions. He also noticed that the bases of both lungs showed greater clearness in the first than in the second position. Can this be produced by anyone contracting his abdominal muscles without any reference to a change in the position of the head? Many practical questions might be asked of our physiologists, but the following appear to me to be of primary importance: Does it matter how anyone carries his head? Does the position of the head affect our bodily conformation and all our automatic reflexes? Does it affect the functioning of the abdominal parietes as an efficient abdominal support to the abdominal organs, to say nothing of the support of the abdominal blood pool? Has it any effect on the functioning and tonicity of the voluntary muscular system? Does it affect the movements of the thorax with corresponding effects on the lungs and heart?

Disclaimer

Dr. A. J. BYRNE (Lepton, E.10) writes to disclaim any responsibility for a laudatory reference to him by a patient, which has appeared in a local newspaper. The notice was published without his knowledge or consent.

"Indoxyluria and Indoxylaemia"

A Correction

The reference to the *Journal* from which abstract No. 478, in our *Epitome* of June 16th (p. 93), was made was erroneously printed. It should read *Bull. et Mém. de la Soc. de Méd. de Paris*, April 13th, 1934, p. 247.

Mr. Henry Kimpton, medical publisher and bookseller, 263, High Holborn, W.C.1, has issued a new catalogue of second-hand works on urology, and will send copies to any reader who applies.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 38, 39, 40, 41, 42, 43, 46, and 47 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 332.

BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, JUNE 30th, 1934

CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS AN ANALYSIS OF 145 CASES TREATED BY OPERATION

BY

H. L. WALLACE, M.B., CH.B., F.R.C.P.ED.

ASSISTANT PHYSICIAN, ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN

AND

L. B. WEVILL, M.B., CH.B., F.R.C.S.ED.

(From the Statistical Research Department, Royal Infirmary, Edinburgh)

In this paper an analysis has been made of 145 cases of congenital hypertrophic stenosis of the pylorus which have been treated by operation at the Royal Edinburgh Hospital for Sick Children during the twelve-year period 1922 to 1933 inclusive. In every case a positive diagnosis of pyloric stenosis was confirmed at operation, and no doubtful cases have been included in the series. Those treated by medical measures only, such as repeated gastric lavage, are not considered, although in a large proportion of the series treatment had been carried out in the medical wards prior to operation, with a view to improving the general condition of the patient. It is not proposed to discuss in detail the symptomatology of congenital pyloric stenosis, but merely to analyse the results of treatment in this series of hospital cases.

Sex and Age Incidence

Out of the total of 145 cases 125 were males and twenty females, representing a preponderance of males over females of 6.25 to 1. The 1931 census figures for

ized, is of great interest, as it is difficult to understand why a congenital malformation such as pyloric stenosis should show such a marked affinity for the male sex.

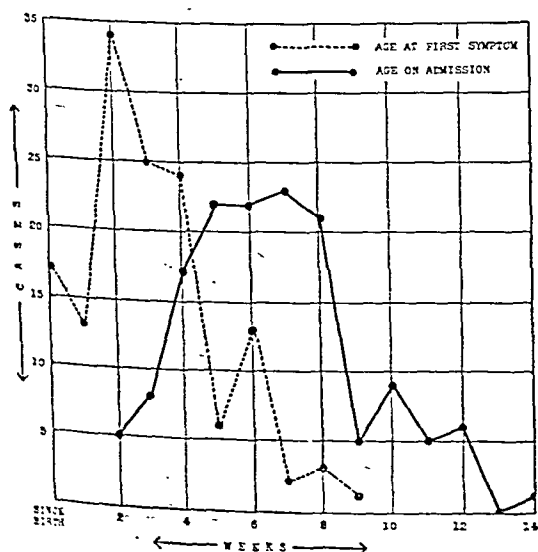
Graph 1 shows two curves: that with the unbroken line represents the age distribution on admission to hospital for the total cases, and the broken line shows the age at the first symptom. If these two tracings be compared, the interval elapsing between the first manifestations of the disease and the time when the condition was actually diagnosed will be obtained. It will be noted that in a large proportion of cases there was an interval of four weeks between the first manifestations and the admission of the child to hospital; in other words, there was a delay in treatment for this long period in a considerable number of cases. The average age on admission was found to be approximately $6\frac{1}{2}$ weeks, and the average age at which the first symptom occurred was 3 weeks. These figures apply to the total series; males and females, since it is impracticable to attempt a separate analysis of male and female cases owing to the very small number of the latter.

Place in Family

The following table shows the place in family of the cases in this series. It will be noted that more than half were first children, and a further 28 per cent. were from second and third pregnancies. No evidence was forthcoming of the occurrence of more than one case in a family.

Place in Family	Cases	Percentage
1st	77	56.6
2nd	23	16.9
3rd	15	11.0
4th	6	4.4
5th	7	5.1
6th	3	2.2
7th	2	1.5
8th	1	0.7
9th	2	1.5
No record	9	

Although this table suggests that congenital pyloric stenosis is an abnormality which has a peculiar selective incidence for the first-born, it is necessary before drawing any such conclusion to have controls with which to compare these figures, since it must not be forgotten that in the general population there is a much higher proportion of first-born children than, for example, fifth- or sixth-born. It is possible, therefore, that the preponderance of first children in this series is merely apparent and not real. For the purpose of control, the place in family of 150 infants admitted to the hospital for various complaints, other than congenital pyloric stenosis, was ascer-



GRAPH 1.—Showing age on admission and age at first symptom for the total cases.

the general population show that the proportion of male to female births in Scotland is 1.02 to 1. This striking preponderance of males, which is so universally recog-

tained, and the age and sex incidence of this control group was approximately the same as for the pyloric stenosis cases. The following table shows the place in family of the 150 control cases.

Place in Family	Cases	Percentage
1st	31	20.6
2nd	36	24.0
3rd	17	11.3
4th	18	12.0
5th	17	11.3
6th	9	6.0
7th	6	4.0
8th	6	4.0
9th	2	1.3
10th	3	2.0
11th	2	1.3
12th	0	0.0
13th	2	1.3
14th	0	0.0
15th	1	0.6

As a further control 230 records of newborn infants, supplied to us by Dr. T. Y. Finlay of the child welfare department, were examined to ascertain the place in family of each infant. The results of this investigation were as follows:

Place in Family	Cases	Percentage
1st	45	19.6
2nd	66	28.7
3rd	31	13.5
4th	30	13.1
5th	13	5.7
6th	10	4.3
7th	17	7.4
8th	6	2.6
9th	4	1.7
10th	3	1.3
11th	0	0.0
12th	1	0.4
13th	1	0.4
14th	1	0.4
15th	1	0.4
16th	1	0.4

From these tables it will be seen that the percentage of first-born infants is comparatively low when compared

with the pyloric stenosis series—approximately 20 per cent. as compared with 56 per cent. The distribution of the controls shows at least one unexpected feature, inasmuch as the number of first-born was actually less than the number of second-born. This raises some suspicion of a degree of selection. We may reasonably assume, however, that with our controls as given, the first-born in the family is actually much more likely to be affected with congenital pyloric stenosis than the younger brothers and sisters.

Birth Weight and Weight on Admission

Graph 2 shows the weight at birth and the weight on admission to hospital. It will be observed that the peak of the birth weight curve occurs at $8\frac{1}{2}$ lb.; this is of interest in that it demonstrates that the majority of infants born with stenosis of the pylorus are strong and healthy at birth, and tend to be above the average birth weight. The average weight of a newborn male infant is usually considered to be about $7\frac{1}{2}$ lb.; in this series

seventy-seven out of 121, or 63.6 per cent., of those regarding whom information as to birth weight was available weighed over 8 lb. The actual average weight at birth for the total series was $8\frac{1}{2}$ lb.

With regard to the weight on admission, the peak on this curve is at $6\frac{1}{2}$ lb., the average admission weight for the whole series being 6 lb. 6 oz. Thus it will be seen that the child usually comes to operation weighing nearly 2 lb. less than it did at birth. This loss of weight is all the more striking since it occurs at a time of life when the child should be rapidly gaining weight. Out of the total cases operated on only fourteen weighed more at the time of operation than they did at birth, and the average age of these children was unusually high—namely, 9 weeks.

First Symptom and Visible Gastric Peristalsis

The two outstanding symptoms associated with pyloric stenosis are projectile vomiting and constipation, and an analysis has been made of the frequency of the occurrence of each as the first indication of pyloric obstruction. In 129 out of the total of 145 cases, or 89.7 per cent., vomiting was the first and only symptom, the constipation not being noticed until a later date. In seven cases, or 4.8 per cent., constipation was the first symptom noticed, and in the remaining nine cases, representing 6.2 per cent., vomiting and constipation were reported to have begun simultaneously. As has already been mentioned, the average age at which the first symptom appeared was 3 weeks, the range varying from birth to the age of 9 weeks.

Visible gastric peristalsis was present in 141 cases, or 97.2 per cent. of the total. Furthermore, it is probable that in the four negative cases visible peristalsis was present, but had not been evident at the time of examination. A palpable tumour in the region of the pylorus was detected in only thirty-five cases, representing

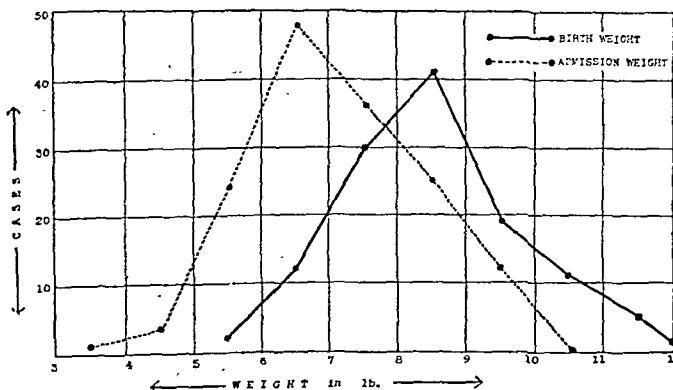
24.1 per cent. In all these, visible peristalsis was also present. From this analysis, therefore, we must conclude that a palpable tumour in the pyloric region is a comparatively infrequent sign of congenital pyloric stenosis, and reliance should always be placed on the almost constant sign of visible gastric peristalsis in coming to a positive diagnosis.

The frequency of these two signs in this series may be conveniently shown thus:

	Present	Absent
Gastric peristalsis	141 (97.2 per cent.)	4 (2.8 per cent.)
Pyloric tumour	25 (24.1 ")	110 (75.9 ")
Peristalsis + tumour	35 (24.1 ")	110 (75.9 ")

Operation

The following table shows the number of cases of congenital pyloric stenosis treated by operation and by non-operative procedures respectively during the last twelve years.



GRAPH 2.—Showing birth weight and admission weight of the total cases.

	1922-1928	1929-1933
Operated on	-	105
Not operated on	40	25
Total... ..	80	130

These figures demonstrate quite clearly the striking increase in popularity of operative treatment in this condition; during the years 1922 to 1928 only 50 per cent. of the admissions to hospital were subjected to operation, whereas in the later period, 1929 to 1933, 80 per cent. were operated on. Another interesting feature is the larger number of cases in the later group than in the earlier one. It will be seen that in the seven-year period 1922 to 1928 the total number of cases of pyloric stenosis admitted to hospital was only 80, as compared with a total of 130 in the shorter period 1929 to 1933. If the average yearly admissions be compared in the two groups it is found that approximately eleven cases were admitted each year between 1922 and 1928, and a yearly average of twenty-six between 1929 and 1933. Whether this increase in numbers in recent years is due to the fact that congenital pyloric stenosis is being more generally recognized, or whether the condition itself is actually occurring more frequently, it is impossible to say, but there does not appear to be any good reason to suppose that this congenital abnormality should be more frequent at the present time than it was ten years ago.

The operation performed was the simple procedure of dividing the pyloric musculature, as first advocated by Rammstedt. Rammstedt's operation has now been carried out almost as a routine measure in the hospital for a number of years, and has been found to be the simplest and most satisfactory. Whenever possible the operation is performed under local anaesthesia, and the child is given a feed while it is actually in progress.

In the present series local anaesthesia alone was employed in 111 cases, or 76.6 per cent. of the total. In seventeen cases, or 11.7 per cent., the operation was begun with local anaesthesia, but it was found necessary to supplement this with a little general anaesthesia during the handling of the stomach. In the remaining seventeen cases the operation was performed under a general anaesthetic.

Operation Mortality

In view of the almost universal adoption of operation as the most satisfactory treatment in the majority of cases of congenital pyloric stenosis some facts regarding the mortality must be given. By operation mortality we mean patients who died apparently as a direct result of operation or of some operative complication. In this series thirty-six patients died as a direct result of the operation, representing a mortality rate of 24.8 per cent. The number of days which elapsed after operation before death occurred is shown as follows:

Days	0	1	2	3	4	5	6	8	9	10	11	13	14	19	21	31	34	Total
Cases	2	4	5	1	2	1	5	2	4	2	2	1	1	1	1	1	1	36

From this it will be seen that more than half of the patients died within one week of operation, and three-fourths within ten days.

The following table shows the number of operations performed and the mortality rate for the various years. These figures suggest that there has been comparatively little reduction in the operation mortality rate during the

past ten years, although admittedly the number of cases included in the earlier group (1922 to 1928) is too small to enable accurate conclusions to be drawn regarding the success of operation.

Operation Mortality in Various Years

Years	Cases	Deaths	Mortality per cent.
1922-1928	40	11	27.5
1929	18	7	38.9
1930	22	7	31.8
1931	22	5	22.7
1932	23	3	13.0
1933	15	3	20.0
Totals ...	145	36	24.8

Cause of Death

The various causes of death were: collapse 24, or 66.6 per cent.; enteritis 9, or 25 per cent.; sepsis 2, or 5.6 per cent.; peritonitis 1, or 2.8 per cent. The "collapse" cases are of special interest in that no definite pathological abnormality could be discovered at necropsy. Most of the patients in this group appeared to survive the actual operation quite satisfactorily, but within a comparatively short time showed signs of extreme weakness and, in spite of the administration of a variety of stimulants, failed to survive. It is a true description to state that these infants simply "faded away" for no apparent reason.

In an endeavour to discover some reason for the alarming operation mortality the cases which failed to survive have been compared very closely with the others, in the hope that some feature might present itself which would give us a clue for assessing operation risk in this condition. Unfortunately we have not been able to arrive at any very definite conclusion as a result of this investigation. It was thought, possibly, that several factors might be concerned in operative risk, and it will be of interest to consider each of these separately. First of all it occurred to us that the weight of the infant at the time of operation might have some bearing on the success of the treatment—the larger and less starved the infant the better the prognosis. This, however, was found not to be the case, since the average weight at operation of those patients who failed to survive was found to be 6 lb. 4 oz., as compared with 6 lb. 10 oz. for those who survived. This slight variation cannot be regarded as significant when dealing with a comparatively small series. If we compare the birth weights and the operation weights of the survivals and non-survivals, it is found that the loss of weight has been practically the same in both groups. In the fatal cases the average loss of weight since birth was 1 lb. 13 oz., as compared with an average loss of 1 lb. 15 oz. in the survivals. These figures suggest that neither the actual weight at operation nor the rate of loss in weight since birth has any appreciable influence on the operation mortality. It must be realized, however, that when dealing with a small series such as this it is probably unwise to draw any definite conclusions from such figures.

The age at operation and the age at which the first symptom was noticed in those patients who died does not show any significant difference from the survivals, the average ages at operation being 6½ weeks and 6 weeks respectively, and the average age when the first symptom appeared being 3 weeks for both those who died and those who survived. These points of comparison between the deaths and the survivals are shown in the following table.

	Average Weight		Average Age	
	At Birth	At Operation	At First Symptom	At Operation
Survivals	8 lb. 9 oz.	6 lb. 10 oz.	3 weeks	6 weeks
Deaths ...	8 lb. 1 oz.	6 lb. 4 oz.	3 ..	6 1 ..

As in the case of the survivals, local anaesthesia was employed for the majority of the patients who died. Of the thirty-six operation deaths, local anaesthesia alone was used in twenty-six, general anaesthesia in six, and in the remaining four both local and general anaesthesia were required. Thus it will be seen that the type of anaesthetic cannot be blamed for the operation mortality.

From this comparison of the deaths with the survivals it must be concluded that no significant fact has arisen which enables us to predict the chances of survival in any particular case.

In addition to the thirty-six patients who died as a direct result of operation, four others died within a comparatively short time of operation from other causes. One developed diphtheria with fatal consequences six weeks after operation, and a second developed septicaemia as a result of abscesses in both axillae, which had been caused apparently by the administration of subcutaneous glucose saline. The remaining two patients were discharged from hospital in good condition, but were readmitted some weeks later with severe enteritis, from which they ultimately died. These four cases have not been included under the heading of operation mortality, since it seemed probable that the operation had little or nothing to do with death in each case.

Operative Complications

Some operative complication arose in twenty-nine cases, or 20 per cent. Post-operative enteritis accounted for nearly two-thirds of the total complications, and as a result death occurred in nine cases. The frequency of the various complications was: enteritis, seventeen; severe vomiting, six; sepsis, three; bronchitis, two; acute parotitis, one.

The six cases under the heading of severe vomiting are mentioned on account of the severity of the symptom, since in each it was found necessary to substitute parenteral feeding for several days following operation, the patients being unable to retain anything in the stomach. One of these died. A number of patients suffered from occasional slight vomiting after operation, but these are not included under operative complications.

Length of Stay in Hospital

The length of stay in hospital of the patients in this series is shown in the following table.

Weeks	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Over 7	Total
Cases	6	31	17	16	9	9	7	12	106

In this table only those patients who survived operation are included, as the length of stay in hospital of those who died has already been discussed. It will be noted that fifty-three patients were discharged within three weeks of admission; this represents 50 per cent. of the total. The patients who remained a longer time were those who had received preliminary treatment in the medical wards prior to operation, or who developed post-operative complications necessitating detention in hospital for long periods. The six patients who remained for less than one week are of interest in that they were treated as out-

patients, and after remaining under observation for a few hours following operation were allowed to go home, with instructions to report progress from time to time. The result in these cases was highly satisfactory. When the lengthy stay in hospital required for the medical or non-operative treatment of congenital pyloric stenosis is considered it must be admitted that on this score, at any rate, the operative treatment of the condition has a very definite advantage over the medical.

Comparison of Early with Later Group

An attempt has been made to determine whether congenital pyloric stenosis is being diagnosed more readily to-day than it was a number of years ago. For this purpose we have divided the cases in this series into two groups. Group 1: cases which were operated on during the period 1922 to 1929, fifty-eight cases. Group 2: cases treated during the period 1930 to 1933 inclusive, eighty-seven. In each group the average age at first symptom and on admission to hospital has been estimated, in order to note the length of time which elapsed between the first manifestations of the disease and the date when the patients were actually referred to hospital for treatment. The figures are shown in the following table.

	Group 1	Group 2
Average age {	First symptom ...	2.7 weeks
	Admission ...	6.4 ..
Difference ...	3.7 ..	3.9 weeks

This table reveals that there is no significant difference between the early and later groups of cases; we must conclude, therefore, that the possibility of the presence of congenital pyloric stenosis in a vomiting baby is not being considered any more to-day than it was five to ten years ago.

Commentary

The most striking and disquieting feature which is revealed by this investigation is the high operative mortality rate, as it will be seen that approximately one patient out of every four operated upon for this condition may be expected to die as a result of the operation. As has been shown there is no unusual feature characterizing those infants who fail to survive operation. Furthermore, the majority who died did not suffer from any recognized post-operative complication, nor was any satisfactory explanation of death discovered post mortem. We must conclude, therefore, that nearly 25 per cent. of infants who come to operation for congenital pyloric stenosis are in such a weak state that they are unable to survive even the comparatively minor operative procedure which is adopted. In this series the operation was carried out with a minimum of disturbance to the infants. Local anaesthesia was employed in a high proportion of cases, and the majority of infants during the operation did not show any signs of distress, so that it may be fairly claimed that post-operative shock was reduced to a minimum.

It would seem, therefore, that if good results are to be obtained in the treatment of congenital pyloric stenosis, and if the operation mortality is to be reduced to a reasonable figure, it is essential that the condition should be diagnosed and treated at a much earlier date than it is at present. In so many cases we find that for a period of three to four weeks after the commencement of symptoms these infants are considered to be suffering merely from dyspepsia, and the feeding is changed every few days in the vain hope that the vomiting will cease.

Eventually, when the child is more or less *in extremis*, it is sent to hospital in a state of health which makes any form of treatment a dangerous procedure.

We would suggest that pyloric stenosis in infancy should be regarded far more than it is at present as an abdominal emergency, and it should be realized that the longer the delay in sending the child for treatment the less are its chances of survival. Admittedly, vomiting in infancy is a frequent occurrence, and is due, in the majority of cases, merely to some feeding defect or mismanagement; nevertheless, we believe that until congenital pyloric stenosis is considered as a possibility in every case of forceful vomiting in infancy the mortality from every form of treatment must remain at a high level. It is probable that if the condition were diagnosed within one week of the commencement of symptoms and sent for operation without delay, as in other cases of abdominal emergency, the operation mortality would be greatly reduced.

Summary

An analysis has been carried out of 145 cases of congenital hypertrophic stenosis of the pylorus treated by operation. The proportion of males to females in this series was 6.25 to 1. More than half of the patients were first children, and it is revealed that the last child in a large family very rarely suffers from this condition. This analysis shows that the birth weights of the infants concerned were somewhat higher than the normal average for males. The average weight at birth for all the cases in this series was 8½ lb.

The first symptom noticed in the majority of cases was vomiting, and the average age at which it occurred was three weeks. Visible gastric peristalsis was an almost constant sign, whereas a palpable tumour in the pyloric region was noted in only 24 per cent. before operation. The operation mortality was 24.8 per cent., and there is no indication of any marked fall in mortality during the last ten years. The patients who failed to survive did not appear to differ significantly at the time of operation from the survivors, and in a high proportion of deaths no adequate cause could be discovered at necropsy.

The time that elapses between the first manifestation of obstruction and the admission of the patient to hospital for treatment is between three and four weeks, and there is no evidence to show that pyloric stenosis in infancy is being recognized any earlier to-day than it was ten years ago.

We wish to record our thanks to the physicians and surgeons of the Royal Edinburgh Hospital for Sick Children, who have kindly placed their case records at our disposal. We also gratefully acknowledge the help of Colonel Harvey and Dr. Kermack of the Royal College of Physicians Laboratory for advice and criticism in the preparation of this paper.

Commemoration Day at Livingstone College, Leyton, was held on June 14th, when General E. J. Higgins of the Salvation Army presided over a large gathering and congratulated the principal, Dr. Tom Jays, and the college generally on the success of their work in providing training in medical subjects for missionaries. "I did not come here," he said in conclusion, "to appeal for funds, but the burdens of finance are pressing. We cannot all go to the mission field, we cannot all come to Livingstone College (most of us are too old), but there are lots of other things we can do, and I feel we could free the college from the burdens that are upon it through lack of money." The Rev. G. Harp of the Moravian Mission, Labrador, said that the year's training he received at Livingstone College had been very useful indeed, and he was most thankful for the help he had received. Dr. Jays said that this year they had had thirty-two students, seventeen of whom were at the college for the whole session. They depended very largely on students' fees to pay their way, and last year there was a deficit of £650.

AN IMPROVED METHOD FOR THE DETERMINATION OF BILIRUBIN IN BLOOD

BY

PROFESSOR A. A. HIJMAN VAN DEN BERGH, M.D.

AND

W. GROTEPASS, M.D.

(From the Medical University Clinic, Utrecht, Holland)

Considerable inaccuracies are inherent in the test for bilirubin in the blood serum as an azo-derivative. We have always preferred, therefore, to call it a quantitative estimate¹ rather than a quantitative determination. The method, however, which owes its widespread use largely to McNee's investigations, continues to be employed chiefly because no better test has yet been found. One of the errors of the method is due to the adsorption of a varying quantity of pigment to the albuminous precipitate during the performance of the test. This objection has been partly circumvented by Thannhauser's modification.² A second error, which must not be neglected, appears in the colorimetric comparison of the azo-bilirubin solution with a standard solution. Our attention was especially devoted to this second error when we critically reconsidered the method. To use as a standard a solution of artificial bilirubin which has to be freshly made for every test is almost impracticable for several reasons. The cobalt sulphate solution we recommended differs considerably in colour-tone from the azo-bilirubin solution, and this makes an exact colorimetric comparison very difficult.* The ethereal solution of rhodanate of iron formerly suggested matches the azo-bilirubin slightly better in colour. The great and rapid change in concentration of an ethereal solution, however, is a serious drawback. A solution of potassium permanganate has been advocated, and this really gives colours which are better matched, but it provides no complete similarity. A permanganate solution, moreover, has the drawback of soon losing its concentration when the solution is weak, and this renders it necessary to make a fresh solution of the desired strength fairly often, thus diminishing the practicability of the method as a routine test. In order to circumvent these difficulties we resorted to carrying out the test in monochromatic light, avoiding in this way the difference in colour between the fluid for comparison and the fluid to be examined—a very disturbing difference in "white" light. This procedure really changes the colorimetry, which is the comparison of the intensity of two colours, into a photometry in monochromatic light, which is a comparison of two strengths of a qualitatively similar light.

Instrumental Modifications

Several more or less costly instruments constructed according to this principle have been recommended. We have used, with good results, one of the ordinary colorimeters common in many laboratories, and have covered the eye-piece with a light-filter. We chose Klett's colorimeter, the new model, in which the source of light is in the foot of the instrument. Schott's green light-filter (S. 52), which only transmits rays of 520 to 546 mμ, was placed on the eye-piece. At first we employed the cobalt sulphate solution, originally described as our standard

* The concentration of the cobalt sulphate solution appears to be 2.16 per cent., and not 2 per cent., as we indicated in our publication *Der Gallenfarbstoff im Blute* (McNee, *British Medical Journal*, 1923, ii, 52). This difference from our former quotation is probably due to a mathematical error on page 17 of the above-mentioned publication, where the azo-bilirubin concentration is mentioned as being 1 in 250,000, and not 1 in 200,000 (cf. Habinowitch, *J. M. Jour. Biol. Chem.*, 1922, xcvi, 163).

solution. The errors in reading were very slight (less than 2 per cent.) by this technique, which far surpasses the results of colorimetry in unfiltered light. The technique, however, can still be improved. The fluids for comparison always provide difficulties for the routine test, especially in clinical laboratories. The preparation of the standard solutions takes time, and chemical analysis is often necessary to test possible changes of composition.

Non-fluid Colour Standards

It is a great advantage to be able to dispense with a fluid for comparison, and the possibilities of this proposition are easily recognizable. The filtered light sent out by the source of light can easily be dimmed in another way and not by the interposition of a pigment solution as a standard for comparison. Vierordt's spectrophotometer, the Stufenphotometer, and Leitz's absolute colorimeter are a few of the instruments that are constructed in accordance with this principle. We have tried a few aids to dimming the light which differ from the above-mentioned instruments. First we interposed a smoked glass, and this gave very good results. In this method one of the vessels of Klett's colorimeter is filled with the azo-bilirubin solution to be examined; the other vessel either remains empty, or, preferably, is filled with the corresponding solving fluid, and is fixed at a constant height. The smoked glass is placed on the ring that supports the latter vessel. The vessel filled with azo-bilirubin solution is brought into the position in which the colours are similar. The standard vessel is filled with a solution of pure bilirubin, and from this azo-bilirubin is made by a technique which we will describe later in this paper. Several solutions of different strength (in 70 per cent. alcohol) are made of this azo-bilirubin, and a standard curve is deduced from them.

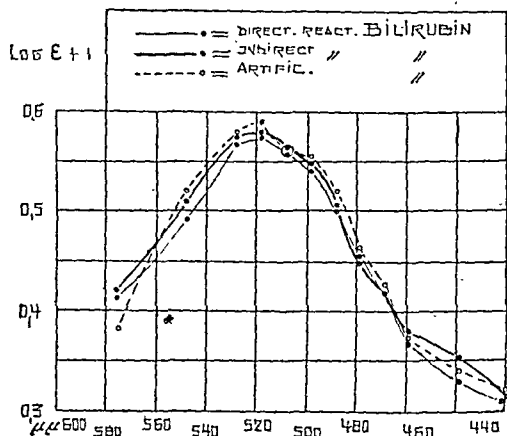
We have, however, now abandoned this smoked glass method, because technical experts feared that the action of these glasses might gradually change. The dimming effect of smoked glass, moreover, is not the same for all regions of the spectrum. Thus errors might occur if the described technique were employed for the colorimetry of other fluids. We rejected an experimental instrument with crossed Nicol prisms for several reasons, and tried an even simpler method of dimming. Instead of the smoked glass we took a metal diaphragm painted black, with a small hole in the centre. The results thus obtained were inferior to those of the smoked glass method. What are the physical causes for the slight changes in colour thus effected we have not been able definitely to ascertain: it is possible that diffraction phenomena might be important. We then replaced the diaphragm with its central hole by a small wire gauze painted a dull black. The wires had a diameter of 0.35 mm., and the meshes measure 1 mm. A gauze of this nature enables us, as is well known,³ to dim the light to a desired proportion. The gauze has the great advantage over the smoked glass in that it dims the light equally in all wave-lengths, and is thus suitable for the examination of all colours. It is, moreover, exceptionally simple and cheap. Messrs. Kipp and Sons (Delft, Holland) are constructing a practical apparatus for quantitative determination of coloured solutions without standards after those principles.

The pH of Fluids in the Direct Reaction

A new difficulty was encountered when we endeavoured to apply this method to the determination of the bilirubin content of the blood serum with the direct reaction. At first the test was performed in the following manner: a certain amount of the reagent was added to the serum

and thereafter a certain amount of alcohol (96 per cent.) and saturated ammonium sulphate. It was then found that, after centrifugalization, a fine turbidity gradually appeared in the red solution, which had been at first clear. This turbidity was, of course, a source of error by dimming the in-coming light in the photometer. A remark of Professor Kruyt's (Utrecht) made us investigate whether the use of less concentrated alcohol might prevent the formation of this albuminous precipitate. We found, after some experiment, that if 50 per cent. alcohol was added there was no vestige of turbidity even after several hours (up to twenty-four) when the correct proportions of alcohol, serum, and reagent were also employed. This method completely abolished at the same time the error mentioned at the beginning of this paper, and which Thannhauser had already tried to circumvent—the loss of bilirubin by adsorption to an albuminous precipitate. When this difficulty had been overcome a new question arose. It appeared that the azo-bilirubin solutions, obtained respectively from chemically pure bilirubin, from bilirubin in serum with a direct reaction, and from serum with an indirect reaction, did not completely match in colour-tone. That the difference in the pH of the fluids was the cause of this phenomenon was proved by subsequent investigation, and the addition of a buffer to the fluids made it possible to obtain nearly perfect similarity of tint. McIlvaine's buffer was found to be most suitable. It consists of 27.25 c.cm. of 0.1 mol. citric acid, and 72.75 c.cm. of 0.2 mol. secondary-sodium phosphate (Sørensen). The pH of the solution is 6.6.

In order to prove even more exactly the similarity in tint, absorption curves of the three different solutions (see diagram) have been measured in the laboratory of



Professor L. K. Wolff, in association with his collaborator Dr. Josephy, by means of Hilger's large spectral instrument. The shape of the curve shows that the light absorption of the three solutions is practically identical in the region of maximal extinction.

It may, we think, be concluded with the greatest possible certainty that the quantity of bilirubin contained in a serum can be estimated by comparing the light absorption of its azo-compound with the light absorption caused by the azo-compound of an artificial bilirubin solution in the spectral region of the maximal light-absorption, which is between 520 and 546μ.

We have now discussed our reasons for the proposed change in our original method for the quantitative determination of bilirubin, and the investigations which led to it: the technique of the test will now be more accurately described.

Special Techniques

The Reaction with Artificial Bilirubin

A small vessel is filled with a freshly made solution of azo-bilirubin. To this end 5 mg. bilirubin is dissolved in 100 c.cm. chloroform; 10 c.cm. of this solution is evaporated under CO_2 in a water-bath until it is nearly dry. About 80 c.cm. of a fluid consisting of 50 per cent. alcohol which contains 10 c.cm. of the above-mentioned buffer solution of pH 6.6 to every 100 c.cm. is added to the residue. The buffer alcohol is heated for some time in order to evaporate the chloroform. Next, the fluid is brought to room temperature, and to it is added 20 c.cm. of the reagent, consisting of (A) 1 gram sulphanilic acid, 15 c.cm. of 25 per cent. HCl, with distilled water up to 1 litre; and (B) 0.5 per cent. sodium nitrite in aqueous solution.

Ten c.cm. of Solution A is mixed with 0.3 c.cm. of Solution B shortly before use. The buffer containing alcohol is added to the fluid after the reagent, and the total quantity is brought up to 100 c.cm. The pigment solution which is to be examined must be left in the dark for fifteen minutes in order to complete the "coupling." Several solutions, all differing by 5 per cent., are made from the azo-bilirubin which has thus been obtained. In this way the weakest solution has half the strength of the original solution, and thus equals 1 in 400,000 bilirubin. One of the vessels is now filled in turn with these different solutions, and the height is determined to which it must be raised in order to obtain a similar light intensity to the other half of the field of vision. The readings of the numbers are marked on the ordinates of a millimeter paper scale and the corresponding units of bilirubin are marked on the abscissae. This constitutes the standard curve of the instrument.

The Direct Reaction

Two c.cm. reagent is added to 1 c.cm. serum. The solution is left in the dark for five minutes, 2 c.cm. of water is added, and then the alcoholic buffer solution up to 10 c.cm. The "coupling" is complete after fifteen minutes. This method keeps the solution perfectly clear for several hours, and a slight turbidity appears only after twenty-four hours. If the serum contains a great amount of bilirubin, and if the azo-solution has, in consequence, a very bright colour, then it must be diluted as often as necessary with 25 per cent. buffer alcohol.

The Indirect Reaction

Two c.cm. serum is mixed with 4 c.cm. alcohol (96 per cent.) and centrifugalized. The clear supernatant fluid is placed in a test tube. Four c.cm. of this solution is placed in a second test tube, and 0.5 c.cm. reagent and 1 c.cm. alcohol are added to it. Wait one or two minutes to obtain maximal colour before using the colorimeter. The dilution factor is 4.

$$\frac{20}{7} \times \frac{5.5}{4} = \frac{5 \times 5.5}{7} = \frac{27.5}{7} = 4 \text{ approx.}$$

It has not been possible to improve this reaction, apart from also employing the filtered (green) light for quantitative determination. We do not commit a grave error by adhering to our original technique in this case, as the quantity of pigment adsorbed to the albuminous precipitate is small in these circumstances.

In these investigations we initially used different proprietary preparations for making the necessary bilirubin solutions. These, however, did not all give, in solutions of the same strength, a quantitatively similar light absorption after diazotizing. We have therefore standardized our instrument with chemically pure bilirubin, with which Professor H. Fischer (Munich) has kindly provided us. An examination of different preparations with the standardized instrument showed that the bilirubin preparations of Hoffman La Roche (Basel) and Fraenkel Landau (Berlin) are exactly similar to Professor H. Fischer's pure preparation.

Summary

This paper describes an improved technique for the determination of bilirubin in the serum by means of the diazo method.

The first improvement is the colorimetric determination in monochromatic light by means of a dimming wire

gauze, instead of the fluid for comparison which was formerly used. This instrument is standardized with azo-bilirubin, derived from chemically pure bilirubin.

The second improvement is the prevention of the adsorption of bilirubin to the albuminous precipitate which occurred when the old technique was followed. This result is achieved by adding, in suitable proportions to the serum, a mixture of reagent, diluted alcohol, and a buffer.

REFERENCES

- ¹ *Der Gallenfarbstoff im Blute*, p. 11 (Leipzig, 1918).
- ² Thannhauser and Andersen: *Deut. Arch. f. klin. Med.*, 1921, cxxxvii, 179.
- ³ Plotnikow: *Photochemie*, p. 121 (Leipzig, 1928).

THE ANTE-NATAL USE OF QUININE

BY

F. W. BUDDEE, M.B., CH.M.(SYD.), M.C.O.G.

LATE RESIDENT MEDICAL OFFICER, QUEEN CHARLOTTE'S HOSPITAL

Several references to the advantage of giving quinine in small doses in the last few weeks of pregnancy have appeared from time to time in the journals. Mitchell¹ (1930) was enthusiastic, and Gair Johnston, Hewetson, and Green-Armytage wrote letters to the *British Medical Journal* on the subject in August, 1933. Special attention was called to the easy labour of the malarial patient under treatment with quinine.

This paper deals with a series of one hundred cases—sixty-six primiparae and thirty-four multiparae—who have been given quinine hydrochloride during the last weeks of gestation. For comparison, a series of the same number of primiparae and multiparae has been taken; in each series toxæmias in any form, and gross pelvic contraction, have been excluded, but otherwise the cases have been selected from the ante-natal booked patients of Queen Charlotte's Hospital.

Pharmacology

Quinine has long been credited with oxytocic properties. It has a direct action on involuntary muscle; in weak concentration it stimulates contraction, but in strong concentration it depresses (Sollman)²; its action is most marked on the uterine muscle, but in animals the intestinal muscle is also effected and splenic contraction also occurs. In the human uterus in labour, however, Bourne and Burn³ showed it had very little effect in hastening delivery, for while it increased the frequency of contractions they were not as powerful. Numerous workers have agreed that it is of no value in the induction of labour except in fully mature or post-mature cases, and medical inductions with quinine and pituitrin have given the same percentage of success when the quinine has been omitted. Quinine has also general tonic properties. It is a general protoplasmic stimulant in small doses, but this is only a transitory augmentation of activity, and in larger doses it is a protoplasmic poison (Cushny).⁴ Its tonic and stomachic action is well known, while its antipyretic properties and specific action in malaria need no mention here. With regard to its increasing resistance, it causes first a mild leucocytosis (followed soon afterwards by a leucopenia) and in higher concentrations it is detrimental to phagocytosis and agglutination (Cushny).⁴

The drug is excreted by the kidneys, but the greater proportion absorbed is destroyed in the body (60-70 per cent.). It appears in the urine fifteen to twenty minutes after ingestion, and the greatest concentration independent of the dosage is present in six to ten hours, though small quantities may be found in the urine for twenty-four to forty-eight hours. It reaches the foetus through the placenta, and has been recovered from foetal urine, liquor amnii, and placental tissue (Dilling and Gemmell).⁵ Excretion by the foetus is thought to be slow, and concentrations of 1 in 100,000 are likely to cause intrauterine death.

Small doses cause marked disturbance in some people (quinism), usually in the nature of disturbance of hearing

and sight, mental confusion, and depression. Skin eruption is perhaps the commonest manifestation of idiosyncrasy, and a large variety of scarlatinal and urticarial rashes have been described (Sollman and Cushny).

Torland described a severe rash associated with foetal death. A possible test for idiosyncrasy is the application of a strong solution of quinine to the scarified skin. In one of the cases given quinine a severe erythematous rash developed after three doses of 5 grains (taken each night) and premature labour followed, but not foetal death (Case 1). One baby developed a miliary rash after twenty-four hours, which may have been caused by quinine. In two patients also the quinine had to be discontinued on account of sickness and headache, in one after six and in another fourteen days. Three cases felt sick for the first three doses, but then continued without further trouble. In this series there was therefore a 3 per cent. idiosyncrasy to the drug.

Dosage and Duration of Medication

The aim in this series was to commence quinine at about the thirty-sixth week of gestation, and to continue until the onset of labour. Quinine hydrochloride in 5-grain tablets was given at night in each case. Labour commenced at varying times—after three days in one case and after fifty-four days in the longest of the series.

The following table shows approximately the number of doses of quinine given.

Onset of Labour

Under 7 Days	7-14 Days	14-21 Days	21-28 Days	28-35 Days	35-42 Days	42-56 Days
4	12	18	23	17	18	8

There appeared to be no relation between the number of doses and the duration of labour. With regard to the period of gestation at which labour commenced fewer cases of the quinine series went past the fortieth week of gestation calculated in the usual method from the last menstrual period.

The following table shows a comparison of the quinine and control series.

Week at which Labour Commenced	35th	37th	38th	39th	40th	41st	42nd	43rd
Quinine { Primiparae ...	1	4	8	15	29	7	1	1
Quinine { Multiparae ...	2	1	8	4	15	2	1	1
Control { Primiparae ...	—	3	8	10	24	11	8	2
Control { Multiparae ...	1	2	4	6	13	3	3	2

Ante-natal Results

Except for the five cases already mentioned as suffering through idiosyncrasy, all cases felt and looked well. No nausea was experienced with the tablets. In quite a number muscle tone was so good that abdominal palpation was difficult, and in a small proportion the uterus appeared more irritable than normal. The incidence of premature labour was not very different from that in the control series, but in Case 1 it seemed responsible for the onset of labour.

Foetal and Neo-natal Morbidity

One stillbirth and two infant deaths occurred in the quinine series. In the stillbirth the case was one of prolonged labour, with inertia, slow dilatation, and the early passage of meconium. The foetal heart was not heard after sixty hours' labour; I do not think quinine can be held responsible. The infant deaths were due in one case to marasmus (on the fourteenth day, a full-term child, weighing 5 lb. 7 oz. at birth, which steadily lost weight),

and in the other following an operation for sacrococcygeal tumour. The control series contained three stillbirths from prolonged labours, and one infant death from bronchopneumonia.

Dilling and Gemmell, in their investigations on quinine for induction, found a high incidence of the early passage of meconium (34.8 per cent. compared with 8 per cent. in normal cases). This was not noticed in the present series, and there was no difference in the progress of the children after birth. While King and Dilling and Gemmell have each considered the higher concentrations injurious to the foetus, although not necessarily increasing the still-birth rate, I do not think in the smaller dosage continued over several weeks there is any evidence to suggest foetal distress, even where idiosyncrasy has been observed. The smallest child in the series weighed 5 lb. 5 oz. and the largest was 9 lb. 6 oz., with an average for all cases of 7 lb. 1 oz.

Uterine Contraction and Duration of Labour

Clinically, where quinine had been given the contractions appeared to be frequent and of good quality, and progress was good in most cases; the labour ward sisters considered the cases had benefited from the medication. On estimating the hours of labour in comparison with the control series, however, the results were disappointing, and very little, if any, benefit was observed, while in addition several bad cases of inertia occurred in the quinine series.

The time of onset of labour in the following tables has been estimated from when the patient first felt painful contractions of any sort, and not, as in Mitchell's series, from "when the patient has to stand still and hold a chair with each pain."

The second stage, while difficult to estimate accurately, is calculated from the routine figures on the labour ward sheets in each case.

Total Duration of Labour

	Primiparae		Multiparae	
	Quinine	Control	Quinine	Control
Under 5 hours ...	1	2	14	14
5 to 10 hours ...	11	8	12	12
10 to 18 hours ...	25	26	5	5
18 to 24 hours ...	5	9	1	2
24 to 35 hours ...	11	9	1	1
36 to 48 hours ...	1	4	—	—
48 hours and over	9	8	1	—

Duration of Second Stage

	Primiparae		Multiparae	
	Quinine	Control	Quinine	Control
Under 1 hour ...	28	32	33	32
1 to 1½ hours ...	10	15	1	1
1½ to 2 hours ...	12	5	—	1
2 hours and over ...	13	14	—	—

In both series of cases twenty-one primiparae had labours exceeding twenty-four hours. In the quinine series six of these cases were typical examples of primary inertia, with labours extending over forty-eight hours. The longest case was 101 hours for the first stage—an occipito-posterior presentation with pains of poor quality (Case 2); four others were occipito-posterior, while one

of the six was occipito-anterior with pains of just poor quality. Four of these inertias were delivered with forceps. The remainder of the labours exceeding twenty-four hours included one extended breech and twelve occipito-posterior presentations. In the multiparae one case which had inertia with her first baby had a labour of fifty-five hours, with weak, ineffective pains (Case 3).

Forceps Incidence, Caesarean Section, and Post-partum Loss, etc.

Eight cases in the quinine series had forceps deliveries, and of these, seven were occipito-posteriors needing manual rotation. In the control series two cases of occipito-posterior were delivered normally after manual rotation, and eight cases were delivered by forceps. Caesarean section was performed in three instances for disproportion. Two of these cases were interesting, in that drug induction with pituitrin was first tried and repeated in twenty-four hours at the fortieth week of gestation with the idea of a trial labour (Cases 4 and 5). The uterine muscle was apparently not more responsive to pituitrin after the quinine medication.

No excessive loss occurred post partum in either series of cases, but the numbers are too small to be of any significance. One multipara, however, who had had a retained placenta with her previous pregnancy, had a perfectly normal third stage. Retraction of the uterus was also satisfactory. Mitchell thought this an important factor in reduction of sepsis, but to consider quinine responsible for this is not justifiable, as retraction was quite satisfactory in the control series. Infection in these cases was never of any serious consequence; no haemolytic streptococci were cultured in any case. One multipara who had had quinine, however, died of pulmonary embolism on the thirtieth day. Femoral thrombosis was present, but no evidence of infection or laceration of the genital tract was seen at any stage (Case 6).

Illustrative Case Records

Case 1.—A. S., aged 36 years, a second multipara, was given quinine at the thirty-sixth week. After the second dose (5 grains each night) she had headache and nausea, and after the third dose had by morning developed an extensive erythematous rash, which was a little itchy, and mild ear and eye symptoms. By evening labour had commenced, and she was admitted to hospital with the head on the perineum after two hours of pains. Normal delivery of a living child (5 lb. 13 oz.) followed. Mother and child progressed satisfactorily, the rash disappearing after three days.

Case 2.—A. W., aged 25 years, a primipara, had quinine for forty-six days previous to labour, which did not commence until three weeks after the estimated date. She was an occipito-posterior presentation, with poor, ineffective pains, and early rupture of membranes. Dilatation of the cervix was slow, and after 101 hours an anterior lip could be pushed up; manual rotation was performed and delivery with forceps. The child's condition was satisfactory, and it weighed 7 lb. 14 oz. This case developed an acute sacro-iliac subluxation, which was treated by manipulation and plaster, with good result.

Case 3.—M. N., aged 25 years, a second multipara, had quinine for fourteen days previous to labour. Weak, ineffective pains and backache were present for forty-eight hours, but then improved, and further progress was good. The labour lasted fifty-five hours in all, and the child weighed 5 lb. 10 oz.

Case 4.—N. D., aged 21, a primipara, had quinine for forty-three days before Caesarean section for disproportion. At the fortieth week of gestation (after thirty-four doses of quinine), medical induction with oil bath enema and six doses of two units of pituitrin at hourly intervals was tried, and repeated after twenty-four hours without any result. The convalescence after the operation was normal, and the child weighed 8 lb.

Case 5.—E. P., aged 23, a primipara, was similar to Case 4. Quinine was given for twenty-eight days, and then medical induction was tried and repeated without result. The child weighed 9 lb. 6 oz.

Case 6.—D. H., aged 28, a second multipara, had quinine for twelve days before labour commenced. She was admitted to hospital with the head on the perineum, and normal delivery followed. The total duration of labour was one hour thirty-five minutes, and the child's weight 7 lb. On the evening of the third day she had a small pulmonary embolism; this recurred twice in the next two weeks, and on the thirtieth day she had a large embolism, causing death. At necropsy there was no evidence of infection or laceration in the genital tract; the left femoral vein was thrombosed, and several emboli were present in the lungs.

Conclusions

Quinine, given in small doses in the last weeks of gestation, acts as a general tonic and stimulant, and the patients feel well and are often improved. Idiosyncrasy is likely in a small percentage of cases, and its manifestations may include skin reaction and the onset of premature labour. There is no evidence to suggest any foetal toxicity or increase in foetal mortality, and, apart from idiosyncrasy, little risk of premature labour. The effect of the drug on the duration of labour is of doubtful value. Clinically, the pains appeared to be improved, but in comparison with the control series no significant difference was evident. Inertia is certainly not eliminated. The general tonic effect may have some beneficial results in reducing the liability to infection through increased resistance.

My thanks are due to the Queen Charlotte's Hospital honorary medical staff for their assistance and advice, and to the Sisters of the hospital for their aid in compiling these results.

REFERENCES

- Mitchell, D. A.: *British Medical Journal*, 1930, i, 144.
- Sollman: *Manual of Pharmacology*, W. B. Saunders Company, 1932, p. 535.
- Bourne and Burn: *British Medical Journal*, 1930, ii, 87.
- Cushny: *Pharmacology and Therapeutics*, p. 474.
- Dilling and Gemmell: *Journ. Obstet. and Gynaecol. Brit. Empire*, 1929, xxxvi, 552; 1930, xxxvii, 529.
- Torland: *Journ. Amer. Med. Assoc.*, 1928, xc, 1180.
- King, E. L.: *Ibid.*, 1933, ci, 1145.

Further information has now been received about the post-graduate course and tour in Switzerland from August 15th to 23rd, previous notification of which appeared in the *Journal* of April 21st. The Basel Medical Association will entertain members of the course on the evening of August 15th, and on the following morning there will be a lecture at the Basel municipal hospital and a visit to the new maternity hospital. The same evening there will be an official dinner at Zürich, with lectures on the new hospital buildings there. The morning of August 17th will be devoted to a visit to the Neumünster hospital, the psychiatric clinic, and the children's hospital. In the evening, at Zürich, there will be an informal welcome by the medical associations of Lucerne, and the following morning will be spent in study of the reconstructed and enlarged cantonal hospital and two local clinics. The official post-graduate course will open at Bern on the morning of August 19th with lectures on the general aspects of hospital treatment, and further lectures on cognate subjects will follow at the University on the three next mornings, with discussions. The formal course will conclude at Leysin on August 23rd, and the five following days will be spent in visits to Arosa, Davos, and St. Moritz. The whole course is arranged in three sections—namely, Basel and Lucerne, Bern and Leysin, and the Canton Grisons tour, the respective fees being 90, 150, and 150 Swiss francs. Tickets should be booked before July 1st. Further details are obtainable from the secretary of the post-graduate course, Obergrundstrasse 13, Lucerne.

OBSERVATIONS ON THE ASSOCIATION
OF HAEMOLYTIC STREPTOCOCCAL
INFECTION WITH ACUTE
RHEUMATISM

BY

WILLIAM A. R. THOMSON, M.D.

SURGEON LIEUTENANT R.N.

FORMERLY DAVIDSON RESEARCH FELLOW IN APPLIED BACTERIOLOGY,
EDINBURGH UNIVERSITY(From the Departments of Medicine and Bacteriology, University
of Edinburgh)

Since Haig-Brown¹ described the occurrence of cases of acute rheumatism in association with an epidemic of tonsillitis among the boys of Charterhouse much epidemiological evidence has accumulated in favour of the association of acute rheumatism with haemolytic streptococcal infections. Longstaff² had already shown from a study of the Registrar-General's returns that there was a close association between the incidence curves of puerperal fever, scarlet fever, and acute rheumatism, while Dudley,³ in a study of the association of acute rheumatism with outbreaks of tonsillitis due to the haemolytic streptococcus among the boys on board the training establishment *Impregnable*, has shown that the annual attack rates per 1,000 were 397 for tonsillitis and 43.7 for rheumatic fever. Glover and Griffith⁴ have reported similar outbreaks in public schools where, as in the case of the training ship, sleeping arrangements were ideal for the transmission of droplet infections. A full study of this aspect of the question is to be found in Glover's Milroy Lectures (1930).⁵

Interest in this association of the haemolytic streptococcus with acute rheumatism has been enhanced of late by the work of Coburn in New York and Collis, Sheldon, and Schlesinger in London. Coburn⁶ showed that when children suffering from rheumatic fever were removed from New York to Porto Rico, not only was the haemolytic streptococcus persistently absent from swabs of the throat, but rheumatic relapses were unknown, and the children made uninterrupted recoveries. When the children returned to New York, however, haemolytic streptococci reappeared in the throat, and several rheumatic relapses occurred. Collis⁸ and Sheldon⁹ reported an epidemic of rheumatic relapses in a convalescent hospital for rheumatic children. Here the relapses were all preceded by tonsillar infections due to the haemolytic streptococcus. Further attention has been drawn to the subject by the work of Todd,¹⁰ who has demonstrated the presence of a high titre of "anti-haemolysin" in the blood of patients suffering or convalescent from acute rheumatism.

Four Cases Encountered in Edinburgh

During an investigation into the aetiology of acute rheumatism that is at present being carried out in Edinburgh, four cases have been encountered which illustrate this association, and which, in view of its importance in relation to the aetiology of acute rheumatism, are now reported.

CASE I

A girl, aged 3 years 9 months, was admitted to the Royal Hospital for Sick Children, Edinburgh, on March 29th, 1932, with a history of weakness and twitching of the right arm and leg for one week. There was no history of headache, strabismus, delirium, or coma, and no family history of rheumatism. The only points of note were that she had had intermittent attacks of pain in the right ear since infancy, and four weeks before admission she had had a "slight cold." On admission she was a well-proportioned, well-nourished child, of average intelligence, but very emotional.

There were marked choreic movements of the face, eyes, and all four limbs, more emphasized on the right side. Speech was considerably impaired, and she was unable to feed herself; both tonsils were slightly enlarged. Nothing abnormal was detected about the heart. The urine contained albumin, and, microscopically, a few red blood cells, but no casts. The following are notes on the progress of the case.

March 31st: Antipyrine, 5 grains three times a day. April 5th: Patient feeding herself; still considerable ataxia. April 11th: Faint, discrete, erythematous, and irritating rash on trunk, antipyrine rash; antipyrine stopped. April 13th: Temperature 100.2°; widespread erythematous rash affecting trunk, lower extremities, and upper extremities to lesser extent—closely set, bright red spots, fading on pressure, not quite so fine as typical scarlatiniform rash; face flushed; no sore throat. April 14th: Rash rapidly fading. April 19th: Well-marked "peeling" of the face. April 30th: Patient active and cheerful, with no noticeable ataxia; had lost 10 lb. in weight since the 14th; had also had impetigo, which responded to routine treatment.

May 1st: Temperature 102°, pulse 140; tonsils congested; high-pitched, blowing systolic murmur audible in the mitral area; sodium salicylate, 10 grains three times a day. May 2nd: Temperature 101.2°, pulse 132; systolic murmur more intense. May 3rd: Temperature 101.2°, pulse 136; haemolytic streptococci isolated from throat swab; reduplication of second sound in pulmonary area; sodium salicylate stopped. May 5th: Skin reaction to intradermal injection of extract of haemolytic streptococci positive; Dick reaction negative; haematuria present. May 7th: Haematuria diminishing; face puffy. May 9th: Preceding night restless; patient very breathless; at 6 p.m. she had an attack of vomiting, followed by cyanosis and a period of intense dyspnoea; during this attack the heart sounds were tumultuous and entirely masked by murmurs. May 10th: Temperature 100°, pulse 148; patient still breathless; apex beat in the sixth intercostal space, just external to the midclavicular line; no pericardial friction. May 16th: Patient immensely improved; no dyspnoea; temperature normal; no abnormal constituents of the urine; apex beat in the fifth intercostal space, medial to midclavicular line; systolic murmur in mitral area much less intense. May 25th: Tonsillectomy performed; tonsils enlarged and septic. May 29th: Further outbreak of impetigo on the face. On June 3rd the patient was discharged from hospital, her general condition being good. The systolic murmur was still present, but much reduced in intensity; there were no abnormal constituents of the urine.

This case demonstrates a majority of the phenomena to which invasion of the body by haemolytic streptococci can give rise. A patient admitted to hospital with chorea, a typical rheumatic manifestation, subsequently develops a rash which, to all intents and purposes, is a typical scarlatiniform eruption; this, in turn, is followed by an outbreak of impetigo contagiosa. Almost immediately afterwards signs of cardiac involvement appear, accompanied by tonsillitis, and a few days later the patient has developed an attack of acute nephritis. Examination of the throat swab reveals the presence of haemolytic streptococci; there is a positive reaction to the intradermal injection of an extract of haemolytic streptococci, and the Dick reaction is negative. A further point of interest is the history of a "cold" three weeks before the onset of choreic symptoms. Glover and Griffith⁴ have shown that febricula and feverish colds are often a definite manifestation of haemolytic streptococcal infection. If it be assumed that this "cold" was such an infection, then the case is in the same category as those described by Collis⁸ and Sheldon,⁹ where rheumatic relapses were usually preceded by a tonsillitis of haemolytic streptococcal origin occurring one to three weeks before the rheumatic manifestations appeared.

CASE II

A boy, aged 15, was admitted to a surgical ward of the Royal Infirmary, Edinburgh, on March 12th, 1932, with a history that five years previously he had been in hospital for

several months on account of a "poisoned leg" following upon a cut on his foot. He was quite well after this until seven weeks before admission to hospital, when his right leg became very painful at the site of the old injury. The boy was found to be suffering from an acute osteomyelitis of the right tibia, which proved to be due to a haemolytic streptococcus. After operative treatment he made a good recovery. The case notes were as follows. On April 12th the patient was transferred to the Astley Ainslie Institution, a convalescent hospital. April 14th: Temperature 101.8°, pulse 120; scarlatiniform rash over whole body; no sore throat; foul discharge soaking through the elastoplast bandage; discharge contained *Staphylococcus aureus* and *albus*, and haemolytic streptococci. April 15th: Temperature 103.2°; rash fading. April 25th: Temperature 100°; pain in left wrist and hip; swelling on dorsum of hand; left border of heart 1/4 inch external to nipple line; mitral systolic murmur; salicylates administered and antistreptococcal serum. May 2nd: "Serum rash." May 6th: Pain in right hip. May 8th: Temperature 102°; heart enlarged; aortic systolic murmur. May 10th: Red patches on leg round wound; ? erysipelas. May 29th: Heart still enlarged; mitral and aortic systolic murmurs. June 2nd: Skin reactions to the intradermal injection of an extract of stock haemolytic streptococci and to an extract prepared from the culture of haemolytic streptococci isolated from his own wound both positive; Dick reaction negative; haemolytic streptococci isolated from throat swab. July 4th: Injections repeated; reactions still positive; Dick reaction negative; no haemolytic streptococci isolated from throat. July 22nd: Patient discharged, much improved; apex beat in nipple line in fifth interspace; mitral systolic murmur, and reduplicated second sound in pulmonary area.

Here again in one patient is practically the whole range of the clinical phenomena of infection with the *Streptococcus haemolyticus*. First the local infection, manifesting itself as acute osteomyelitis; then the generalized intoxication characterized by a scarlatiniform rash, followed by what some would regard as the allergic phase showing itself as acute rheumatism; and, finally, a localized invasive phase, characterized apparently by a mild attack of erysipelas. That the joint and cardiac involvement in April was a rheumatic manifestation is suggested by the prompt response to salicylate, and the subsequent progress of the condition.

CASE III

This patient, a girl aged 12, was admitted to the Ear, Nose, and Throat Department of the Royal Infirmary, Edinburgh, on March 16th, 1932, with the following history. There had been an intermittent discharge from the left ear since she was 8. At the end of February, 1932, she had been taken ill with "influenza," and on March 6th she had again complained of pain in this ear, which was followed by a discharge. Subsequently a discharge, unaccompanied by pain, appeared from the right ear. There had been no vomiting or giddiness. There was a history of tonsillectomy five years previously, but no history of rheumatism.

On admission the patient complained of pain in the left ear, which contained some pus. The tympanic membrane was bulging, and there was mastoid swelling and tenderness. Examination of the throat showed that a small piece of the right tonsil had been removed; the left tonsil was still entirely present. The tonsillar lymphatic glands were much enlarged, and there were large adenoids. The progress notes were as follows.

March 17th: Schwartz operation on left ear; sinus healthy. Growth of haemolytic streptococci obtained from pus from antrum. March 29th: Adenoids removed. April 4th: Temperature 102.2°, pulse 120; profuse discharge from both ears. April 5th: Schwartz operation on right ear. April 6th: Temperature 103.4°, pulse 140; no rigors. April 7th: Left jugular ligation; haemolytic streptococci isolated on blood culture. April 11th: 10 c.cm. scarlatina streptococcus antitoxin intravenously and 10 c.cm. intramuscularly. April 12th: 10 c.cm. antitoxin intravenously. April 13th: 25 c.cm. antitoxin intravenously. May 13th: Patient transferred to the Astley Ainslie Institution; still some discharge from right

mastoid wound. June 6th: Patient complained of pain in lumbar region on walking, which responded to rest in bed. June 10th: Again complained of pain in lumbar region, and was put back to bed; temperature 97°. June 11th: Temperature 99.6°; salicylate administered. June 16th: Temperature 98°; patient allowed to get up. June 23rd: Salicylate stopped. July 13th: Operation wounds healed.

August 4th: Temperature 98°; throat inflamed and tonsils swollen; complained of sore throat; systolic murmur in mitral area audible for first time. August 5th: Temperature 102°. August 19th: Temperature 98°; patient allowed up; throat normal; mitral systolic murmur still present. September 13th: Tonsils again septic. October 21st: Patient transferred back to Royal Infirmary; still complaining of pain in back; tonsils septic. October 29th: Tonsillectomy performed. October 31st: Patient transferred back to Astley Ainslie Institution; throat clear. November 28th: No haemolytic streptococci isolated from throat swab; negative skin reaction to intradermal injection of extract of haemolytic streptococci. December 12th: No haemolytic streptococci isolated from throat swab; skin reaction to injection positive. December 23rd: Patient discharged; mitral systolic murmur still present.

In this case a definite haemolytic streptococcal infection was followed by what must be considered as a rheumatic infection of the heart. Not only was the haemolytic streptococcus isolated from the local infection, but it was also obtained on blood culture. There was no family history of acute rheumatism nor had the patient herself ever previously shown any signs of a rheumatic infection.

CASE IV

A woman, aged 26, whose first child was born on December 30th, 1931, was admitted to a fever hospital on January 7th, 1932, as a case of puerperal fever. She was discharged on March 1st. On April 2nd her temperature was 101°, and she complained of pains in the knees, thighs, arms, shoulders, and right iliac fossa; these responded to salicylate. She was admitted on April 22nd to the Gynaecological Department, Royal Infirmary, Edinburgh, on account of pain in the right iliac fossa. The tonsils were enlarged. A diagnosis of pyosalpinx was made, and she was discharged on this occasion on May 10th. For four weeks in August she was in bed at home with a recurrence of acute rheumatic polyarthritis.

On November 6th she was readmitted to the Royal Infirmary on account of persistent pain in the right iliac fossa, and of pain in the "small of the back" and on micturition. The joint pains still persisted to a slight degree. On admission there was a blowing systolic murmur of the heart, maximal in the mitral area. The tonsils were large and ragged. The case notes were as follows.

November 8th: Subtotal hysterectomy performed; haemolytic streptococci isolated from pus from pyosalpinx; pains improved considerably after the operation, and in addition salicylate was administered. December 3rd: Patient transferred to Astley Ainslie Institution. December 12th: Haemolytic streptococci isolated from throat swab; skin reaction to intradermal injection of extract of haemolytic streptococci strongly positive. January 4th, 1933: Haemolytic streptococci isolated from throat swab; skin reaction to injection strongly positive; patient receiving salicylate; joint pains easier. January 23rd: Haemolytic streptococci present in throat swab; skin reaction still strongly positive; patient getting up for a short time each day; pains now absent. February 6th: Haemolytic streptococci isolated from throat swab; skin reaction positive to injection; loud, blowing systolic murmur still present in the mitral area; patient now up all day.

In this case the haemolytic streptococcal infection took the form of an attack of puerperal fever, followed by a pyosalpinx, which, on bacteriological examination, was found to be due to this organism. Here again there was no previous history of acute rheumatism, nor any family history, and it was only after a haemolytic streptococcal infection that an initial attack of acute rheumatism occurred, leaving in its train a definite cardiac lesion.

Discussion

If it is assumed, as is indeed probable, that the "cold" reported in Case I was a haemolytic streptococcal infection, then in each of the cases the rheumatic manifestations were preceded by such an infection. Another feature of all four cases is the absence of a previous history of rheumatic infection and of any family history of this disease. On the other hand, there is much variation in the period intervening between the onset of the haemolytic streptococcal invasion and that of the rheumatic manifestations. In view of the clinical picture and the response of these cases to sodium salicylate, there can be little doubt that the cardiac and arthritic signs were of rheumatic origin.

It must be borne in mind, however, that this is not a random selection of cases. For every case here reported there were many more where either haemolytic streptococcal infection was present without associated rheumatism, or acute rheumatism existed without any evidence of haemolytic streptococci being involved, although the former was the more common finding. In other words, haemolytic streptococcal infection without any accompanying or consequent rheumatic manifestations was much more frequently found than acute rheumatism without some evidence of haemolytic streptococcal involvement. This is a factor which is of the greatest importance in any attempt to assess the role of the haemolytic streptococcus in the aetiology of acute rheumatism. It has been pointed out elsewhere¹¹ that if any series of cases of haemolytic streptococcal infection be examined the majority of cases of acute rheumatism in the series will be found to be secondary to such infection, whereas in a series of cases of acute rheumatism the number of cases secondary to haemolytic streptococcal infection will be much smaller.

The cases here reported are deliberately chosen because of the dominant part played by the haemolytic streptococcus, and in order to emphasize the important, though perhaps not primary, role of this organism in the aetiology of acute rheumatism, a role which must always be considered in any attempt to investigate the aetiology of this disease. That a close association does exist between the haemolytic streptococcus and acute rheumatism is exemplified even in this short series, where the latter condition was found in association with: (1) tonsillitis, (2) otitis media, (3) mastoiditis, (4) puerperal fever, (5) pyosalpinx, (6) acute nephritis, (7) acute osteomyelitis, (8) erysipelas, (9) impetigo, and (10) scarlet fever, in each case haemolytic streptococci being isolated as the causal organism. To argue from this, however, that the micro-organism is the primary cause of acute rheumatism is not valid, in view of the much larger number of cases in which no evidence of acute rheumatism is ever found.

The value of the cases in this series is further enhanced by reason of the fact that in none was there any family or previous history of acute rheumatism; it is not possible to argue, therefore, that we are here dealing with the invasion of tissues already susceptible to the disease. Again, the period elapsing between the first signs of haemolytic streptococcal invasion and the onset of the rheumatic manifestations is so variable that it argues strongly against the haemolytic streptococcus being the primary cause of the disease.

As suggested elsewhere,¹¹ the present position would seem to be one of two alternatives: either that infection with the haemolytic streptococcus facilitates the invasion of the tissues by some specific agent, or that the haemolytic streptococcus may so alter the tissues susceptible to rheumatic infection as to prepare the way for invasion by this specific infective agent.

I have to acknowledge my great indebtedness to Lieut.-Colonel John Cunningham, superintendent of the Astley Ainslie Institution, not only for permission to study the cases under his charge and for full access to the case notes, but also for the sympathetic assistance which I received from him at all times. I am similarly indebted to Professor Charles McNeil for permission to publish the notes on Case 1. This work was part of a larger study of acute rheumatism which was being carried out in co-operation with Dr. H. J. Gibson of the department of bacteriology, and before my entrance to the Royal Navy, with the aid of personal and expenses grants from the Medical Research Council, and latterly during my tenure of the Davidson Research Fellowship in Bacteriology.

REFERENCES

- ¹ Haig-Brown, C.: *Tonsillitis in Adolescents*, 1884.
- ² Longstaff, quoted by Newsholme, A.: *Lancet*, 1895, i, 589.
- ³ Dudley, S. F.: Medical Research Council, Special Report Series, No. 111, 1926.
- ⁴ Glover, J. A., and Griffith, F.: *British Medical Journal*, 1931, ii, 521.
- ⁵ Glover, J. A.: *Lancet*, 1930, i, 499.
- ⁶ Coburn, A. F.: *The Factor of Infection in the Rheumatic State*, 1931.
- ⁷ Coburn, A. F., and Pauli, R. H.: *Journ. Exper. Med.*, 1932, lvi, 609, 633, 651.
- ⁸ Collis, W. R. F.: *Lancet*, 1932, i, 1341.
- ⁹ Sheldon, W.: *Ibid.*, 1931, i, 1337.
- ¹⁰ Todd, E. W.: *Brit. Journ. Exper. Path.*, 1932, xiii, 248.
- ¹¹ Gibson, H. J., and Thomson, W. A. R.: *Edinburgh Med. Journ.*, 1923, xl, 93 (Trans. Med.-Chir. Soc. Edin.).

MENTAL DEFICIENCY AND HEREDITY

BY

F. GRUNDY, M.D., D.P.H.

ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH, EAST SUFFOLK
COUNTY COUNCIL

A little over a year ago I completed an investigation into the incidence and circumstances of retarded school children and mental defectives, which had for one of its objects the investigation of medical and family histories of all defectives of school age within a defined area. An attempt was made to estimate the relative importance of various factors in the causation of mental deficiency, and it is the purpose of this paper to give a brief account of this aspect of the original investigation. Other relevant matters are referred to from time to time, as appears necessary to the purpose in view. If in places this short contribution seems ragged, and poor in supporting evidence, indulgence is asked on the ground that it is the essence of a thesis some ten times its length, an important part of which was the presentation of genealogical charts which consideration of space precludes from reproduction here.

Introductory

The area referred to is the north-east quadrant of East Suffolk, with a total population of 45,435, a school population of 6,645, and a density of population of 0.3 persons per acre. The chief industries are agriculture and fishing. Communications across country are relatively poor, and many villages are still comparatively isolated. Social cohesiveness is high throughout the area, and remarkably complete family histories were obtained; as a rule, without great difficulty. The standards employed were those fully described by Dr. Lewis in his report.¹ A total of 750 children (11.2 per cent. of the entire school population) was examined by individual methods, and there is every reason to believe that the ascertainment of defectives was, for practical purposes, complete. Stanford tests and Burt's graded tests were used respectively in the estimation of mental and of educational age. The investigation of suspected defectives of school age followed closely that usually undertaken in the completion of Form 306 M. of the Board of Education; that of suspected adults was made with the social concept of deficiency in mind. It was neither practicable nor indeed desirable to subject adults to systematic testing.

While it is clearly impracticable to submit any details of individual cases, it may be said generally that judge-

According to my own investigations twelve out of thirteen children certifiable as feeble-minded according to educational standards are well behaved during the years of school life, and exhibit no distinctive abnormalities of character other than apathy and undue docility.

Furthermore, roughly half the children certifiable as defectives for the purpose of the Education Acts will not be defective in a social sense in adult life in a rural area.⁵ That is to say, there exists a wide disparity between the standards used in the educational and social classifications of feeble-mindedness, and it is difficult to avoid the conclusion that the use of the single term "feeble-minded" in two distinct senses, both of which are legal and not scientific, is highly confusing in an inquiry of this sort. An attempt was made to overcome the difficulties implicit in this duality of meaning, but finally a conviction was established that nothing short of a carefully planned genealogical survey, extending over at least two generations, would meet the case. Be that as it may, a study of families containing defectives enabled certain principles, which are summarized below, to be advanced tentatively, yet with the knowledge that they are consistent with, and lend support to, many widely known authoritative opinions.

Summary of Conclusions

1. Roughly 75 per cent. of defectives of all grades come of stocks which exhibit distinct mental abnormalities, of which deficiency and gross dullness are the commonest.

2. Of the remaining 25 per cent., a few are attributable to environmental causes, but most are without apparent cause.

3. Feeble-mindedness and dullness are familial to a much greater extent than lower-grade deficiency.

4. The mating of two mentally defective individuals yields offspring who are all defective.

5. The mating of two individuals of "poor type" yields offspring of "poor type," who are often defectives in an educational and sometimes in a social sense.

6. "Dull parents, dull children," is a usual association.

7. When a neuropathic stock exists the chance presence of an adverse environment, using the term in its broadest sense, may produce actual deficiency in cases which might not have been defective without the intervention of such a factor.

REFERENCES

- ¹ Report of the Mental Deficiency Committee, 1929, Part IV, p. 41.
- ² *Ibid.*, 1929, Part IV, p. 64.
- ³ *Ibid.*, 1929, Part IV, p. 135.
- ⁴ Tredgold: *Mental Deficiency*, 1929, p. 19.
- ⁵ Estimate from original thesis. See also Shrubsall, *Mental Deficiency Practice*, 1932, p. 19.

Clinical Memoranda

PERFORATIVE APPENDICITIS COMPLICATING ACUTE NEPHRITIS IN AN INFANT

Acute appendicitis under 1 year is very rare, and under 6 months excessively so. Of 500 cases admitted to the Royal Infirmary, Edinburgh, there were but three in infants in the first year of life (Fraser¹: he does not give the exact ages in months). Pre-natal appendicitis is recorded by Jackson²; Kümmell, quoted by Lipshutz,³ records appendicitis in a baby who died twenty-four hours after birth. Abt⁴ has made what is probably the most exhaustive survey of the literature, and has collected records of seventy cases in children under 2 years, twenty being in infants under 3 months. Reports by other observers covering a large series of cases show a similar striking paucity of references to appendicitis in infants less than a year old. Fraser⁵ gives an anatomical and bacteriological explanation for this. (1) There is a very small amount of lymphoid tissue in the appendix at birth, and it gradually increases; the presence of this tissue seems to render the locality in which it resides more prone to infection. (2) The *B. coli communis*, which is the infecting organism in the majority of cases, shows great variation in virulence; just after birth it is very slightly toxic, but this feature becomes more marked as the child grows older, probably caused by change in diet and in some cases by attacks of gastro-enteritis, mild or otherwise. The following case is therefore of interest.

A female, aged 5 months, was admitted to hospital on December 5th, 1933, suffering from general oedema. We could ascertain nothing beyond a history of a rash six weeks previously; there had been measles in the family, and this probably accounted for the rash. (Appendicitis has been quoted as a complication of measles by some observers, and Thenebe, Hirshberg, and Cenci⁶ have reported six cases, but in none of them was the patient under 5 years; it is doubtful, of course, if there is any real connexion in this case.) The urine was scanty and loaded with albumin, and a diagnosis of nephritis was made. On December 7th no urine was passed, and on the following day 1½ c.cm. saliyrgran was given, which produced a copious flow. Urine was passed freely on December 9th, but was scanty again the following day. The saliyrgran was repeated on December 11th, and the flow again became copious. On December 12th the child passed urine freely and appeared much better; on December 13th and 14th the urine was freely passed, but saliyrgran was repeated on the 14th. The child died on December 15th.

The temperature was 99° F. on admission, 100° on the sixth day, and rose to 104° on the seventh; it continued between 102° and 103° until death, when it rose to 105°. The stools were green and slimy on admission, but became normal after three days until the last two days, when only mucus was passed. Owing to the difficulty of obtaining a specimen of urine no record was made of the amount passed. The usual methods of producing diuresis—hot packs, etc.—had no apparent effect. The abdomen was examined on a few occasions, but beyond being oedematous—and this was improving—there was nothing else to be noted; the child slept fairly well, and took its feeds.

At necropsy the kidneys showed the features of a nephritis; they were not enlarged, but were congested, cortex thinned, and there were spots of haemorrhage scattered through the medulla. Beyond some slight congestion of the lungs the other organs were normal. On looking into the pelvis pus was discovered, and on further investigation the appendix was found to be perforated at the base; the pus which had gravitated anterior to the rectum was odourless, and there were no obvious signs of peritonitis. The brain was not examined, as the parents did not wish the child's head or face to be disfigured.

There is no record, so far as I am aware (but this is subject to correction), of appendicitis complicating acute nephritis in an infant. In this case it was an absolutely silent appendix: Lipshutz remarks that infants with appendicitis always vomit, but this feature was absent; the infantile peritoneum is said to be very susceptible to infection, and a general peritonitis rapidly develops, but this did not occur. Which condition killed the infant—the nephritis or the appendix? And am I correct in assuming that the rise of temperature marked the entrance of the appendix to the picture? The case is interesting, and I should like the comments of those more experienced than myself.

I am indebted to Mr. E. S. Gawne, F.R.C.S.Ed., medical superintendent, for permission to publish this case.

REFERENCES

- ¹ Fraser: *Surgery of Childhood*, vol. ii.
- ² Quoted by Lipshutz: *Arch. of Pediat.*, 1931.
- ³ *Idem.*: *Ibid.*, 1931.
- ⁴ Abt: *Ibid.*, 1917.
- ⁵ Fraser: *Surgery of Childhood*, vol. ii.
- ⁶ *Arch. of Pediat.*, 1933.

J. B. MARINAN, M.B., F.R.C.S.Ed.
Senior Assistant Resident Medical Officer,
Townleys Hospital.

Farnworth, near Bolton, Lancs.

Reviews

PATHOLOGICAL ANATOMY.

Having already brought out a work on general pathology, Professor DIETRICH now follows it with a volume on pathological anatomy.¹ It has been customary in works on pathological anatomy to start with a section on general principles as a necessary introduction to the proper understanding of the special section, to which it was more or less subordinate. In recent years the interest in the general section has greatly increased, until, as in Professor Dietrich's work, it has come to occupy an independent position, the interest in pathological anatomy in the narrower sense having declined. The tendency now is to regard the special part merely as giving typical examples in illustration of general principles, avoiding the overcrowding of descriptions with anatomical details amid which a sense of relationship to general principles is apt to be lost.

Professor Dietrich has followed out this idea in his book, the chief difficulty encountered consisting in the choice of subjects to be included. Certain subjects will be looked for in vain, and some descriptions may be thought unduly concise; in these matters it is left to the student to fill in details from other sources. While thus limiting the range of pathological anatomy in this particular instance, Professor Dietrich has no doubt of the great importance of the subject for the general practitioner. It provides a solid basis of fact, entirely free from theory and from the danger inherent in a purely functional point of view which, unsupported by pathological anatomy, easily leads to speculation.

In other respects the book follows the usual lines. In addition to the description of pathological changes the author has been careful to give full consideration to the interrelationship of lesions, regarded as the cause or consequence of other lesions, as originating reactive changes in other parts of the body, and as merely independent associated changes. It will be found a useful book both to student and to practitioner.

CAUSES OF MENTAL DEFICIENCY

The results of an interesting piece of research are recorded in *Investigations into the Causes of Mental Deficiency*,² by Dr. H. O. WILDENSKOV, translated from the Danish by Dr. Hans Andersen. Dr. Wildenskov is the medical superintendent of the Keller Institution for Mental Defectives at Brejning, Denmark. In the course of his work he, like most others, has been convinced that thorough inquiry into the family history of a mental defective constitutes an absolute prerequisite for an estimation of the cause of the defect. Further he, again like others, has become convinced that there is a marked difference in the apparently hereditary associations of the milder degrees and the more severe forms. He says: "Other investigators have also recognized that there is an essential difference between the two groups, but I have not yet found in the literature any particularly systematic investigation aiming to elucidate the possible difference"; and, "If there be actually a difference of causation between the mild degree and the severe degree it would be apt to influence the results obtained by the various

investigators, since the selection of material by itself would thus bring about some difference in the results." The author therefore took two groups of mentally defective persons, entirely from his own institution: consecutive entries respectively of children admitted to the school departments, and therefore presumably of the milder type (dullards and feeble-minded), and of children admitted to the asylums department and therefore presumably of the more severe type (imbeciles and idiots). A full and skilful investigation was made by the author himself into the families of these groups, and though by this method both expert knowledge and uniform standard were ensured, the number of cases that could be made the subject of inquiry was necessarily much restricted. Only fifty in each group were finally included in the research.

The results are analysed very carefully in many directions, and an account of the actual cases, together with the results of this analysis, is given in Dr. Wildenskov's report. The findings show that there is a great difference in the results obtained with the two classes of mental defectives, mild and severe. There is a lower social and moral standard in the families of the slightly mentally defective. The hereditary taint is demonstrated considerably more often in the mild cases than in the severe (98 against 74 per cent.), and oligophrenia in the nearest relatives is shown to be far more frequent in the milder group (90 to 60 per cent.). The author is, of course, "fully aware that the question of causation is not settled by the findings in this work," but the practical conclusion is arrived at that "future works on mental deficiency ought to be based on material that is uniform as to the degree of mental deficiency." There is a useful bibliography and an interesting review of recent literature relevant to the investigation.

STUDIES IN METABOLISM

The discussion of Nitrogenous Metabolism³ by Professor E. F. TERROINE is the eighteenth in the series of monographs on biological problems which is being published by Les Presses Universitaires de France. The author, a distinguished authority on comparative metabolism, deals with the absorption, utilization, and excretion of nitrogen, while a large section of the volume is devoted to a consideration of the minimum nitrogenous requirements viewed from both the quantitative and the qualitative aspects. The scope of the volume is very large, for it includes not only the greater part of ordinary quantitative metabolism, but also discusses the minimum needs of the body for special amino-acids, a problem closely linked with vitamin studies. The author has covered this wide range of topics in a volume of 562 pages, and his bibliography contains about 900 references. These figures imply a very condensed account of the subject, and, indeed, much of the letterpress is occupied by tables which summarize the results of metabolic experiments. Consequently the volume is more suitable for reference than for continuous reading. This general character of the monograph makes it the more unfortunate that no index has been provided.

Professor Terroine, in the section on dietetics, draws attention to the curious paradox that physiological research during the last half-century has steadily reduced the level of the minimum protein requirements of man. In 1875 Voit estimated the figure to be 120 grams a day, whereas modern researches have shown that it is possible to maintain nitrogenous equilibrium on a daily intake of from 30 to 50 grams of protein. On the other hand, all

¹ *General Pathology and Pathological Anatomy*, Band II, *Pathologische Anatomie*, Von Professor Dr. Albert Dietrich, Leipzig, 1931 (H.P. 413; 252 figures, R.M. 1850).

² *Investigations into the Causes of Mental Deficiency*, By H. O. Wildenskov, M.D., Copenhagen, Levin and Munksgaard; London: H. K. Lewis, Oxford University Press, 1934. (H.P. 115)

³ *Le Métabolisme de l'Azote*, Par Professeur E. F. Terroine, Les problèmes biologiques, XVIII. Paris: Les Presses Universitaires de France, 1933. (H.P. 52; 125 fr.)

classes or races have increased their protein intake whenever this has been made possible by improved economic conditions. The author thinks this a disconcerting fact, and remarks that "this is not the only example of the irrational character which human diet assumes more and more, even though the rules which ought to govern it are steadily becoming clearer." One fairly obvious reason for such discrepancies is that the physiologist recommends a diet on the basis of its fuel value, whereas the ordinary individual chooses so far as possible a diet that will gratify his appetite and taste.

The volume contains an excellent review of various special problems of protein metabolism, such as its relation to hair growth, milk secretion, egg-laying, etc. The section on requirements in regard to individual amino-acids touches various problems of pathology. In particular there is an interesting account of work on the influence of amino-acid feeding on haemoglobin formation in anaemia.

EFFECTS OF MOTION PICTURES

The Payne Fund of New York City, through its committee on educational research, has been engaged during the greater part of the last five years in the gathering of facts and experience with regard to the effect of motion pictures on youth. The results of these investigations are now in course of publication. A note on a volume dealing with the effects on children's sleep was given in these columns on February 24th last (p. 335), and additional volumes are now forthcoming: *How to Appreciate Motion Pictures*,⁴ by EDGAR DALE; *Motion Pictures and Youth*,⁵ by W. W. CHARTERS; and *The Emotional Responses of Children to the Motion Picture*,⁶ by WENDELL S. DYSINGER and CHRISTIAN A. RUCKMICK of the University of Iowa.

The first of these three volumes is by way of being an introduction to the series. It has no medical bearings, but is, in fact, a very interesting and informative help to the inexpert, and fulfils admirably the purpose indicated by its title. The other volumes exhibit the usual virtues and vices shown as the results of the modern American method of conducting an inquiry through a large committee with a considerable fund at its disposal and publishing results with voluminous detail and comment. The inquiry is usually—as in this instance—most laborious and painstaking, but the subject is not always fully ripe for research, the methods are not always wisely chosen, the conduct of the inquiry and the estimation of its findings are not always free from apparent bias, and statistical statements are not uncommonly based on too small a sample. Hence the results of such an inquiry as set out with laborious particularity in a series of reports are frequently of no real scientific value and are quite disproportionate to the trouble that has been taken by the large number of people concerned. Yet, if final scientific proof by facts and figures may still be wanting, certain broad impressions produced by such American inquiries as those now under consideration may not be without their value.

With regard to the effect of motion pictures on the minds of children and young persons, both in relation to intelligence and in relation to emotion, certain definite broad impressions seem to have been produced on all those who took part in these inquiries. They are set

out in the main chapter of each of the two volumes. In the first place, even very young children remember clearly what they see for many weeks after the event, and all children tend to accept as authentic what they are shown. Thus the motion picture is a potent influence in moulding the experience of children; it may be made a powerful medium of education, but the content of current pictures is not found to have a good influence. Further, the investigators report that, as gauged by their school teachers, the children who attend "movies" very frequently average lower deportment records, do on the average poorer work, are rated lower in reputation, are less co-operative and less controlled, and are slightly more deceptive in school situations, slightly less skilful in judging what is the most helpful and sensible thing to do, and slightly less emotionally stable. But many important questions at once arise before these statements can be accepted. The authors themselves put one of them: "Does extreme movie attendance lead to conduct which harms reputation, or do children of low reputation go frequently to the movies?"

Those who wish to follow more fully the methods and facts from which such impressions as these resulted cannot do better than study the books now under review. It may safely be predicted that, though in most such readers a good deal of disquietude will be aroused, there will at least be some who will not be fully convinced that definite conclusions are yet justified.

OPERATING ROOM PROCEDURE

The volume on *Operating Room Procedure* by Dr. HENRY C. FALK, first published in 1925 and now appearing in a second edition,⁷ aims at giving those who assist in an operating theatre all the technical information they require. Every surgeon realizes that with the great advances of modern surgical technique he has become more and more dependent upon the technical knowledge and skill of his assistants, but probably very few realize the immense amount of preparation that underlies a simple operation. It is just these details which are supplied in this volume.

Every hospital has, in the nature of things, developed its own traditions for the preparation of operating materials; but here will be found, described in most precise detail, all the best-known methods, and we imagine that there are very few theatre sisters, however experienced, who will not glean from it some useful suggestions. The preparation of gauze supplies, of suture material, of gloves, and rubber appliances are all described in elaborate detail, whilst a valuable chapter is devoted to the systematic keeping of supplies. The preparation of the patient and his adjustment on an operating table are discussed by the author with great thoroughness and illustrated by very precise sketches, which seem to us of real value.

The second half of the book is devoted to details of operation which a nurse or an assistant ought to know in order to take an intelligent interest in what is being done. The whole of this section is illustrated by rough thumbnail sketches, which leave one in no doubt as to the meaning they are intended to convey. Dr. Falk's book should be of great value to theatre sisters and nurses, and, in fact, to all those who have to assist at any operation. Indeed, there are few surgeons who would not pick up valuable hints from its perusal.

⁴ *How to Appreciate Motion Pictures*. By Edgar Dale. New York: The Macmillan Company. 1933. (Pp. 243. 8s. 6d. net.)

⁵ *Motion Pictures and Youth: A Summary*. By W. W. Charters. New York: The Macmillan Company. 1933. (Pp. 102. 6s. net.)

⁶ *The Emotional Responses of Children to the Motion Picture Situation*. By Wendell S. Dysinger and Christian A. Ruckmick. New York: The Macmillan Company. 1933. (Pp. 285. 5s. net.)

⁷ *Operating Room Procedure: For Nurses and Internes*. By Henry C. Falk, M.D., F.A.C.S. With a foreword by Eugene H. Pool, M.D. Second edition. New York and London: G. P. Putnam's Sons. 1934. (Pp. 413; 316 figures. 12s. 6d. net.)

Notes on Books

The third edition of Professor McDOWALL's book on *The Science of Signs and Symptoms*⁸ has appeared two years after the first edition, amplified in size and in scope. It is written as a textbook for general practitioners of medicine, and its object is to correlate the latest views of physiological science, using that term in its widest sense, with the bedside findings of clinical science. The first quarter of the volume deals with the nervous system in its various normal and abnormal aspects, with chapters on such subjects as sensation, headache, convulsions, speech, and so forth. Next, the circulatory and respiratory systems are considered, and after them foods, feeding, digestion, and the digestive system. In the final chapters subjects such as growth, oedema, the skin, acid-base equilibrium, and others are discussed, a final chapter on "The Psychological Production of Symptoms" being contributed by Dr. Hardcastle. The book may be warmly recommended to the attention of medical practitioners who are anxious to bridge the gap that is so often found to separate the principles of physiology from the daily practice of clinical medicine. It is clearly written, comprehensive, and not over-dogmatic.

The short textbook on Tuberculosis of the Lungs⁹ by GISEL and SCHMIDT gives a short history of the disease and a full account of the tubercle bacillus and of the ways in which it may attack the lungs. The symptoms, diagnosis, and treatment of pulmonary tuberculosis are described, with especial emphasis on the various methods of surgical treatment that are nowadays of increasing importance. The book is well written, and illustrated with many excellent skiagrams; it is up to date, and may be recommended to medical men and surgeons who wish to refresh their memories by reading a recent variation on an old theme.

The series of *Médecine et Chirurgie Pratiques* includes a monograph on Bronchiectasis by Dr. MICHEL LÉON-KINDBERG.¹⁰ The disease is described from every aspect, but a very large part of the book is devoted to a somewhat speculative but highly interesting discussion on the aetiology and pathogenesis. The author shows how much knowledge of the disease has been increased by a study of the bronchial tree with the aid of lipiodol and x rays. A number of excellent reproductions of films illustrate points in pathology and diagnosis. An interesting point is the true significance of the square or triangular shadows interpreted as showing posterior mediastinal pleurisy. By the aid of lipiodol it has been demonstrated that there is usually bronchiectasis, which is in accord with the clinical symptoms and signs. The author ends with a sketch of the treatment, and concludes from a large experience, that the indications for artificial pneumothorax, resection of the phrenic nerve, and thoracoplasty are very restricted. Lobectomy presents almost insuperable obstacles at the present time, though it has given some remarkable successes. He believes that most benefit is to be obtained by relying on palliative treatment, including bronchoscopy, which sometimes cures the patient permanently.

We welcome the second edition of Dr. CRANSTON LOW's *Common Diseases of the Skin*.¹¹ It maintains all the excellent qualities which were to be found in the original work, and has been considerably improved and brought up to date. The number of illustrations has been more than doubled, and their quality—always a matter of vital importance in any dermatological book—is very high. Dr. Cranston Low is thoroughly modern in his outlook, and

all the more recent methods of treatment are included, with the exception, perhaps, of protein shock, of which there appears to be no mention, although good results had been obtained from it in many forms of chronic dermatoses. This is a very sound introduction to the subject, and may be again recommended both to students and to medical practitioners.

In his statistical account of the reduction of infantile mortality in Norway¹² between the years 1867 and 1929, Dr. C. SCHIÖTZ discusses the figures furnished by the Norwegian Central Statistical Bureau from every point of view, and compares them with many similar records drawn from other countries. The death rate during the first year per 10,000 born alive has fallen from 1,269 to 568 in the case of boys, and with girls from 1,066 to 443 during this period; the death rate is always higher (by 19 to 23 per cent.) for boys than it is for girls. January and February are the most fatal months for infants; September is the least fatal. Many interesting points are discussed in this book, which may be recommended to the attention of medical statisticians.

The little book on Gangrenous Suppuration of the Lungs,¹³ by BERNARD and PELLISSIER, gives an excellent general account of the classification, diagnosis, and treatment of the condition. The authors have obtained good results in a number of cases from "autopyotherapy"—that is to say, by treatment with a heated or iodized vaccine made from the pus of the abscess formed in a guinea-pig by the intramuscular injection of 1 to 2 c.cm. of the patient's sputum; this pus is diluted before injection with thirty volumes of distilled water, the initial dose being 0.25 c.cm., the final 1 to 2 c.cm. The volume may be recommended to all medical men who have to treat cases of pulmonary gangrene.

The work on *The Single Woman*¹⁴ by Dr. R. L. DICKINSON and Miss LURA BEAM forms a continuation of their previous study entitled *A Thousand Marriages*, and should be read in association with Dr. Dickinson's recently published *Atlas of Human Anatomy*, to which frequent reference is made throughout the text. The book is based on the study of 1,078 records of cases described at length, which have been under Dr. Dickinson's observation during the last fifty years. Numerous statistical tables are appended relating to the period of observation of the patients, comparative distribution of nervous disorders among married and single patients, occurrence of pelvic disorders, menstrual history, occupation of the patients, incidence of operations and nervous or mental disabilities, seasonal indications of sexuality, and signs of sexuality in various groups of patients.

⁸ *Eine Darstellung und Kritische Bewertung der Ursachen des Rückganges der Säuglingssterblichkeit in Norweg.* Von Carl Schiøtz. *Acta Paediatrica*, vol. xv. Supplementum I. Uppsala: Almqvist and Wiksells. 1934. (Pp. 133. 25s.)

⁹ *Les Suppurations gangreneuses du Poupon.* Par Léon Bernard et Pellissier. Paris: J. B. Baillière et Fils. 1933. (Pp. 89; 12 figures. 10 fr.)

¹⁰ *The Single Woman. A Medical Study in Sex Education.* By Robert Latou Dickinson and Lura Beam. London: Baillière, Tindall and Cox, and Williams and Norgate Ltd. 1934. (Pp. xix + 462. 25s.)

New Preparations

BEE VENOM OINTMENT

In response to a reawakened interest in the employment of bee venom for the treatment of rheumatism, Messrs. Coates and Cooper, Ltd. (94, Clerkenwell Road, E.C.1), now stock supplies of "fempin" which has been used for some time on the Continent. Fempin is prepared in the form of an ointment, and is made in two strengths. No. 1 contains the venom of sixty-five bees and No. 2 contains the venom of ninety-eight bees. In addition, fempin ointment contains salicylic acid and oil of mustard. The manufacturers claim that its action is at least equal to the subcutaneous injection of bee venom, and that the application is simple and seldom attended by any distress to the patient. The price of the No. 1 is 5s. 6d. and of No. 2 ointment 4s. 6d. per tube. Samples are available for members of the medical profession who may be interested in this technique.

⁸ *The Science of Signs and Symptoms.* By R. J. S. McDowall, D.S.C., M.B., F.R.C.P. Third edition. London: William Heinemann Ltd. 1934. (Pp. 542; 11 figures. 55s. net.)

⁹ *Die Lungentuberculose.* Von H. Gisel und P. Schmidt. G. Fischer & Co. Jena. 1933. (Pp. x + 222; 4 coloured plates and 110 drawings in the text. M.B. 20. 5/6 net.)

¹⁰ *Les Suppurations gangreneuses du Poupon.* Par Léon Bernard et Pellissier. Paris: J. B. Baillière et Fils. 1933. (Pp. 89; 12 figures. 10 fr.)

¹¹ *Common Diseases of the Skin.* By Dr. Cranston Low, M.D., F.R.C.P. Second edition. Philadelphia: W. B. Saunders and Co. 1934. (Pp. 307; 135 illustrations, 8 coloured. 12s. 6d. net.)

FOOD STANDARDS OF THE WORKING CLASS

A COMMITTEE AGAINST MALNUTRITION

Several members of the medical profession in London and research workers in allied fields have lately established a committee to be called the "Committee Against Malnutrition." Those who have started the movement believe that there exists in this country widespread under-nourishment among the families of unemployed and low-paid workers, that this must inevitably lead to a steady deterioration in the physical standards and health of the people, and that the last thing upon which a community must economize is the nutrition of its working class. The aim of the committee (which works from 19c, Eagle Street, Holborn, W.C.) is to give people throughout the country the opportunity of centralizing their information and co-ordinating all efforts to the end of securing adequate nourishment for every man, woman, and child. It publishes a bi-monthly bulletin and other literature, arranges lectures to organizations likely to be interested, and furnishes support to any direct campaigns for increase of food standards.

The first public meeting in connexion with the committee was held in Red Lion Square on June 13th, and was so largely attended that an overflow meeting had to be arranged at the last moment, to which all the speakers went to repeat their addresses. The chair was taken by Sir FREDERICK GOWLAND HOPKINS, President of the Royal Society, who declared that the outstanding social duty of the moment was to see that all sections of the people were properly nourished. This was even more important than to see that they were properly housed. Any housing policy should go hand-in-hand with a sound food policy. The paradox and scandal of to-day was the coexistence of abundance and want. Science and enterprise had reproduced on a large scale the miracle of the loaves and fishes, but these were not being fed to the multitude. Science, moreover, had shown the necessity of the fishes as well as the loaves. Even in a physical sense no one could live on bread alone, though margarine and subsidized beet sugar were added. The initial steps taken in this movement had been both wise and useful. As far as possible it should avoid all issues which were merely political. A number of highly influential men in Government circles were at the moment very much awake to the necessity of action if the further regression of this nation into a C3 nation was to be arrested; therefore, in respect to political action, he thought they should be a little patient. What had to be done was to remove certain inhibitions—apathy in a few, disbelief also in a few, and ignorance in a great many.

Dr. STELLA CHURCHILL spoke of malnutrition as affecting women and children. She said that some years ago she had attempted an elementary piece of research in Bermondsey, and found the most heart-breaking deterioration in young children between the ages of 1 and 5. The rickety girl of 5 was going to be the maternal mortality case of 25. With regard to women, she said that the mother in the working-class home was the last person to be fed. She knew of hundreds of homes where the woman was not getting enough food. She made the suggestion that floating kitchens should be organized for unemployed families, who, on the production of vouchers, would be entitled to have ready-cooked meals.

Dr. R. A. LYSTER, lecturer in public health at St. Bartholomew's, said that the standard of existence of the unemployed depended upon the interpretation of various groups of men with no common factor. The Government on its part declared that it was the local authority which had the statutory obligation to provide food for the necessitous; yet there were large public assistance authorities which interpreted their duty very narrowly, and as the relieving officers told the unfortunate people that it was of no use applying, no applications came along—a very effective way of preventing anything being done. About a year ago public apprehension began to be aroused with regard to the nutrition of large classes of the popula-

tion. Various insurance bodies reported increases in the sickness rate, and the tuberculosis returns went up. But just when this public apprehension was making itself evident it was allayed by extracts from an official report published under the auspices of the Ministry of Health, which stated that there was no available medical evidence of malnutrition due to unemployment. If the Ministry of Health did not know of it, Dr. Lyster declared, the Ministry was the only place in England to remain in ignorance. The fact was that medical officers of health, in their ordinary reports to the Ministry, could only introduce the subject of malnutrition by, in a sense, going out of their way; it was not in the medical officer's general line of work. But that the facts warranted public apprehension there could be, no doubt. He urged that every child should be given half a pint of milk every day in the year, and the cost of so doing—about seven and a half millions per annum—would be the best investment the nation could possibly make.

Professor J. B. S. HALDANE said that the scientific knowledge of nutrition had got past the stage of theory to a stage where a fair number of facts were quite definitely known. The time had gone by when one could legitimately talk about theories of nutrition. There was now very substantial agreement about the facts, and therefore a laboratory worker like himself was not entirely out of place on the platform. As a result of the work on nutrition of the last thirty years it was possible to lay down a perfectly definite standard, quantitatively and qualitatively, for nutrition. After mentioning the various constituents of a proper food supply, Professor Haldane went on to say that when research made a standard possible it was time for public action. There was no question that the food was in existence, and the minimum standard of nutrition should be enforced, just as a minimum standard of water purity was enforced, as part of the public health service of the country. He added that there was taking place at the present time a mothers' strike, something quite as important as the general strike of 1926, but continuing, and the refusal to bear children would go on until it was recognized that the production of children was a national service, to be subsidized or to receive help from the State in some form. Not only in the interests of health, but in order to prevent a catastrophic decline in population, he gave his most cordial support to the movement of the committee.

When the meeting was thrown open to general discussion, Dr. ELWIN H. T. NASH said that he drew attention twelve years ago to the question of subnormal nutrition, and his voice was that of one crying in the wilderness until Dr. McGonigle of Stockton-on-Tees produced his classic report. While in no sense antagonistic to the present movement, he rather deplored some of the exuberant phrases which had been used. There was no standard of nutrition known at the present time. He thought it was desirable not to overstate the case, and if statements went out from the committee which could be challenged successfully there would be grit in the wheels of the movement. As one who had been in intimate contact with the poor, and had observed closely the conditions in which they lived, he felt that the fact could not be denied that in very many poor homes the money available for food was not expended in the best way. The dietetic ruts in which a large proportion of the population moved were simply appalling. He had been trying as far as he could to bring this matter of nutrition down to practical politics, and he had shown that it was possible to obtain 380 calories for one penny and fifteen grams of protein for one penny. Much could be done by proper instruction of the working class in food purchase and preparation.

Dr. Nash's remarks were warmly criticized by various members of the audience, one of whom said that this was a policy of not trying to get rid of malnutrition, but of making the best of it, and he added that if the poor were given the money they would feed themselves a great deal better than the rich. Several women school teachers told pathetic stories of the undernourishment of their pupils, and pleaded for a more abundant and better organized provision of school meals.

Mr. LE GROS CLARK, the bureau secretary of the committee, stated that it was the desire of the committee to get out not only scientific bulletins on the question of food, but also bulletins on the powers of local authorities in these respects, and he suggested that local groups be organized to study the question in their own district and to bring to the attention of the local authorities the need for free school feeding for families of unemployed workers, the provision of free milk at clinics, meals at nursery schools, and scales of relief adequate to supply full nourishment.

PRAISE AND DISPRAISE OF DOCTORS

DR. HUTCHISON'S MACALISTER LECTURE

The eighth annual lecture in memory of Sir John Macalister, for many years secretary and librarian of the Royal Society of Medicine, was delivered at the National Temperance Hospital, on June 21st, by Dr. Robert Hutchison, the incoming president of the society. His subject was "Praise and Dispraise of Doctors," and included a very large number of quotations from non-medical writers, ancient and modern, on the subject of the medical profession. We understand that the quotations were chosen from a considerable number collected by Dr. Gladys Wauchope and the lecturer, which are being published in the *London Hospital Gazette* as a medical anthology.

Dr. Hutchison began by glancing at popular proverbs, a collection of which, bearing on the medical profession, was published many years ago in the *British Medical Journal*.¹ The following were examples: "He who has killed a thousand persons is half a doctor" (Tamil proverb); "When you call the physician, call the judge to make your will" (German); "The doctor is often more to be feared than the disease" (French); "If the doctor cures, the eye sees it; if he kills, the earth hides it." (Scottish and Portuguese). Dr. Hutchison also quoted one French and Italian saying. "A surgeon should be young; a physician old," which he thought might be considered when fixing the retiring age for medical and surgical members of a hospital staff! One proverb ran: "A young physician makes a lumpy churchyard." The most sweeping condemnation was a saying in the Talmud: "The best of doctors is ripe for hell." Dr. Hutchison said that he had some hope that this referred to doctors of law, but he was assured, on Jewish authority, that it referred to doctors of medicine.

CLASSICAL WRITERS OF ANTIQUITY

In the Scriptures there were few references to medicine, though everyone knew the well-known panegyric of Jesus the son of Sirach, in Ecclesiasticus; also the poignant verse in St. Mark's Gospel about the woman with an issue of blood who "had suffered many things of many physicians, and had spent all that she had, and was nothing better, but rather worse"—an oblique condemnation of the profession which might well be pondered, Dr. Hutchison thought, by the gynaecologists.

Turning to the classical writers, there was a handsome compliment in Homer:

"A wise physician skilled our wounds to heal,
Is more than armies to the public's weal."

Aesop's fables, however, were disparaging, and Heraclitus went so far as to say that, "doctors excepted, there was no one more stupid than the grammarians." Menander made a shrewd hit when he said that "a prattling physician is another disease to the sick man." Mimmermos, in the seventh century B.C., had an interesting comment on prognosis: "There are doctors who to show their worth and to be sure of an excuse make the bad

¹ *British Medical Journal*, 1911, ii, 1482.

seem worse, and of the worse make a disaster." Plato made the curious remark that doctors "had better not be in robust health, and should have had all manner of diseases in their own persons."

Roman writers were more bitter in their comments than the Greeks, probably because in the early Empire most of the physicians in Rome were Greeks, whom the Romans despised. The elder Pliny, in his *Natural History*, had some very derogatory remarks to make, among them the following: "The art of physic hath this peculiar gift and privilege alone, that whosoever professeth himself a physician is straightways believed, say what he will, and yet to speak the truth, there are no lies dearer sold or more dangerous than those which proceed out of a physician's mouth." Pliny was severe on the extreme avarice of doctors, and referred to the "merchandise, spoil, and havoc" that they make when they see their patients in danger of death. Javolen exercised his wit at the expense of the profession; Quintilian had no faith in doctors and regarded medicine as only serving to keep us hopeful; while Plotinus, in the second century A.D., denounced medicine as "the chief of errors."

THE MIDDLE AGES

Coming to mediaeval writers, Dr. Hutchison mentioned the portrait by Chaucer of the doctor in the Prologue to the *Canterbury Tales*. The chief features of the doctor were apparently his belief in astrology, his knowledge of classical and Arabian authors, his spare but nourishing and digestible diet, his indifference to the Bible, his fine dress, and his love of money. From John of Salisbury, who lived two centuries earlier than Chaucer, the lecturer quoted at length: "When I hear them [theoretical physicians] talk I fancy that they can raise the dead, and are in no way inferior to either Aesculapius or Mercury. And yet with all my admiration I am much troubled at one matter, and that is that they are so singularly at variance in their discussions and in the opinions which are drawn from them." This twelfth century schoolman continued: "Perhaps you look for me to say what the common people say, that the physicians are a class of people who kill every man in the most polite and courteous manner. Well, you will be disappointed. God forbid that I should do them this injury." The most violent mediaeval opponent of medicine, however, was Petrarch, who devoted four books of invectives to the medical profession. One of his letters to the Pope, which Dr. Hutchison quoted at length, ended as follows: "... shun the physician who is eminent not for his knowledge but solely for his powers of speech, as you would a lurking assassin or a poisoner"—reminding one of Osler's dictum that there were only two kinds of doctors, those who practised with their brains and those who practised with their tongues.

RENAISSANCE WRITERS

The Renaissance writers, too, found the profession a butt for their wit, though Erasmus, perhaps because he was a friend of Linacre, was complimentary, pointing out that "the theologian makes men repent of their sins, but it is owing to the doctor that there is anyone to repent," and he endorsed the view of antiquity that "no reward worthy enough can be paid to the skill and trust of the worthy doctor." Savonarola, too, was kind: "Love teacheth him [the physician] everything, and will be the measure and rule of all the measures and rules of medicine." Montaigne, on the other hand, repeated the old gibe that doctors do not practise what they preach, tying their patients to "a strict diet of panada [a soaked and sweetened bread] or a syrup, while feeding themselves upon a melon, dainty fruits, much good meat, and all manner of good wine." To this period, also, belonged the

delightful and oft-quoted Latin epigram attributed to Euricius Cordus:

"Three faces the physician hath;
First as an angel he,
When he is sought; next when he helps,
A god he seems to be;
And last of all, when he has made
The sick, diseased, well
And asks his guerdon then he seems
A very fiend of hell."

Shakespeare took a more sympathetic attitude than most of the Elizabethan dramatists, who were abusive of the profession. Here the lecturer referred to the recent collection of their references by Mr. Macleod Yearsley, in *Doctors in Elizabethan Drama*. Thomas Dekker, though abusive in his plays, gave, in his heart-rending account of the plague of London, one of the most beautiful metaphors about the doctor ever penned: "A good physician comes to thee in the shape of an angel, and therefore let him boldly take thee by the hand, for he has been in God's garden, gathering herbs, and sovereign roots to cure thee. The good physician deals in simples and will be simply honest with thee in thy preservation." The lecturer selected for quotation three well-known criticisms by Francis Bacon in his *Advancement of Learning*. One read: "Physicians are some of them so pleasing and conformable to the humour of the patient as they press not the true cure of the disease."

THE DAWN OF MODERN MEDICINE

By the seventeenth century, with the dawn of modern medicine, criticism became graver and more serious, and there was greater disposition to acknowledge the virtues of the doctor and to excuse his failings, though dispraise was still commoner than praise. A sympathetic picture was given by Thomas Fuller, the author of *The Worthies of England*. One of his sayings was that to poor people the good physician "prescribes cheap but wholesome medicine, not removing the consumption out of their bodies into their purses." It was Fuller who wished for surgeons the three requisites of their practice—an eagle's eye, a lady's hand, and a lion's heart. Molière, of all seventeenth century writers, was the most satirical at the expense of doctors, but his plays did not lend themselves well to brief quotation, and Dr. Hutchison refrained from any examples.

Eighteenth century physicians and surgeons laid themselves open to attack by their frequent pomposity and pedantry in that age of full-bottomed wigs, snuff-boxes, and gold-headed canes. Voltaire defined a physician as "one who pours drugs of which he knows little into a body of which he knows less." It was the same French cynic who declared that the art of war was "like medicine, murderous and conjectural." Horace Walpole abhorred physicians, and declared that by "quack" he meant an impostor not in opposition to but in common with physicians. On the other hand, Pope, who was not overgiven to commendation, said of physicians that they were, in general, the most amiable companions and the best friends, as well as the most learned men he knew. Much praise came from Samuel Johnson, who said that doctors did more good to mankind without a prospect of reward than any profession of men whatever. Addison, in the *Spectator*, said that "when a nation abounds in physicians it grows thin of people." On the other hand, in the *Tatler* he—or it might have been Steele—said that there was not a more useful man in the commonwealth than a good physician. Blackstone of the *Commentaries* declared that the medical profession beyond all others remarkably deserved the character of general and extensive knowledge. Samuel Parr thought that of the three learned professions, in erudition, in science, and in habits of deep and comprehensive thinking,

the pre-eminence must be assigned in some degree to physicians. Henry Fielding, the novelist, made a hit when he said that "every physician almost hath his favourite disease," and Swift, that "no man values the best medicine if administered by a physician whose person he hates and despises." Hannah More wondered why people should be so fond of the company of their physician till she recollected that he was the only person with whom one dared to talk continually of oneself, without interruption, contradiction, or censure.

OLD GIBES NOW OUTWORN

Many of the old gibes at doctors had lost their point by the nineteenth century, and were only repeated, if at all, in jest. Among modern writers praise was commoner than criticism, and criticism was reserved more for the manners and customs of the profession as a whole than for its practice or morals. Scott gave a charming picture of a country surgeon in Gideon Gray. Dickens, who reserved his criticisms for the law, had very little to say about medicine (but had Dr. Hutchison forgotten Bob Sawyer?). Thackeray had a few favourable though patronizing references in his *Book of Snobs*, and George Eliot, in *Middlemarch*, depicted with great skill and humour different types of practitioners, but refrained from general praise and blame, except when she said that it was seldom a medical man had true religious views—there was too much pride of intellect.

Dr. Hutchison quoted some opinions by politicians, including Lord Salisbury's "Doctors are a social cement," and Mr. Lloyd George's statement that while he was dealing with the Insurance Act he found doctors "unreasonable and unruly." Ruskin paid a graceful tribute in *Crown of Wild Olives*, "... if they are good doctors, and the choice were fairly put to them they would rather cure their patient and lose their fee than kill him and get it." A number of other *obiter dicta* by various writers, from Sydney Smith to Dean Inge, were quoted, the following from Sydney Smith, "The sixth commandment is suspended by one medical diploma from the North of England to the South," and this from E. F. Benson, "Doctors are the only autocrats we have left." Robert Louis Stevenson's remark was also quoted:

"He [the physician] is the flower, such as it is, of our civilization; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and, what are more important, Heraclean cheerfulness and courage."

It would appear, said Dr. Hutchison in conclusion, that praise and dispraise pretty well cancelled out, just as in individual practice undeserved blame was balanced by unearned credit. In the earlier periods of medicine blame was probably often well merited, but as the profession had risen in efficiency, so it had gained in esteem. Even now, however, it was probably true to say that the individual doctor was better liked than the profession as a whole.

The number of anti-tuberculous vaccinations by oral administration of B.C.G. vaccine (according to H. Mallard, *Bull. de l'Acad. de Méd.*, May 8th, 1934) has increased in the Côte d'Or Department from 443 cases in 1930 to 867 in 1933. Of these, 151 were notified by tuberculosis dispensaries, 397 by medical practitioners, and 319 by midwives. During the first year after birth the percentage mortality was 30 among non-vaccinated infants exposed to infection, as compared with 11 among vaccinated infants similarly exposed, and 8.5 among all infants.

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HELP FOR THE DEAF

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Many have been the discussions as to what disability constitutes the greatest handicap and deprivation in life—blindness, deafness, maiming, or crippling. What ever be the supreme evil, there is no doubt in the minds of medical men and women about the gravity of the loss sustained by those who cannot hear. Until recent times, however, little has been done to relieve the distress suffered by many deaf persons. Ample provision has been made for the blind, but the deaf have been in truth the Cinderellas of the philanthropic world. That omission is in the way of being remedied, largely through the activities of the National Institute for the Deaf, of which Lord Charnwood is the president. The Institute was founded in the year 1911, on the lines of the successful National Institute for the Blind, by the late Mr. Leo Bonn. In 1923 there was a definite step forward in its work, and in the following year a most useful handbook was published giving in compact form all the available information about the organizations furthering the interests of the deaf existing in the country. A new edition of this work has now been issued under the title *All About The Deaf. How the deaf are helped and how they may help themselves*.¹ It is an attempt, and an entirely successful attempt, to bring together information on every branch of the problem of defective hearing. It does not deal with the strictly medical aspects of deafness, nor in a direct way with prevention; its object is to furnish practical help to those immediately concerned in looking after their fellow creatures who are deaf, from birth, from childhood, or in later years, and who need guidance, training, or assistance. It is intended to advance the welfare of a class whose affliction involves exceptional hardships and difficulties which in general are too little realized by those who enjoy the blessings of hearing.

But the book has its preventive aspect: by thus placing the problems of the deaf before social workers it is hoped that the information given about one large section of the deaf—namely, those known as the deafened—will accomplish much in awakening the public mind to the gravity of lost hearing and to the need for effort to prevent this calamity, as well as the importance of assisting those who suffer in this way to surmount the difficulties created by the partial or complete absence of audible communication with their fellows. The problem is no small one. It is calculated that some 40,000 persons in Great Britain have been deaf from birth or from very early life; but the tale of the deafened is unknown. Besides the mass of well-indexed particulars concerning schools, institutes,

homes, and hospitals, *All About The Deaf* includes a couple of short papers on the "Prevention of Deafness," by Dr. Kerr Love and Dr. Arthur G. Wells, which are informative. These have now been republished by the National Institute in a sixpenny pamphlet for popular use, with a table of hints to parents, and an appendix giving the recommendations on the public provisions required to prevent deafness which were drawn up by the medical committee of the Institute in October, 1933. The handbook as a whole will be of great value to school medical officers. A copy ought to have its place upon the shelves of every medical reference library.

BRITISH POST-GRADUATE MEDICAL SCHOOL

The Senate of the University of London, acting on recommendations by the Governing Body, has now filled three of the four university chairs tenable at the British Post-Graduate Medical School; and the new school, if all goes well, should open at Hammersmith before the end of this year. Professor Francis R. Fraser, physician and director of the medical professorial clinic at St. Bartholomew's, is appointed to the chair of medicine. Dr. James Young, gynaecologist to the Edinburgh Royal Infirmary and university lecturer in clinical obstetrics and gynaecology, is appointed to the chair of obstetrics and gynaecology. Professor E. H. Kettle, who has held the university professorship of pathology at St. Bartholomew's since 1927, is appointed to the chair of pathology. The chair of surgery has yet to be filled. In the *British Medical Journal* of March 17th (p. 487) we published an article by the dean of the post-graduate school, Dr. M. H. MacKeith, who comes to London from Oxford, giving an account of the origin of the scheme and the progress so far made with it; this included a general note on the lay-out of the group of buildings at Ducane Road, Hammersmith, and an indication of teaching arrangements and policy. The occupants of the new university chairs will be appointed by the London County Council to the visiting staff of the adjoining and associated hospital, of which Sir Carey Evans is medical superintendent. The four chairs, and their clinical obligations, are whole-time posts, and the professors may not hold any other public appointments nor engage in other professional work without the approval of the Governing Body. In the organization of the work of his department each professor will have a first assistant to act as chief of staff and executive officer. The choice of persons for these posts will no doubt be the next step taken in building up the teaching teams.

We may recall that the British Post-Graduate Medical School, after a pre-natal period of over ten years, was incorporated by Royal Charter in 1931 and that the Governing Body includes a representative (Sir Robert Bolam) of the British Medical Association. Its

¹ *All About The Deaf*. A revised edition of *The Problem of the Deaf*, 1923. London: The National Institute for the Deaf, 2, Bloomsbury Street, London, W.C.2. 1934. (3s., post free 3s. 3d.)

² *The Prevention of Deafness*. N.I.D. Booklets, No. 1. (6d.)

first chairman, the late Lord Chelmsford, has been succeeded by Sir Austen Chamberlain, who takes a warm interest in the project. The foundation stone of the new buildings was laid by the Chancellor of the Exchequer, Mr. Neville Chamberlain, in July, 1933, when the probable date for the opening of the school for the reception of students was announced as October, 1934. There appears, however, to be some doubt whether the machine will be ready to function as soon as that, and we note that the dates for two of the three appointments to chairs are officially minuted by the University of London: "from October 1st, 1934, or as soon thereafter as may be practicable." Meanwhile, the new post-graduate teaching institution has been admitted as a school of the university for a period of two years in the first place, permanent recognition being deferred for the present by reason of certain requirements of the university statutes which cannot be fulfilled until the actual date of opening.

SKELETAL DEFECTS OF ANIMALS

Comparative medicine as a research instrument is becoming of increasing importance to our profession, and its value in elucidating many medical problems now receives more and more recognition, if only because so much experimental work must be carried out on lower animals. A good example of this is seen in three lectures delivered by Sir Arnold Theiler at the Royal Veterinary College, under the auspices of the University of London, and published in the April and May issues of the *Veterinary Journal*. Sir Arnold was for many years director of the Veterinary Research Laboratories in South Africa, and is well known as an authority on deficiency diseases, especially those caused by lack of phosphorus and calcium. His lectures on the osteodystrophic diseases of domesticated animals are thus worthy of careful attention by workers in the field of human medicine. Diseases of bones have always been important to veterinary surgeons, particularly in the days of horse traffic, but the interest was mainly clinical, and conceptions of what their names stood for varied widely. Too often names used in human pathology were applied to conditions in animals on the basis of gross clinical or macroscopic similarity, and once the name of the disease had been taken over most of the ideas of causation accompanied it, without enough scrutiny of the evidence available for alternative explanations. Many of these explanations have only recently been forthcoming—largely as the outcome of Sir Arnold Theiler's own work—and their practical bearing is important.

All defective bone formation in domestic animals is now proved to be dietetic in origin, though dietary factors are not always the only factors concerned in the aetiology of these diseases. They result from a withdrawal of calcium phosphate from the whole skeleton, and this leads inevitably to pathological changes in the bones. Such changes vary with species, age, and mode of life. The normal functioning of the

mineral metabolism of the body depends upon the harmonious interaction of three dietary ingredients—vitamin D, calcium, phosphorus—but the absence of any one of these does not produce the same effect in all animals. Some species react more readily to one deficiency than to another, while in other species the same individual may react in two separate ways at the same time; different pictures appear to result from identical causes, and the same picture may be presented by diseases of unlike aetiology. Rickets and osteomalacia—using the terms in the strict pathological-anatomical sense—exist in sheep and cattle, apparently in pure form without complications. They also occur in pure form in pigs, but are sometimes associated with osteodystrophia fibrosa, a disease which can, however, appear independently. These diseases are also seen in dogs, though rickets and osteomalacia are more frequent, while in horses and goats osteodystrophia fibrosa is the common bone affection. Moreover, though osteodystrophia malacia (rickets and osteomalacia) is pathologically the same in the various domesticated animals, aetiotogically it is different in the different species, being primarily a deficiency of phosphorus in sheep and cattle, of calcium in pigs, and of vitamin D in dogs. True osteomalacia does not occur in horses, the condition generally called equine osteomalacia being really an osteodystrophia fibrosa (equivalent to Recklinghausen's osteitis fibrosa) caused by excess of phosphorus in relation to inadequate calcium. Curiously enough, such a failure of balance does not produce the condition in cattle, and it appears to be practically unknown in these animals.

The researches of Sir Arnold Theiler and his colleagues in South Africa have been of enormous economic importance, but their merit does not lie in that alone: they are a valuable contribution to comparative medicine, both by enabling a strict scientific comparison of the various bony disorders to be made, and by directing attention to the different courses which similar diseases may take in different species of animals.

STAPHYLOCOCCAL INFECTIONS IN DIABETES

Having discovered that in a large number of diabetic patients a staphylococcal factor was present in most cases of infection of the upper respiratory tract, J. A. Gilchrist and Mary J. Wilson¹ started to treat these cases with staphylococcal toxoid, and obtained very encouraging results, even though the weather conditions were adverse, cloud and rain prevailing. They also found themselves able to substitute various daily doses of insulin by a weekly injection of toxoid, and in all cases reduction of the insulin dose proved to be practicable. They refer to the discovery of Mills that there is a high diabetic rate north of the fiftieth parallel of latitude, and that the incidence of this disease is greatest in places where the climate is most changeable and stimulating. They are now convinced that in most of the sufferers from diabetes mellitus in the Toronto area

¹ Canadian Med. Assoc. Journ., April, 1934, p. 353.

there is a staphylococcal factor, and that the administration of toxoid attacks the cause. The objection to antitoxin is the severity of the symptoms which may follow its employment in diabetics. Because of unpleasantly severe reactions in the earlier injections of toxoid they now start with half the usual dose, and dilute it with normal saline solution, the time of injection being chosen so that the uncomfortable stage is got over during sleep. The dizziness which may ensue is attributed to a low blood sugar level; it is relieved by eating, care being taken to give protein as well as carbohydrate. The authors invite further testing of their conclusions by others who have the care of diabetics in rainy seasons. They believe that the occurrence of such focal infections has been often overlooked in the past owing to inadequate examination of the sinuses, infection of which, they add, conduces to depression and even suicidal tendencies in diabetics. They argue that staphylococcal toxoid reduces the toxæmia which is producing diabetic hyperglycaemia, and increases the basal metabolic rate. It renders normal any morbid conditions of the haemoglobin and the non-protein nitrogen of the blood, permitting the discontinuance of iron administration in the secondary anaemias.

PRINCIPLES OF CHILD GUIDANCE

The fifth annual report of the Liverpool Child Guidance Council and Clinic, which deals with the year 1933, contains a lucid discussion of the diagnosis and correction of disorders of behaviour in children and adolescents. Dr. Dingwall Fordyce, honorary director of the clinic, points out that the only wise or safe approach to such work is under immediate medical direction—a timely caution in an age that is prone to make light of the difficulties while appreciating more and more the possibilities of the psychological aspects of education. Further, while the value of clinic advice and assistance is now well established, unnecessary resort to it is to be deprecated. Any measure tending to diminish self-confidence in the mind of the general public, such as, for example, unwise propaganda in the lay press, is harmful to the general purpose of the work. To these three principles Dr. Fordyce adds a fourth, insisting that, while an important function of the clinic is educative, this should in the main be fulfilled through efficient practical work and contacts. In the Liverpool Clinic, as elsewhere, the need for team work is recognized. All possible data are collected concerning the child's physical, emotional, and mental make-up, as well as the nature of the environment; these are then pooled and considered from different aspects by a body of observers. Since its inauguration over 350 children and adolescents have been dealt with; at the beginning of 1933 there were seventy cases under treatment, and during the year 124 new patients were admitted, fourteen being of pre-school age, ninety-nine of elementary school age, and eleven above school age. Inquiry into the origin of disordered behaviour showed that personal factors were twice as common as environmental. In older children the most frequent cause was traceable to the home environment, this exercising an adverse influence in thirty-three out of fifty-five cases, being the sole

factor in six cases and the predominant one in twelve others. As would be expected, the apportioning of the causation is more complex in these older children, the environment embracing home, school, and clinic, while an investigation of the individual character has to take into account the physique, the emotional and intellectual components, and any psychopathy. The commonest difficulty in the first seven years of life was found to be uncontrollable outbursts of temper, usually associated with lax or inconsistent parental handling, and often curable by advice to those responsible. Dr. Muriel Barton Hall emphasizes the gratifying results that follow individual psychiatric treatment of the younger children. She remarks: "Experience of treating patients in middle and later life suffering from gross forms of nervous and mental disorder, developments of the uncorrected—even unexpressed—fears, dreads, and doubts that tortured their childhood, illustrates the vital importance of rectifying these problems during early years, a time when they may be dealt with and banished with comparative ease." In regard to the older children Dr. F. Hopkins notes that the great majority pass through adolescence in a perfectly normal and uneventful way. "There is no reason why, with good health and sensible upbringing, they should not. There are, however, greater dangers at this period for those children who are temperamentally susceptible, or whose upbringing has been injudicious. The realization of this would do much to prevent or mitigate the distress that does so frequently occur." Looking ahead, Dr. Fordyce contends that child guidance is a branch of paediatrics, and should therefore be most successfully conducted as a special line of work associated with a children's hospital, provided it retains all facilities for handling cases referred by public authorities and social agencies when no private practitioner is in charge of the child. So will the clinical and educational facilities of child guidance be turned to best advantage.

VITAMIN A DEFICIENCY

In the current issue of the *Archives of Disease in Childhood* Dr. Helen Mackay concludes the study of vitamin A deficiency in children with the results of her own investigation into skin lesions and their prophylaxis by this vitamin. Her previous summary of the literature and composite picture of a child suffering from vitamin A deficiency referred to in these columns¹ led her to conclude that one of the earliest stages of disease due to absence of sufficient of this vitamin from the diet of young children was an increased susceptibility to infections of the skin. Her own investigations confirm this view. Between January, 1931, and October, 1932, two groups of artificially fed babies were kept under observation in the out-patient department of the Queen's Hospital for Children. The average period of attendance was eight months. All the children were fed on a roller-process dried milk containing iron and ammonium citrate (hemolac), to which were added vitamin D, orange juice, and sugar. From the age of 7 to 8 months, solid food (including eggs, fish, vegetables, and meat) replaced part of the milk ration. Approximately half the children, sixty

¹ *British Medical Journal*, May 5th, 1934, p. 811.

in all, received in addition extra vitamin A, while the other half (fifty-eight children) were dependent for this vitamin upon that naturally present in their dried milk or in the mixed diet in the later months. The exact difference in the vitamin A intake in the two groups was difficult to compute, but it is safe to assume that the "treated" group received many times more. The groups were compared as regards weight and general morbidity rates, the number of illnesses being assessed for each child and for the groups as a whole. It is clear from the results, which have been statistically checked by Dr. Bradford Hill, that the addition of vitamin A had no influence on the general health, on rate of gain in weight, or on the general resistance to infection, whether to infections of the respiratory or digestive tract or to specific fevers. On the other hand, while the incidence of infections of the skin not due to microbial infection, such as urticaria, rough face, and sweat rash or erythema, was identical in the two groups, the incidence of "infective" lesions was, in the group receiving extra vitamin A, approximately half that of the control group. The lesions classed as "infective" may for the most part be regarded as due to some form of local irritation with an infection by local organisms of low virulence taking root as a result, and these include sore buttocks, sore scrotal skin, intertrigo, dribbling eruptions, etc. This difference is not only present for the groups as a whole throughout the period of investigation, but is also present in each of the four seasons under consideration, and is the only difference between the two groups which was uniform over the seasons. It seems to be proved by this work that slight deficiency in vitamin A may be a not uncommon condition among children attending the out-patient department of a hospital in the East End of London. The diet of the control group was by general standards a good one except for the omission of cod-liver oil, and one of Dr. Mackay's conclusions is that in the present state of our knowledge cod- or other fish-liver oil known to be potent in vitamins A and D is probably the most economical supplement for providing these factors, and should be a routine addition to the diet of all children of the type here under investigation.

THE WATER SITUATION

In many parts of the country the water situation gives rise to growing anxiety, and the need to safeguard supplies is at least as great as ever. There has been no such prolonged shortage of rain within living memory. In opening a reservoir at Bridgwater last week-end the Minister of Health said as plainly as he could that recent showers have not made it any less necessary for people to save water. Local authorities, in addition to what they are already doing to relieve the present scarcity, should plan ahead for difficulties foreseeable in August and September. Measures that can be taken are the sinking of new bores and wells, and the enlargement of wells, obtaining emergency supplies from neighbours, chlorinating impure supplies to make them serviceable, and distributing by cartage. County councils can help district councils with the services of experienced men. The Ministry and its water engineers have been helping the rural districts to deal

with the emergency. Measures are in progress which secure that rural authorities shall take action forthwith, and be prepared with plans for any further action necessary as the summer goes on. These authorities should make prompt use of all means and sources of help available in overcoming their difficulties. They should also press forward with their plans and applications for help for permanent water schemes out of the million pounds now available. When the emergency is over, as Sir Hilton Young said on June 22nd, it will be necessary to review the experience gained and consider the measures which it suggests. He will not anticipate the result of that review, but he can see some obvious common sense in the opinion held by practical men that the idea of a "grid" has little, if any, application to water supply. "Water has to be got where nature puts it, and of its own accord will only go where nature allows it to go. Its supply is conditioned by natural circumstances, such as watersheds. To disregard those conditions, as the idea of a grid suggests, would mean impossible cost in mains, tunnels, and pumps." In his view the key word for water supplies is not "nationalize," but "rationalize"; areas of supply being so reorganized as to bring them into closer relation with the facts of nature.

KING JAMES I

Dr. F. William Cock, who is well known for his encyclopaedic knowledge of medical lore, contributes to the *University College Hospital Magazine* (January-April, 1934) an account of the last illness and post-mortem examination of James I of England. He has translated the difficult Latin in which the original is written with the skill of a scholar, has added some useful notes, and illustrates his paper with a reproduction of one of the two portraits of the King in the Apothecaries' Hall, with a facsimile of a page of the funeral book in the Public Record Office, and with a reproduction of Scharff's drawing of the interior of the vault of Henry VII in Westminster Abbey showing James I's leaden coffin. "The account of the last illness and death with a summary of the pathological causes of the most renowned James, King of Great Britain of pious memory our very gracious Lord who, on the 27th Day of March 1625, by the compassion of God left this mortal and troublesome life" was perhaps dictated by Theodore Mayerne to Dr. David Bethune, a Scotsman and one of the Royal physicians. It deals rather hardly with the King as a man from his physician's point of view. It begins:

"It is true that the most serene King was gifted by Nature with an excellent constitution, but as age came on it was obvious that this was impoverished chiefly by errors in diet and by external causes. . . . His stomach by its want of tone was many times distended by wind and its movements hindered by symptoms of imperfect digestion so manifest that he was continually drinking strong wine to give himself ease. To this weakness of the body must be added many errors of diet, for although moderate enough in ordinary food, because he was edentulous he never masticated it but bolted it whole. Moreover in the matter of garden fruit he grossly exceeded, greedily eating it at any time day or night. Again in drinking he was shockingly intemperate, mixing his liquor so that at any one time he took ale, beer, sherry and sweet white French or Greek wine, which were his favourite and customary beverages even when

they were rosy and full of lees. From these habits it followed that evil humours were bred in him."

The King suffered from piles as well as feebleness in his kidneys, which were frequently obstructed by calculi and gravel. He was also troubled by uneasy sleep and gouty pains. He suffered much from constipation, which ought to have been relieved by purgatives,

"but Nature happily intervened removing this huge load, for the King was entirely set against these and every other kind of medical help. It is more than certain that unless a benevolent Nature had often helped His Majesty by attacks of profuse diarrhoea with an enormous excretion of foul liquid motions his strength would have failed under such a burden."

He was attacked on March 4th by what at first was unanimously described as a fever of the intermittent tertian variety. During the first few days the paroxysms of fever followed by sweating were comparatively slight, but the King was a bad patient, for neither at the beginning of a fit would he leave off drinking, nor in the fever stage could he put up with the heavy uneasiness, nor as the sweating stage declined would he suffer any other method of treatment, but again drank deeply, and would listen to nothing about the use of helpful remedies. Everything he did was in a most restless way. "And so the King of all Monarchs the most Christian, upright and prudent, most piously left this earthly prison on March 27th, 1625." On the following day the body was opened. The internal parts were very carefully inspected and their appearance accurately noted. In the light of modern morbid anatomy the results were inconclusive, and Dr. Cock asks at the end of his interesting essay, "What did James I die of?" It cost £2,000 to bury him.

A PLAY ABOUT DOCTORS

A French player told the dramatic critic of the *Times* the other day that from an actor's point of view a British audience was the best in the world. "I dismissed the saying as an habitual compliment. But the verdict was repeated and repeated again: the English come to enjoy themselves; the French to sit in judgement. Perhaps it is true." We think so; and in proof thereof London playgoers without too keen an eye for probability are finding entertainment now at the Strand Theatre in the performances of *Living Dangerously*. The authors, Mr. Reginald Simpson and Mr. Frank Gregory, have slipped up here and there on technical matters, but not enough to mar the pleasure of a doctor's evening off duty, and they are well served by the principal actors in a balanced cast. Mr. Godfrey Tearle is good as the good doctor who, after his name has been struck off the *Medical Register* on a trumped-up charge, makes a fresh start in America with the lady who shared his ordeal. And Mr. Martin Walker is good as the very bad doctor. This horrid person indulges in illicit drug traffic for gain, suborns his secretary-mistress, offers his wife to his partner (her medical attendant), and then brings a false accusation against him to the General Medical Council. After an interval of eleven years he blackmails the former partner in New York, but comes to grief through mixing villainy with whisky when the occasion calls for steadiness of head and hand. The trial scene in the Council

Chamber is moving, and there can be very few people who know enough to feel sure that such things don't really happen quite like that. It may shock us a little to hear the president (Mr. Allan Aynesworth) giving so much latitude to complainant's counsel; but a plot is a plot, and our emotions are there to be worked upon. The result is a brisk parlour-melodrama and a deft piece of propaganda for the right of appeal from penal decisions of the G.M.C.

RESEARCH IN BACTERIAL CHEMISTRY

The Medical Research Council announces the inauguration of new arrangements for further combined chemical and bacteriological studies of the conditions which govern the life and multiplication of micro-organisms causing disease. These have been made possible by the co-operation of the Middlesex Hospital Medical School, the trustees of the late Viscount Leverhulme, and the Sir Halley Stewart Trust. Accommodation and facilities are being provided at the Middlesex Hospital in the Bland-Sutton Institute of Pathology and the adjoining Courtauld Institute of Biochemistry. The investigations will be directed by Dr. Paul Fildes, F.R.S., who has been appointed a member of the scientific staff of the Medical Research Council. The other workers are Mr. B. C. J. G. Knight, with a Halley Stewart Research Scholarship, and Dr. G. P. Gladstone and Dr. G. Maxwell Richardson, holding Leverhulme Research Fellowships. The arrangements took effect on June 1st, and the support given by the co-operating bodies will suffice for an initial period of five years.

PREVENTION OF BLINDNESS

At a meeting of the executive committee of the International Association for the Prevention of Blindness, held in Paris last month, Professor de Lapersonne (the chairman) gave a brief account of the work accomplished during 1933. In the course of the proceedings Dr. Park Lewis, on behalf of the American Ophthalmological Society and other bodies, presented the Dana Medal to Professor de Lapersonne for his distinguished services in ophthalmology and in the prevention of blindness. It was decided that Mr. Bishop Harman should be consulted on the choice of date and place of meeting for the next general assembly of the association in 1935.

ANNUAL REPRESENTATIVE MEETING

The thirty-second annual meeting of the Representative Body of the British Medical Association will be held in the Grand Hall, Town Hall, Bournemouth, commencing at 9.30 a.m. on Friday, July 20th. All duly appointed Representatives and members of the Central Council for 1933-4, and those already elected to the Council for 1934-5, are entitled to take part in the proceedings. Cards of admission, agenda, and relevant documents will be posted from the Head Office on July 12th.

The Asiatic Society of Bengal has awarded the Barclay Memorial Medal for 1934 to Professor R. Row, M.D., D.Sc., of Bombay, for conspicuously meritorious contributions to biological science, with special reference to India.

LISTER INSTITUTE REPORT

The fortieth annual report of the Lister Institute of Preventive Medicine, dated May 30th, 1934, contains the customary review of the scientific work carried out there during the year. In the introduction, the Governing Body records its appreciation of the continued co-operation of the Medical Research Council, and states that the hospitality of the Institute's laboratories has been extended to two foreign guests displaced from scientific posts in Germany—Professor Ellinger of Düsseldorf and Miss Klieneberger of Frankfurt. As regards the national collection of type cultures 200 new types were deposited for maintenance in the collection, while over 5,000 cultures of bacteria and fungi were distributed to workers at home and abroad. A revised list of the fungi in the collection is being prepared for publication in the *Transactions of the British Mycological Society*. A list of scientific papers published from the Lister Institute appears at the end of the report, together with the balance sheet and accounts. Below we give a summary of those pages of the report which deal with the research work undertaken during the year.

VIRUS STUDIES

Vaccinia.—Dr. G. H. Eagles, using a kidney extract culture medium, has completed a series of passages in which the washed elementary bodies from dermal virus used for initial seeding gave rise to seven generations of subculture without apparent loss of potency. The final subculture represented a 20th multiplication of the original potency. Dr. C. R. Amies has used suspensions of elementary bodies (which represent the virus in its purest form) for vaccination against small-pox: these suspensions retain their activity for several weeks at room temperature, and the loss of activity at 0°C. is small. Dr. Amies has also attempted to confirm a claim by Russian workers that vaccinia virus can be cultivated *in vitro* in symbiosis with yeasts. The experiments have not, however, been successful.

Varicella and Herpes.—Following up previous work on varicella Dr. Amies has confirmed the finding of elementary bodies in herpes zoster, and has obtained pure suspensions of them from the vesicle fluid. Suspensions are agglutinated by convalescent serum, which also agglutinates the elementary bodies of varicella to approximately the same titre. In a few cases varicella convalescent serum has agglutinated both varicella and zoster elementary bodies. There thus seems to be support for the belief that the two viruses, if not identical, are closely related.

Other Viruses.—Dr. M. H. Finkelstein has been studying the relationship of fowl-pox and pigeon-pox, while Mr. D. W. Henderson has had successful results with the growth of louping-ill virus *in vitro*. Dr. Sabin has been investigating a virus recovered from a fatal case of human acute ascending myelitis ("B" virus) from the point of view of a possible relationship to the herpetic group of viruses. This virus is readily communicable to rabbits, in which an ascending paralysis regularly follows an intradermal injection: in the form of rabbit brain or cord it is exceedingly active. No convalescent rabbit serum for cross-immunity has been secured as yet. Experiments with this "B" virus show that rhesus monkeys can be immunized by intracutaneous and intraperitoneal inoculation. Mice are also susceptible to the "B" virus, which is filterable through Berkefeld V and N candles, the centrifuged filtrate yielding a highly potent sediment. Further studies have been made on the virus of pleuropneumonia and agalactia.

SEROLOGICAL STUDIES

Dr. H. L. Schütze has been studying the development, stability, and antigenic importance of the heat-labile envelopes of *B. pestis*. It seems that the antigen content in the envelope is sensitive to alkali, and that if the vaccine is neutralized before sterilization the envelope

substance retains a greater antigenic power. Miss D. Steabben has been investigating the antigenic condition of Shiga's dysentery bacillus, and finds that the preparation of a vaccine incubated at 45° C. contains 50 per cent. more bacterial substance than the 37° C. vaccine, and between four and five times more toxin.

Amongst the spore-bearing anaerobes *C. oedematis maligni* has been subjected to cross-immunization experiments with the "O" antigen, while work commenced last year on the antibacterial mechanisms associated with *C. tetani* has been continued. Experiments with the high titre antitoxin sera against *C. tetani* spore infection have shown that such sera only delay the onset of the disease, which later ends fatally. Repeated intravenous inoculation of antitoxin may, however, induce a successful result. As regards the relation of virulence and susceptibility to "O" antigen it has now been found by Dr. A. Felix and Miss R. M. Pitt that highly agglutinable strains of *B. typhosus* are of low virulence, while non-agglutinable strains are highly virulent. The virulent strains are without demonstrable capsule, though the results do not contradict the view that "rough" forms are non-virulent, but indicate that the presence of smooth "O" antigen does not completely define virulence.

ENDOCRINOLOGY

The biological assay of testicular hormone has been continued in experiments showing the physiological variations from the average of the weights of organs in rats. Injections of the hormone in oil gave satisfactory results in assay, suggesting that this (and probably other dissolved substances) is absorbed from oily solutions during the whole period of injection at some constant rate. Castration experiments have shown that effects are noticeable not only in the sexual organs but also in several other organs. Castration produces striking atrophy of the secondary sexual organs (prostate, seminal vesicles, penis, and preputial glands), slight atrophy of the thyroid, and, later, of the liver and kidneys, involution of the thymus being delayed, and the adrenals and hypophysis being hypertrophied. There is an increase in fat deposition, and a slight decrease in heart weight is also specific. The specificity of the changes produced is supported by results of hormone injection into castrated male rats, the injection causing a return towards the normal.

Other work connected with hormones includes experiments performed to show the effect on the sexual, endocrine, and other organs, of adrenalectomy, and of cortical extract injection into normal and castrated rats. The latter experiments reveal no influence of the cortical extract on either the weight or histological structure of the organs mentioned in either normal or castrated rats. On the subject of vitamins, recent experiments show that vitamin E deficiency produces changes similar to those produced by vitamin A.

RESEARCH ON NUTRITION

Vitamin Standards.—During the last three years the Institute has devoted much time to points connected with the standards adopted at the international conference in 1931. The following subjects have been investigated. Vitamin A: pure crystalline carotene as standard; influence on stability of temperature and of solvent used; the relative value of various methods of vitamin A estimation. Vitamin B: the stability at different temperatures of the standard absorption product on acid fullers' earth from rice polishings. Vitamin C: suitability of raw ascorbic acid as standard in place of fresh lemon juice previously recommended.

The biological value of carotene as a source of vitamin A has been tested, together with its efficacy in different solvents: coco-nut oil has already been found to be the most satisfactory for use with crystalline carotene, and several samples of the oil have been compared. It has been found that the same sample of carotene dissolved in different oils will not always have the same biological value. A comparison has also been made between the different forms of carotene. Dissolved in the same sample

of coco-nut oil β -carotene has a deep yellow colour, and is biologically active in smaller doses than in the sample used as international standard. As to vitamin D, examination of plant material for this substance has been continued; results have been irregular, however, though it has been established that the vitamin which is abundantly formed when fresh green leaves are exposed to powerful ultra-violet light irradiation tends to disappear when the material is kept. No evidence was obtained of the presence of vitamin D in germinated wheat, contrary to statements of some workers that cereals develop vitamin D as well as vitamin C during germination.

Biological Value of Proteins.—Dr. Harriette Chick and Mr. J. C. D. Hutchinson have been investigating the balance-sheet method of studying the nutritive value of proteins, and the latter has done some work on the relative value of wheat and maize produce in the nutrition of young rats. The work offers another argument against the theory which would explain the association of endemic pellagra with the use of diets containing as the staple cereal maize products by an amino-acid deficiency in such diets.

Vitamin C and Ascorbic Acid.—It was pointed out in the last report that a number of specimens of ascorbic acid and its derivatives were examined for antiscorbutic activity with a view to establishing whether vitamin C was identical with the acid. Evidence has accumulated that synthetic l-ascorbic acid is active and that this compound possesses antiscorbutic activity *per se*. The reversibly oxidized form of this acid has been the subject of tests for its detection, but so far there has been little success. Work has also proceeded on the physiological functions of vitamin C and its content in germinated peas, fresh fruit, and canned apples, while Dr. Gough has been examining a number of suprarenal glands from human necropsies by the silver nitrate method, and has succeeded in showing (in collaboration with Dr. Zilva) a high degree of antiscorbutic activity in the pituitary as well as the suprarenals.

BIOCHEMISTRY

Alcoholic fermentation has been the subject of sundry investigations, and further knowledge has been gained of the reactions involving phosphoric acid during the breakdown of sugars by the enzyme-complex of yeast. The mechanism of calcification in animal tissues has been further studied by Professor Robison, whose work suggests that the two mechanisms of calcification may together form a complex enzyme system analogous to those of muscle and yeast. The chemical nature of the oxytocic hormone of the posterior pituitary gland has again been the subject of study by Dr. Gulland. He has confirmed the dual nature of the interaction with nitrous acid, and has also shown that there is a third concurrent inactivation in which the hormone is attacked by nitric acid produced by aerial oxidation of the nitrous acid during the experiments. Other subjects of study in this group include the action of chemical substances on cells, the constitution of nucleic acids, and oxidation experiments bearing on the metabolism of fat.

THERAPEUTIC SERUM

Recent work has thrown light on the nature of a purpuragenic toxin in connexion with the pneumococcus, and Drs. Petrie and Morgan are endeavouring to obtain by selective breeding genetically pure lines of this toxin which are respectively susceptible and resistant to the purpura-producing toxin, and to compare the survival rates when equivalent doses of virulent test-culture are given to mice.

A fresh attempt has been made to simplify the preparation of the toxin and antitoxin of *B. welchii*, and the results have been so satisfactory that the present methods can now be regarded as purely routine. It is believed that the preparation of the specific toxin and antitoxin from *V. septique* will offer no special difficulty.

As regards the recent work by Panton and others at the London Hospital on the use of a specific antitoxin in acute and subacute staphylococcal infections, and of a toxoid preparation in the treatment of the chronic type of in-

fection, the department is co-operating with the Wellcome Physiological Research Laboratories in supplying the specific remedies for clinical tests which are being organized by the Therapeutic Trials Committee of the Medical Research Council.

Convalescent serum for poliomyelitis is being sent to the Western Fever Hospital, where early cases of the disease are admitted, while a new supply of serum from immunized horses has been found to possess very high virus-neutralizing value in tests on monkeys. It is available for prophylactic use in contacts.

Other subjects of study under the therapeutic section have been: titration of anti-dysentery serum, biochemical investigations into the specific substances of the meningococcus, and colorimetric methods for the estimation of glucosamine and N-acetylglucosamine. Finally, Dr. McClean and Dr. Favilli are collaborating in further experiments on the nature of local immunity explained on the basis of a lowered permeability of the tissues, and Dr. Lumsden has again been given facilities for his work on an anticancer serum by immunization of sheep.

HEALTH OF SCOTLAND

DEPARTMENT'S ANNUAL REPORT

The fifth annual report of the Department of Health for Scotland,¹ recording its main administrative activities for the year 1933, is now available. The report draws attention to the necessity for taking a broad view of the probable industrial developments of any locality before determining the suitable sites for additional houses and the future uses of cleared areas, and this question will be reviewed when the programmes of local authorities for the five years 1934-8 come under scrutiny. With regard to the national health policy, a review of the various health services appeared necessary, and is now being carried out by the Departmental Committee on Scottish Health Services, the terms of reference being "To review the existing health services of Scotland in the light of modern conditions of knowledge, and to make recommendations on any changes in policy and organization that may be considered necessary for the promotion of efficiency and economy." The volume of certified sickness among the insured population continued to be high, amounting in the year up to June 30th, 1933, to 19,000,000 days, accounted for by about 400,000 separate cases of illness. Out of every 1,000 insured persons there were 227 cases of illness.

HOUSING

The output of houses under State-aided schemes was considerably accelerated during the year. The number built was 20,915; this constituted a record since the national housing effort began in 1919, and was almost double the output for the year 1931. The total number of houses completed since 1919 up to the end of 1933 was 164,740. The output of houses by private enterprise without State assistance was 5,570, which also constituted a record since 1919. Progress has been made in slum clearance, and at the end of the year tenders had been approved for the erection of 21,266 houses by 150 local authorities. Of these houses, 10,847 have been completed. The subsidies payable to local authorities under the various Housing Acts came under review at the end of the year, and it was decided to continue unaltered until October, 1936, the subsidy for slum clearance; but, in accordance with the Government's policy of leaving ordinary house building to unassisted private enterprise, it was decided that no subsidy would be payable for such houses completed after March 31st, 1934. In rural areas 2,815 dwellings were reconditioned during the year. A total capital expenditure of approximately £9,500,000 had been determined by the Department at the end of 1933 in respect of 197 housing schemes, and a capital expenditure of £896,000 in respect of twenty-four slum clearance schemes.

¹ Cmd. 4599. H.M. Stationery Office, 129, George Street, Edinburgh. (2s. net.)

GENERAL SANITATION

The year 1933 may be regarded as one of exceptional drought, though this did not necessarily involve a shortage of water supplies. Information called for by the Department in January, 1934, showed that in sixty burghs out of a total of 195 there had been some shortage during the year. In landward areas, 106 special water supply districts out of 404 had also been short of water. In the counties of Aberdeen and Kincardine trouble was experienced with some rural water supplies which exhibited dangerous plumbo-solvency. The danger was first brought to light by a case of lead poisoning in Aberdeen Infirmary, in which the illness was traced to the water supply. A number of sources were subsequently found to be affected, especially wells distributed widely over moorland districts. The plumbo-solvency was obviously due to peat acids. Three wells were treated experimentally with limestone chippings to neutralize the acid, and this treatment reduced the plumbo-solvency to a safe figure. Many wells in the two counties were afterwards similarly treated with satisfactory results. With regard to public cleansing, it was found that in many rural districts accumulations of refuse still existed. The question of village scavenging, however, has received increased attention during recent years, and mechanical traction has been the prime factor in this development. Amalgamation of districts has been tried with satisfactory results, and the collection of refuse over a large area by mechanical traction has given good results. The importance of the provision of suitable receptacles for the storage of refuse is emphasized, because it appears that any type of container devoid of covering and incapable of retaining liquid refuse is in many places considered good enough. This is regarded as one of the worst features of public cleansing, and the Department urges local authorities to make by-laws regulating the size and capacity of ashbins.

FOOD SUPPLIES

Reference is made in the report to an investigation by Drs. Leighton and M'Kinlay upon the average amount of liquid milk consumed in Scottish households (*British Medical Journal*, April 28th, 1934, p. 769). This showed that for Scotland as a whole the consumption was 0.48 pint per head per day, and it is recommended that this might be increased with great benefit to the public health. The Department continued to press local authorities to replace part-time veterinary inspectors of dairy cattle by inspectors not engaged in private practice in the area of the authority. The need for veterinary inspection of dairy cattle in exempted premises was again evident from the fact that in several instances cottagers' cows were found to be suffering from clinical tuberculosis. Representations were made to the Department by producers of milk from graded tubercle-free herds and by local authorities that the retail prices fixed by the Milk Marketing Board for certified and Grade A (T.T.) milk were too high; this situation is receiving attention. The progress in the production of tubercle-free milk is indicated by the fact that the number of herds licensed in recent years increased from forty-four in 1927 to 103 in 1932 for certified milk, and from fifty to 103 in the same period for Grade A (T.T.) milk. There are at least 115 other tubercle-free herds in the country, although their owners have hesitated to bring them under the grading system owing to the limited demand for tubercle-free milk. The report suggests that a substantially increased demand would do more than any other single measure for the eradication of tuberculosis from dairy herds. Reports by veterinary inspectors show that there is a continued improvement in the cleanliness of cows and byres, and in the methods of milk production generally, due largely to the educative influences of local authorities' inspectors. The practice of certain dairy associations of paying a bonus to producers with the least bacterial content of milk samples has also proved effective in raising the standard of milk production. In Edinburgh a test has been carried out with the object of detecting *Brucella abortus*; in 256

samples examined 17.5 per cent. were found to show this organism. A high standard of meat inspection and control of slaughterhouses under the Meat Regulations (Scotland), 1932, was maintained during the year, and several convictions were obtained for infringement of the regulations—for example, for the removal of organs to conceal traces of tuberculosis. Further amendments of the regulations are at present under consideration. Two small outbreaks of food poisoning occurred during the year: one in Glasgow, where the suspected foodstuff was a sausage; and one in West Lothian, where the illness was attributed to the consumption of cheap pork.

MATERNITY AND CHILD HEALTH SERVICES

The year 1933 has shown a new low record in the birth rate, which was 17.6 per 1,000 of the population. There has also been a decline in the infantile mortality to 81 per 1,000 births as against 86 for 1932 and an average of 85 for the preceding five years. The maternal mortality rate also declined to 5.9 per 1,000 births as compared with 6.3 for 1932 and 6.6 for the preceding five years. Data collected by the Department's Scientific Advisory Committee concerning all births in Scotland over a period of six months are at present being analysed, and a report on maternal mortality and morbidity will shortly be available. Infant mortality in 47.7 per cent. of cases was due to congenital causes; in 19.9 per cent. to bronchitis and pneumonia; in 10.3 per cent. to diarrhoea; and in 5.2 per cent. to whooping-cough. The number of children between the ages of 1 and 5 in Scotland was estimated to be 330,900, and the number of deaths in this group was 2,638, representing a death rate of 8 per 1,000 of the age group as compared with a rate of 10.1 in 1932. The chief causes of death were bronchitis and pneumonia in 28.5 per cent. and whooping-cough in 14.3 per cent. Deaths of children between 5 and 15 numbered 1,740 in 1933 as compared with 1,827 in 1932. The chief causes of death in this group were tuberculosis, 268 cases; violence, 263; diphtheria, 180; and pneumonia, 128. Proposals for additional maternity beds have been made to the Department during the year from local authorities of Kirkcaldy, Dunfermline, Renfrewshire, Motherwell, Kilmarnock, Ayrshire, and Greenock. An experimental reorganization of the medical inspection of school children has been made in Edinburgh. Under the new scheme, which was in operation during the year 1932-3, medical inspection of entrants and leavers has been continued, but instead of the inspection of an intermediate age group, an annual classroom survey of all children in the schools has been made. The advantages of this have been an earlier detection of defects with medical supervision at an earlier stage of disability; an examination of the child in its usual school environment; and closer contact in the classroom between teacher and medical officer. With regard to maternal welfare, there were 187 maternity and child welfare centres in Scotland at which arrangements were made for giving advice to expectant mothers. The number of first attendances at ante-natal clinics has risen from 9,103 in 1925 to 29,099 in 1932. It is stated that 49 per cent. of the births in Scotland during 1932 were attended by doctors, 29 per cent. by midwives, and 22 per cent. were institutional. The number of maternity beds at the end of 1933 was 459 provided by local authorities and 513 in voluntary hospitals. There has been a steadily increasing tendency in recent years towards institutional treatment in childbirth. Concerning child welfare the report states that about 86 per cent. of the children born in Scotland during 1932 were visited by health visitors, who made an average of over six visits to each child during the year. The number of children between the ages of 1 and 5 visited by health visitors during the year 1932 was 99,372 as against 82,509 in the preceding year, while the number brought to welfare centres was 19,478 as compared with 18,769. With regard to the school child, the number of schools under inspection in 1933 was 3,364 with a total of 827,311 children on the registers. The number of children medically examined in selected age groups was 243,345, and in addition 148,975 children were referred to medical officers for special

examination, and 89,670 children found defective at previous examinations were re-examined. The chief defects were: decayed teeth, with one to four decayed in 57.4 per cent., and five or more decayed in 13.5 per cent.; enlargement of lymphatic glands in 20 per cent. of cases; enlarged tonsils in 17.7 per cent.; nutrition below the average in 5.7 per cent.; external eye diseases in 5.2 per cent.; nasal catarrh in 4.5 per cent.; poor vision in 4.4 per cent.; and infective skin conditions in 2.8 per cent.

[To be concluded]

Ireland

Conditions and Pay in the Public Health Service

The Minister for Local Government and Public Health of the Irish Free State, Mr. S. T. O'Kelly, who was accompanied by the Parliamentary Secretary, Dr. C. Ward, Mr. E. P. McCarroll, and Dr. R. P. McDonnell, received a deputation recently from the executive of the Irish Medical Committee, consisting of Drs. R. J. Rowlette, J. P. Shanley, P. O'Dowd, T. P. MacDonnell, and T. Hennessy, and Mr. T. M. Gick. The Minister agreed that the salaries of medical officers were on the small side in certain areas (the deputation had made special reference to the Health Boards of South Tipperary and of Counties Roscommon, Leitrim, and Longford). Representations would, he said, be made to the Health Boards mentioned to reconsider the salaries. He also promised to inquire into the salaries advertised for the dispensary districts in Cashel, Golden, Tipperary, and Cappagh, and to try to arrange a more reasonable remuneration for the post of whole-time medical officer of health to the borough of Waterford. In the case of the salaries in mental hospitals the Minister was prepared to consider any claim submitted to him. The sum of £30 per annum, plus rates and taxes, was, he considered, a reasonable and fair rent for dispensary houses. The deputation pointed out that medical officers as tenants were at a great disadvantage, since the fixity of tenure, etc., of dispensary houses, provided by the Town Tenants Acts, did not apply to them, with the result that, on retirement, they and their families were homeless, although they might have paid in rent the total cost of building the house. With regard to promotion in the medical services, the Minister said he was anxious there should be provision for this in all deserving cases, and he would consider the best means of giving effect to it. The medical attention of those school children who usually receive treatment under the Medical Charities Acts was discussed, and the Minister expressed the hope that in a very short time there would be a whole-time county medical officer of health for the outstanding counties and chief boroughs in the Free State. Concerning the practice of some health boards of undertaking the treatment of the children of well-to-do parents and applying the money towards lessening the expense of the county scheme, the Department would take steps to prevent such irregularities in all cases brought to its notice. The fee for immunization against diphtheria was, he considered, a matter for arrangement between the local authorities and the medical profession. The question of fees for the remuneration for registrars, of births, deaths, and marriages was being considered with a view to improvement. In the case of extra medical benefits provided by approved societies—for example, in respect of glasses—the Minister was entirely in favour of the proposal that ophthalmic surgeons should be employed instead of opticians. The whole question of the remuneration for anaesthetics and the differentiation between major and minor operations was to be considered, as also was the matter concerning the reinstatement of Dr. H. V. McKeogh. The issue of red tickets in midwifery cases to the dispensary doctor,

and, in the circumstances, his position, and that of the midwife who receives no ticket, was discussed; it was pointed out that the regulations at present in force made the doctor responsible for the case, but that he could seek subsequent relief from attendance in normal cases by arranging for a midwife. A recent order issued by the County Wexford Health Board directing that dispensary doctors should report all puerperal cases in which the patient had a continuous increased temperature for twenty-four hours was considered by the deputation to be *ultra vires*, since the medical attendant alone was responsible for the diagnosis: the Minister promised to have the matter put in order. The principle of the advisability of consulting accredited medical representatives when changes were about to be made in remuneration, and in administrative and other regulations, was approved. Fees for vaccination and vaccination certificates were considered to be statutory, and to require legislation to remedy any inadequacy. The Minister said that the allocation of hospitals in South Tipperary was engaging his attention.

Centralization of Fever Hospitals in Dublin

The Dublin County Council has decided to approve the scheme of the Free State Hospital Commission for the concentration of fever treatment in a central hospital controlled by a board of management. The latter would be representative of the public bodies previously responsible for providing adequate fever treatment, and of the Cork Street Fever Hospital Board. The Commission attaches special importance to the value of public representation on the board of management. A tentative figure of seventeen members has been fixed, and it is proposed that the representation should be as follows: Dublin Corporation, seven; Dublin County Council, three; and Cork Street Hospital, seven. It is also proposed to invite the principal medical bodies to associate themselves in an advisory capacity with the board of management by nominating representatives. The building of the hospital would be borne by sweepstakes funds, and the accommodation to be provided would be a matter for discussion between the Commission of the City and county medical officers of health. A measure of agreement has been reached between the Commission and the Cork Street authorities, by which the latter will contribute towards the upkeep of the new hospital. The Commission's proposals have now to be submitted to the Minister for Local Government and Public Health.

National Health Insurance

In the Dáil, on the estimate for national health insurance, Mr. S. T. O'Kelly stated that the increase in State grant was due to the additional expenditure on benefits and to the greater number of contributions which it was estimated would be paid in 1934. There had been a steady increase in the annual contribution income of the National Health Insurance Fund, which in 1933 was calculated to have reached £602,000. The expenditure on benefits, however, also increased, and in 1933 it was estimated to be £760,969. The average number of persons in receipt of benefits weekly through the year was 26,000. Complaints of insured persons concerning their treatment by approved societies numbered about 120 a week only, or one dissatisfied claimant out of over 220. During the eleven months ended February, 1934, sums totalling over £400 were recovered for injured persons from employers in respect of benefits lost through neglect to pay contributions. The number of medical certificates issued in 1933 was 1,338,828. The accumulated funds forming the assets of the national health insurance amounted to £3,551,780 at the end of 1933, an increase of £50,390. The annual income derived from dividends and interest was £125,970.

Scotland

Proposed Public Medical Service for Edinburgh

A meeting of general practitioners in the city of Edinburgh was held in the British Medical Association Scottish House on June 28th, at 8.30 p.m., to consider a draft scheme for the formation of a public medical service for the area covered by the city of Edinburgh. The scheme has been drawn up on the lines of the model scheme issued by the Association to provide medical attendance and medicine for the dependants of insured persons and others of similar means. It is proposed that any registered medical practitioner within the area may become a member of the service on payment of an entry fee of £2 2s.; that the affairs of the service should be managed by a committee consisting of a chairman, honorary secretary, and treasurer, with twelve other members elected from the medical profession; and that medical service and medicines should be provided for subscribers after acceptance by the practitioner of their choice at an entrance fee of one shilling and a subscription per week varying from fourpence for one subscriber up to one shilling for a family of four or more. The services to be provided under the scheme will approximate as closely as possible to those given to persons insured under the National Health Insurance Scheme.

New Glasgow Professor

The vacancy in the Muirhead Chair of Medicine at Glasgow University, caused by the approaching retirement of Professor Walter K. Hunter, M.D., D.Sc., has been filled by the appointment of Dr. Archibald Wilson Harrington. Dr. Harrington, who takes up duty on October 1st next, is 56 years of age and has been one of the physicians to Glasgow Royal Infirmary since 1926. He graduated M.B., Ch.B. Glasg. in 1900 and M.D. in 1903, and became a Fellow of the Royal Faculty of Physicians and Surgeons in 1912. After holding resident posts in Glasgow Royal Infirmary, Royal Maternity Hospital and Glasgow Fever Hospital at Ruchill, he joined the Royal Infirmary staff in 1906 and became assistant physician in 1913. During the war he was a captain in the R.A.M.C. on the staff of the 3rd Scottish General Hospital, Glasgow, and in 1916 went to Salonika with the 38th General Hospital. Later he was in France as officer in charge of the Medical Division of the 58th General Hospital with the rank of major. After his return to Glasgow he became visiting physician to the Ministry of Pensions Hospital at Bellahouston in 1920, a post which he resigned on taking charge of wards in Glasgow Royal Infirmary in 1926. Dr. Harrington has also held the posts of consulting physician to the Glasgow Royal Maternity Hospital and to the Glasgow Royal Mental Hospital at Gartnavel.

Chiropody in Edinburgh

Lord Elphinstone was elected president of the Edinburgh Foot Clinic at the annual meeting, at which Professor John Fraser took the chair. Mr. Robert Stirling said that the number of treatments at the clinic during 1933 had totalled 13,633 as against 10,360 in 1932. There were thousands of men and women whose occupations involved long periods of standing, and whose foot troubles often interfered with their work; those people were beginning to look to chiropody for relief. Patients came to this clinic from all parts of Scotland. It was generally considered that the highest efficiency in any profession was found in the centre of training, and it was well to

recollect that attached to this foot clinic there was a school of chiropody. Students were trained for two years, and at the end of that period, if they passed their examinations, they received the diploma of the Incorporated Society of Chiropodists. This school had a wide reputation, and the clinic had always worked in harmony with the medical profession. Lord Elphinstone, in opening a new theatre, said that judging by the rapid development in the last ten years, the clinic would soon require to be open all day in order to cope with the demands made upon it. He appealed to the generosity of the public to support the clinic.

England and Wales

Tuberculosis Prevention

The thirty-fifth annual general meeting of members of the National Association for the Prevention of Tuberculosis was held in London on June 15th (an account of the conference appeared last week at page 1136). Sir Robert Philip presented the annual report, commenting on the gratifying facts that in twenty years the mortality rate in England from all forms of tuberculosis had fallen, approximately, 41 per cent., and in Scotland 50 per cent. He added that the death rate from this disease in 1932 was the lowest ever recorded in this country, and showed a substantial reduction over the 1931 figure. The rate of decline was accelerating. In co-operation with the Scottish branch of the British Red Cross Society, the Royal Victoria Hospital Tuberculosis Trust, and the Scottish branch of the Queen's Institute of District Nursing, the National Association had carried out a highly significant mission of investigation and instruction through the Highlands and Islands of Scotland. It was hoped, soon, to appoint a nurse commissioner for tuberculosis in East Suffolk, a new step which might be the precursor of a more general movement of this kind throughout the country. The disused Empire Marketing Board poster frames would be utilized in part for propaganda against tuberculosis. The Burrow Hill Sanatorium Colony for youths between the ages of 14 and 18 was obtaining subsequent employment for a gratifying percentage of these patients. Thanks to the special appeal of 1926-8 the financial position of the National Association was good, but there were many demands for fresh, useful expenditure. Lady Titchfield, who had been prominently associated with this appeal, and had been elected vice-chairman of the council, gave a short account of the Christmas seal scheme. Apparently first thought of in Australia in 1897, it had later occurred to a Danish postal clerk, in 1904, that money for charitable purposes could be raised by issuing special stamps or seals for Christmas letters and parcels. Since then the Danish mail had carried these stamps every Christmas, and most other civilized countries had taken up the scheme. Last year it had been adopted in this country by the National Association, and would be continued. Lady Titchfield stressed the point that the money accruing was devoted to the local anti-tuberculosis work in the places where the seals were sold, and thus served to stimulate interest and attract support. In connexion with this conference, visits were paid to Colindale and High Wood Hospitals and King George V and Pinewood Sanatoria. The conference hall housed a very attractive collection of exhibits, including specimens of work by members of handicraft classes organized by tuberculosis care committees, and a great variety of instructional and propaganda literature.

Baby Week, 1934

Many medical authorities will give their views on matters connected with the health of mothers, infants, and young children during the eighteenth National Baby Week, which is the occasion of the National Conference on Maternity and Child Welfare, organized by the National Association for the Prevention of Infant Mortality, to be held at Birmingham from July 3rd to 5th. Usually the conference takes place in London, but occasionally it has been held in provincial centres. The National Baby Week Council this year has focused attention upon the general subject of the making of an A1 nation, and directs particular attention to the problem of nutrition, as affecting the foundations of national health. The Council as an organization concerned with propaganda has devised a great variety of ways of stimulating the interest of young and old alike in this question of specific interest. One is the issue to midwives of a pamphlet on the diet of the expectant mother, written by Professor S. J. Cowell of St. Thomas's Hospital Medical School. It is being distributed to midwives through local supervising authorities, and copies may be had on application to the National Baby Week Council, 117, Piccadilly, London, W.1. Other events of next week bearing upon nutrition are essay-writing on nutrition for the family by domestic science students, and postcard competitions for school girls and boys. Girls are asked to write on six good rules they would bear in mind in preparing the family meals. Boys are asked to write six rules they would follow if they had gardens of their own and wished to use these gardens to help their mothers to feed the family all the year round. In another competition nursery nurses are invited to plan the meals of the 3-5-year-old child. All these activities should stimulate public interest in seeking to know the principles of good nutrition.

L.C.C. Dentists and Nurses

The London County Council is proposing that from July 1st the salaries of dentists at hospitals and institutions under the management of its Hospitals and Medical Services Committee shall be, for full-time, £500 a year, rising by annual increments of £25 to £650, and for part-time, £90 a year for one session of approximately two and a half hours a week for fifty-two weeks a year, and at the rate of £65 a year for each additional session of the same length for fifty-two weeks. All dentists must possess a degree or recognized diploma in dental surgery. The hours of duty for the full-time officers are to be thirty-three hours a week; travelling time from a central point in London to be included. The Council has also been reconsidering the supervisory nursing staff (that is, the various grades of sister) for its general hospitals. The present staffing is held to be inadequate, and the question of adding substantially to the number of sisters cannot longer be postponed. It is proposed to create 105 additional positions, which will ensure an adequate standard for normal requirements, but not sufficient to ensure that at each of the larger hospitals there will be one ward sister not normally allocated to a definite ward or other duties, but available to be drawn upon in case of emergency for duty at her own hospital or one of the smaller hospitals. The number of such emergencies in a large service calling temporarily for the services of a ward sister is considerable, and it is therefore proposed, in addition to the 105 allocated positions, to have twenty other new positions of ward sister, to be allocated normally to hospitals with a bed accommodation of 500 or over, but available for temporary transfer elsewhere when necessary. The new proposals will result in an additional expenditure of nearly £25,000 in the current financial year.

Bristol Sanitary Congress

Further details have now been received about the annual congress of the Royal Sanitary Institute at Bristol from July 9th to 14th. The congress is under the presidency of Dr. Stanley Badoak, Pro-Chancellor of the University of Bristol, who will deliver his inaugural address on the first afternoon. The Minister of Health will address a general session of the congress on the afternoon of July 13th on "Some Aspects of the Housing Question." In addition to independent meetings of the six Sections—namely, preventive medicine; engineering, architecture, and town planning; maternity, child welfare, and school hygiene; veterinary hygiene; national health insurance; and the hygiene of food—there will be conferences of the representatives of sanitary authorities, of medical officers of health, engineers and surveyors, sanitary inspectors, and health visitors. Among the topics to be discussed are: the water supply problem; administrative difficulties in municipal housing; posture and its relation to health; the eradication of bovine tuberculosis; the problem of the mental defective; the teaching of mothercraft; mental development of the child between the ages of 2 and 5; sickness experience and sickness expectancy; sanitation in modern architecture; and the avoidance and destruction of sewage odours. A discussion on nutrition and the public health will be opened by Professor J. A. Nixon, who will be followed by Professor R. H. A. Plimmer and Dr. H. E. Magee of the Ministry of Health. Further particulars of this congress can be obtained from the secretary of the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1.

Reports of Societies

SURGERY OF THE SYMPATHETIC SYSTEM

At a meeting of the Aberdeen Medico-Chirurgical Society, on June 7th, with the president, Mr. ALEX. MITCHELL, in the chair, Professor J. R. LEARMONTH read a paper on "The Surgery of the Sympathetic Nervous System."

Professor Learmonth began by recalling that the efferent fibres of the sympathetic nerves left the spinal cord in its anterior roots, between the first thoracic and second lumbar segments, inclusive, and, detaching themselves from the spinal nerves in the white rami communicantes, they reached the great ganglionated paravertebral chains. These chains had two uses. They provided a shunting system whereby (a) a certain number of fibres were side-tracked for the supply of viscera, and (b) the remainder were returned (by the grey rami communicantes) to travel with the somatic nerves. By their extent (from base of skull to tip of coccyx) they compensated for the fact that not all the segments of the spinal cord gave off sympathetic fibres. The activity of those fibres that travelled with somatic nerves produced the following effects: (1) vaso-constriction of the arterial tree, and probably also of the capillaries; (2) increase in the secretion of sweat; (3) contraction of the unstriped muscle in the skin, which caused erection of the hairs and "goose-flesh." Interruption of these fibres was followed in the area so denervated by (1) vaso-dilatation, (2) absence of sweating, (3) absence of goose-flesh and of erection of hairs. These effects were produced by the liberation, at the endings of sympathetic nerves, of a substance apparently identical with adrenaline, to which Cannon had given the non-committal name of "sympathin." This substance was the link between nervous impulse on the one hand and its translation into changes of muscular and glandular activity on the other.

SYMPATHECTOMY TO SECURE VASO-DILATATION

Broadly speaking, sympathectomy would be of therapeutic value to secure vaso-dilatation in a part that needed more blood. No local evil effects followed the procedure;

the increase in warmth of the part from the access of additional blood was not an inconvenience, and the increased capacity of part of the arterial tree was not followed by a fall in systemic blood pressure. The operation was a satisfactory method of producing hyperaemia. To the question whether the local hyperaemia that followed sympathectomy was permanent, Professor Learmonth answered that, when the denervation was complete, and when local structural changes in the vessels were absent, the local increase in blood supply was permanent. Although a few sympathetic fibres reached the proximal segments of great arteries directly from neighbouring sympathetic ganglia, by far the greatest number reached the peripheral arterial system by being detached at intervals from the somatic nerves of the part. Hence the most effective sympathetic denervation of a part could be done by division or resection of the "bottle-neck" in which these vaso-constrictor fibres were concentrated—namely, the grey rami communicantes or their parents, the sympathetic chains. For the lower extremity this was a relatively easy matter; it was accomplished by the removal of the second, third, and fourth lumbar ganglia, and the part of the chain that connected these. It was much more difficult to ensure that all the vaso-constrictor fibres to the upper extremity had been severed, for their anatomical position made them less accessible, and their arrangement was less constant. The surgeon aimed at removing the sympathetic chain from the inferior cervical ganglion to the second thoracic ganglion, inclusive; but even this extensive procedure might fail to produce complete sympathetic denervation. Even after technically complete procedures evidence was accumulating (J. C. White) that the denervated muscle might still contract as a result of the liberation of excessive amounts of adrenaline during emotional crisis; such vaso-constriction was, of course, temporary.

With regard to the second postulate—normality, or near normality, of the vessels, especially the arteries—it was obvious that in pathological processes which led to narrowing of the arteries—for example, in thrombo-angiitis obliterans—if the disease progressed, a stage would be reached when the arterial system, however dilated originally, became inadequate for the supply of the limb. Even in Raynaud's disease, though in the early stages structural changes in the vessels were absent, in the later stages changes in the calibre of the vessels might make it impossible to secure permanent increase in the flow of blood. Because of these possible structural changes the surgeon, before carrying out a sympathectomy to secure vaso-dilatation, must satisfy himself that the peripheral arteries were capable of dilating. Thus it was necessary to have some method of producing and of measuring the amount of peripheral dilatation that was possible. For clinical purposes a sufficiently accurate method was to measure, by a thermocouple, the rise in surface temperature of an extremity when its vessels were dilated. For producing vaso-dilatation the most convenient method in the wards was to warm the body, with the exception of the limb or limbs to be tested, in a cabinet—for example, under an electric light cage. The vessels in the unwarmed parts dilated because of a sympathetic reflex. The maximum temperature that could be produced by complete paralysis of the regional vaso-constrictor nerves in a normal limb varied with the room temperature. When this was about 20° C. the "vaso-dilatation level" was about 32° C. Morton and Scott had found that if the thermometric readings did not reach at least 28° C. during the test sympathectomy was unlikely to be of benefit.

INDICATIONS FOR SYMPATHECTOMY

Professor Learmonth next discussed conditions in which sympathectomy might provide a permanently increased supply of blood in cases shown to be appropriate by the above tests. In suitably chosen cases sympathectomy would permanently relieve the symptoms, and banish the signs, of Raynaud's disease. The hands or feet became warm, and the areas of superficial gangrene healed with remarkable rapidity. The fairest indication of the success

of the operation was the almost uniform desire of patients on whom unilateral operation had been performed to have the other limb denervated. In the group of structural disease of the peripheral arteries he included arterio-sclerotic disease, thrombo-angiitis obliterans, syphilitic endarteritis, the late stages of Raynaud's disease, and certain cases of scleroderma. Patients afflicted with one or other of these diseases came under notice suffering from intermittent claudication, impending gangrene of the digits, or both these features. The operability rate in this group was low; one could hope to provide a remedy for the complaints only if greater volume of blood could be furnished to the limb, and/or facilitate its distribution to the areas requiring it. Distribution might be facilitated in two ways: (a) by producing vaso-dilatation in existing channels, a possibility dependent on the presence or absence of structural changes in the arterioles; (b) by leading to the opening up of new anastomotic channels. In the lecturer's experience sympathectomy was not worth while in arteriosclerotic disease; the age of the patient, the progressive nature of the lesion, and the lack of resilience in aged vessels all pointed to the desirability of a conservative attitude.

The widest field for operation was in thrombo-angiitis obliterans, the victims of which were comparatively young. They could be divided into three groups: (1) When the disease was rapidly progressive and surgery had nothing to offer. (2) Slowly progressive disease. If tests showed a satisfactory rise of temperature, sympathectomy might be advised. The resultant vaso-dilatation might "last out" the patient's lifetime, or it might defer the necessity for amputation. (3) When the disease reached a certain stage and then seemed to be arrested. In selected cases sympathectomy might avoid amputation and deal satisfactorily with local gangrenous areas.

A limb extensively paralysed as a result of anterior poliomyelitis was often cold, blue, and, especially in winter, subject to ulceration and chilblains. The vascular condition appeared to depend on two factors, of which the more important was poor venous return as a result of the absence of support afforded to veins by normal muscles, whether at rest or contracting. The second factor was hypoplasia of the main artery to the limb, which appeared to be proportionately greater than the loss of substance in the member. In spite of these unpromising pathological conditions the lecturer had been agreeably surprised at securing, by sympathectomy, a rise of surface temperature of about 5° C. in several such cases. The effect of this increase in blood supply on the nutrition of the skin had so far been satisfactory. In the treatment of intractable ulceration of the leg the increase of blood supply after sympathectomy was occasionally of use. His own experience included two types of case: (1) ulcers secondary to disease of the central nervous system, such as might complicate spina bifida, and (2) intractable varicose ulceration.

The operation had been performed also in cases of scleroderma, when the condition was distal and associated with gangrene; the immediate results were good. Sympathectomy had been employed, too, though perhaps less justifiably, in the treatment of hyperidrosis. Finally, in certain cases of periarticular polyarthritis, in patients under 40, sympathectomy often relieved pain and improved the function of hands and feet.

VISCERAL SYMPATHECTOMY

The efferent sympathetic nerves to the viscera controlled their local blood supply; and in addition those destined for hollow muscular viscera might exercise their effects in two ways: (1) by leading to changes in the calibre of the viscus, and (2) by regulating its function of transmitting its contents. The immediate functions of the two sets of nerves that reached hollow viscera appeared to be twofold: (1) the sympathetic nerves were inhibitory to the musculature of hollow viscera and motor to their smooth sphincters, and (2) the parasympathetic nerves were motor to the musculature of hollow viscera and inhibitory to their sphincters. Operations had been devised for the

division of the sympathetic nerves of the lower urinary tract, of the distal part of the colon, and of the rectum; the roots of these nerves approached each other so closely that at the pelvic brim they were easily accessible immediately under the peritoneum, in the form of a single meshwork or strand, called the superior hypogastric plexus, or presacral nerve. The object of these operations had been to secure proper emptying of one of these organs, and only those cases were chosen in which organic obstruction was absent. From a functional point of view the hollow systems under consideration consisted of a series of reservoirs and conduits separated from each other, and ultimately from the exterior, by sphincter mechanisms of smooth muscle. The improper emptying of such a living system might be the result of many factors, acting singly or in combination. One of the great difficulties in assessing the relative importance of possible factors was the degree of autonomy possessed by many of the viscera when deprived of their extrinsic nerve supply; this physiological self-sufficiency was most marked in the alimentary tract. The simplest cause of failure-to-empty was paralysis of the musculature of a viscus. A second cause was incoordination of the contractions that were attempting to convey material along the system. A third cause was sympathetic overactivity, of such a degree that inhibitory impulses overwhelmed motor impulses, so that the muscular tube remained relaxed, and formed a passive container. A fourth possible cause was resistance to the passage of the contents of a conduit offered by a sphincter of smooth muscle.

Among conditions that might be benefited by visceral sympathectomy Professor Learmonth mentioned Hirschsprung's disease. That improvement in emptying the bowel followed division of its sympathetic nerves was an incidental clinical observation made by Royle and Wade. The denervation could be performed by any one of several techniques. Any of these operations might be efficacious in securing unaided evacuation of the colon; but it was too early yet to dogmatize on the permanence of the results. Although the operation had been employed, and with occasional success, in cases of constipation that had resisted prolonged medical measures, its indiscriminate application was to be deprecated. It had this in its favour—that if its result fell short of complete success, except so far as sterility in the male was concerned, the patient was at least not any worse, and the continuity of the gut had not been altered. A third condition was paralysis of the ureters and bladders. A group of cases was met with in which great dilatation of the ureters, or of the ureters and bladder, occurred as a presumably congenital condition in the absence of demonstrable organic obstruction. These patients appeared to suffer from achalasia at the uretero-vesical juncture, the vesico-urethral juncture, or at both. Like Hirschsprung's disease, it yielded to sympathetic denervation of the ureters and bladder. Occasionally the internal sphincter of the bladder was alone affected by spasm or achalasia, and this condition had been relieved by division of its motor (sympathetic) nerves, even when "punch" operations had failed to bring relief. When the central origins of the motor (parasympathetic) nerves to the bladder had been damaged by injury or disease, it was sometimes possible to restore power-to-empty to the bladder by division of its sympathetic nerves in the presacral strand. This operation failed to afford relief when the lesion that led to paralysis of the vesical musculature was situated either in the hypogastric ganglia or in the wall of the bladder.

OPERATIONS FOR RELIEF OF PAIN

The operations so far enumerated had as their object the division of efferent sympathetic fibres. The system contained afferent nerves also, which mediated visceral reflexes and transmitted painful sensations from viscera. In the urinary and alimentary tracts the adequate stimuli for production of pain appeared to be limited to over-distension of a viscus, and spasmodic or incoordinated contraction of its musculature. The latter was the only type that might recur often enough to demand relief. Such recurring spasm was to be found in the painful contractions of a chronically inflamed bladder,

and in the painful uterine contractions at the menstrual periods. When operating for the relief of intractable somatic pain the surgeon attacked the final concentration of pain fibres in the spino-thalamic tract of the spinal cord. It appeared that fibres mediating visceral pain were not so thoroughly concentrated in the cord; they could be divided, with least fear of an incomplete result, as they traversed the sympathetic "bottle-necks" in the abdomen and thorax. The "bottle-neck" formed by the presacral nerve contained a proportion of sensory fibres from both uterus and bladder. Dysmenorrhoea of the spasmodic type that had resisted ordinary methods of treatment could often, perhaps usually, be abolished by division of the presacral nerve. A careful selection of cases was necessary, and particular care must be exercised to exclude cases of the congestive type. The improvement was not to be ascribed solely to division of afferent "pain" fibres; probably the neurectomy deprived the cervix uteri of some of its tone. Painful chronic cystitis was sometimes a legacy from tuberculosis of the kidney; at other times it followed chronic pyogenic infection. Considerable relief from the distress of painful frequency followed division of the presacral nerve; but in this group of cases the urinary bladder was often contracted and its capacity so reduced that frequency was inevitable.

Sensory nerves from the heart reached, ultimately, the rami communicantes of the first five thoracic nerves, and entered the cord with the posterior roots of these nerves; apparently the majority of cardiac sensory nerves inclined to the left side. A number of operations had been designed with the object of severing these nerves at various points in their course for the relief of angina pectoris. From his own experience, and from a study of reports by trustworthy clinicians, Professor Learmonth was not inclined to regard the suppression of pain in angina as undesirable. The difficulty of performing elaborate operations in patients already in a precarious condition had been surmounted by the method of paravertebral alcohol block of the upper five thoracic nerves on the left side. The results of this had been satisfactory in a considerable proportion of cases, and although the injections must be carefully performed by an operator who had familiarized himself with the technique, the risk to the patient was minimal.

In conclusion, the lecturer urged that in any case in which sympathectomy was considered the problem should be viewed as a whole, and that the operation be employed as only part of the treatment. Carefully performed, after thorough investigation of individual patients, and in the conditions he had described, it formed a valuable addition to the therapeutic armamentarium of surgery.

At the meeting of the Royal Society on June 21st a paper by Drs. P. A. BUXTON and D. J. LEWIS, on "Climate and Tsetse Flies: Laboratory Studies upon *Glossina submorsitans* and *tachinoides*," was communicated by Sir GUY MARSHALL. In this the authors recalled that the number of tsetse flies which could be captured under standard conditions rose and fell with the season, and that many of the species were sharply limited to particular types of vegetation. It was thought that the limits were climatic. The paper described a series of experiments in which adults and pupae were exposed to controlled conditions in the laboratory. The work gave an approximate knowledge of the limits of temperature and humidity which were favourable or unfavourable to the fly; it was found possible to delimit an approximate optimum at which the flies fed best, lived longest, and had the highest birth rate. Records of temperature and humidity were also made in the permanent haunts of the fly, and conditions in the dry and the wet season contrasted. Observations made in the laboratory and in the field supported one another satisfactorily, and, taken together, they should tend to give precision to the control of *Glossina*, which would probably be achieved by altering the vegetation and with it the micro-climate. At the meeting on June 28th Professor W. L. Bragg delivered the Bakerian Lecture on "The Structure of Alloys."

CORRESPONDENCE

Pregnancy Diagnosis

SIR,—Dr. J. M. Robson, in his lecture on "Pregnancy Diagnosis in Theory and Practice" (*Journal*, June 16th, p. 1063) states with reference to the Friedman test, in which adult female rabbits are used as the test animals instead of immature female mice, that "the rabbit never (or very rarely) ovulates spontaneously, and hence, if mature animals are segregated, they are suitable for the test." Later on he says: "Sometimes the ovaries of normal rabbits contain small blood spots . . . it may be difficult to decide whether the blood spot has arisen as a result of the injection or independently of it." In such cases he advises a second examination of the rabbit after a further interval of twenty-four hours to determine whether there is any alteration in the size of the blood spots.

I have employed the Friedman method in this department for the past two and a half years, and about 700 tests have been performed with it. In 439 rabbits the ovaries have been inspected by laparotomy before injecting the urine for diagnosis. On thirty-one occasions—that is, in 7 per cent. of cases—blood spots have been found at this preliminary laparotomy. In seven of these the blood spots were sufficiently fresh to resemble exactly the appearance obtained by the recent injection of urine of pregnancy, and one would not have hesitated to report a positive result had the rabbits been inspected only after the injection of the urine for diagnosis. In one of these seven cases the animal was a virgin rabbit which had been isolated for three months, the isolation commencing before the rabbit reached puberty. It is possible that the three false positive results which occurred in Dr. Robson's series of 145 cases (one in a definitely non-pregnant subject and two in cases of "delayed menstruation") were due to recent spontaneous ovulation or formation of blood follicles, and would not have occurred had he resorted to preliminary laparotomy.

Dr. Robson advocates concentrating the gonadotropic hormones by extraction with rectified spirit, since it was found at the Edinburgh Pregnancy Diagnosis Station that the injection of untreated urine did not give sufficiently satisfactory results. "This," he says, "may be due to the interval elapsing between the collection of the urine and its receipt for examination being longer than has been the case with other investigators." In twenty-nine cases of my series the urine has yielded a positive reaction after being kept at room temperature for a period longer than twenty-four hours. The exact intervals between voiding and injection in these cases are as follows:

Interval	Number of Cases
25½ hours	3
2 days	9
3 days	6
4 days	3
5 days	5
6 days	2
8 days	1 (weak positive)

It is well established that if the urine is kept in an ice-chest its gonadotropic potency persists for a long time, even, in some cases, up to two years. Thus, though no appreciable diminution of potency occurs during the first week after voiding the urine, all specimens in this laboratory are placed in the ice-chest shortly after receipt, so that should the test need to be repeated the urine is still available, and there is no necessity to demand a further specimen from the patient.

In a certain small number of female adult rabbits it has been found that the injection of urine of pregnancy does not produce a positive reaction. Consequently, in order to

detect such unreactive test animals, it is the practice in this laboratory to inject urine of pregnancy in all rabbits in which the urine for diagnosis has produced no changes in the ovaries. If, after this procedure, the ovaries still remain unchanged, the animal is discarded and the test repeated on another rabbit.

In a series of 203 clinically controlled cases, in which the technique which I outlined at the Annual Meeting of the British Medical Association in Dublin last year (*British Medical Journal*, 1933, ii, 306) has been employed—namely, a preliminary laparotomy and subsequent injection of urine of pregnancy when the urine for diagnosis has given a negative result—the results obtained have been 113 correct positive, eighty-nine correct negative, and one doubtful. In the case of the doubtful result the patient bled per vaginam in the third month of her pregnancy, the specimen of urine being collected six hours after the commencement of bleeding. This specimen gave a negative result. Three days later a dead ovum was found in the cervical canal. This case is considered as a false negative result. No false positive result has been obtained in this series, so that the error of the 203 cases is 0.5 per cent.

By eliminating the test animal completely as a source of error by the procedure indicated above, the test may be made even slightly more reliable than the original Aschheim-Zondek test, in which the variability of reaction of the immature mice to urine of pregnancy can only be controlled by using more than one animal for each test.—I am, etc.,

Physiological Laboratory, Guy's
Hospital, S.E., June 18th.

P. M. F. BISHOP.

Intracranial Injury in the Newborn

SIR,—I have read with much interest the paper by Dr. Moncrieff on hypertonic rectal saline for intracranial injury in the newborn in your issue of June 16th (p. 1063). There is one criticism I should like to make, which is concerned particularly with the footnote to his paper.

I have recently emphasized the fact that when cerebral oedema is present the intracranial pressure is considerably higher than the venous pressure. The cerebral oedema, therefore, which commonly accompanies severe head injuries must have a beneficial effect in limiting haemorrhage from torn cerebral veins and sinuses. This point is of particular importance in the cases Dr. Moncrieff is considering, as damage to venous sinuses is common in birth injuries.

The administration of hypertonic solutions by the rectum has a powerful effect in reducing intracranial pressure, and if used soon after injury may encourage bleeding into the subdural space. For this reason I think that it is inadvisable to use treatment such as Dr. Moncrieff suggests as a prophylactic measure in cases of difficult delivery, but to reserve the treatment for the type of case he describes in which the symptoms and signs of increased intracranial pressure are clearly present.—I am, etc.,

W. RITCHIE RUSSELL, M.D.,
F.R.C.P.Ed.

Edinburgh, June 19th.

Ligature of the Innominate Artery

SIR,—Mr. H. S. Souttar's paper on ligature of the innominate artery (*Journal*, June 16th, p. 1066) is very interesting, especially from the point of view of the cerebral circulation, but his literature only dates to 1915.

In 1928 I reported a case of ligature of the innominate and common carotid arteries for a subclavian aneurysm, caused by a fracture of the clavicle (published in the *British Medical Journal*, 1929, ii, 49). Following the operation it was observed that the right side

of the head was pallid and obviously colder than the other side: this persisted for forty-eight hours. The circulation in the hand was defective for twenty-four hours only, due apparently to some collateral circulation having already been established. It appears that the influence on the circulation was only temporary, no further trouble having arisen, although it is now nearly six years since the operation. From the statistics it is clear that there is a lower mortality rate when the innominate and common carotid arteries are both tied than when the innominate alone is tied.

As to anaesthesia, I used gas and oxygen, and with an almost bursting aneurysm (it did rupture at the operation, and needed a good deal of digital pressure with one finger to occlude the sac) I doubt whether local anaesthesia would have sufficed. Again, with local anaesthesia, I can see the difficulty of using the common carotid artery as a tractor.—I am, etc.,

Grimsby, June 20th.

C. L. GRANVILLE CHAPMAN.

Classification of Mental Disorders

SIR,—In reply to Sir R. Armstrong-Jones's letter in your issue of June 16th, I would point out that the classification of mental disorders was adopted by the Royal Medico-Psychological Association in 1933, and published in the *Journal of Mental Science*.—I am, etc.,

Burghill, nr. Hereford, June 26th. G. W. T. H. FLEMING.

Avertin for Toxic Goitre Operations

SIR,—Mr. Geoffrey Keynes's article of May 12th on avertin narcosis in operations for toxic goitre is of great interest, and he is to be congratulated on his excellent results. This type of anaesthetic has been very successfully employed during the past twelve months at the Northern Hospital in our cases of toxic goitre, and, like Mr. Keynes, we have been greatly impressed by those cases in which the pulse rate actually fell during operation to a level lower than the pre-operative rate, and also by the absence of worries in connexion with the anaesthetic, both during and after operation. Our honorary anaesthetist, Dr. R. J. Minnitt, is responsible for the following pre-anaesthetic routine.

Permission of the relatives is obtained, but the patient is not aware that an operation in the immediate future is contemplated. For at least four days beforehand a hypodermic injection of sterile water is given at the same time the premedication will be given on the operation day. Two hours after this a glucose saline is administered per rectum and the patient told that this is routine treatment. During these four days the patient is weighed on two different occasions. Two hours before the operation is due to commence omnopon 1/3 grain and scopolamine 1/150 grain is given hypodermically. This dose is modified according to the size and weight of the patient, who is quite unaware that an operation is to be carried out. One hour later the avertin solution is prepared on the basis of 0.1 grain per kilo of the patient's body weight. After about fifteen minutes this is slowly run into the rectum by a tube and funnel, with the patient lying on the left side. The patient is then kept quiet, and within twenty minutes can be transferred from the ward to the operating theatre. A drop or two of castor oil is placed in each eye, and a bandage applied. The ears are lightly plugged with cotton-wool, and a face-mask is fixed in position with a Clausen retainer, so that gas and oxygen can be administered at any moment. In the cases where there is the slightest reaction when the incision is made gas and oxygen is commenced from a McKesson machine. Care is taken that no cyanosis is allowed, and for this purpose 25 per cent. oxygen and 75 per cent. nitrous oxide is generally required. This is sufficient to complete the narcosis if the avertin anaesthesia is satisfactory. Rebreathing is given throughout the operation.

Mr. Keynes commented on the result of preliminary ligation as a first-stage procedure. In our experience in bad cases it is not helpful and in mild cases it is unnecessary, and we consider it too liable to upset the patient to justify its use.

We do not think it wise to treat severe cases of toxic goitre in a general surgical ward, especially as several weeks may be required for the preliminary medical treatment before the optimum time for operation arrives. Moreover, much of the benefit of avertin is lost if the patient is disturbed during the stage of induction or during the hours immediately following the operation, when its prolonged sedative effect proves so valuable. It has been our custom to treat these patients in a medical ward until their operation, and then, for the next few days, in a single-bed side-ward, in quietness and subdued light.—We are, etc.,

L. CUNNINGHAM, M.A., M.B., M.R.C.P.
PHILIP HAWES, Ch.M., F.R.C.S.

Liverpool, June 18th.

Evipan Anaesthesia

SIR,—I was much interested in the article by Dr. Paul Kuhne (*Journal*, June 9th, p. 1029), in which he discussed the relative value of four different types of general anaesthetics administered to the same patient. On two occasions evipan sodium was used, the only difference being that in the second instance there was premedication with omnopon 2/3 grain and scopolamine 1/150 grain. On this occasion alarming symptoms were produced, and, according to Dr. Kuhne, the patient "at first sight appeared dead." In discussing this he expresses surprise:

"This is rather surprising, in view of the fact that some days previously evipan alone had given an excellent result. I can give no explanation of this, but the case illustrates clearly the depressant action of evipan on the respiratory centre and also its selectivity for that centre."

Might I suggest that the depressant effects which occurred have been due rather to the previous administration of a very large dose of omnopon combined with scopolamine, both of which are powerful respiratory depressants, rather than to evipan? Since Dr. Kuhne had previously given evipan without any ill effects, surely it is unscientific, to say the least, to ascribe the alarming symptoms which followed evipan plus premedication to the evipan and not to the premedication. The patient was the same; evipan was used on both occasions; the only new factor was that of omnopon and scopolamine. Yet Dr. Kuhne, after expressing his surprise and admitting his inability to give any explanation (see quotation above), immediately afterwards claims that his very limited number of cases—namely, two—"clearly illustrates the depressant action of evipan on the respiratory centre and also its selectivity for that centre." By what logical process he has come to this conclusion I entirely fail to comprehend.

I would call his attention to the report on the clinical value of evipan from the Anaesthetics Committee of the Medical Research Council (*British Medical Journal*, July 8th, 1933, p. 63). This committee concluded that it is inadvisable to give any sedative before evipan sodium. Admittedly Dr. Jarman and Mr. Abel have used evipan preceded by omnopon and scopolamine, and have achieved excellent results (*Lancet*, July 1st, 1933, p. 18); yet they considered that such methods are contraindicated in feeble and toxic cases. Surely a patient who had been admitted with chronic otorrhoea of twenty years' duration, and who developed tenderness over the left mastoid and then had three anaesthetics within two months, might have been considered both toxic and enfeebled.—I am, etc.,

MONTAGUE SOLOMON, M.B., Ch.B., D.P.H.
Liverpool, June 9th.

Psychological Effect of Hysterectomy

SIR.—That the after-results described by Dr. Winifred Coppard are not invariably associated with hysterectomy is shown by the following case in my practice.

A woman, aged 32, having previously had three children, was suffering from severe menorrhagia. Three years ago my partner, Dr. G. R. Hughes, performed a subtotal hysterectomy, since when, of course, the periods have ceased. At first she felt unwell each month, but now she has no symptoms of any kind associated with the menstrual cycle. Whereas, however, before the operation her sexual appetite was normal, her husband now informs me that she has an insatiable sexual desire which makes very considerable demands on him for gratification. She has also become much more highly strung and nervous since the operation.

Of course, before the operation this nymphomania may have been suppressed owing to the fear of pregnancy; but, at any rate, in this case the frigidity described by Dr. Coppard did not ensue.—I am, etc.,

Barnet, June 21st.

S. VATCHER, M.D. Cantab.

The Cancer Problem

SIR.—The cachexia of malignant disease may hold a key to the understanding of part, at any rate, of the malignant process. That a true cachexia occurs apart from haemorrhage, infection of the growth, and mechanical interference with bodily function is generally agreed. It is not easy, perhaps, to be sure that the pure picture of malignant cachexia is strictly defined, but probably it will be accepted that anaemia, wasting, a thin, atrophic skin, and a tendency to secondary infections are constant features, while there is no evidence of failure of kidney function, or liver function, or of the circulatory system.

To approach the matter from another angle, and one, I think, which has something of the novel in it, the body tissues may be divided into three groups: one in which the cells continue to multiply actively after birth—for example, the epithelial and mucous surfaces, the blood-forming organs, the testes; one in which no new cells are formed after foetal life—for example, the brain and perhaps the kidneys; and one in which cellular multiplication occurs, but only in minor degree or after injury. This difference in cellular capacity has not, I think, been specifically studied in its relation to disease.

In malignant cachexia clinical observation and microscopical study point to the probability of the main injury being done to those tissues of the body which are still undergoing cell multiplication. Whether this injury consists in the abstraction from the circulation of some essential substance for cellular division or, which is improbable, the addition to it of some poison to such activity, may be revealed by study. If the cachectic state could be relieved life could be prolonged in fair health in symbiosis with the growth.

So far as active attack on the neoplasm is concerned, it seems established that apart from surgical removal most success attends efforts which regard the growth as a somewhat weakly rooted parasitic weed, and attack it with injurious agents which, while damaging the tissues of the host also, do not destroy their more established growth. X rays, bacterial toxins, metallic poisons, and prolonged pyrexia appear to be all occasionally successful, as I think might be expected if this simile from the garden is true, and it may well be that along the lines of such attack on the whole body will be found a means of medical cure of, at any rate, some varieties of malignant neoplasm.—I am, etc.,

Birmingham, June 17th.

HUGH DONOVAN.

Tuberculin

SIR.—Dr. Noel Bardswell is reported in the lay press to have stated at the annual meeting of the National Association for Prevention of Tuberculosis that in his experience distilled water had given the same results as tuberculin. That is not my experience. I have seen a rise of temperature of 4° F. after an injection of one millionth of a cubic centimetre of T.R. into a child of 8. Thinking this might be a nervous reaction, I injected 1 c.cm. of distilled water a week later. There was no reaction. I would be glad to know in what medical paper Dr. Bardswell's observations were first published.

I will gladly allow Dr. Bardswell to give me an injection of 1 c.cm. distilled water if he will allow me to give him 1 c.cm. bacillary emulsion. The results will be different. The distilled water will cause a slight haemolysis, and nothing more. The tuberculin will produce a lump. If a small exploring needle be stuck into that lump, per se suction applied from a Record syringe, some of the intracellular fluid will be drawn into the barrel of the needle. When this is expressed on to a glass slide it is found to consist of hundreds of polymorphonuclear leucocytes. That is a simple fact which anyone can verify. In the lump itself millions of leucocytes are eating and digesting particles of tuberculin. It is only fair to add that after an injection of 1 c.cm. bacillary emulsion anyone not immunized to this dose might find himself in a better world. Yet last week I gave a patient a final injection of 2 c.cm. bacillary emulsion. She had had *tabes mesenterica*, but after twelve months' tuberculin treatment the glands were no longer palpable, and she had gained a stone in weight. Does anyone seriously suggest that this could have been achieved by distilled water?

The comparative figures published by Gillespie of Belfast prove that tuberculin alone gives better results than sanatorium treatment without tuberculin. The deplorable neglect of tuberculin is due, I think, to two causes: men have not troubled to learn how to use it, and some who use it have not been over-communicative about the details of technique. I have been using tuberculin for over twenty years, and only during the past six months have I found a foolproof method of avoiding the severe reactions that sometimes follow large doses, and are due to superimposition. I now tell the patient not to come for another injection until the lump has entirely disappeared. This lump may persist for a week, a month, or even longer, but as long as it is present all the tuberculin has not been consumed. The patients feel at their best after the lump has gone.

If only those who are using tuberculin would unite to form a small society in which all knowledge would be pooled, the undoubted value of tuberculin would soon be recognized by the majority of doctors.—I am, etc.,

London, W.S. June 18th.

HALLIDAY SUTHERLAND.

Carcinoma of the Appendix

SIR.—Mr. Robert Rutherford's communication on carcinoma of the appendix (June 23rd, p. 1119) should, if it be necessary, once more drive home the importance of having a microscopical examination of every organ removed from the abdominal cavity. But it is surely supererogatory to suggest a course of deep x-ray therapy, for I thought it was established that if the peritoneal coat is intact the malignancy *qua* metastasis is nil.—I am, etc.,

London, W.I. June 24th.

R. CHRISTOPHER HOWARD.

Bile Salts for Empyema

SIR.—Mr. B. R. Sworn and Dr. T. V. Cooper, in their article on "The Treatment of Pneumococcal Empyema with Bile Salts" (June 23rd, p. 1117), express some apprehension as to the possible haemolytic effects which might follow absorption of sodium desoxycholate. They accordingly postpone treatment until the pus has become thick.

In the latter part of 1932, having convinced myself of the superiority of sodium desoxycholate over the taurocholate in the treatment of pneumococcal empyemata, I toyed with the idea of employing this salt in the treatment of pneumococcal pneumonia. To this end Dr. Macdonald of the Manchester University Physiology Department injected 10 c.cm. of a 10 per cent. solution (I quote from memory) of desoxycholate into the ear vein of a rabbit, with apparently no harmful consequences.

I mention this because it is my belief that, in the interests of quick healing, the walls of an empyema cavity should never be allowed to become thickened. If the thickness of the pus is an indication of the thickness of the pleura, then this can be avoided by the early employment of sodium desoxycholate. Furthermore, it would seem possible that the slight toxic manifestations which occasionally follow retention of the solution by the thin-walled cavity may be due more to the absorption of toxins from the lysed bacteria than to the antiseptic itself. For this reason I favoured thorough irrigation with a 10 per cent. solution followed by complete evacuation to the method of replacement.

May I, in conclusion, recommend this form of treatment as being worthy of further institutional study?—I am, etc.,

Alderley Edge, nr. Manchester, June 26th. H. R. DONALD.

District Almoners

SIR.—It is now generally recognized that almoners are indispensable in all our hospitals, and suggestions are being made that there should be district almoners, whose services would be available to all.

It is unnecessary to tell those who have worked on the visiting or resident staff of a hospital in recent years what an almoner can do, but there must be many in practice who have never been able to write upon a hospital patient's card, "Will the lady almoner please do this or that," and consequently many who do not realize how much an almoner can do to help to get the best results out of treatment. It will interest these to know that the almoner can usually do all those things for a patient that doctor or nurse cannot do; abdominal belts, and all other types of surgical appliances, extra nourishment or particular articles of diet, dressings, and special care of any sort can be obtained for those otherwise unable to obtain them.

Patients with cancer who need special care, with Graves's disease whose home conditions are unsuitable; children who have come from a distance for the specialist's opinion, who may be recommended treatment with rest in bed, and may not even have a bed to themselves—all these and many other similar cases can be dealt with by an almoner. Convalescence can be arranged, and although the patient at first mention of this may fear the loss of his job by so long an absence, yet it is usual to find that an almoner can approach his firm and get over this difficulty, often obtaining a grant partially to cover the cost.

Naturally the services of an almoner are not for the well-to-do, but with the assistance of a district almoner

practitioners could give better service to their patients, such a large proportion of whom are in varying degrees of domestic or financial difficulties. It would be interesting to hear the views of other practitioners on this subject, as it is felt that before further steps can be taken we ought to have an idea of the support that can be obtained.—I am, etc.,

London, S.W.1, June 18th.

GEOFFREY HALE.

Poisoning by Ground Ivy

SIR.—I am interested to note that Dr. W. G. Aitchison Robertson (June 2nd, p. 1008) states that the dermatitis produced by "ground ivy"—that is, *Hedera terrestris*—is similar to that caused by the American "poison oak or ivy" (*Rhus toxicodendron*). At one time I had a good deal of experience of the latter, and I think I am perhaps in the position of being able to suggest a form of treatment which, having been very satisfactory for *Rhus toxicodendron* poisoning, might be of value for the *Hedera* dermatitis.

In the former the rash, erythematous in type, spreads from the wrists to the eyelids and face, and may involve the whole body. The facial disfigurement is very marked, the eyelids being swollen and oedematous. Papules appear which develop into vesicles and even large bullae. Fever and constitutional disturbance are fairly marked in severe cases, but in spite of the alarming appearance of the patient I have never seen any case which gave me real anxiety. The causative agent is probably lobinol, and not toxicodendrol.

The treatment which I found most satisfactory was to paint the skin repeatedly with fluid extract of grindelia (U.S.P.). Copious drinks and suitable purgation, with a bland, non-stimulating diet, will, of course, be advisable in addition to the local treatment.—I am, etc.,

A. DANGERFIELD, M.B., F.R.C.S.Ed.

Corfe Castle, Dorset, June 19th.

Osteopathy

SIR.—My letter (June 2nd) in reply to Mr. Blundell Bankart's attack on osteopathy (May 19th) called forth several letters (June 9th and 16th) of the type one has learnt to expect on this subject. They do not call for any reply individually as they contained no considered criticism, and therefore were not useful except in so far as they give proof of the urgent necessity for the registration of qualified osteopaths.

I gathered from the letters that their authors had no knowledge of osteopathy, and therefore, perhaps, they are not aware that, although there are roughly a thousand persons practising as so-called osteopaths in the British Isles, of that number only about two hundred are qualified. When I speak of osteopathy, I mean the work of the qualified osteopath, not that of the chiropractor, the bone-setter, the naturopath, nor of any unqualified person.

We could all quote cases in which x-ray plates have not been correctly interpreted, and others in which prolonged and elaborate treatments have failed to cure, or even relieve, but these unfortunate happenings are not necessarily confined to osteopaths.—I am, etc.,

DOROTHY WOOD, M.R.C.S., L.R.C.P.

London, W.1, June 25th.

* * This correspondence is now closed.—Ed., B.M.J.

Obituary

MICHAEL GEORGE FOSTER, M.D., F.R.C.P.

We regret to record the death on June 16th of Dr. Michael G. Foster. Born on December 13th, 1864, in the house of his grandfather, Michael Foster, F.R.C.S., at Huntingdon, Michael George was the elder child and only son of Sir Michael Foster, K.C.B., M.D., F.R.S., afterwards the first professor of physiology at Cambridge, and for twenty-two years the secretary of the Royal Society, by his first wife, Georgina Edmonds. Educated at University College School, London, he entered Trinity College, Cambridge, in October, 1881, at an age recalling the custom of earlier centuries, and took his degree in 1884, at the same time as his friends W. Gordon of Exeter, G. P. Bidder of Cambridge, R. A. Bickersteth of Liverpool, J. G. Adami, Sir Arthur Shipley, and Sir Henry Head, with a third class in the Natural Sciences Tripos. Following his father's example, he went up to University College Hospital, qualified in 1888, became house-surgeon, and showed great promise in surgery. His future in this walk of the profession was as by a thunderbolt shattered by the onset of pulmonary tuberculosis, to which he had a strong hereditary tendency. But after two round voyages to Australia he began the hard life of a Continental physician, which he carried on for forty years, first at Maloja in Switzerland, then at Alassio, both for a short time, and later for many years at San Remo. Proceeding to the M.D. Cambridge in 1895, and elected F.R.C.P. in 1916, he subsequently practised at San Remo in the winter and at Harrogate in the summer. When war broke out he worked at the First Eastern General Hospital, Cambridge, and with Dr. John Foster Gaskell, the son of his father's pupil and colleague W. H. Gaskell, M.D., F.R.S., brought out in 1916 a well-written and finely illustrated monograph on cerebro-spinal fever, a subject on which he also wrote in the *Medical History of the Great War*. Later he was consulting physician to the troops in France and Flanders (with the rank of temporary colonel A.M.S.), was twice mentioned in dispatches, and received the O.B.E.

Michael Foster had a wide knowledge of health resorts, and as long ago as 1896 collaborated with the veteran authority Sir Hermann Weber in the article on "Climate in the Treatment of Disease" in Allbutt's *System of Medicine*; in 1933, after retirement from practice, necessitated by failing health, he brought out an admirable account of *Baths and Medicinal Waters in Britain and Europe*, inscribed "In affectionate memory of Sir Hermann Weber." After a week's struggle with pneumonia he finished his course on June 16th at the house at Fincham, Norfolk, where his mother (obit 1869) was born. He was buried on June 20th at Huntingdon.

We have received the following from Sir HUMPHRY ROLLESTON:

Many Cambridge men who fifty years ago were medical students will recall with regret the Michael G. Foster of Trinity, with the slim figure, healthy complexion, and high spirits of a boy. Entering the University when under the age of 17, he often spoke of this as an experiment in education, and in some respects no doubt it was a handicap. When he went up with a number of his friends—and he had a genius for friendship—to University College Hospital, he showed great promise in clinical work. But now came one of the many arrows of outrageous fortune that hit him; for, like his father, he developed signs of pulmonary tuberculosis, and the whole course of his life was thus altered. He practised for about forty years on the Italian Riviera, and became

an authority on the climatic treatment of disease. In spite of various family anxieties, the long illnesses and deaths of his two wives, and, in recent years, indifferent health, crippling rheumatism, and financial stringency from unsuccessful investments, he never lost his cheerful, kindly disposition, became embittered, or altered essentially from the pleasant companion his friends knew in the last century.

A deep sense of loss and very sincere regret has been felt in the Rotherham district by the passing, in London on June 12th, of WILLIAM STANLEY WILDMAN, at the early age of 48, after a severe illness borne with great fortitude. After passing through the Lancaster Grammar School and the London Hospital Dr. Wildman came to Rotherham in 1913, where he joined the late Dr. Percy Drabble in partnership, and remained a popular and esteemed figure in general practice till 1933, when a breakdown in health forced him to give up a large practice and seek a quieter life; but he continued to practise in Tewkesbury for some months, till a further breakdown in health finally forced him to retire, and he died only a few weeks later. Dr. Wildman was honorary surgeon to the Rotherham Hospital for fourteen years, and took an active and enthusiastic part in the affairs of the local branch of the B.M.A., of which he was secretary for many years. He was a well-known and popular member of the Thyrbergh Golf Club, and only a short year ago won the Fullerton trophy there. During twenty years of active practice in Rotherham he endeared himself to thousands by his tireless energy, patience, and skill, combined with a deep sympathy for all in suffering and trouble. He was much beloved, and widespread are the expressions of grief and deep sorrow at the news of his passing.

J. J. H.

We regret to record the death, in a motor car accident on June 18th, of Dr. ARTHUR WILLIAM JAMES, who was well known for his pioneer work in developing the provision of ambulances for street accidents. Born in 1864, he was educated at St. Bartholomew's Hospital; he obtained the diplomas M.R.C.S., L.R.C.P. in 1887, and the D.P.H. of the Conjoint Board two years later. He graduated M.D. Brux. in 1897. His early medical appointments included those of clinical assistant to the Royal London Ophthalmic Hospital and resident medical officer to the Stoke Newington Dispensary and the Somerset and Bath Lunatic Asylum. Later he was medical officer in charge of the Duchess of Sutherland's Hospital for Naval Officers, and the California Hospital for Belgian Soldiers. He was a Fellow of the Royal Society of Medicine and a member of the Röntgen Society. Early in his London practice he had been impressed by the opportunities for saving life and minimizing injuries resulting from traffic accidents. His efforts brought into being the Metropolitan Street Ambulance Association, of which he was honorary secretary. In 1904 he contributed an article to these columns on the urgent need of ambulances for street casualties. Dr. James became a member of the British Medical Association in 1899, and is survived by his widow, who was with him when the fatal accident occurred.

News has been received from Alexandria of the death there, on June 14th, of Dr. ARTHUR ANDREW MORRISON, C.M.G., who had resided in Egypt since 1882. Born in Aberdeen in 1858, he received his medical education in that University, graduating M.B., C.M. in 1882, and proceeding M.D. four years later. He quickly attained distinction as a surgeon, and published articles in these columns on spinal analgesia and renal calculus. He was surgeon, and later consulting surgeon, to the Anglo-Swiss Hospital in Alexandria. Dr. Morrison was appointed British delegate to the International Quarantine Board of Egypt in 1897, and his public services in this and in other respects were recognized in 1925 by the conferment upon him of the C.M.G. He was a member of the Egyptian Division of the British Medical Association.

JUNE 30, 1934]

EPSOM COLLEGE

EPSOM COLLEGE

Lord Leverhulme presided over the eighty-first annual general meeting of the governors of Epsom College, which was held at the office, 49, Bedford Square, W.C., on June 22nd, and thanked the governors for having elected him president in succession to the late Lord Burnham. In presenting the council's annual report he stressed the importance of the appeal for new governors in order to enlarge the activities of the Foundation. He pointed out that possibly no profession felt the effects of a period of depression more acutely than the medical profession, whose voluntary work in such times was as much increased as their private practice was diminished. It was all the more necessary, therefore, to do all in one's power to help as many as possible of the large and ever-growing number of applicants for pensionerships and Foundation scholarships. This year the list of successful Foundationers contains the names of boys whose fathers practised in Glasgow, Stepney, Shropshire, Peterborough, London, Sierra Leone, the R.A.M.C., and the Royal Naval Medical Service. The report was unanimously approved, and the proceedings closed with thanks to Lord Leverhulme for his presence.

The report was unanimously approved, and the proceedings ended with a warm vote of thanks to Lord Leverhulme for presiding at the meeting.

The report was unanimously approved with a warm vote of thanks to Lord Cockell presiding at the meeting.

The following Founders were elected by the conjoint committee on June 13th: Daniel L. C. Thomas, William Farquhar Graham, John Urquhart Crichton, Colin C. R. Walker, Francis McLean Mathewson, Ian Young, and Donald M. Simmins. Denis M. W. Hartley was also elected as a special Founder. The following were elected pensioners: Mrs. Grace Elizabeth Hutchinson and Mrs. Alice M. A. Cockell.

At Epsom College will be celebrated on the day of the cricket match...

Founder's Day at Epsom College will be celebrated on Saturday, July 28th—the second day of the cricket match between the school and an Old Boys XI. At noon there will be service in chapel; at 2.15 an assault-at-arms; and at 3.30 Viscount Leverhulme, the president, will distribute the prizes, followed by tea on the cricket ground; and at 8 p.m. a performance of *H.M.S. Pinafore* will be given by the choral society.

The Services

INDIAN MEDICAL SERVICE: ANNUAL DINNER

The annual dinner of the Indian Medical Service took place in London at the Trocadero Restaurant on June 20th, with Major-General Sir Leonard Rogers, F.R.S., in the chair. The official guests were Mr. S. K. Brown, *Military Department*; India Office; Dr. N. G. Horner, *British Medical Journal*; Dr. E. C. Morland, *Lancet*, and Mr. F. H. Brown, *Times*; together with six officers on probation.

Dr. E. C. Morland *Lancelot*, and together with six officers on probation. After the health of "The King-Emperor" had been honoured, the chairman, in proposing the toast of "The Service," declared that the I.M.S. still gave opportunities for good work, and that it would continue in the forefront. Recalling the primitive conditions under which hospital, laboratory, and administrative work had to be done when he joined the Service in 1893, he could point to many and great advances, both in equipment and in openings for research and clinical study. Whereas research used to be discouraged, now a man might give his whole time to it, with fine laboratories in the great centres of population and at hill-top institutes. For the progress that had been made during the past thirty or forty years Sir Leonard Rogers paid tribute to Sir Pardee Lukis, and to Sir Dawson Williams, a firm friend of the I.M.S. who made history by publishing in the *B.M.J.* a leading article headed "The Cinderella of the Services." On the military side there was now provision under the station hospital system, for better conditions of work; on the civil side the opportunities for lucrative employment had indeed gone, but with fewer posts there were fewer bad stations. The I.M.S. had friends at home in the Secretary of State and high officials at Whitehall, and if it came well out of the melting-pot this would be largely due to the support of the India Office. Recruitment of officers had been better in numbers and quality in recent months than at any time during the past twenty years.

The chairman's health was toasted with enthusiasm, on the proposal of Major-General Sir John Megaw, lately Director-General of the I.M.S., and now Sir Leonard Rogers's successor as president of the Medical Board, India Office. He said that Sir Leonard's achievements in medical research were known to the whole world, and every I.M.S. officer was proud of them ; but even if he had not won that fame they would still regard him as the man who got things done. If their chairman's faith in the future of the I.M.S. were justified by the event this would be attributable in large measure to the efforts he himself had made to uphold its efficiency and prestige.

The chairman, after a brief acknowledgement of the unfailing kindness of his brother officers throughout his career, called upon Colonel J. Anderson for an interlude of stories. The final toast was the health of the honorary secretaries, Sir T. Carey Evans and Sir Richard Needham, to which the former replied, mentioning that there was a record attendance on this occasion, and that he had had many messages from officers in the Punjab and elsewhere.

The officers present at the dinner were: Sir John Megaw, H. R. Nutt, Sir Leonard Baird, Sir S. R. ...

The officers present are—

Major-Generals: Sir John Megaw, H. K. R. Baird, Sir S. R. Rogers, G. Tate.

Colonels: H. Ainsworth, J. Anderson, R. F. Baird, A. B. Fry, J. K. Close, J. Crimmin, P. Dee, A. B. Leonard, J. Fuller-Good, T. A. Grainger, C. R. M. Green, W. H. Leonard, F. P. Mackie, A. J. Macnab, J. McPherson, Sir Richard Needham, J. P. Pratt, Ashton Street, R. G. Turner, W. S. Willmore, F. J. P. Wimmerley.

Lieutenant-Colonels: W. G. P. Alpin, C. H. Barber, F. A. C. N. C. Buchanan, R. H. Candy, H. P. Cook, H. S. Cormack, Barker, A. D. Crawford, J. M. Crawford, J. B. Dalzell Hunter, D. Courts, D. C. Duerr, H. R. Dutton, S. C. Evans, J. K. St. C. D. Dawes, C. F. Graham, V. B. Green-Armytage, Fleming, C. A. Godson, H. Hingston, J. M. Holmes, E. V. A. F. Hamilton, J. B. Hanafin, H. Hingston, J. M. Holmes, E. V. Hugo, M. L. C. Irvine, S. P. James, I. Davenport Jones, H. C. Keates, H. Kirkpatrick, W. B. Lane, J. C. H. Leicester, I. M. Macrae, A. A. McNeill, E. C. G. Maddock, F. O. N. Mell, T. R. Mulrone, C. Newcomb, H. Ross, W. S. J. Shaw, F. B. E. J. O'Meara, M. A. Rahman, S. Spackman, H. B. Steen, T. G. N. Shettle, G. M. C. Smith, W. C. Spackman, E. O. Thurston, R. S. Stokes, H. Stott, J. Taylor, C. Thomson, E. O. Thurston, R. S. Townsend, A. G. Tressider, E. L. Ward, T. C. N. Bose, H. C. Brown, J. C. Chukerbuti, W. H. Crichton, J. A. Cruickshank, J. L. J. C. Carey Evans, J. S. Galvin, N. H. Hume, G. R. Donnelly, Sir T. V. O'Malley, C. J. L. Patch, C. G. Seymour, McRobert, D. V. O'Malley, C. J. L. Patch, C. G. Seymour, E. A. C. Smith, H. Williamson.

Captains: J. D. Chopra, A. M. Fraser, R. T. Hicks, T. A. Malone, J. S. McMillan, Asa Singh, R. A. Wesson.

Officers on Probation: Captain A. Pullar, Lieutenant R. D. de Soldenhoff, Lieutenant R. L. H. Minchin, Lieutenant R. R. Prosser, Lieutenant T. K. White, Lieutenant E. Parry.

The King has conferred the Efficiency Decoration of the Territorial Army upon Major R. J. Bruce, R.A.M.C., T.A.

Universities and Colleges

UNIVERSITY OF OXFORD
21st the de

UNIVERSITY OF OXFORD
At a congregation held on June 21st the degree of Doctor of
Medicine (D.M.) was conferred on H. E. Harding.

UNIVERSITY OF CAMBRIDGE
19th the deg

UNIVERSITY OF CAMBRIDGE

At a congregation held on June 19th the degree of B.Chir. was conferred on S. J. Hadfield.

Following candidates have been approved at the exam-

The following candidates have been nominated for the following examinations indicated:

THIRD M.B.—(*Part I. Surgery, Midwifery, and Gynaecology*):
A. G. V. Aldridge, T. G. Armstrong, K. C. Bailey, R. H. Bailey,
G. Bates, H. H. Taylor, D. A. S. Blair, C. H. T. Bond, J. G.
Chappel, L. A. Collins, F. H. Culshaw, F. J. Curtis, R. H. Dale,
T. M. Daniel, S. M. Davidson, W. H. Ekin, F. I. Evans, J. D.
Ferguson, H. A. Hamilton, W. H. C. M. Hamilton, J. W. T.
Hannay, E. E. Harris, G. R. Hawkes, N. B. McDowall, K. W.
A. M. Lester, F. D. M. Livingstone, E. B. M. Nutt, N. C. Oswald,
Martin, R. S. Morris, J. H. Moseley, W. S. Nutt, N. C. Oswald,
J. R. Owen, A. R. Pope, M. S. M. Rayner, J. S. Ross, A. G.
Salaman, K. K. Sen, D. A. Smith, L. W. Spratt, R. J. Stull, F. B.
Turner, R. W. D. Turner, P. A. Walford, J. H. Walters, W. H. C.
Watson, N. Whittaker. *Women: Pathology, and*
(Part II. Principles and Practice of Physic, Pharmacology): R. H. Bailey, A. M. Barrett, C. H. D. Bartley,

H. H. Bayley, R. L. Benson, A. T. Blair, T. B. L. Bryan, R. C. F. Cartwright, J. R. Chambers, A. C. E. Cole, J. Collinson, J. G. Connell, A. H. Dunkerley, J. F. Edwards, C. E. Elliott, W. A. Elliott, F. I. Evans, S. M. Evans, J. D. Fergusson, R. I. N. Graves, G. D. Hadley, E. A. M. Halsted, L. A. Hawkins, J. D. Hay, G. T. Hindley, N. G. Hulbert, A. Innes, B. S. Jones, A. M. Lester, R. E. K. Levick, M. W. Lloyd Owen, C. J. Martin, L. C. Martin, M. K. Martyn, H. B. May, W. G. Q. Mills, G. S. W. Ormrod, B. H. Page, C. G. Pantin, C. G. Parsons, J. P. S. Peck, G. T. Pitts, T. A. Ratcliffe, W. F. Richards, M. A. Rugg-Gunn, S. B. H. Saunders, T. L. H. Shore, M. S. Spink, R. J. Stull, A. S. Tull, R. W. D. Turner, J. H. Walters, G. L. Ward, M. Williams, H. W. Williamson, V. H. Wilson, R. M. Yeo. Women: C. M. Cavell, R. A. Kelgren, D. J. Thompson.

UNIVERSITY OF LONDON

At a meeting of the Senate held on June 20th, Professor L. N. G. Filon, D.Sc., F.R.S., was re-elected Vice-Chancellor for the year 1934-5, and Dr. George Senter was appointed Deputy Vice-Chancellor for the same period.

Among the honorary degrees to be conferred on the occasion of the celebration of Foundation Day, 1934, are the D.Sc. upon Professor Karl Pearson, F.R.S., and the LL.D. upon Sir Cooper Perry, M.D.

Professorial Appointments

The following among other appointments were made to university chairs:

Anatomy (St. Thomas's Hospital Medical School), from September 1st, 1934: A. B. Appleton, M.A., M.D.

Bacteriology (Goldsmiths' Company's) (London Hospital Medical College), from October 1st, 1934: S. P. Bedson, M.D., M.Sc.

Medicine (British Post-Graduate Medical School), from October 1st, 1934, or as soon thereafter as may be practicable: F. R. Fraser, M.D., F.R.C.P.

Obstetrics and Gynaecology (British Post-Graduate Medical School), from October 1st, 1934: James Young, D.S.O., M.D., F.R.C.S.Ed., F.C.O.G.

Pathology (British Post-Graduate Medical School), from October 1st, 1934, or as soon thereafter as may be practicable: E. H. Kettle, M.D., F.R.C.P.

The title of Emeritus Professor of Bacteriology in the University was conferred on William Bulloch, LL.D., M.D., F.R.S., on his retirement from the Goldsmiths' Company's chair of bacteriology at the London Hospital Medical College; and that of Emeritus Professor of Ethnology in the University on C. G. Seligman, M.D., F.R.C.P., F.R.S., on his retirement from the University chair of ethnology at the London School of Economics.

Heath Clark Lectureship

The date of the appointment of Professor Karl Pearson as Heath Clark Lecturer was changed from 1934 to 1935, and Dr. L. W. Hackett, assistant director of the International Health Division of the Rockefeller Foundation, was appointed for the year 1934.

UNIVERSITY OF LEEDS

At a meeting of the University Council on June 21st, Mr. E. R. Flint, F.R.C.S., was elected to the chair of clinical surgery. He will also retain the directorship of surgical research.

UNIVERSITY OF GLASGOW

At a ceremony on June 21st, presided over by the new Chancellor of the University, Sir Daniel Stevenson, the honorary degree of LL.D. was conferred upon Dr. René Leriche, professor of clinical surgery in the University of Strasbourg.

The following higher degrees were conferred on the same day:

M.D.—(1) With honours: D. Baird, J. M. Johnston. (2) With commendation: Margaret E. R. London. (3) Ordinary degree: W. Bain, W. Elvish, J. B. L. McKendrick, Elizabeth M. Pollock. D.Sc.—W. J. Hamilton, M.B. Bell, T. Nicol, M.B. Ch.M.—A. M. Clark (with high commendation).

The Board of Curators has appointed Dr. Archibald Wilson Harrington to the Muirhead chair of medicine, in succession to Professor Walter K. Hunter, who will retire on September 30th.

The Senate announces that the History of Medicine Prize has been awarded to Dr. William J. Rutherford.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

This week the Commons put the Debt Clearing Houses and Import Restrictions Reprisals Bill through all stages, and completed consideration of the Milk Bill. The Betting and Lotteries Bill was down for second reading.

The House of Commons has read the Finance Bill a third time. Mr. Chamberlain told the House he was confident the reliefs given in the Bill would not need to be withdrawn in future, and would, he hoped, be followed by other concessions.

In the Commons, on June 25th, the South Devon and East Cornwall Hospital, Plymouth, Royal Albert Hospital, Devonport, and Central Hospital, Plymouth (Amalgamation, etc.) Bill was considered on report, and ordered for third reading.

Consideration of the Shops Bill by a Standing Committee of the House of Commons was completed on June 26th.

The Lords, on June 20th, passed the South Middlesex and Richmond Joint Hospital District Bill, which was thereafter read a first time in the Commons.

In the House of Lords, on June 22nd, the Royal Assent was given to the Workmen's Compensation (Coal Mines) Act, the Statutory Salaries (Restoration) Act, the Protection of Animals (Cruelty to Dogs) (Scotland) Act, the Licensing (Permitted Hours) Act, and the Birmingham United Hospitals Act.

In the House of Lords, on June 26th, the Marriages Provisional Orders Bill, and the Adoption of Children (Workmen's Compensation) Bill were read a second time. The Road Traffic (Compensation for Accidents) Bill was read the third time and passed.

Price of Milk to Schools

The House of Commons, on June 19th, again went into committee on the Milk Bill.

On Clause 11, which deals with contributions from the Exchequer towards expenses of milk marketing boards, Sir F. Acland moved an amendment to ensure that not less than half of the money provided by Parliament should be expended in repayment to the Milk Marketing Board in respect of milk for consumption by children attending public elementary schools, or by mothers, or by children below school age attending clinics under schemes approved by the local public health authority. He said that the Bill contained nothing to provide that any money should be spent for this purpose at all. From the point of view of the farmers, quite as much as from that of the children, it would pay over and over again to give as large a proportion of this money as possible for milk for consumption by the school children and other persons covered by his amendment. Dr. Elliot said that the proportions they would spend would be about six-sevenths for school milk and one-seventh for publicity. The proposals with regard to publicity had been gone into, on behalf of the Milk Marketing Board, by one of the greatest experts in the country, and the sum which was at present suggested as reasonable to devote to that object was a sum of, say, £50,000 a year in England, or £100,000 in all, which left the English share of the grant £430,000 a year, or £860,000 in all.

The amendment was withdrawn.

On the motion that the clause should stand part of the Bill, Dr. Elliot, in reply to Sir Stafford Cripps, said that it was intended to work on the schemes which had been in operation for some time under the National Milk Publicity Council. Those schemes, which were now supplying something like 900,000 children with milk, were working well. Milk was at present supplied at one penny for one-third of a pint, and it was hoped, as soon as they got sanction to proceed under the Bill, to reduce it to one halfpenny. They hoped that halving the price would act as an excellent advertisement. The extent to which they could spread the milk at

one halfpenny depended on the arrangements which they were able to make with the Board and the arrangements which the Board could make with the distributors. If the Bill became law in good time, they would be able to bring the scheme into operation the moment the children returned from their school holidays. He hoped, within the next two years, that a scheme could be worked out which the Board might itself be able to continue after the expiry of State assistance.

On Clause 12—extension of functions of milk marketing boards—Dr. Elliot moved to insert words providing that the milk had been produced in circumstances determined by the Minister or by the Board with the object of securing, so far as practicable, that it was pure and free from the infection of any disease. This would enable the proposals to be continued by agreement and not necessarily by an order. The amendment was agreed to. Dr. Elliot moved a further amendment to clear up a doubt which had been expressed as to whether the provisions of the Agricultural Marketing Act, 1931, would enable the Milk Marketing Board to fix the price of milk to be sold to schools at a lower price than the price of liquid milk sold to other consumers. He said the whole House desired to allow this discrimination in price. The amendment was agreed to and the clause as amended was accepted.

On Clause 13—interpretation—Sir ARNOLD WILSON moved to insert a definition of pure milk. He said his amendment would exclude pasteurized milk and milk treated by heat in other ways from the financial benefit of Clause 9. The Hopkins report gave grudging support to pasteurization; it admitted that vitamin C was destroyed to a greater or less degree by the process of pasteurization, and said that the resulting deficiency could be corrected by the use of orange or lemon juice, which was now easily obtainable. Sir Arnold denied that this juice was easily obtainable. It cost from sixpence to one shilling weekly per child, and in many parts of England was practically unobtainable. The Hopkins report mentioned that in America a large number of children who were fed on pasteurized milk became rickety, and the deficiency was only cured by an antiscorbutic diet of lime-juice. The Chairman intervened to say there was no reference to pure milk anywhere in the Bill, and as the expression did not occur it would not be in order to propose a definition of pure milk. Sir Arnold Wilson said the words "pure and free from the infection of any disease" occurred in the definition which had just been moved by Dr. Elliot. The Chairman insisted on his ruling, but said the matter raised by Sir Arnold Wilson might subsequently be brought up as an amendment on Clause 9. Clause 13 was then approved, and the committee stage ended.

On June 25th the Milk Bill was further considered on report in the House of Commons. On Clause 9 (payments for securing pure milk supply), Sir STAFFORD CRIPPS moved an amendment to provide that in cases of default by local authorities in England or Scotland the Minister of Agriculture or the Secretary of State for Scotland should exercise all the powers of inspection of dairy cattle at present conferred on the local authorities. Mr. SKELTON said that once they linked up the system of accredited herds with encouragement in the production of pure milk they would get a stimulus to the extension of the system of clinical inspection of herds which would do a great deal more than could be done under the Diseases of Animals Act. The amendment was negative.

Sir ARNOLD WILSON moved an amendment to define milk "pure and free from the infection of any disease." The amendment proposed to exclude from the scope of the Bill pasteurized milk or milk heated in other ways. It also proposed to set up a scientific technical body on which the Ministries of Health and Agriculture would be represented, which would advise from time to time on what might reasonably be regarded as pure milk, free from the infection of any disease. Sir F. FREMANTLE said he could not understand how anyone could suggest that they were going to get a standard of bacteriological purity and nutritional content by a public inquiry. All they could do was to see that the standard was revised from time to time, and, if it was thought advisable, to inform Parliament as to the grounds on which the standard was laid down. He did not think the amendment was required. Mr. SKELTON said the amendment would not quite succeed in doing what its supporters wished. The main method which it was intended to apply to secure a

supply of pure milk free from infection was the initiation of a scheme for the cleansing of the herds, and he thought the House would agree that that was the right method. If the amendment were accepted it would go far to prohibit the pasteurization of milk. There was no intention that any development of pasteurization should take the place of the cleaning up of the herds as far as this clause was concerned. It might well be, however, that under the Bill it would be worth while to make some investigation into the proper method of pasteurization. To make the granting of money for the purpose of cleaning up the herds dependent on the milk reaching a particular standard of bacteriological purity and nutritional content took them very far from the vitally important purpose of the clause.

The amendment was withdrawn, and the report stage was concluded.

Health of the Country

Departmental Estimates

In the House of Commons, on June 20th, Sir HILTON YOUNG made his annual statement on the estimates of the Ministry of Health. He said there was an increase of £18,500 over the estimates of the previous year, as the result of additional work on slum clearance and rural water supplies. Between 1919 and 1934 the vote for the Ministry of Health had increased from £13,000,000 to £21,000,000. Of this latter sum £40,000,000 was the block grant to the local authorities, £11,500,000 the State expenditure on pensions, and £14,000,000 the State expenditure on housing. He desired to take advantage of the debate to give an account of the work of the Ministry during the year in relation to national health, and in particular of the standard of national physique and health as shown by the incidence of, and the resistance of the population to, disease. The general death rate of the nation showed a downward tendency; compared with five years before, the standardized death rate for 1932 was 10 per cent. lower after taking account of the fact that owing to the falling birth rate the population was annually getting older in its average age. During the last ten years 40,000 more infants under 12 months had been saved each year than were saved at the beginning of the century. The improvement was due basically to the education of the mothers of the country in the care of infants. He offered a tribute to the work done by the 1,340 ante-natal clinics in the country and the 2,820 infant welfare centres. In the thousands of health visitors and nurses from these centres they had an army for health from whose work they derived great advantage. In the last fifteen years the death rate of children under 5, from bronchitis, diarrhoea, and measles, has been cut by more than half. The death rate figures in respect of adults also showed the results of faithful work by the medical profession and the hospitals, and by the administrators of the public health services. Brilliant successes had been secured against disease conveyed by outside carriers like water or milk, or by some "bug" or insect, or by food. Difficulties arose when infection was carried from person to person. The line to work on to prevent such an infection was to see that overcrowding was avoided. When the Ministry said that overcrowding clamoured for a national remedy it did so not only for social reasons but to prevent disease. The health work of the country had won a brilliant victory against what seemed the most intractable of diseases—namely, tuberculosis. In the ten years up to 1933 the death rate from tuberculosis had decreased by 22 per cent. This was due, in the first place, to the knowledge that isolation was the principal preventive of the disease. It was due also to the general improvement of social conditions, and in particular to the improvement in child welfare and child care. However far the campaign against tuberculosis was carried they would never get rid of that disease until they were rid of the slums. The statistics of lunacy and mental deficiency gave a less favourable impression, but were deceptive. The increased average age of the population probably accounted for the increase in lunacy, which was a disease of advanced years. The apparent enormous increase in mental deficiency was due to better ascertainment. They were for the first time undertaking a great service for the segregation of mental deficients. A report had been published during the year on the difficult problem of the sterilization of the mentally unfit. As an individual he was impressed by the strength of the reasons

given by the committee in support of its recommendations. He was equally impressed by the unanimity, and, as an individual, he could not see the least difficulty in approving the recommendations. But Ministers must remember that this was a novel question and had not been thought out by the nation. Great organizations such as the Churches should have adequate time for thinking out this matter. It would be wrong for Ministers to suggest any national policy until they were quite sure they were making no proposal which did not offend against the national conscience. The maternity death rate, the Minister continued, had not decreased like other death rates during the last twenty years. By intensive study they knew the reason for this—namely, that there were bad local patches in maternity welfare work. He asked the responsible authorities in localities where the rate was above normal to realize the service that could be done to public health by following up inquiries into the cause of the local variation. The remedy was to ensure that the maternity service was as good in every locality as it was now in the best. The Ministry of Health pursued that policy, and could report that the country now had 147 more ante-natal clinics than a year ago, and that more births took place under the supervision of such clinics. There was also an increase in the number of maternity beds. Speaking generally of the health services of the country, the Minister said the work had been much assisted, and knowledge had been enormously increased, by the systematic review of the Ministry of Health. Since the Act of 1929 made that review possible the Ministry had already dealt with the health services of the counties, the county boroughs, and the metropolitan boroughs, and it was going on to deal with the smaller authorities. Two things were sought in these reviews besides a general increase in efficiency. First, it wished to press forward the movement inaugurated by the Act of 1929 for taking the treatment of disease out of the Poor Law, particularly by the transfer of institutions dealing with ill-health to the public health committees. In London sixty institutions had been taken out of the Poor Law. Mental cases, health cases, old persons, etc., were now treated in specialist institutions; this meant an increase in efficiency and also an increase in the area covered by such institutions. After a survey of the water supply of the country as affecting the public health, and of the measures which had been taken to relieve the shortage consequent on the long drought, Sir Hilton Young referred to the Government's housing activities, particularly its slum clearance campaign. In 1933-4, he said, they had secured the declaration of 2,250 slum areas, covering 37,000 houses and 172,000 people, apart from individual houses. The rate of progress was increasing monthly, and if the acceleration were maintained the White Paper programme would be achieved in five years. The present rate of demolition was not good enough to carry out the programme, and must be speeded up. During the year he had reorganized the housing work of the Ministry, and had put together town planning and housing into a single department, under an officer with the special status of Director of Housing. There was a town planning advisory council, so that expert persons could aid the Ministry. The staff of the Ministry had been increased to cope with this additional work. The year had seen a boom in the building of small houses in London. In the half-year ended March 31st, 1934, 44,000 more houses were built than in the preceding half-year, and 34,000 more houses were built by private enterprise. The country was now building at the rate of 300,000 houses a year, and at the rate of 155,000 a year for lower-paid wage-earners. That astonishing activity followed the Act of 1933, which altered the system from a general subsidy into a controlled subsidy for slum clearance. The production of houses was rapidly overtaking the shortage, but the reduction in prices would not be seen until the shortage was actually overtaken.

Opposition Criticism

Mr. ARTHUR GREENWOOD said he shared the Minister's sorrow that no impression had yet been made on the maternity death rate. If Sir Hilton could produce any scheme to reduce that rate he would have warm support from the Opposition. He criticized the Minister's past policy in respect of water shortage, and particularly the "massacring" of rural water schemes which the Labour Government had left behind in 1931. He also questioned the Minister's statement about

housing, and said that under the Housing (Financial Provisions) Act of 1933, which was to produce houses to be let at reasonable rents aided by guarantees from building societies, guarantees had been given up to the end of March this year in respect only of 1,631 houses. In addition, guarantees in respect of 8,400 houses had been promised or were in active negotiation. Private enterprise last year built more houses than it did the year before, but these did not compensate for the local authority's houses which had not been built owing to the change of policy.

Mr. GEORGE GRIFFITHS said the total number of deaths from tuberculosis in 1932 was 32,000. Dr. Bradbury, who had been closely investigating the disease in Jarrow and Blaydon for over two years, put the cause of tuberculosis under three headings: (1) the bad sanitary condition of houses; (2) overcrowding, which Mr. Griffiths contended the Ministry of Health promoted by sending auditors who drew attention to arrears of rent on municipal houses and forced housing committees to allow tenants to take a second family into the house; and (3) poverty, which Dr. Bradbury stated was the chief cause. Mr. Griffiths said, as chairman of the Tuberculosis Subcommittee of the West Riding County Council, that scores of miners' wives in that county got tuberculosis as the result of under-feeding. The medical officer of health for the West Riding stated that the health of the children in schools revealed surprisingly little evidence of malnutrition, but this result was obtained by the self-sacrificing bravery of the mothers. Sir George Newman had stated that at least half of the mothers who died in childbirth could be saved if they were properly looked after. The reason they died was that they had not the necessary strength. When wages went down in this country diabetes went up. There were in this country 196,000 diabetic people. As the 1932 Health Insurance Act said a man must forfeit medical benefit when out of work for two years and nine months, he calculated that out of 100,000 unemployed who had forfeited medical benefit there must be at least 400 diabetics who were deprived, through that Act, of the means of getting insulin. The Government had also taxed, at a rate of 25 per cent., the imported needles which the diabetics had to use. The latest price for a bottle containing 100 units of insulin was 1s. 10d., and some people had to take 500 units a week. He asked the Minister to promise that the diabetic who had been deprived of other medical benefits should continue to get insulin.

Grant for the Post-Graduate School

Captain ELLISTON mentioned the subject of health education, and asked the intentions of the Government towards the British Post-Graduate Hospital and Medical School. The £250,000 voted for these before 1931 had been reduced to £100,000, but leaders of British medicine hoped the Government would now take a more liberal view. These leaders wished to see in London a post-graduate medical school which would be a rallying point to medical men from all parts of the Empire and of the United States, who now went by hundreds to work in Paris, Vienna, Berlin, and Rome. Yet London had material to rival any capital in Europe, and the teaching could be supremely well given. Little could be done to improve the efficiency of the health departments of the country. It remained to teach the public to make use of the facilities provided by those departments. All the organization of health visitors, doctors, and laboratories, and all the expenditure on maternity and infant welfare, on nutrition, and on countering tuberculosis and venereal disease was wasted unless the public could be taught to use the facilities provided. The Minister had encouraged the Central Council for Health Education in its work, but that Council had no funds, and it was to be regretted that the Minister had applied in vain recently to the Association of Municipal Corporations and the County Councils Association to get their constituent bodies to support the Central Council. He asked the Minister to advise local authorities that a small expenditure to support the Council would mean a great saving in the cost of public health departments and in preserving the health of the people. It was also to be regretted that the magnificent unit for the production of moving pictures which had belonged to the Empire Marketing Board had not been retained for the purposes of the Ministry of Health. Some matters of great concern to the public—for instance, nutrition—were not dealt with by existing organizations. He asked the Minister, when

that cinema organization had finished its work for the Post Office, to consider whether it could produce for the Ministry of Health a series of films which would have great educational effect. He appealed to the Minister with regard to the local government officers, who were doing magnificent work. It was a hardship that superannuation was only in force in some areas.

The debate was adjourned. It is expected that medical members will have an opportunity, on its resumption, to discuss the sections of the Minister's speech dealing with public health.

Administration of the Tuberculosis Order.—On June 18th Dr. ELLIOT informed Mr. T. Williams that there were no qualified veterinary surgeons employed by the Ministry of Agriculture exclusively on duties under the Tuberculosis Order, 1925. That Order, in the main, was administered by

local authorities and their veterinary staffs. Imported cattle were examined in the landing place by the Ministry's veterinary staff for tuberculosis as well as for other scheduled contagious diseases. On this work eleven veterinary inspectors were employed full time.

East African Climate and Europeans.—Mr. LEWIS, on June 19th, asked Sir Philip Cunliffe-Lister if his attention had been called to a suggestion put forward by the Kenya Society for Race Improvement, supported by a number of "doctors in practice in Nairobi," that research should be undertaken into the effects of the East African climate on European residents. He also asked whether, in view of the bearing of this question on the problem of white settlement, the Minister would initiate some such inquiry. Sir PHILIP CUNLIFFE-LISTER replied that he knew nothing of this suggestion beyond what had appeared in the Press. Mr. Lewis would not expect him to form an opinion on such material.

Medical News

The Section of Obstetrics and Gynaecology of the Royal Society of Medicine has issued invitations to all members of the Medico-Legal Society to a meeting at 1, Wimpole Street, W., on Friday, July 6th, at 8.15 p.m., when there will be a discussion on "The Nature of Sex and its Sociological and Legal Implications." Members of the Medico-Legal Society are invited to take part.

The ninety-third annual meeting of the Royal Medico-Psychological Association will be held at the Guildhall, Northampton, on July 4th, 5th, and 6th, under the presidency of Dr. Daniel F. Rambaut. The annual dinner will be held in the Guildhall on Wednesday, July 4th, at 8 p.m.

As already announced, the Queen will open the new Students' Hostel at the London Hospital Medical College on Tuesday, July 3rd, at 3.30 p.m. The prize distribution will be on Tuesday, July 10th, at 3 p.m., by the Right Hon. Walter Elliot, LL.D., M.B., Minister of Agriculture and Fisheries.

Lord Derby will open the Medical Section, which has been established at British Industries House, Marble Arch, on Thursday, July 19th, at 3 p.m. This section comprises a comprehensive display of British-made hospital medical and surgical requirements, and also a twelve-bed ward, two operating theatres, and a number of accessory rooms. The theatre and ward block unit occupies over 12,000 square feet on the ground floor of the building, and is constructed from the plans of Messrs. Adams, Holden, and Pearson, who also are the architects for the new Westminster Hospital. The work is being carried out under the supervision of the Advisory Council of the Medical Section, of which the chairman is Dr. Alfred Cox. All members of the medical profession and others interested in hospital administration are invited to the opening ceremony and to use the Section afterwards. It will be open daily from 10 a.m. to 5 p.m.; Saturdays 10 a.m. to 1 p.m. Admission on presentation of professional card.

On Friday, July 6th, at 8.45 p.m., Dr. A. Salusbury MacNalty of the Ministry of Health will take the chair at the Princess Elizabeth of York Children's Hospital, Shadwell, E., for an address on "Charles Lamb" by Mr. R. Ellis Roberts, literary editor of *Time and Tide*. Visitors are welcomed.

A post-graduate course on diseases of the urinary tract will be held at the Hôpital Cochin, Paris, from July 2nd to 21st, under the direction of Professor Chevasu. Further information can be obtained from the Faculty of Medicine.

The Fellowship of Medicine's programme includes a lecture-demonstration on high blood pressure, at 11, Chandos Street, W., on July 10th, at 2.30 p.m.; a weekend course in general medicine and surgery at the General Hospital, Southend-on-Sea, on July 7th and 8th; a fortnight's course in dermatology at Blackfriars Skin Hospital from July 9th to 21st; a three weeks' course in urology at All Saints' Hospital from July 9th to 28th.

X-ray demonstrations for M.R.C.P. candidates will be given at 11, Chandos Street, on July 2nd, 4th, and 6th, at 8.30 p.m., and a demonstration of dermatological cases at the National Temperance Hospital, Hampstead Road, N.W., on July 14th, at 3 p.m.

A Leverhulme Research Fellowship has been awarded to E. Ashley Cooper, D.Sc., lecturer in chemistry, University of Birmingham, the subject of his investigation being the activity of enzymes of bacteria.

The issue of the *Urologic and Cutaneous Review* for June is devoted to prostatic resection.

The issue of the *Schweizerische medizinische Wochenschrift* for June 9th is a Festschrift in honour of the centenary of the foundation of Bern University, and contains portraits of the most distinguished professors of the medical faculty during the last hundred years.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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QUERIES AND ANSWERS

Results of Operations for Elephantiasis

"I. S. Q." would be glad of any information from surgical readers as to the end-results of either the Koadoleon or Sistrunk procedures for elephantoid conditions of the lower extremities.

Exercises for Lumbago

"W. T. H." writes: Can any reader give me information regarding curative or remedial exercises for lumbago? I seem to remember some discussion in the *Journal* about two years ago, concerning such exercises or manipulative movements. Is there any book dealing with the subject?

Pruritus with Jaundice

Dr. ALEX. P. GREEN (London, S.E.) writes: In answer to "P. J. M." (June 16th, p. 1103), I remember some years ago giving an injection of pilocarpine nitrate for just such a condition as he mentions, with very good results.

Orchitis After Prostatectomy

Dr. A. J. C. TINGEY (Hastings) writes, in reply to the inquiry by "X. Y. Z." (June 9th, p. 1061): Orchitis is a common sequel to *Bacillus coli* infection of the urinary tract. I suggest that a specimen of the patient's urine should be examined by a bacteriologist, and, if positive, the infection should be treated. Among the urinary disinfectants in general use pyridium, neotropin, and caprokol are convenient to prescribe, and are well tolerated.

*Income Tax**Motor Car Allowance*

"P. N. G." inquires what he should claim in respect of a car he has "recently" purchased.

* So far as out-of-pocket expenses for running costs—including licence, insurance, etc.—are concerned they should be treated as ordinary professional expenses, though the local inspector will probably insist on some set-off from the total expenditure for private use of the car. As the car has been purchased recently the deduction of those expenses will, presumably, not affect his current year's liability. In addition, he can claim the "depreciation" allowance, and as that is deducted from the profits as an allowance for the year of assessment, there is no reason why a claim for an allowance of 20 per cent. of the cost price should not be made as for the current year—or, at any rate, for the appropriate number of months between the date of purchase and April 5th, 1935.

Employment of Assistant

"A. M." has "engaged an assistant, at £400 per annum, living out." The assistant has a car of a more expensive make and involving a larger consumption of petrol and oil than "A. M." would have supplied. The yearly mileage is about 3,500. What arrangement is considered reasonable?

* This is, of course, one of the minor matters which it would have been well to have settled beforehand. As it is, the general basis of a suitable arrangement would seem to be that "A. M." should pay as a car allowance to his assistant what would have been the probable cost (including depreciation, repairs, etc.) of providing an adequate car for his use. Possibly some addition should be made on the ground that with a better car the assistant can take a larger share of the work, or cover his share more effectively. For income tax purposes "A. M." will, of course, deduct the amount he pays.

LETTERS, NOTES, ETC.

Ethyl Chloride Analgesia in Minor Surgery

Dr. JOHN FREDERICK BRISCOE (London, S.W.) writes: The contribution by Dr. A. Amoils under the above heading in your issue of June 23rd (p. 1143) I can thoroughly endorse. In the hands of the skilled and busy practitioner this method is simple and practical. But as regards dental extraction the operator *must* be an adept with his forceps. I had the opportunity of the friendship of Dr. Peake at the Durban Hospital, South Africa, two years ago, and I took him three Lascars with bad teeth and innumerable stumps in a pyorrhoeal mouth. Under the minute he removed fifteen stumps from one Indian subject without any upset whatsoever. Dr. Peake's practice is as follows: "He has a piece of lint 8 in. by 5½ in., with two drachms of the ethyl chloride sprinkled upon it. The patient is on an upright couch; the prepared lint is held a few inches before the face, and he is told to keep blowing into it. No gag is used. After about two minutes the stumps are skillfully and rapidly extracted. The head is turned aside over a small basin, and the mouth syringed out with pale Condy." Not least important, all instruments and hospital furniture are absent within a quiet room.

* We take this opportunity to correct a typographical error in Dr. Amoils' letter. In the description of the method of administration, "(eight-inch)" should read "(eighth-inch)."

Imported Insulin

Mr. J. WICLIFFE PECK, Ph.C., F.C.S., chairman of the firm of C. L. Blencard (1934) Ltd., importers of Danish insulin, writes: In your issue of June 9th, under "Medical Notes in Parliament," you give a report of the interview which the Chancellor of the Exchequer granted to a deputation from the Parliamentary Medical Committee, on the removal of the tax on imported insulin, and a further report of the debate which ensued in the House of Commons on the repeal of the Customs duty thereon. Certain statements which, according to your reports, were made on these two occasions are without foundation, and therefore I trust you will give equal publicity to the following comments. A member of the deputation is reported to have stated: (1) "The Danes had buildings and equipments free. Raw pancreas and labour were both cheaper." Danish raw pancreas is not so cheap as imported frozen pancreas from the Argentine or pancreas from English slaughterhouses. The other statements quoted are devoid of foundation. (2) "And their product exempted from income tax." This is a totally misleading statement. (3) "It was evident that the Danes were prepared to under-sell British manufacturers however much these reduced the price, and would so secure the British market." This assumption is both without foundation and absurd. In the House of Commons speakers are reported to have said: (1) "The committee should be asked to pass a clause which would probably have the effect of handing over to a foreign monopoly the manufacture of insulin." There is no foreign monopoly in existence, nor can I see the slightest prospect of one arising. (2) "Denmark was able to produce insulin more cheaply than we were, partly because of the subsidized nature of the manufacture, partly because of the ease with which the Danes could obtain the pancreas, and partly because of the cheapness of the pancreas." These suggestions are fictitious. (3) "This country produced finer and purer insulin than any other country in the world." It would be interesting to learn on what grounds the speaker makes this claim. I regard it as without foundation.

Medical Reunion in Vienna

With reference to the notice in this column on June 16th (p. 1104), the committee has decided to postpone the reunion of doctors in Vienna to July 29th, in accordance with general request. The meeting will therefore be held from July 29th until August 4th, instead of July 9th to 15th, as originally intended.

By Air to Bournemouth

For the benefit of members of the British Medical Association who may wish to travel by air to the Annual Meeting at Bournemouth next month, Provincial Airways, Ltd., of Croydon are prepared to reduce their fares from £2 10s. to 35s. single. To enable members to reach Bournemouth in time to attend the morning session of the Scientific Sections, a machine will leave London at about 8.30 a.m. Those who are interested should communicate direct with Provincial Airways, Ltd.

Corrigendum

In our review of *Individual Psychology and Practice*, published on June 23rd (p. 1122), the name of Dr. C. M. Bevan-Brown, one of the four contributors to this pamphlet, was incorrectly given.

As announced in our advertisement pages last week, a new company, Ciba Limited, 40, Southwark Street, London, S.E.1, is taking over the pharmaceutical department of the Clayton Aniline Company Limited, as sole concessionaires for the Ciba Brand pharmaceutical products. The formation of the new company coincides with the jubilee of the Ciba firm in Basle.

Watson and Sons (Electro-Medical) Ltd. (Sonic House, 43-47, Parker Street, W.C.2) have issued a new leaflet dealing with infra-red and radiant heat equipment, and including some new types of apparatus; also a price list of their medical arc carbons. Copies may be had gratis or application.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 36, 37, 38, 39, 40, 41, and 44 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 344.

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READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma; Epithelioma, Malignant Disease, New Growth, Sarcoma, etc.; Child and Infant; Bronchocele, Goitre, and Thyroid; Diabetes, Glycosuria, and Sugar; Eye, Ophthalmia, and Vision, etc.

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EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

Subacute Epidemic Hepatitis

IZARD, MAZIÈRES, and PONS (*Paris Méd.*, September 30th, 1933, p. 233) draw attention to a syndrome, hitherto undescribed and recently observed by them in the Toulouse district, characterized by febrile enlargement of the liver accompanied by changes in the blood picture and the serum, and appearing in a sporadic form or in small epidemic foci. Of the twelve cases observed, five occurred in a farm and a neighbouring brick kiln in the north of the department, three others in a family in the east-south-east, and four in a family in the neighbourhood of Toulouse. Of the twelve cases ten occurred at the end of August or beginning of September. Adults in the prime of life and children were affected. The blood changes consisted of an intense eosinophilia and positive Wassermann and Kahn reactions without there being any signs of syphilis. All other diseases, such as malaria, undulant fever, echinococcus disease, and amoebic hepatitis could be excluded by the appropriate tests. The immediate prognosis was good, as all but one recovered, but as the liver continued to be enlarged for several months after apparent recovery, a guarded outlook was indicated. It remained to be seen whether the condition described was a new special disease or a special variety of one already known.

2 Influence of Work and Sport on Heart Size

W. KNOLL (*Med. Welt*, September 23rd, 1933, p. 1345) denounces the oft-repeated verdict of Herxheimer that the heart is larger than normal in highly trained athletes. He gives figures showing that, in ski-runners, 60 per cent. have a normal transverse diameter, 30.5 per cent. less than normal, and only 9.5 per cent. greater than normal. W. THORNER (*ibid.*, p. 1346) investigated the influence of prolonged muscular exertion on dogs. He found that, compared with normal controls, these dogs had hypertrophied and dilated hearts and an increased stroke-volume. Progressive increase of the transverse diameter was observed radiologically. He argues that the same may occur in the human being. W. KAUFMANN (*ibid.*, p. 1347) writes on this subject from the radiological point of view. He believes that the transverse diameter of the heart may be increased by prolonged muscular exertion. Differences in size occur, and he recalls that the heart shadow is also some measure of the stroke-volume. This will account for the gradual diminution in size immediately after exercise. The picture given by the hypertrophied heart of the athlete is, he says, quite different from that due to hyperpiesis, all chambers being proportionately increased in size.

3 Aortic Diastolic Murmur in Hypertension

L. GRAVIER (*Journ. de Méd. de Lyon*, September 20th, 1933, p. 565) refers to recent researches which prove that "functional" aortic incompetence can exist, and also that, even in organic regurgitation, the diastolic bruit may disappear. He states that this may be explained in slight cases by variations in blood pressure, by cardiac failure, with fall in blood pressure, or by simple changes in posture. There are also cases of "organic functional" regurgitation, in which the lesion is insufficient to produce a murmur. Gravier does not admit that these are due sometimes to enlargement of the aortic orifice. An attack of paroxysmal tachycardia or of complete arrhythmia may also abolish a diastolic murmur. In some cases treatment may assist the disappearance of the bruit, and result in a functional cure. The author quotes a case showing that an aortic diastolic murmur may disappear in spite of persistent hypertension. Further examples are cited in which, after disappearance of aortic diastolic

murmurs during life, necropsy has revealed serious valvular lesions. In such cases it is impossible to speak of "cures," but it can be stated that the functional consequences of the lesion are neutralized by valvular adaptations. It appears that this occurs only in aortic regurgitation following endocarditis—there is no record of such valvular adaptation in syphilitic aortitis. It is obvious in such circumstances that the fixation of the valves to the aortic wall by gelatinous exudate prevents the functional restoration of the valves.

4 Diaphragmatic Hernia and Angina Pectoris

MOSLER and HAAS (*Deut. med. Woch.*, September 1st, 1933, p. 1353) record an investigation on the frequency of hernia through the oesophageal hiatus and its possible relation to angina pectoris. In 1,500 radiographic examinations of the stomach this type of hernia was found forty-nine times, none of the cases being of the short oesophagus type. The average age was 61 years, and only two patients were under 50 years of age. The authors state that a dilated oesophageal ampulla needs careful distinction from hernia. Angina pectoris co-existed in twenty of the forty-nine cases, and was more frequent with the larger herniae. The cases were grouped into: (1) herniae the size of an egg or greater (nine cases, five of which had angina); (2) those the size of a walnut (eleven cases, five with angina); and (3) those the size of a cherry (twenty-nine cases, nine with angina). In one case there was also oesophageal dilatation and dysphagia.

Surgery

5 Supracondylar Fracture of the Humerus in the Young

A. BECK (*Zentralbl. f. Chir.*, September 23rd, 1933, p. 2242) states that conservative treatment has given him ideal anatomical and functional restitution in twenty-nine cases, treated in four years, of supracondylar fracture of the humerus of children; he is therefore averse from operative reposition and bone suturing. These cases had the common backward displacement of the lower extremity, and included three old unreduced fractures (nine to fourteen days). In old-standing cases Beck stresses the importance of securing correction, and of prolonged, patient manual extension (half an hour sometimes being necessary). The traction is applied in the direction of the long axis of the upper arm to the lower arm, which is held flexed to a right angle and pronated to relax the pronator and flexor muscles attached to the internal condyle. During the extension careful massage is performed. After reposition plaster is applied with the patient prone, the elbow at a right angle and the forearm vertical. For a further eight or ten days the child is kept in bed in the same position, the splint being suspended from a hook. Plaster is worn for the following three or four weeks, and special treatment is unnecessary, free movement gradually returning with ordinary use of the elbow.

6 Age and Sex Incidence of Chronic Appendicitis

S. WINEROF (*Nord. Med. Tidsskrift*, September 23rd, 1933, p. 1121) publishes a study of 209 cases of chronic appendicitis observed at the communal hospital of Ullevaal in Oslo. He classifies them in three main groups: (1) chronic appendicitis with a history of one or more acute attacks, operated on in a free interval; (2) chronic appendicitis without a definite history of an acute attack, and without anatomical or functional involvement of the large intestine; and (3) chronic appendicitis associated with local or general involvement of the large intestine. Striking

features common to all three groups were the low average age (22, 23, and 26 years respectively) and the preponderance of female patients (81, 97, and 84 per cent. respectively). In an earlier study Widerøe found that the sex incidence of acute appendicitis was approximately equal (women 47 and men 53 per cent.). This striking difference in the sex incidence of acute and chronic appendicitis may possibly be explained by the preference shown by women for operations during a free interval. If this is so, the greater liability of women to suffer from chronic appendicitis is more apparent than real. A survey of the symptoms in the three groups showed that dyspepsia was not a characteristic symptom in any group, but was most common in the third group. The results of appendicectomy were good in the first group, less so in the others. According to this author, when the large intestine is involved appendicectomy should be only a link in the treatment, and if surgeons neglect the medical treatment of the colon, they must be prepared to find their operative results most disappointing.

7 Transurethral Prostatic Resection

G. J. THOMPSON (*Amer. Journ. Surg.*, September, 1933, p. 421) considers that this operation can be used in all cases of prostatic hypertrophy in which it is possible to pass an operating instrument. In a series of 205 cases operated on by the transurethral route the majority were beyond the sixth decade of life, and many were in extremely poor physical condition. The relief afforded in many cases of otherwise inoperable carcinoma was very encouraging, and urinary function was restored to many patients who had been wearing suprapubic tubes or leading a catheter life rather than undergo the risk of prostatectomy. The low mortality rate and good immediate results were found to justify the marked technical difficulties experienced in operating on the larger glands. In certain cases of badly infected bladders (with or without diverticula) a primary suprapubic operation was found necessary. Thompson fully describes the technique of the operation: in most instances the Braasch-Bumpus punch was used. In 89.5 per cent. of cases relief was afforded by one transurethral resection; in the remainder two, and sometimes three, resections were necessary. Severe post-operative haemorrhage after the tenth day occurred in 5 per cent. of cases and epididymitis in 8 per cent. The period required for complete healing was variable: when the resection was extensive it was usually a little less than three weeks. There were no deaths in this series, and a total of 236 cases have been operated on in a year without a fatality. As the material is comparatively recent it is too early for true recurrence to have developed, and at present only five of the series can be classed as cases of recurrence. Three of these had benign hypertrophy for which punch operations had been performed several years previously; the other two had carcinoma, and resection was performed a second time some months after the initial operation.

8 Tumours of the Testicles

A. PETERSON and W. E. COSTOLOV (*Urol. and Cut. Rev.*, October, 1933, p. 720) record forty-one cases of tumours of the testicles in patients aged from 16 to 59. Pathologically the tumours were grouped as teratomas (mixed cell tumours) and seminomas (single cell tumours). The cases were classified in the following three groups: (1) Thirteen patients now living and free from clinical evidence of the disease, in whom no metastases were found on the original examination and upon whom orchidectomy only was performed, followed by prophylactic radiation with x rays. (2) Three patients alive and apparently free from disease, upon whom an orchidectomy was performed and who showed signs of recurrence. (3) Twenty-five patients who had died. In twenty-four of these orchidectomy had been performed, and in one orchidectomy and radical resection followed by varying amounts of radiation. Sixteen patients, therefore, were alive and free from disease for a time ranging from ten months to over ten years. Metastases might, the author points out, occur later.

Therapeutics

9 Malachite Green as a Skin Disinfectant

E. FIORINI (*Il Policlinico, Sez. Prat.*, October 2nd, 1933, p. 1563) has carried out experiments to ascertain whether it is possible to replace tincture of iodine in the preparation of the skin for operation by something equally efficacious and less irritating. His main objections to iodine are that it is irritating to the surgeon's eyes and to parts such as the external genital organs of the patient, and that in persons whose skin is hypersensitive it sometimes leads to vesication, with the consequent danger of post-operative suppuration of the skin in the neighbourhood of the wound. Experiments made with malachite green show that this dye is devoid of these disadvantages, and that it is a powerful germicide when applied to the skin. Its activity in alcoholic solution increases with the concentration of the dye, and, within limits, with a decrease in the strength of the alcohol. After a number of trials, in which cultures were taken after varying times from skin which had been treated with malachite green and with iodine, the author concludes that the most satisfactory strength is a 10 per cent. solution of the dye in 40 per cent. alcohol. This solution has approximately the same germicidal activity as tincture of iodine without the objectionable properties of the latter, and is therefore recommended for trial by surgeons.

10 Treatment of Malignant Diphtheria

During the last two years A. STROË (*Arch. f. Kinderheilk.*, September 29th, 1933, p. 86) has observed a large number of cases of diphtheria and scarlet fever characterized by a necrotic or gangrenous condition of the fauces. Cultures of the throat in the cases of diphtheria yielded large quantities of *B. perfringens*, and an anaerobic coccobacillus, as well as diphtheria bacilli. As a result of his experiences in seventeen cases, Stroë concludes that in many instances malignant diphtheria is due to the association of the diphtheria bacillus with anaerobic organisms, and that unexpectedly good results may be obtained by the combination of diphtheria antitoxin and antiganrene serum from the onset of the disease.

11 Transfusion in Post-operative Thrombophlebitis

R. BOURG and LAVAND'HOMME (*Bruxelles-Médical*, October 8th, 1933, p. 1451) do not consider that post-operative thrombophlebitis is necessarily a contraindication to transfusion in chronic anaemia, and fully report two cases in which progressive cure attended this measure. Both patients suffered from chronic anaemia caused by repeated haemorrhages, due in one case to uterine carcinoma, in the other to a uterine fibroma. In both, thrombophlebitis of the iliac vein, with marked accentuation of the anaemia and deterioration in the general condition, supervened after total hysterectomy. Despite persistence of the extensive phlebitis, a transfusion of 250 to 300 c.cm. of citrated blood (3 grams of citrate), and 400 c.cm. of citrated blood (3 grams of citrate) with 100 c.cm. of physiological serum, were given to each patient respectively. This was the only treatment employed. Marked improvement in the haemic conditions and general state and in the phlebitic lesions rapidly ensued, and cure was progressively established. The authors assert that chronic anaemia predisposes to post-operative phlebitis, which results both from the blood dyscrasia and from the usual factors of operative traumatism and infection. The former is often but slightly evident, though many cases of uterine fibromata are accompanied by chronic inflammatory lesions of the adnexa. Infection, due to the intrauterine lesions, was the probable factor in the present cases. The dangers of this procedure result from three causes: incompatibility between the patient's and donor's blood, with consequent embolisms; marked increase of the blood coagulability after transfusion in phlebitis, a condition in which it is already greatly increased; and increased blood pressure due to the introduction of a large amount of fresh blood, which appears to increase the risk of embolisms.

Jan. 6, 1934]

EPITOME OF CURRENT MEDICAL LITERATURE

[To be continued 3

Dermatology

12 Toxic Action of Metals in Alepecia Areata

Metallic intoxication is corroborated by MAYER, THORNTON, and KISSACKY (New York State Journ. Med., August 15th, 1933, p. 941) to play an important part in the production of alopecia areata. The similarity between the type of baldness artificially produced by thallium and that of alopecia areata suggested that common metals might play a part in the production of the disease. Metals tend to accumulate rapidly in the reticulo-endothelial system, and the result of this transferred to the vegetative nervous system produces various symptoms, notably abnormal local metabolic activity. Lead and cyano, and increased vascular permeability from toxic arsenic are readily available for absorption from foods, drugs, and liquids. In a series of 150 cases of alopecia areata, lead or arsenic was found in varying abnormal amounts in the hair, blood, or urine in as many as 75.75 per cent of cases. The laboratory data obtained seem to indicate that damage to the reticulo-endothelial system caused by common metals plays an important part in the production of alopecia areata. As a method of treatment of the disease it is suggested that all sources of metallic absorption, such as lead pipes, and the habit of spraying of toothbrushes with arsenic, should be avoided. It is stated that metallic elimination may be aided by the administration of 1 to 3 grams of pure crystalline sodium thiosulphate three times a week.

13 Enterococcus Dermatitis in Infants

C. CHLOE (Thèse de Paris, 1933, No. 146), who records an illustrative case, even of which are original, states that the dermatitis on the buttocks of infants, which is regarded as a form of erythema, is due to the enterococcus. Treatment by an anti-enterococcus vaccine without any local treatment produces a rapid and complete cure not only of the skin condition, but also of the digestive disturbance accompanying the dermatitis. The intradermal, buccal, or rectal route may be employed, the buccal being the most convenient. Vaccine treatment may often be accompanied by prescription of a suitable diet.

14 B. coli Vaccine as a Local Application

R. RÖDT (Munch. med. Woch., September 22nd, 1933, p. 1476) discusses dermatological conditions of the perianal region. He considers that the eczematous state so commonly seen there starts as pruritus; the patient then scratches, producing excoriation which becomes infected with *B. coli* from the rectum and leads to eczema. He has treated such cases with "posterior-anal" vaccine. This may be obtained as an ointment or as a suppository. In his hands this form of therapy has given good results in what is usually an obstinate condition. Local applications of vaccine have the support of Besredka's well-known work on tissue immunity.

15 Thrombophlebitis Migrans

A. BUSCHKE and A. JOSEPH (Klin. Woch., September 23rd, 1933, p. 1483) describe the case of a healthy man of 43 years suffering from recurrent thromboses in the more superficial veins of both legs, which had resulted in a high degree of venous stasis. All the usual forms of treatment were tried without improvement. Eventually 3 grams of ung. hydrarg. were inunctioned daily, and this was rapidly followed by improvement, no further thromboses occurring.

16 Animal Carriers of the Ringworm Fungus

A. M. DAVIDSON and P. H. GREGORY (Canadian Med. Assoc. Journ., September, 1933, p. 242), discussing the transmission of ringworm infection from animals to children, state that in Winnipeg, while more than half the cases of microsporon ringworm were due to the human fungus (*Microsporon audouinii*), two-thirds of the separate outbreaks were due to *M. felinum*, which causes disease

mainly in cats, dogs, and horses. They were able to trace infection definitely from a kitten to a boy, and found that the hair of cats infected with *M. felinum* exhibited a fluorescence in ultra-violet light similar to that found in infected human hair, and the extension of the fluorescence test for the detection of microsporon infection in cats and kittens suggested also to pet animals which have been in contact with unweaned infected children. The authors find that apparently healthy cats may yet be carriers.

Obstetrics and Gynaecology

17 Foetal Danger Signs during Labour

A. MAYER (Munch. med. Woch., October 6th, 1933, p. 1538), discussing two cardinal signs of impending danger to the foetus—lowering of the foetal heart rate and passage of meconium—recalls recent observations which have shown that a fall in the heart rate of below 100 in the intervals between uterine contractions—especially if this occurs during three intervals—is of grave import. If this rate persists for forty minutes the child will, it is stated, probably die, though the author quotes two cases of retarded foetal heart rate in which the outcome was successful. The second danger sign—escape of meconium—must be differentiated from pre-mature amniotic fluid due to previous passage of meconium. Any solid masses indicate that evacuation has been recent, and that asphyxia threatens. While stressing the danger of these signs, Mayer believes that in many cases in which instruments are applied on account of indications of foetal danger, delivery would have occurred normally, and that, unless the danger signs are definite and persistent, reasonable delay is preferable to precipitate interference.

18 Treatment of Habitual Abortion

H. STÄBIL (Zentralbl. f. Gynak., September 23rd, 1933, p. 2226) discusses the treatment of repeated abortion in the same patient, in the absence of syphilis, trauma, or disease of the genital organs. He has been able, in many cases of these habitual abortions, to secure the carrying of the next pregnancy to term by injecting at fourteen days' intervals, subcutaneously or intramuscularly, 10 cc. of serum from healthy pregnant subjects. The treatment is based on the hypothesis that normal pregnancy serum contains bodies which decrease contractility of the pregnant uterus. That these are derived from the corpus luteum is suggested by the antagonism which Knaus has described between the anterior pituitary lobe and the corpus luteum, and also by Reynold's experimental demonstration that injection of urine from pregnant subjects diminishes uterine contractions.

19 Diathermy in Chronic Endocervicitis

A. STÄBIL (Arch. Uruguayos de Med., Cir. y Esp., September, 1933, p. 351), having observed fifty cases treated by diathermy, states that cure can almost always be effected if simple precautions are observed. Anaesthetics are unnecessary, and, except for drying the vagina with gauze, the patient need not be prepared. Stäbils uses a high-frequency apparatus furnished with a rheostat which is set at 24 or 3. The current is controlled by a mercurial interrupter. He ignores the milliamperemeter owing to its too constant variations. The active pole, terminating in a metal electrode, is introduced into the cervical canal until it reaches the os internum. The current is turned on only for a few seconds. The appearance of the tissues around the os externum indicates the effect produced in the canal. They become of a pearly yellow hue, which soon loses its lustre and changes to a dull grey. When this is seen the electrode is withdrawn and the parts touched with a pledget soaked in antiseptic

oil. The patient is allowed up, and the vagina is irrigated with Carrel-Dakin solution for some weeks. The cervical canal is dilated periodically with a soft rubber bougie for some months. The new mucosa is smooth, soft, non-fibrous, and contains but few glands. The treatment is contraindicated by pregnancy, corporeal endometritis, all acute genital or perigenital affections, neoplasms of the cervix (suspected or outstanding), or the presence of the catamenia. Chronic adnexitis, if quiescent, offers no contraindication, but the patient should keep her bed for some days. The colposcope—a kind of binocular microtelescope affording a good view of the cervix at from 10 to 15 cm. from the objective—is a very valuable help when observing the lesions and the progress of cure.

20 Dangers of Induced Abortion

P. KÜHNEL (*Ugeskrift for Læger*, September 21st, 1933, p. 1013) publishes a study of 200 hospital cases in which, since 1919, abortion was induced on medical grounds. The most common indication for induction was pulmonary tuberculosis (101 cases). There were two operative deaths; severe haemorrhage occurred in at least 8 per cent., and infections in 18 per cent. Dilatation of the cervix in 158 cases led to tears in eighteen, and the percentage associated with accidents was 22. Among these "accidents" are perforation of the uterus, which occurred in two, and possibly three, cases. Hegar dilatation being responsible. Classification, according as the operation was undertaken by the professor in charge of the hospital or by one or other of his assistants, showed how much the outcome of the operation depended on the dexterity and experience of the operator. In the face of all the mishaps, and even misfortunes, experienced in these 200 hospital cases, the author asks what would have happened to them in the hands of unskilled operators working under less satisfactory sanitary conditions. Kühnel submits his material and the conclusions drawn from it to those of his colleagues who, in discussions at medical meetings, treat the induction of abortion with "the easy airiness of ignorance," and imply that such an undertaking is simple and safe.

Pathology

21 B. coli Septicaemia in a Newborn Child

F. ATHENSTAEDT (*Zentralbl. f. Gynäk.*, September 30th, 1933, p. 2302) records a case of *B. coli* septicaemia in the child of a mother who had had a severe attack of pyelitis just before term. The infant appeared well until the third day, but died on the fourth day, six hours after the appearance of a hypogastric cellulitis which respected the navel. At necropsy *B. coli* was found in the meninges, heart, blood, liver, and peritoneum, and the serous membranes were inflamed. Transplacental transmission of *B. coli* has, the author states, been demonstrated in other cases, including one of Sennewald in which delivery by Caesarean section in a patient with pyelitis and ileus gave a stillborn foetus having *B. coli* in blood from the heart. Athenstaedt points out that *B. coli* sepsis in the newborn has an unfavourable prognosis, and he recommends injections of maternal blood.

22 Humidity in the Propagation of Diseases

A. AIMES (*Rev. d'Hyg.*, October, 1933, p. 614), in a discussion of this problem, concurs with Trillat in his belief that the composition of the air and the gases diffused through it acts upon the microbic contents, and that the hygrometric degree of the air is important in bacterial diffusion and multiplication. Trillat has shown that the fine vesicular droplets of atmospheric aqueous vapour form a veritable culture medium. Dry dusts are arrested and fixed by the mucus of the nose or pharynx and by the vibratile cilia of the trachea; droplets, owing to their spherical shape and superficial tension, traverse the mucosa without adhering to it.

Though not always pathogenic if the air is pure, humidity renders the subject more susceptible to external conditions by reducing the peripheral circulation and modifying conductivity to these conditions; this is said to be especially true of "cold" humidity. It is stated that rain, though purifying the atmosphere, has also a pathogenic action. Enteric fever is more frequent in rainy periods following dry ones, while the morbidity of scarlet fever, measles, and diphtheria, and the mortality in tuberculosis, are greater in wet years. Nugge has noted the frequency of influenza and respiratory diseases during wet seasons. Eggs, especially in towns and manufacturing centres, have a pathogenic action owing to the deleterious gases they contain, and the recent outbreak in the valley of the Meuse is cited as an example of this. Atmospheric ozone plays a protective part against the harmful action of solar rays, in particular the ultra-violet. Its exact action is undetermined; it, however, purifies the air by ridding it of bad odours, putrid gases, and volatile organic matters, and is thus indirectly bactericidal.

23 Iodine Content of the Blood

According to G. M. CURTIS, C. B. DAVIS, and F. J. PHILLIPS (*Journ. Amer. Med. Assoc.*, September 16th, 1933, p. 901) the iodine content of human blood is an index of thyroid function. Normally about 0.012 mg. per 100 c.c., it is raised in thyroid hyperfunction and lowered in hypofunction. It is always elevated by any form of thyroid medication. In exophthalmic goitre it was found to range from 0.016 to 0.04, and in cases of congenital cretinism or post-operative myxoedema from 0.007 to 0.011 mg. The effects of treatment in these cases were indicated by corresponding changes in the blood iodine figures. After an adequate thyroidectomy, followed by the usual abatement of the characteristic symptoms together with the subsequent fall in the basal metabolic rate, the blood iodine was found to fall to a low normal rate, in the absence of any iodine medication. In patients with a non-toxic goitre the iodine content is usually within the normal range. In most diseases other than those of the thyroid gland the iodine figure is normal, but in acute severe infections, such as septicaemia, it is raised, as also in lymphatic leukaemia. A rise occurs also in the early stage of menstruation. The author believes that the level is maintained by thyroid action, and that its estimation has valuable diagnostic and therapeutic possibilities. The urinary iodine content was found to rise similarly with increased thyroid activity or iodine medication.

24 Freund Dermal Reaction in Malignant Disease

J. CHOLEWA and ŠT. CERNELC (*Wien. klin. Woch.*, September 1st, 1933, p. 1072) review the evidence that cancer is a disease in which local neoplasia is accompanied by general biochemical changes which make possible the serological diagnosis of the condition. Freund has found in the serum of non-cancerous patients substances which cause lysis of tumour cells. These lysins are absent from the blood of gravid women and patients with malignant disease. These substances have a high degree of specificity; thus serum from a patient with carcinoma will still contain lysins for sarcoma, and vice versa. The lysins appear to be elaborated in the bowel. In addition, the serum of cancer patients contains a substance which protects the cancer cells against the lysis by the serum of non-cancerous patients. Associated with these serological changes are changes in the blood chemistry: the blood sugar is raised in carcinoma and the peptone content of the serum in sarcoma. Freund has isolated from the intestine a "carcinoma fatty acid" which gives a positive dermal reaction in carcinoma. Cholewa and Cernelc, the present authors, have used this reaction in fifteen patients with carcinoma and twenty-seven non-cancerous controls. All the former gave a strongly positive reaction; twenty-five of the controls were negative, and of the two who gave positive reactions one had diabetes mellitus, and thus a hyperglycaemia similar to that found in carcinoma, and the other was thought possibly to have a symptomless carcinoma causing wasting.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

25 Undulant Fever in a Child

W. HUTTENBACH and K. ERBE (*Arch. f. Kinderheilk.*, September 24th, 1933, p. 63), who record a personal case, illustrate the rarity of undulant fever in early childhood by the fact that they could find only thirty cases on record. In almost all the cases the diagnosis was established by the agglutination test, and in some instances by the complement fixation test. In several cases the children showed either no clinical evidence of disease or no symptoms suggestive of undulant fever. In the authors' case, which occurred in a girl aged 3½ years, the disease was due to consumption of raw milk. The child was admitted to hospital with the diagnosis of septicaemia of umbilical origin. Death took place after six months' illness, which was complicated by nephritis and pneumonia. The diagnosis was established by the agglutination test before the characteristic undulant fever developed. The case was remarkable for being the first in which *B. abortus* was cultivated from the blood in a child under the age of 5 years.

26 Endemic Typhus Fever

A. C. ELLIS and J. R. F. ROSEMAN (*New England Jour. Med.*, September 14th, 1933, p. 542) record their observations on ten cases of endemic typhus fever admitted to the Beth Israel Hospital at Boston from 1929 to 1932 inclusive. The cases corresponded in all essential features to the condition known as Brill's disease. All the patients were residents of separate areas of Boston or its suburbs, and had lived in the United States for many years. In no instance was more than one person in a household affected. Six of the ten cases occurred during the warm months of the year. A positive Weil-Felix reaction was obtained in eight cases. In several cases there was a slight rise in the total protein content and number of lymphocytes in the spinal fluid during the febrile period. The writers conclude that there is a rather widespread reservoir of the disease in and about Boston, and that unrecognized cases are occurring in the community.

27 Colds in Arctic Regions

J. FINN (*Tidsskr. f. d. Norske Lægefor.*, September 15th, 1933, p. 973) has investigated the incidence of catarrh of the upper respiratory passages and influenza-like conditions in Long Year town, latitude 78°, in Svalbard (Spitzbergen), where he has been attached since the summer of 1930 as medical officer to a coal mine. The community consists of about 440 workers, women and children bringing the total up to about 550. They are completely isolated between the middle of October, when the last boat leaves Svalbard, and the middle of May, when the first boat of the year arrives. Records kept of the incidence of catarrhal infections throughout the year showed two main peaks. By far the highest peak, both in 1930 and in 1931, occurred early in the summer and coincided with the arrival of the first boat of the season. A curious observation was the frequency, on these occasions, of colds among the new-comers; among fifty-one new-comers from the first two boats, there were as many as seventeen who caught colds on coming to Svalbard. The residents also suffered greatly on the same occasions. During the remainder of the summer there would be a decline in the incidence of colds, followed by a second peak in the autumn, coinciding with the departure of the last boat. This peak may be connected with the increased interchange of contacts due to the departure of the last boats. After this autumn peak there was a gradual decline in the incidence of colds throughout the

winter, but at no time was the community completely free from colds. Having obtained a stock of anti-cold vaccine from the State Institute for National Hygiene in Oslo, Finn administered it as a prophylactic to those of the community who did not object to it. The objections ceased to continue. The 165 persons who were treated did not, however, appear to be more immune to colds than the controls.

28 Recurrent Herpes Zoster

H. GRUNDGESEN (*Monat. med. Woch.*, September 15th, 1933, p. 1437) gives reasons for the belief that this disease occurs more frequently than has been hitherto believed. In recent years numerous recurrences have been reported; one medical man had eleven attacks during 1½ years, always in the left sternal region. Relating his own personal experience, the author states that since 1928, after any attack of zoster, he has suffered from herpes simplex. In addition to this he had an attack of right cervical herpes zoster. The diagnosis was confirmed by a colleague. In 1931 he had another attack, whilst a colleague had an extraordinarily severe attack of varicella and left cervical herpes zoster. In the spring of 1932 the author had a sudden attack of severe (right) lumbar neuralgia, followed next day by typical herpes zoster, which healed, leaving characteristic pigmented scars.

Surgery

29 Fracture-dislocation of Mandibular Condyle

K. POST (*Zentralbl. f. Chir.*, September 9th, 1933, p. 2118) states that this injury is more common than is generally recognized, and pleads for conservative methods of treatment, which were successful in spite of insufficient anatomical correction near the temporo-mandibular joint in a case here described. He recommends restitution of dental alignment by splinting, and the allowance of a moderate degree of motion at the condyle, and finds that a good functional result is obtained by attending to the body of the mandible and awaiting natural cure of the fracture-dislocation of the condyle. Operative reposition, bone suture, and excision of the condyle are, he believes, unnecessary.

30 Radiology of Femoral Head in Infants

Stating that the epiphyseal nucleus of the femoral head becomes calcified and demonstrable in radiographs only after the third year of age, and that the equal opacity of the head and the surrounding tissue makes radiographic failures frequent, J. CORRY (*Le Scalpel*, September 23rd, 1933, p. 1482) finds insufflation of air into the articular capsule of value. By this procedure radiographs reveal the exact contours of the cartilaginous bones, the articular contours, and those of the contained organs with their relations to each other. He uses a vaselined sterilized 10 c.cm. Luer syringe and a needle with a stylet 5 cm. long and 1 mm. thick, having a rather short bevel. After locating the trochanter, femoral artery, Fallopian arch, anterior superior iliac spine, and "right anterior muscle," he introduces the needle vertically to the head midway between the femoral artery and the prominence formed by the muscle, until it meets a hard body; it is then slightly withdrawn and directed more obliquely to penetrate the capsule. One c.cm. of air is now injected. If great resistance is met, the needle has entered cartilage; if there is none, the muscle or cellular tissue has been penetrated. Slight resistance indicates penetration of the capsule, and 5 to 10 c.cm. of air are then injected without force to avoid

escape of the air through the puncture. The needle is now withdrawn, the piston being kept under pressure before taking the plate. In some cases this technique is impossible, and the needle must be introduced laterally outside the muscle, along the neck, and into the capsule between the cotyloid roof and the head. This measure is without danger, necessitates no anaesthetic, and causes no after-effects. It is indicated in cases of traumatism (epiphysiolysis), malformations (congenital luxations), and bone diseases (rickets, achondroplasia, osteochondritis, and coxa vara).

31 Perforated Gastric and Duodenal Ulcer

L. ROUSSELIN (*Lyon Chir.*, September-October, 1933, p. 543) gives a comprehensive review based on sixty-six cases operated on for perforated gastric or duodenal ulcer. Although the condition is found at any age, the highest proportion of cases occur in middle life, and usually in men. In the series reported only three cases occurred in women. Patients may be divided into three classes: those in whom the perforation is the first indication of any gastric lesion, those who have had symptoms for a few days or weeks, and those—comprising the majority of cases—who have had gastric trouble for several months or years. In the last group the perforation usually occurs during a particularly acute attack. The most common site of perforation is the duodenum, where it occurred in fifty-one of the reported cases. The remaining cases were found in the pyloric region of the stomach and on the lesser curve in equal frequency. The size of the perforation may vary from a pin's head to a franc; the smallest are found in the duodenum and the largest in the stomach. From an operative point of view the size of the opening is of little importance, as it is usually surrounded by a zone of induration which can only be sutured with difficulty. The mortality varies according to the site of the lesion. Out of fifty-one duodenal perforations there were thirteen deaths (25 per cent.), there were seven pyloric perforations with four deaths (57 per cent.), and seven perforations of the lesser curve with five deaths (71 per cent.). The operative treatment should be as simple and quick as possible. Suture of the perforation alone is the best procedure, and it is only when the duodenum is narrowed that a gastro-enterostomy should be added. Drainage to the pelvis was instituted in all but one case. Emphasis is laid on the importance of early operation. When this was carried out in under six hours the mortality was only 17 per cent., whilst over twenty-five hours the mortality was 90 per cent.

Therapeutics

32 Control of Diphtheria Epidemics

M. J. HOLMES (*Med. Journ. of Australia*, September 16th, 1933, p. 366) records an investigation of children during an inter-epidemic season of diphtheria. He took throat swabbings from patients exposed to diphtherial infection, and from others. The results showed that exposure to definite infection had not greatly affected the percentage of positive swabs, but that in the exposed group there were many who were carriers of virulent organisms, whereas in the non-exposed group no virulent organisms were present. The necessity of following up swabbing with virulence testing is, he argues, obvious. It is suggested that the frequency and massiveness of the infection and the physical condition of the child may be as important as the virulence of the organism in the determination of the development of the clinical manifestations of the disease. If the dose, although virulent, is small, a child who is apparently susceptible and harbours the organisms may be able to develop immunity in time to forestall development of the disease. The value of Schick testing and active immunization against diphtheria during an epidemic is emphasized by C. S. BARBOUR (*ibid.*, p. 363), who describes a campaign carried on in Port Pirie in 1932. The occurrence of the epidemic

destroyed public apathy, and consent for testing and immunization was readily obtained. Barbour considers that it is possible to dispense with a control for the Schick test if time is a factor of importance. Full injections of anatoxin confer absolute immunity on Schick-test standards in 90 per cent. of cases, and an increased degree of immunity in the remainder. Even small doses cause the development of some immunity, but it is not until doses of 0.1 and upwards are reached that the immunity is appreciable with only two injections. The author adds that it may be expected that anatoxin will give rise to no general reaction, and to no local reaction of serious import, provided that the dosage is regulated by the previous skin test. In young children, in whom immunity is most desirable, anatoxin sensitiveness is exceptional.

33 "Solvitren" in Graves's Disease

H. GEUTING (*Med. Klinik*, September 22nd, 1933, p. 1316) has treated a series of cases of Graves's disease by injection of "solvitren," a proprietary preparation of decolorized animal blood. To avoid anaphylaxis, injections of the drug prepared alternately from sheep and ox blood are used. The rationale of the treatment, which was first advocated by Bier in 1901, is that whole blood is the most efficacious of all polyglandular products, and that the body can abstract from it just those hormones that it needs. Geuting claims remarkable success with this form of therapy—great relief, objective and subjective, being conferred upon all his cases. Weight was regained, basal metabolism was reduced, and tachycardia diminished. None of his twenty-three cases required operation after a course of this treatment.

34 Gold Salts in Pulmonary Tuberculosis

German and French authorities have recommended gold salts in oily suspension in the treatment of pulmonary tuberculosis on the grounds that they are better tolerated, and that the action of the salt is thereby prolonged. Dumarest and Mollard have especially advocated solganal B—particularly in debilitated subjects—in those intolerant to other auric preparations, and in patients needing very active treatment. A. GIRAUD (*Presse Méd.*, September 20th, 1933, p. 1456), who is not wholly of this opinion, gives details of four cases which failed to respond to the therapy. Lumière has stated that when solganal B is injected in oily suspensions an intense osmosis occurs in the pocket caused by the injection; the gold salt is rapidly absorbed by the transuded liquid, the oil alone remaining at the injection site, which is innocent of gold after twenty-four hours. Feldt, the discoverer of solganal B, maintains that the particles of this drug are resorbed by the phagocytes around the injection, are carried by them to the lymphatic circulation, and stored in the ganglia; simple absorption does not occur. Without concurring in either of these opinions, Giraud believes that the results in his and other recorded cases show that extreme care should be exercised in employing gold salts in oily suspension in the types of cases named by Dumarest and Mollard, as the lower toxicity of these substances in oil has not been definitely demonstrated.

35 Symptomatic Treatment of Asthma

M. ANGLADE and O. GAUDIN (*Bull. Soc. de Théor.*, October 9th, 1933, p. 196), who record five personal cases in patients aged from 23 to 57, state that some individuals show an intolerance to ephedrine characterized by tremor, vertigo, and nervous irritation. They have found that these symptoms can be prevented by combining ephedrine with papaverine and codeine in the following proportions: ephedrine hydrochloride 0.01, papaverine hydrobromide 0.03, and iodide of codeine 0.02 gram. In spite of the prolonged use of this mixture no unpleasant symptoms have arisen apart from dryness of the mouth and a slight tendency to somnolence in a few cases. The mixture is also of value in attacks of spasmodic coughing, which are often very difficult to treat successfully.

Anaesthetics

35 Intravenous Anaesthesia with Sodium Evipan

J. GORONOFF (*Semana Médica*, August 10th, 1933, p. 408), writing from St. Hedwig's Krankenhaus, Berlin, states that sodium evipan (pentamethyl cyclohexyl methyl barbiturate acid) is an ideal general anaesthetic inasmuch as, free from all toxicity, and without upsetting the patient, it produces instantaneous and profound sleep, which renders possible all kinds of surgical manipulations, is quickly and completely eliminated, has no disagreeable after-effects, and may be readily prepared and administered by any practitioner. It is a white powder, freely soluble in distilled water. A 10 per cent. solution is employed, of which the dose, according to the weight of the patient, is from 3 to 10 c.c.m. In his own practice the writer is also guided by the general condition of the patient, believing that nervous subjects require rather more, while the debilitated require less, no matter what their weight may be. The solution may be injected into any vein. There is no "stage of excitement." The corneal reflex disappears almost at once, while the pupillary light reflex persists throughout the anaesthesia. Relaxation of the mandible is a sign that a sufficient quantity of the anaesthetic has been administered. The needle may then be withdrawn from the vein if the operation does not require a prolonged course. Complete anaesthesia after a single dose lasts from fifteen to twenty minutes. The reappearance of the corneal reflex is the earliest indication of the return to conscious life. There are no contraindications. The writer's personal experience is confined to its employment in operations on the genitourinary system, which include hyperaesthetic prostatectomy, ureterectomy, castration, and the coagulation of vesical polypi by diathermy.

37 Pre-narcosis by Morphine and Paraldehyde

B. B. GARFETT and E. GURRINGS (*Med. Journ. of Australia*, July 8th, 1933, p. 46) commend morphine, paraldehyde, and hyoscine in suitable doses as basal narcotics for operations under local anaesthesia. They find also that morphine and paraldehyde, as a preliminary to general anaesthesia, are useful in relatively short operations, and tide the patient over the painful recovery period. An enema is given the night before the operation, and any necessary sedative administered to ensure peaceful sleep. One hour before the operation a hypodermic injection of morphine (1/4 grain) and hyoscine (1/100 grain) is given. Fifteen minutes later paraldehyde (0.5 drachm for each stone in weight) is dissolved in ten times its volume of normal saline solution and injected slowly into the rectum. Almost invariably the patient falls into a deep sleep before the injection has been completed, and the subsequent induction of anaesthesia is easy. At the end of the operation the patient returns to the ward still asleep, and remains so for one to four hours. In local anaesthesia much less cocaine or novocain is required. The authors noted a decided and definite drop in the blood pressure in all cases; this places certain cardiac patients—for example, those with coronary sclerosis—among the group of risky subjects for whom such pre-narcosis is undesirable. In 143 cases the authors had only one death, and in this case there was gross tuberculous involvement of the larynx, with obstruction to breathing, tracheotomy having to be performed. The patient died from respiratory failure, having an associated tuberculous and bronchiectatic involvement of the lung, and asthma.

38 Ethyl Chloride: A Statistical Inquiry

S. HORNEMAN (*Ugeskrift for Læger*, October 19th, 1933, p. 1145) has addressed a list of questions about ethyl chloride to 150 Danish hospitals, and has received 133 answers. It was used as a general anaesthetic in 117 of the 133 hospitals which replied. The replies dealt with 76,000 inductions of anaesthesia in which ethyl chloride

was used by itself or in preparation for another anaesthetic. In addition to these 76,000 recorded cases, there were many thousand other cases which had eluded record in the hospitals which replied. Only two anaesthetic deaths were recorded. As for alarming collapse, there were twenty-six hospitals which had never observed it, and fifteen which had each had one case of collapse after ethyl chloride anaesthesia. There were ten hospitals with a couple of such cases each. In several of these cases the patients were children. There were forty-nine hospitals in which ethyl chloride anaesthesia was employed as frequently as before, forty-six in which its employment had risen, and seventeen in which it had diminished. All the hospitals employing ethyl chloride gave it on an open basis. In thirty-three hospitals both the drop and the spray methods were employed, in thirty-three only the spray, and in fifty only the drop method. In only half a score of hospitals was ethyl chloride administered for five minutes or longer at a time. Undertakings requiring a longer interval were usually dealt with by a transition to ether. Summarizing his impressions from this inquiry, the author insists on the need for a very weak anaesthetic. It cannot be claimed for this anaesthetic, nor, for that matter, for any other given by inhalation, that it is perfectly safe. Yet, with only two deaths in this immensely large material, the risks of a fatal issue would seem to be exceedingly small, particularly if very young children are excluded. The author sees no reason why ethyl chloride should be given up as a general anaesthetic.

Obstetrics and Gynaecology

39 Pregnancy after Removal of both Tubes

N. P. WERHATSKY (*Zentralbl. f. Gynäk.*, August 19th, 1933, p. 194) records the case of a woman in whom the gravid left Fallopian tube was removed, with a wedge of the uterine cornu, to which the left ovary was sutured. The right tube, it was noted, was absent as the sequel of a previous operation for right tubal pregnancy. A normal uterine pregnancy followed the second operation, and the child was born at term, but died at the age of three months. Werhatsky states that eleven cases have previously been described of uterine pregnancy after ablation of both tubes; he alludes to a case of Zangemeister's in which a two months' uterine abortion, and later a spontaneous delivery at term, occurred.

40 Remote Prognosis in Eclampsia

A. OLSEN (*Ugeskrift for Læger*, September 21st, 1933, p. 1019) has investigated the subsequent careers of the women who, since 1910, had been treated in a maternity home where they had suffered from eclampsia or "eclampsism" (threatened eclampsia, with albuminuria, high blood pressure with or without oedema, headache, disturbances of vision, and drowsiness). In 102 of the 150 cases of eclampsia, and in seventy-eight of the 119 cases of eclampsism, information was obtained as to the subsequent fate of the patients. Among the 102 eclampsia patients were forty-nine who had subsequently undergone a total of eighty-two pregnancies, of which fifty-nine of the confinements had been uncomplicated. Among the seventy-eight eclampsism patients were twenty-nine who had subsequently become pregnant, giving a total of fifty pregnancies, with twenty-six uncomplicated confinements. The author brings up his total of post-eclampsia and post-eclampsism pregnancies to 175 by adding forty-three cases in which the patient had suffered from eclampsia, but not in his hospital. From this total of 175 he subtracts two doubtful cases and another eighteen because the pregnancy terminated in abortion within the first three months—that is, before a recurrence of eclampsia could have been expected. Among the remaining 155 pregnancies there were only ten cases of eclampsia or eclampsism. From Olsen's work emerges the remarkable observation that the patients who had had eclampsia had, on the whole,

subsequently fared better than those who had suffered from eclampsia. Of the 160 children, 139 (87 per cent.) were born alive and well, fifteen (9 per cent.) were born dead or died soon after birth, and six (4 per cent.) were classed as abortions. The author concludes that a history of eclampsia or eclampsism in a previous pregnancy does not by itself justify the induction of abortion.

41 Resuscitation in Neo-natal Asphyxia

E. SHUTE and M. E. DAVIS (*Canadian Med. Assoc. Journ.*, September, 1933, p. 252) discuss the methods of treating asphyxia in the newly born, with special reference to that due to narcosis following the administration of morphine to the mother. In one year they had a series of 320 infants delivered after such morphine injections, and found in 120 of these some degree of narcosis, deep in twenty-five. Six infants were apnoeic for over twenty minutes, and in one the respiration did not become normal for thirty-five minutes. All six infants survived, and subsequently appeared to be healthy. In thirty-six instances resuscitation was brought about by means of various mixtures of carbon dioxide and oxygen, but the authors found that pure carbon dioxide, followed by pure oxygen for very short periods of time, was much the most effective procedure. For general clinical use they recommend a 10 to 30 per cent. mixture of carbon dioxide in oxygen, to be followed by pure oxygen. They state that this mixture is not dangerous if used intelligently, and requires only very simple equipment. They emphasize the point, however, that such gases should not be used for longer than is necessary to initiate adequate respiration. In cases of mechanical obstruction the most effective method for clearing the air passages is the tracheal catheter. With this in place, the chest may be gently and rhythmically compressed to stimulate respiration. Violent methods are apt to be harmful. Insufflation can also be performed through the catheter, using minimal pressures, the operator's cheeks and not his chest muscles being the agents of force required.

Pathology

42 Determination of Non-Protein Nitrogen in the Blood

C. A. DALY (*Journ. Lab. and Clin. Med.*, September, 1933, p. 1279) points out that in the Folin method of determining the non-protein nitrogen content of the blood it is very difficult to avoid the separation of the silica from the glass during the long period of digestion. Heating the acid mixture rapidly obviates this, to some extent, but requires careful regulating of the flame, and there is a possibility that the oxidation process may not be complete. In Folin's original directions the period of digestion is excessive for practical purposes, and the best results are obtained by stopping the process as soon as the brown appearance of the mixture is replaced by a light green colour. When sulphuric acid with hydrogen peroxide or potassium persulphate is used for the digestion mixture, a white or yellow precipitate of tungstic acid nearly always appears, either during the digestion or when water is added. This acid precipitate is soluble in the alkaline Nessler solution, but the reagent itself is affected by the process of solution. Daly describes a modification of the Koch method for determining the blood non-protein nitrogen content, which is claimed to be more satisfactory, and to give accurate results. Gum ghatti and sodium citrate are used to prevent the precipitation of the colour reagent when solutions turbid from tungstic acid are Nesslerized. The digestion mixture is made up with hydrogen peroxide. It contains 45 per cent. sulphuric acid, and the Nessler solution is diluted so that 15 c.cm. will give the same final alkalinity as 12 c.cm. of the original reagent. A change in the technique becomes necessary, owing to this dilution. The nitrogen solution in the ignition tube (diluted to 35 c.cm.) and the Nessler solution are poured simultaneously into

a large beaker to mix, whirled round, and then poured back into the tube. In this way the two solutions are more intimately mixed, and there is less danger of turbidity. It is important for the solutions to be at room temperature when Nesslerized, since a higher temperature encourages precipitation. The author believes that this modified method of testing for non-protein nitrogen promises to be the most satisfactory one for routine use in the clinical laboratory.

43 Read's Formula for Basal Metabolism

H. NEUMANN (*Klin. Woch.*, September 16th, 1933, p. 1444) examines the range of application of the well-known formula of Read for basal metabolism. A uniform opinion of the value of this formula in clinical work has not hitherto been reached by the many workers in this field. Read, and later Ueber and Rosenberg, concluded that in 90 per cent. of cases the formula gave a result within 20 per cent. of the values obtained by gas analysis. Other workers have reported even more favourable correspondence. The majority agree, however, that with increasing basal metabolism the formula becomes less reliable, so that it has been suggested that it is valuable only in borderline cases, and will detect slight deviations from the normal with astonishing accuracy [Berthelau]. Other workers have definitely condemned the formula, and Gale and Gale (*Lancet*, 1931, i, 1287) proposed the modified expression, $B.M.R. = (Pulse + Pulse Pressure - 111)$; but even this has not been found satisfactory. The present author, having access to a large metabolic material, was able to compare the results of B.M.R. determinations with Knipping's apparatus with those derived by Read's formula. Eighty-two cases were examined in this way, 48 per cent. having a metabolic rate over + 20 per cent., and 32 per cent. one of over + 30 per cent. In 72 per cent. of the cases the difference between the formula and the respiratory gas analysis exceeded 5 per cent.: in 55 per cent. it exceeded 10 per cent.; in 34 per cent. it exceeded 15 per cent.; in 22 per cent. it exceeded 20 per cent.; and in 8 per cent. it exceeded 30 per cent. (these figures represent the absolute, not percentage, differences). It was found in this series also that with increasing B.M.R. the error of the formula became greater. Further, a negative value on the gas analysis was not necessarily accompanied by a negative value on the formula. Calculation of the Gale formula in this series gave rather worse results than did that of Read. In conclusion, the author finds that in the important critical cases between 10 per cent. and 30 per cent. the Read formula is unreliable, and that as a clinical substitution for gas analysis it is without value.

44 Amniotin in Experimental Diabetes

B. O. BARNES, J. F. REGAN, and W. O. NELSON (*Journ. Amer. Med. Assoc.*, September 16th, 1933, p. 926) found that glycosuria in depancreatized dogs could be markedly reduced by the injection of amniotin. In view of the considerable amount of evidence supporting the view that the administration of oestrogenic substance suppressed the sex principle in the pituitary functioning, they thought that the postulated diabetic principle in this might also be capable of control on similar lines. They used amniotin as the vehicle of this oestrogenic substance since it was available in an oil solution, giving a slower and more uniform rate of absorption. It was found that the wounds in the experimental animals healed promptly under this treatment, and life was prolonged, although a gradual loss in weight occurred. A possible explanation submitted is that the pituitary function is suppressed in this way. If this is the case, there appears to be an obvious danger that other organs might atrophy. The authors therefore give the warning that, before attempting to treat clinical diabetes by pituitary suppression, it will be necessary to determine whether the influence on carbohydrate metabolism can be accomplished without serious injury to other organs. Investigations along these lines are proceeding.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

45 Primary Cardiac Rheumatism

A. HANNS and J. WORTER (*Arch. des Mal. du Cœur*, September, 1933, p. 545) put on record two new examples of primary cardiac rheumatism. They remark that although this condition is well recognized it is uncommon, and that most of the accounts hitherto given have related to endocarditis. Primary rheumatic pericarditis and primary rheumatic myocarditis, which are rarer, are exemplified in the two clinical accounts presented by the authors. The first patient was a man of 45 who had suffered from acute articular rheumatism fifteen years previously. He developed a pericarditis with effusion without any accompanying joint symptoms. On account of the poor general condition of the patient and the mode of onset of the illness, tuberculous pericarditis was diagnosed initially. A rapid regression of symptoms followed salicylate administration, but a week later acute articular rheumatism supervened. In view of these events the initial pericarditis was regarded as rheumatic in origin. The second patient was a man of 38, who presented the usual signs of congestive failure without previous illness or obvious cause. A slight fever appeared, this increased after one week, and at the same time acute inflammation of the right knee and ankle and other joints occurred. A diagnosis of primary rheumatic myocarditis with acute articular rheumatism was made. Administration of salicylates in large doses and the usual cardiac remedies brought about simultaneous improvement in the cardiac and articular conditions. The patient was discharged from hospital cured three weeks later.

46 Diet and Gall-Stones

E. J. HENNINGSEN (*Hospitalstidende*, September 21st, 1933, p. 60) produces statistical evidence in support of the view that variations in a nation's dietary from one period to another may be reflected in the death rate from gall-stones. In the period 1870-90 Denmark was comparatively spartan at table. Since then, with the exception of the lean years of the war, the national dietary has grown generous, particularly in meat and fats. The mortality returns for the Danish towns show that in the period 1890-9 there was an annual mortality from gall-stones of 2 per 100,000 living inhabitants. This figure rose to 4 in the period 1900-9. Between 1907 and 1913 it ranged from 4.5 to 6, reaching the imposing figure of 8.5 in 1913. It fell in 1914 to 6.5. In the period 1917-18 it ranged between 4 and 4.7. In 1919 it rose again to 7.3. From then onwards it continued to rise till it culminated in 1926 with 9.2. The gall-stone mortality in rural areas was, in 1920, lower than that in the towns; but it has shown the same tendency to rise, and in 1927 it drew level with the town mortality at 7.3 per 100,000.

47 Diagnostic Value of Superficial Eye Examination

C. BERENS and J. ZUCKERMAN (*New York State Journ. Med.*, September 15th, 1933, p. 1097) indicate the diagnostic points in cases of extraocular and systemic diseases which may be detected by examination of the vision, the position of the eye in the orbit, and the eyelids. Defective vision, for example, may be traceable to corneal opacities, lens changes, and diseases of the media which owe their inception to tuberculosis, syphilis, diabetes, hypertension, focal infection, or brain lesions. Exophthalmos may be caused by syphilis or tuberculosis of the orbital bones and periosteum, or by extension of infection from the nasal accessory sinuses, or by thrombophlebitis of the orbital veins following scarlet fever, or infection of these sinuses and of the tooth sockets. Influenza and rheumatism may give rise to inflammation of Tenon's capsule and exophthalmos. The commonest cause of bilateral

exophthalmos is Graves's disease, but high myopia, cranial anomalies, and bilateral orbital tumours may have this effect also, as well as sinus thrombosis. Enophthalmos occurs in the aged, extreme emaciation, paralysis of the sympathetic, congenital defects, and as the result of trauma. Scars along the outer upper margin of the orbit sometimes follow tuberculosis of the orbital bone; above the nasal angle of the eye they are usually the sequels of infection in the ethmoid cells. Bacterial allergy is indicated by recurrent attacks of slight redness and swelling, particularly of the upper eyelids, with slight scaling and itching. Non-inflammatory oedema of the eyelid may be of diagnostic significance in commencing heart failure, nephritis, and myxoedema. An early sign of Graves's and Addison's disease is marked pigmentation of the lower eyelid. Increased size of the palpebral fissure may be caused by a large myopic eyeball, abscess in the orbit, retrobulbar tumours, and arterio-venous aneurysms in the cavernous sinus.

48 Mechanism of Infection in Poliomyelitis

H. K. FAJER (*Amer. Jour. Pub. Health*, October, 1933, p. 1024) discusses some of the problems concerned with the conveyance of the virus of poliomyelitis and its mode of action in the body. In addition to personal and (rarely) milk transportation he is inclined to incriminate dust carried by air currents. He urges the need of further attention to this possibility, which would account for certain unexplained outbreaks. The site of implantation is, he thinks, the nasal mucosa, and not the lower respiratory or intestinal tracts. The author concludes that the olfactory bulb may well be the initial focus within the central nervous system of poliomyelitic infection, from this site the virus spreads directly along the nerve axons. Fajer argues that the clinical manifestations afford further evidence of such a route being followed. Failure of the virus to complete its journey to the anterior horn cells of the cord would explain the occurrence of cases of non-paralytic infection. He doubts whether the frequency of such cases is as high as some have thought (10 to 1 case of paralysis), and thinks that in epidemics an average frequency of non-paralytic cases is about 2 or 3 to 1. He is satisfied that the value of convalescent serum as a prophylactic is undoubted—at any rate for a few weeks—and urges its supply in epidemics to allay alarm and reduce the number of susceptible persons.

Surgery

49 Congenital Dislocation of the Patella

H. ROCHER (*Bordeaux Chir.*, October, 1933, p. 365) describes the operative technique he has adopted in a case of recurrent congenital dislocation of the patellae by transplanting a bone graft into the external condyle of the femur. The condition occurred in a girl of 14 where both patellae easily and frequently dislocated on flexion of the knee-joint and reduced themselves spontaneously on extension of the knee. The operation carried out consisted in opening the knee-joint and exposing the external condyle. A bone graft, which was taken from the tenth rib near the posterior angle, was then fixed near the outer border of the condyle of the femur. This graft lay against the outer edge of the patella and prevented its lateral displacement when the knee was flexed. The result of the operation appeared satisfactory, and so the second operation on the opposite knee was carried out, but without actually opening the knee-joint. In this instance the bone graft was attached to the condyle of the femur at the edge of the articular surface after pushing aside the synovial membrane. The patient, when

examined four years later, was able to walk normally and flex her knees completely without dislocating the patellae. The functional result was excellent, neither knee having been dislocated since the operation, in spite of the fact that the patient had had frequent falls. Radiograms showed the presence of bony shadows where the grafts had been fixed.

50 Aspiration in Cerebral Abscess

G. WORMS (*Ann. d'Oto-laryngol.*, September, 1933, p. 1029) advocates immediate and repeated aspiration of the small septic pockets which persist after evacuation of a cerebral abscess. This can readily be performed by using a simple glass pipette with abraded point, which can easily be introduced either directly into the cerebral tract, the operative wound being visible, or, when repeated with the patient in bed, into a rubber drain, sufficiently rigid not to close with the aspiration, one end being entered slightly into the abscess, the other projecting beyond the dressing. The pipette is connected to a rubber tube with a glass index at the vacuum source, a tube of water, or preferably to a surgical electric motor pump. Aspiration can thus be gently and completely performed without risk of cerebral traumatism, and permanent drainage is subsequently established. Cure is not always obtained, as sequels (epileptiform seizures) necessitating subsequent operation may persist. During aspiration the patient should be seated with the head turned to the sound side, which affords better separation of the edges of the pocket; deep respiration is also advisable, as this produces a maximum enlargement of the cavity to be drained. Notes of four cases, illustrative of the efficacy of this procedure, are appended; three of these were abscesses of the temporo-sphenoidal lobe of otic origin, and one a late abscess of the fronto-parietal lobe of traumatic origin. Two other cases, with advanced encephalitis when first seen, and in which death occurred after transient improvement, are also recorded.

51 Ramisection for Vascular Lesions of the Foot

J. SEIFFERT (*Zentralbl. f. Chir.*, September 30th, 1933, p. 2317) states that, although division of the grey rami communicantes in treatment of trophic lesions of the foot is an operation of considerable severity, it is justified by its striking success in trophic lesions which are due to functional conditions (such as angiospasm or Raynaud's disease) rather than anatomical—for example, endarteritis obliterans. He records two successful cases of ramisection for morbid neurovascular conditions of the foot of toxic origin. The first patient, a girl aged 11, had bilateral swelling, bony dystrophy, and redness about the tarsus; the second, a male aged 31, had cyanosis and partial necrosis of the great toe, with appearances in the adjacent toe resembling those of Raynaud's disease. In the second patient the grey rami from the third lumbar to the second sacral sympathetic ganglia were divided; in the first these were divided on one side, and at the same operation, retroperitoneally, the first and second sacral rami of the other side were cut. Disappearance of pain and redness and progressive restitution of function followed operation at once in each case, and operative resection of a gangrenous portion of the toe in the second case led to healing by first intention.

52 X-Ray Diagnosis of Gall-Stones

C. KREBS (*Hospitaltidende*, September 21st, 1933, p. 35) notes that there is still some disagreement as to the diagnostic value of the x rays in cholelithiasis. He has analysed the material in a Danish hospital for the period January 1st, 1927, to April 1st, 1933. Only those cases were considered in which the diagnosis of gall-stones was confirmed at an operation or a post-mortem examination. Among 100 such cases there were forty-eight in which an x-ray diagnosis of gall-stones could be made, and thirty-nine in which the x-ray evidence was suggestive of gall-stones without being conclusive. In twelve cases the x rays contributed nothing of value to the clinical diagnosis, and in one case the x-ray evidence was actually misleading. The conclusion drawn from these observations is that the absence of definite x-ray signs of gall-

stones does not justify the elimination of this diagnosis. On the other hand, in a considerable proportion of cases the x rays are, he states, of great value to the surgeon.

Therapeutics

53

"Work Therapy" in Diabetes

F. BRAUCH (*Zentralbl. f. innere Med.*, September 30th, 1933, p. 865) states that since the discovery of insulin the therapeutic possibilities of judicious and even occupational exercise in diabetes have been greatly increased. It was soon found that an insulin-sparing action of muscular exertion was demonstrated by cases in which the latter was repeatedly followed by hypoglycaemic crises in those receiving insulin, and this author mentions the case of a patient taking 20 units of insulin thrice daily who had hypoglycaemic attacks after taking up gardening, and who could avert these by increasing his intake of bread or omitting one or two of his daily injections. In an institution for diabetics Brauch found that most patients receiving insulin reacted to work by diminished glycaemia and/or diminished glycosuria; and, even in cases of some severity, he found that many patients previously unfit for work could be brought, by a suitable combination of dietetic and insulin therapy, to return to their occupation. He lays down the following principles to be followed in "work therapy" in diabetics. The worker must not forget, but must observe with special care, his dietetic rules. A high protein diet is preferable to one composed chiefly of vegetables and fats; and the calorie intake must be adapted to varying degrees of exertion. Insulin dosage must be altered when the severity of the labour alters—being increased, for example, in sensitive subjects on Sundays. The patient must carry sugar and be instructed regarding hypoglycaemic symptoms; in any case careful medical supervision is necessary during the first few weeks' return to work, and is best given in a suitable institution. It must be remembered that work may be followed by hyperglycaemia without glycosuria. Muscular subjects are better fitted for work than the obese or weakly diabetic, and work is contraindicated if cardiopathy is present. Excretion of the acetone bodies in considerable amounts contraindicates exertion, which is not necessarily harmful, however, if small amounts of acetone only are voided.

54

Carbon Tetrachloride as an Anthelmintic

J. A. CARMAN (*East African Med. Journ.*, September, 1933, p. 181) discusses the value of carbon tetrachloride in the treatment of hookworm disease and taeniasis. He points out that there is a heavy preponderance of evidence as regards its safety and efficiency in this respect, and, since the drug is now included in the *British Pharmacopoeia*, it can no longer be considered as an experimental remedy. Experience has shown that with careful selection of cases and preliminary dosage with magnesium sulphate symptoms of poisoning do not occur. In the fatal human cases on record the commonest factor present was alcoholism before or after treatment, but in a few cases the patients had been recently anaesthetized with consequent liver impairment. Carman is satisfied that the drug is an effective anthelmintic in uncinariasis and taeniasis. He condemns the exhibition of extract of male fern as being inefficient in dispensaries staffed by native dressers unless the patient has been very carefully prepared. In such circumstances it is likely to give rise to fatal poisoning occasionally. The author commends a one in four mixture of oil of chenopodium and carbon tetrachloride; with this in several hundred cases he has encountered no untoward symptoms. No food is given to the patients in the evening before treatment. In the morning they take 2 drachms of magnesium sulphate in 2 ounces of water; the anthelmintic mixture is then administered, followed by another dose of the salt. The maximum dose of the vermifuge mixture is 60 minims for a well-developed adult male, and smaller doses for women and children.

Dermatology

55 Observations on Soft Chancre

A. N. CHAPIRO and J. E. KANTOR (*Rev. Franç. de Derm. et de Vén.*, July-August, 1933, p. 387) record their observations on cases of soft chancre treated at the Minsk anti-venereal dispensary during the period 1924-9. Simple chancreoid occurred in 92.7 per cent. of the cases, and there were 2.6 per cent. mixed hard and soft chancres. No cases of extragenital transmission of chancreoid were seen. As regards the number of ulcers, a single chancre was found in 55.5 per cent., two in 18.2 per cent., three in 7.4 per cent., and more than three in 18.9 per cent. The favourite sites for chancreoid in man were the balanopreputial sulcus (26.4 per cent.), the inner surface of the prepuce (21.7 per cent.), and the sheath of the penis (18.2 per cent.). The following complications were noted: Phimosis (12.2 per cent.) and buboes (41.9 per cent.), of which 38.7 per cent. were on the right, 48.4 per cent. on the left, and 12.9 per cent. on both sides). The appearance of the buboes accelerated the process of cicatrization of the chancre. Podvysotskaia's observation that the increased incidence of chancreoid was invariably accompanied by an increase of syphilis was confirmed by a sudden rise of syphilis in 1930. The writers' experience also confirmed the view expressed by S. T. Pawlak, who maintained that chancreoid delayed the appearance of the constitutional symptoms of syphilis.

56 Chronic Lichen Simplex

D. E. H. CLEVELAND (*Canadian Med. Assoc. Journ.*, October, 1933, p. 368) defines lichen simplex chronicus as a persistent dry thickening of one or more circumscribed areas of skin, with scaling, pigment formation, and intense itching which may precede the other symptoms. Often known as neuro-dermatitis, it is to be considered a distinct nosological entity—not to be confused with eczema, although often associated with this disease. Allergic, psychoneurological, and occupational factors play an important part in creating the background upon which the symptomatology is displayed. Treatment must be general as well as local, the predisposing aetiological causes being eliminated. The author finds the local application of x rays is the most frequently successful agency, but large doses at long intervals are not so effective as small and frequently repeated doses. Cleveland does not consider ultra-violet rays so promising. The prognosis is uncertain unless the constitutional disorder is rectified, but spontaneous recovery after a very protracted course not infrequently occurs.

57 Ringworm of the Feet and Toes

I. S. BARKSDALE (*Med. Journ. and Record*, October 18th, 1933, p. 279) discusses the treatment of the so-called ringworm of the feet and toes (athlete's foot). He considers crystal-violet application the method of choice, fuchsin in combination with the heavy metals having proved in his experience a disappointing germicide. Bismuth violet (0.4 per cent. in a 10 per cent. glycerin solution) gave satisfactory results, but only after repeated application and very diligent and conscientious treatment. It was found necessary to apply the medication every day for a week or ten days. Thymol and salicylic acid, applied on two consecutive nights beforehand, was found to be a useful adjuvant. Finally, what is described as the ideal dehydrating, kerolytic, and germicidal agent was elaborated: a combination of bismuth violet 1 gram, salicylic acid 2 grams, and ethyl alcohol to 100 c.cm. Two or three daily applications of this mixture arrested the infection, and recurrence was only noticed in cases when all after-care was neglected. The author states that this trichophyton infection is not associated with any impairment of the general health or nutrition, and advises early diagnosis to avoid spread of the disease. He describes the onset as characterized by slightly reddened, moist, and swollen skin between the toes and on the soles and sides of the feet. If treatment is not started,

small watery vesicles ensue in twelve to twenty-four hours, with intense itching. Larger lesions follow, with areas of raw discharging subcutaneous tissue usually emitting a foul odour. The clinical diagnosis is confirmed by laboratory detection of the trichophyton.

Obstetrics and Gynaecology

58 Results in Tubal Operations

A. MANDELSTAMM (*Zentralbl. f. Gynök.*, September 8th, 1933, p. 2132) pleads for conservation in operations on the Fallopian tube. After post-operative implantation of the tube in the uterus, it is possible, he finds, to secure lasting permeability in about half of the cases. Although sterility usually persists in spite of this, eight cases have been recorded of pregnancy going to term, and five of uterine pregnancy ending in abortion. Mandelstamm here records another case of issue of a healthy child at term, the circumstances were favourable in that the tube was microscopically normal, with permeable external ostium, gonorrhoea was absent, and the adhesion in the intramural part of the tube was probably due to mild infection in antecedent abortions. Dealing with uterine pregnancy after operation for tubal gestation, Mandelstamm describes a case of delivery at term thirteen months after operation, in which the right ovary was sutured to the reconstructed distal end of a right tube stump which was 2.5 cm. long. The left tube had already been excised for a previous tubal pregnancy. At least thirteen cases of normal pregnancy have been recorded after bilateral tubal resection, combined in some cases with that of a connecting wedge of the uterus. On the other hand, some twenty cases of tubal gestation have been reported after partial tubal resection for ectopic pregnancy.

59 Thymophysin in Labour

OTTO WALLIS (*Journ. Obstet. and Gynecol. British Empire*, June, 1933, p. 633) is astonished by the adverse report on the value of thymophysin* issued by Roques and MacLeod. He maintains that its applicability is not in straightforward labour, but "in cases of primary and secondary inertia with a not too overfatigued uterus." He points out that the increase of the performance of the normal strongly working uterus obtained by means of an injection of thymophysin must be considerably less than the increase of the performance of the inert uterus brought about by equal doses of thymophysin. This use of thymophysin is illustrated by a record of fifty cases in which successive small doses—0.4 c.cm., followed, if necessary, by often no more than 0.02 c.cm. at one-hour intervals—definitely shortened labour. He prefers thymophysin even in the second stage, as less, not more, likely than pituitrin to cause tetanic contractions of the uterus and affect the foetal circulation. He has never met with such adverse effects. The duration of labour is definitely shortened by its use: (1) in conjunction with castor oil for initiation of contractions (it lasted 11 hours 35 minutes and 5 hours 45 minutes in two cases reported), and (2) in a large majority of cases of primary or secondary inertia. He emphasizes the view that the value of such a preparation can only be estimated from its effect in such cases as call for a labour stimulant.

60 Induction of Labour

D. G. MORTON (*Amer. Journ. Obstet. and Gynecol.*, September, 1933, p. 323) tried out in 150 cases a method of inducing labour in order to assess its reliability in toxæmic or other urgent indications. The patients included twenty toxæmic cases and 122 normal cases near term. There was one failure in each group. The routine was as follows: at 4 a.m., castor oil 30 c.cm.; at 5, 6, and 7 a.m., quinine 0.3 gram; at 7.30 a.m., a hot

* This drug, a combination of thymus and posterior pituitary extract, is made by the Chemosan Union, Vienna, and is obtainable from Paines and Byrne, Perivale, London.

enema; at 8.30 a.m., artificial rupture of membranes. This was performed under antiseptic conditions (30 c.cm. of 4 per cent. aqueous mercurochrome in vagina) with a fine hook. Pituitrin, 1 c.cm., was then applied intranasally every hour till pains were established. The average number of applications in multiparae was 2.9, in primiparae 3.2. It was found specially important, in cases where the pains went off, to repeat the pituitrin. Once established, labour was conducted normally, with sedatives, etc., as required. The onset was usually with severe prolonged pains, never tetanic. Foetal heads showed marked moulding, and forceps were required in "a number of cases" owing to secondary uterine atony; but harmful effects on the babies were "notably absent." These induced labours were found to last approximately half as long as spontaneous cases. The main factor in their duration was found to be the degree of obliteration of the cervical canal at the time of artificial rupture of the membranes. There were no maternal deaths and no serious infections. Febrile puerperia appeared in 10.1 per cent. of cases—mostly only technical. One baby was stillborn; one died on the third day of *B. coli* infection; one on the forty-second day of prematurity. One foetal complication occurred—a prolapsed cord. This was successfully diagnosed and treated by high forceps extraction, but this method is not recommended in cases where the presenting part is not fixed. The twenty-one cases induced for toxæmia were all markedly successful.

61 Stimulation of Labour Pains

T. ANTOINE (*Zentralbl. f. Gynäk.*, November 25th, 1933, p. 2770) states that at the II. Universitäts-Frauenklinik in Vienna recourse is first had, in cases of uterine inertia, to quinine salts, which are now (in accordance with the experimental work of Schübel) given in much smaller doses than formerly—six powders, at half-hour intervals, of 0.05 gram each by the mouth. About 10 per cent. of cases fail to respond, and are given thymophysin, also in much smaller doses than were customary, beginning with 0.2 cm. This is successful in over 90 per cent. of cases; in some of the remainder labour is found to follow comparatively quickly after rupture of the membranes, which is held to be indicated where pains are good and a thick bag of membranes exhibits, but with little extra protrusion through the os during the pains. Morphine and belladonna are very useful in treatment of uterine inertia when the os is rigid; and rest rather than stimulation is called for in uterine fatigue.

Pathology

62 Experimental Work on Poliomyelitis

R. SOUTHEY and MARGOT MCKIE (*Med. Journ. of Australia*, September 23rd, 1933, p. 404) have endeavoured to ascertain the neutralizing effect on the poliomyelitis virus of normal and of convalescent serum. From thirty-two healthy adults in Melbourne, ranging from 19 to 46 years in age, a total of 13 litres of blood was collected, from which a little over 5 litres of serum were ultimately prepared. Neutralization tests were carried out by mixing the serum in varying quantities with a 5 per cent. suspension of pooled virulent cords, leaving the mixture at room temperature for fifteen to twenty minutes and in the ice chest overnight, and inoculating it the following day intracerebrally into monkeys. The strain of virus used in the preparation of the cords was one that had been isolated locally from a fatal case of poliomyelitis, and that gave rise on intracerebral inoculation to complete paralysis of the monkey on the eighth or ninth day at the latest. Only small numbers of animals were available for the neutralization experiments, and the results were irregular; it appeared, however, that about 0.6 c.cm. of the pooled normal serum was able to neutralize the dose of virus employed. Different batches of convalescent serum used for comparison likewise gave very irregular

results, but on the whole suggested that the quantity necessary for neutralization was about 0.3 c.cm. It would thus appear that pooled normal adult serum possesses definite neutralizing properties to the poliomyelitis virus, though not so potent as those of convalescent serum. In the second part of their paper the authors recount detailed experiments on the immunological relationship between Australian and American virus strains. The monkeys used were few in number, but the general conclusion was that the degree of protection afforded by inoculation with one strain against subsequent inoculation with another depended to a considerable extent on the virulence of the first strain. A virulent Australian strain appeared to afford a considerable degree of protection against a virulent American strain, while previous work of Burnet and Macnamara's had shown that a moderately virulent Australian strain did not protect against a virulent American strain. They conclude that, in future work of this type, the virulence of the virus must be taken into account before drawing deductions on the immunological difference between strains of varying origin.

63 Histology of Cutaneous Myomata

In an attempt to shed some light upon the causation of pain in cutaneous myomata, GRZYBOWSKI (*Ann. de Derm. et de Syph.*, September, 1933) has made an elaborate histological study. Pain is elicited in the lesions by the slightest mechanical irritation, and by cold. The present author showed that this pain was probably due to the presence of nerve fibres in the tumours and not, as has been supposed, to contraction of the muscle fibres. Numerous sections were prepared by the silver impregnation method of Ramon y Cajal, and these showed that nerve fibres were present in enormous numbers in the tumours. They were more numerous and larger than those found in similarly prepared sections of the skin of normal finger tips. The nerve fibres were irregularly arranged in bundles, each bundle being in close association with a capillary blood vessel. Isolated nerves were also found, either interwoven with the muscle fibres or running with them, and occasionally there were little plexiform arrangements.

64 Differentiation of Gram-positive and Gram-negative Bacteria

D. W. BRUNER (*Journ. Bacteriol.*, October, 1933, p. 261) grew a number of different bacteria in a synthetic medium containing 0.1 per cent. sodium carbonate, 0.2 per cent. acid potassium phosphate, 0.2 per cent. urea, and 2 per cent. agar in distilled water with a pH of 7.2 to 7.4. It was observed that when a 20 per cent. extract of pig's pancreas in glycerol was added to this medium, the Gram-positive bacteria grew, while the Gram-negative bacteria did not. The addition of the pancreatic extract to infusion agar gave rise to no inhibition of these organisms, suggesting that organic substances present in the nutrient agar medium absorbed or reacted with the active principle in the extract. Microscopical examination of cultures of bacteria in the synthetic medium plus 20 per cent. extract revealed the fact that Gram-negative bacteria underwent lysis, which was partial after twenty-four hours' and complete after forty-eight hours' incubation. The Gram-positive bacteria, on the other hand, showed no evidence of lysis. Separate examination of the various enzymes present in pancreatic extract was then made. Lipase, amylase, and, incidentally, pepsin, were found to be inactive. Trypsin, on the contrary, was found to have the same effect as the original extract. The inhibition of the Gram-negative bacteria appears to be due to a process of enzymic digestion resulting in lysis. It is suggested that the synthetic medium containing pancreatic extract may be used to separate off Gram-positive from Gram-negative bacteria. Attention must, however, be called to the fact that tryptic activity does not develop in pancreatic extracts till they have stood for two or three weeks at refrigerator temperature, so that freshly prepared extracts should not be employed for this purpose.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

65 Spontaneous Pneumothorax in the Healthy

T. H. LARSEN (*Norsk Mag. f. Lægervid.*, October, 1933, p. 1130) records seven cases of spontaneous pneumothorax in otherwise healthy persons whose ages ranged from 20 to 34. Three recovered in a short time and one took more than a year to be restored to health. In one case the pneumothorax was still present at the end of two years, and in another case a small local pneumothorax was still present at the apex after one and a quarter years. An effusion which was detected in only one case appeared after one year, and led to absorption of the gas. There was never any rise of temperature. In spite of repeated examinations the Parquet test was always negative in this case. Two patients were brothers. In two cases aspiration of air was performed, but without any lasting result.

66 Essential Paroxysmal Hypertension

J. M. PLANTYDT (*Nederl. Tijdschr. v. Geneesk.*, October 21st, 1933, p. 4774) records a case of essential paroxysmal hypertension caused by an adrenal tumour (phaeochromocytoma) in a man aged 28. The symptoms consisted in increasingly frequent attacks of palpitation, during which the systolic blood pressure was 325 to 310 mm. Hg and the diastolic 200 to 150 mm. Hg. Impairment of renal function was shown by rise in Ambard's coefficient from 0.06 to 0.15. The clinical diagnosis of a right suprarenal tumour was confirmed by a skiagram; operation was performed, and a tumour weighing 149 grams was removed. Shortly after the operation Ambard's coefficient fell to 0.10, and six months later to 0.06, when the systolic blood pressure was 115 and the diastolic 80. This case is the fourth example on record of complete recovery after surgical removal of an adrenal tumour for essential paroxysmal hypertension, the three previous cases having been reported by Mayo (1927), Shipley and Pincoff (1929), and Porter and Porter (1930).

67 Whooping-Cough: A General Survey

F. HODER (*Med. Welt*, October 14th, 1933, p. 1451), who gives a useful review of present knowledge of whooping-cough, states that the organism most frequently associated with this disease is that first isolated by Bordet and Gengou. The discoverers used a medium glycerin-potato extract, agar, and blood, and considered the last constituent as essential for the growth of the organism, at least in the early stages. It has, however, been shown that the bacillus can be "acclimatized" to grow on blood-free media. Outside the body it is still viable in dried sputum after three days, but taken altogether shows little resistance in such conditions. Infection occurs by transmission in the coughed-up drops of fluid. After the first week of the catarrhal stage contagion becomes less likely, since the organism disappears from the sputum. In the first five years of life the mortality is high but gradually diminishes with increasing age; in the first year of life it is greater than that of scarlatina and diphtheria combined. According to Hoder, general agreement as to the exciting cause of whooping-cough has not yet been reached. The different views are: (1) that the Bordet-Gengou organism is the exciting cause, (2) that pertussis is due to a mixed infection and in certain cases is related to the infectious fevers, and (3) the filterable virus theory. The mass of bacteriological and serological evidence seems, however, to support the old Bordet theory. Vaccines of the *Bacillus pertussis* have given encouraging results in prophylaxis and treatment; anti-bacterial sera are not so promising, though the con-

valent serum has been very successful in the hands of some workers. The vast number of non-specific therapeutic agents have shown no particular virtues. Reviewing the results of many workers who used mixed autogenous vaccines, stock vaccines, and special ones prepared by a German manufacturing firm, Hoder finds that though dosage varied widely the vaccine treatment led in many cases to improvement in a relatively short time, while some success in prophylaxis was also obtained. Other workers report consistent failure with vaccines. The present author, whilst admitting the necessity for more investigation, considers that the balance of evidence is in favour of vaccine therapy.

68 Whooping-Cough in Old Age

A. J. HALL (*Clin. Journ.*, October, 1933, p. 397), who reviews the literature and records two illustrative cases in a man aged 72 and a woman aged 73, states that whooping-cough as a possible diagnosis should be borne in mind in every case of severe paroxysmal cough in an elderly person for which no obvious organic cause can be found. The popular idea that old people may with safety be brought into contact with cases of whooping-cough is incorrect, whether they have or have not had it in childhood. An elderly person with unrecognized whooping-cough may be a serious source of infection to children. The attack in old persons is usually very distressing, and although not often directly fatal, it may be so or accelerate death from other causes.

Surgery

69 Carcinoma of the Colon

F. LANEY (*Amer. Journ. Surg.*, October, 1933, p. 64), emphasizing the importance of early diagnosis and treatment of carcinoma of the colon, presents a series of cases of which 56 per cent. had noticed symptoms for six months or less, while 85 per cent. had had abnormal symptoms for less than a year. As the lesion is easily recognized by means of x rays and fluoroscopy with bismuth enemas, and as surgical removal is in most cases quite safe, the early recognition of the disease renders the probability of a cure quite considerable. The largest number of cases occur in the rectum and recto-sigmoid. The age incidence is highest between 50 and 70 years, and the cases are almost equally divided between men and women. Symptoms vary according to the location of the disease. Cases of carcinoma of the proximal colon show severe secondary anaemia. Symptoms of carcinoma of the distal colon are those of obstruction in varying degree. Lesions of the rectum show few signs in the early stages, but the appearance of blood and the presence of haemorrhoids should lead to high digital and sigmoidoscopic examinations. There was constipation or diarrhoea in all but nine out of the author's 100 cases; nausea and vomiting occurred chiefly in cases with obstruction, and loss of weight was present in 65 per cent. of cases. According to the author the surgery of the colon and rectum has until recently been of a very severe type, but the Mikulicz procedure has greatly lessened the mortality. Illustrations are given showing the two-stage removal of the right colon, hepatic flexure, and part of the transverse colon, with anastomosis of the ileum to the transverse colon by this procedure. By this method of treatment the danger of peritonitis is largely eliminated, and it is possible to remove large segments of either side of the colon with comparative safety. Further illustrations show the Mikulicz plan of removal of the descending colon or splenic flexure and the two-stage plan of removal of cancer of the rectum.

70 Pancreatic Fistula after Operation for Gastric Ulcer

According to G. E. KONJETZNY (*Zentralbl. f. Chir.*, October 7th, 1933, p. 2375) injury to the pancreas or its ducts during gastric or duodenal operations usually leads to a lethal pancreatitis, rarely to a pancreatic fistula. A case is described of the latter, following partial resection of the stomach and posterior gastro-enterostomy for benign ulcer. The fistula led to the body of the pancreas, whose duct appeared to have been sectioned; it persisted after the scraping away of the deep-seated local granulations. Ten months after the first operation the distal end of the fistulous track, which had a lumen of 1 mm. diameter and a wall of granulation tissue 7 mm. thick, was successfully implanted in the jejunum close beyond the gastro-enterostomy. The relations with the omentum were treated conservatively, and a thin india-rubber catheter was passed through the fistula before its implantation.

71 Renal Carbuncle and Paranephritic Abscess

According to H. BOEMINGHAUS (*Zeit. f. Urol.*, October, 1933, p. 659) there are two non-ascending pyogenic infections of the kidney—multiple (miliary) abscesses and renal carbuncle. The latter is less common, but seventy-eight certain cases have been recorded. These two haematogenous infections are indistinguishable clinically: acute onset with high fever and rigors and negative (or only slightly pathological) urinary findings are the rule. In certain cases pyrexia and renal pain or tenderness are absent. Renal carbuncle is, he states, distinguishable in many cases from multiple kidney abscesses by the pyelographic findings of characteristically displaced and obstructed calyces; such were the findings in twelve of the fifteen cases in which pyelography was done. Cure of the carbuncle by discharge into the renal pelvis may occur, but a paranephritic abscess usually forms. When healing does not follow incision of a paranephritic abscess renal carbuncle may be suspected; but Boeminghaus thinks the routine freeing and inspection of the kidney during the original operation is too severe a proceeding to be justifiable. The recognition of renal carbuncle calls for enucleation or nephrectomy, and the decision cannot be made before operation. Preoperatively, in cases of paranephritic abscess (it is said) a careful examination of the urine and urinary function and of the renal pelvis—including cystoscopy, ureteral catheterization, and pyelography—will often serve to distinguish cases requiring simple incision from those in which a large collection of pus in the kidney will call for enucleation or nephrectomy.

72 Instability of the Knee-joint

A. KRIDA (*Journ. Bone and Joint Surg.*, October, 1933, p. 897) states that injuries to the crucial ligaments occur when the knee is subjected to gross dislocation or subluxation. Either or both ligaments may be the seat of rupture, injury to the anterior crucial ligament being the more common. Following such injury the knee-joint frequently becomes the seat of a chronic instability which may be general in character, or specific with regard to the particular ligament involved. The characteristic instability associated with injury to the anterior crucial ligament consists of the ability to displace the tibia forward on the femur in extension or slight flexion. Damage to the posterior ligament makes possible the sliding backward of the tibia on the femur in the flexed position. Operative treatment, as devised by Hey Groves, consists of the use of fascia lata to replace the injured ligament and the firm anchorage of the reconstructed ligament in bone tunnels drilled through the femur and the tibia. The operation is fully described, and the author gives the result of his experience in eleven cases of reconstruction of the anterior crucial ligament. The ligament was found to be completely ruptured in three cases with varying degrees of attenuation and relaxation in the remainder. Eight cases have been followed up,

and are classified as good results. The patients have stable, painless knees with substantially complete ranges of motion, except one in whose knee flexion is limited to 15 degrees beyond a right angle at the end of a year.

Therapeutics

73 Histamine in Rheumatic Affections

A. GOVAERTS (*Bruxelles-Médical*, October 29th, 1933, p. 1536), discussing the anti-rheumatic therapeutic use of histamine, states that its cutaneous vascular reaction is most important. Anomalies of cutaneous functioning (lowered cutaneous temperature, etc.) and circulatory stasis are, he points out, common in rheumatic affections. Histamine relieves these conditions by causing cutaneous hyperaemia with cellular transudation and increased circulation and local temperature, which favours absorption of the exudates and elimination of waste products. In treatment, Govaerts employs the ionization method of Deutsch, and uses compresses impregnated with 20 to 40 c.cm. of a 1 in 20,000 solution of histamine. These are connected to the positive pole of a continuous galvanic current, the intensity of which should be one-third of a milliampere per square centimetre of surface to be treated. Deutsch also recommends applications over the articulations and muscles controlling these. Govaerts has employed this method in twenty-four cases of various rheumatic "algias" with complete relief in 62 per cent., marked alleviation in 16 per cent., and failure in 22 per cent. He considers that this technique, which does not preclude the use of other measures, is efficacious in relieving muscular pains in certain cases, such as contractures and conditions of non-inflammatory arthritis and peri-arthritis.

74 Magnesium Sulphate in Status Epilepticus

F. STORCHEIM (*Journ. Amer. Med. Assoc.*, October 21st, 1933, p. 1313) found that genuine status epilepticus did not respond to morphine, with atropine, chloral, and ether or chloroform anaesthesia. Intravenous injections of magnesium sulphate, however, prevented death, and reduced the number of subsequent attacks. He states that an injection of 10 c.cm. of a 25 per cent. solution of the salt is, apparently, a safe dose, and as a rule brings the attack to a speedy termination. If necessary it may be repeated, and possibly even be given a third time in a well-developed patient; but this is the limit of safety. Storchheim comments on the parallelism that has developed in the treatment of eclampsia and status epilepticus, with the discarding of morphine and narcotics in favour of magnesium sulphate. He suggests that the underlying pathological changes in the central nervous system are analogous, if not identical, in the two conditions. He adds that the beneficial influence of the salt on the oedema of the lungs, as well as on the brain, may play an important—or even the deciding—part. The maximum dose of magnesium sulphate which can be regarded as safe is given as 7 or 8 grams.

75 Treatment of Lobar Pneumonia

F. BARDACHZI and W. SEKELES (*Med. Klinik*, October 6th, 1933, p. 1374) emphasize the importance of bodily and mental rest in the treatment of pneumonia, and state that if these cannot be secured in the patient's home he should be carefully transported to a hospital, where all unnecessary examinations and demonstrations must be forbidden. Pain, restlessness, and irritating cough call for morphine, in not too small doses, and preferably combined with atropine, while for sleeplessness it should be given in the minimum effective amount. If circulatory failure seems likely, large doses of digitalis are to be given; if it is present, strophanthin, or in less severe cases camphor, is called for. Venesection is very useful for relief of the lesser circulation. In specific treatment the writers prefer, to serotherapy, injections of the basic

salt of ethyl-hydrocuprein (optochin). In their hands this drug seems to have halved the pneumonia mortality during the last five years, and they have not found toxic visual disturbances to follow its use if an alkaline milk diet is prescribed. Like Cross, they give the optochin in four-hourly doses of 0.2 gram for three days.

76 Oestrin Therapy in Haemophilia

R. L. BROWN and F. ALFRIHT (*New England Journ. Med.*, September 28th, 1933, p. 630), who have tested the value of progynon and theelin administration in a case of haemophilia, found no definite changes were observed in the clotting time or in the number of platelets, although urinary examinations revealed that the patient was excreting the hormone in amounts far exceeding those present in normal women. Before this line of treatment started the patient was excreting considerable amounts of substance (possibly the male sex hormone) which produced oestrus in castrated female rats. Since there can be no doubt that in this case the dosage was fully adequate, the authors conclude that little benefit is to be expected in haemophilia from oestrin injections.

Ophthalmology

77 Ocular Tuberculosis

J. L. PAVIA (*Rev. Sud-Amér. de Méd. et de Chir.*, September, 1933, p. 641) believes that, except in the rare cases of traumatism, this condition is secondary, and that a primary focus always exists. Infection probably occurs through the blood (chiefly the veins), though convection by the lymphatic cannot be excluded. Repeated re-infections cause a certain degree of immunity in cases of ocular tuberculosis; a state of hypersensibility is also produced, with repeated local haemorrhages and formation of uveal tubercles, first in the ciliary body, then in the iris, and finally in the choroid. The prognosis is grave, as the sclerotic undergoes purulent effusion necessitating enucleation of the eye. Many forms are noted between phlyctenular conjunctivitis and the sclerites produced by lymphatic formations on the bulbar conjunctiva and sclerotic. Phlyctenular forms should immediately receive tuberculin, as recurrences endanger vision. Involvement of the episclera and sclerotic may also arise. Disease of the deep sclerotic layers favours inflammatory extension to other membranes, and troubles of vision occur. There may be uveal involvement and tubercle formation in the great anterior circle and base of the iris, the ciliary body, and equatorial choroid region. Tuberculous retinitis is important only owing to its mechanical effects, while disease of the optic nerve, due to infection from the retina or pia mater, is occasionally found. For diagnosis, Pavia practises the intradermal reaction, injecting 0.5 c.cm. of a 1 in 400 solution of tuberculin T.R. into the skin. Therapeutic measures are: climatic treatment, tuberculin therapy combined with radiotherapy, and sub-conjunctival injections of sodium chloride, either alone or with 1 to 4 per cent. of hecol. Comment is made of the diagnostic method, in certain cases, of Meller, who makes cultures by the Loewenstein technique from an eye needing enucleation.

78 Acute Inflammation of the Orbit in Children

R. C. GAMBLE (*Arch. Ophthalmol.*, October, 1933, p. 483) points out that the difference in the course of this disease in adults and children is due to the smaller size but more active growth of the sinuses, the greater tendency to septicaemia after abscess incision, the greater ease with which pus travels along fascial planes, and, finally, the greater resistance of the cornea in children. Orbital cellulitis may arise from direct wounds, from adjoining infection, or from embolism. The majority of cases are due to ethmoiditis and antritis. Swelling of the lid with increased nasal discharge on the same side is usually the first sign. Resolution may follow hot or cold applications, the use of ephedrine, and a mild silver protein in

the middle meatus combined with nasal suction. In severe cases proptosis appears, while fixation of the globe or chemosis indicates pus formation. Though a sub-cutaneous swelling above or below the tendo oculi demands incision, radical intranasal operations or orbital incisions should usually be avoided because metastases so often follow. Acute orbital periostitis and osteomyelitis may occur as a metastatic infection without concurrent sinusitis. Osteomyelitis of the maxilla, due to trauma plus infection, is more common in infants than in older children.

79 Psychoneuroses of Ophthalmic Origin

C. K. GHOSH (*Calcutta Med. Journ.*, September, 1933, p. 111) comments on the number of cases in which symptoms of neurosis are definitely related to the eye. Local treatment fails to remedy the condition, and may even make it worse, owing to the patient's attention being thus concentrated upon the eyes. The author cites various instances of these neurotic ophthalmic symptoms, which include asthenopia, lid tremors, amaurosis, amblyopia, photophobia, and ocular hyperaesthesia. The most common field defects are said to be general depression and concentric contraction, which is often star-shaped, reversal of the colour fields, or interlacing of their boundaries. Such field changes present inconsistencies *per se* very often, and indicate the existence of a deeper cause of a non-organic nature. The author advises that such possibilities should not be overlooked, since long treatment with no resulting benefit may aggravate the underlying neurosis and postpone the urgently needed psychotherapy.

Obstetrics and Gynaecology

80 Chloride Metabolism and Hyperemesis Gravidarum

H. KRETZSCHMAR (*Zentralbl. f. Gynäk.*, October 7th, 1933, p. 2353) draws attention to the resemblance between the clinical pictures of (1) an advanced stage of pernicious vomiting of pregnancy, and (2) hypochloroemia. In the latter, diminution of the blood and urinary chlorides is associated with weakness, wasting, persistent vomiting, diarrhoea, and mental apathy; and a lethal uraemic coma may ensue, the kidneys showing no characteristic necropsy changes. He suggests that the toxic symptoms of advanced cases of pregnancy hyperemesis may be due in part to the hypochloroemia following repeated vomiting of hydrochloric acid from the stomach: according to this view the vomiting, probably at first of psychogenic origin, leads to hypochloroemia, which sets up further vomiting, and induces a vicious circle. Kretzschmar describes a case of pregnancy hyperemesis with rapid wasting and toxic symptoms including jaundice, pyrexia, and apathy alternating with excitement; the chloride content of the blood was markedly diminished. Treatment by insulin injections and rectal injection of glucose was ineffectual. The vomiting gradually ceased, however, and the weight increased, *pari passu* with the return of the blood chlorides to normal as a result of rectal and intravenous injections of sodium chloride. This treatment, it is said, well deserves trial in cases of hyperemesis gravidarum which have not responded to psychotherapeutic and the other usual treatments: in the case recorded it saved the induction of abortion, which had appeared inevitable. R. KESSLER and H. ALBERS (*ibid.*, October 21st, 1933, p. 2479) record two cases of hyperemesis gravidarum in which the blood chlorides were diminished and the non-protein nitrogen of the blood greatly increased; in both cases a pyelitis had preceded the vomiting, and a salt-free or salt-poor diet had been given. They point out the clinical and biochemical similarity between pernicious vomiting and the condition of dehydration, hypochloroemia, and azotaemia which occurs, from loss of chlorides, in the persistent vomiting of intestinal stenosis. In both conditions there is no primary renal affection to explain the retention of urea and other non-protein nitrogenous substances. Allusion is made to the possible noxious

effects of a salt-poor diet in pregnancy, and to the therapeutic possibilities of oral or intravenous injection of sodium chloride, which in the cases described led to diminution of the blood nitrogen and increase of the chlorides. It is suggested that in treatment of hyperemesis the hypochloreaemia should receive attention as well as the acidosis.

81 Sharp Curette in Treatment of Abortion

A. A. PUNTEL (*Semana Médica*, September 28th, 1933, p. 879), in the course of a lengthy paper, strenuously advocates the employment of the cutting curette for the removal of all remnants of the embryo which persist after quinine, ergotamine, pituitrin, and vaginal tamponage have been tried. Abortion complicated by the coexistence of salpingitis, parametritis, and pelvic peritonitis he places on another plane, and in such cases abstains from all intrauterine manoeuvres. Stating that there are two schools of thought—namely, the “abstentionists” and the “interventionists”—and having quoted the work of almost fifty writers, of whom only two are British, Puntel ranges himself enthusiastically on the side of the latter school. Full histories are given of sixty-one of his own cases of abortion, of which but one proved fatal; this last was septicæmic on admission to hospital, and the curette was therefore not employed. The author does not mention the value of glycerin in septic metritis.

82 Premature Rupture of Membranes

L. W. MASON (*Amer. Journ. Obstet. and Gynecol.*, September, 1933, p. 395) analyses the effects of spontaneous rupture of membranes at or before the onset of labour pains in 166 cases occurring in a series of 1,000 normal deliveries. Comparing the premature rupture cases with those occurring after dilatation of the os, he reports in the former a definite and marked tendency to shorter labours, with no demonstrable effect upon foetal or maternal mortality or morbidity. He questions the value of the hydrostatic wedge, and suggests that dilatation of the cervix is primarily a process intrinsic in the uterus and cervix.

83 Ovarian Hormones in Amenorrhoea

C. KAUFMANN (*Klin. Woch.*, October 7th, 1933, p. 1557), whose previously published work indicated that the whole menstrual cycle could be re-established in a castrated woman with atrophied uterine mucosa by the administration of folliculin and the corpus luteum hormone; states that this required much larger amounts than those commonly used, 200,000 mouse units of progynon being the minimum dose for a single injection. He believes that many failures are due to underdosage. The mere appearance of bleeding is not a sufficient criterion of success, for not all bleeding after the administration of ovarian hormones is due to menstruation. Intermenstrual haemorrhage can be produced in the monkey by injections of folliculin alone, whilst true menstrual bleeding can only be obtained by folliculin and corpus luteum combined. Great overdosage with folliculin can, even in the castrated subject, lead to abnormally great proliferation of the uterine mucosa—the so-called glandular cystic hyperplasia. The author quotes a case of a castrate woman of 28 years to whom 1,100,000 mouse units of folliculin were administered, and in whom a brownish uterine discharge was induced, curettage demonstrating the typical cystic hyperplasia. In such hyperplastic uterine mucosa glycogen is not found; but if, in addition, corpus luteum is injected glycogen appears in this situation. The author's technique in the treatment of amenorrhoea is to inject 1 c.cm. of highly active progynon (1 c.cm. = 50,000 mouse units) twice a week for three weeks. After this time 25 to 50 rabbit units of a corpus luteum preparation (proluton) is injected over a period of five days. In five cases of primary amenorrhoea with hypoplastic or infantile genitalia, the author found a demonstrable increase in the size of the uterus after treatment with very large doses of progynon in two cases only. This increase in size may be accompanied by short periods of haemorrhage, which the author calls

“follicular haemorrhages.” In two cases of primary amenorrhoea with well-developed genitalia Kaufmann used both follicle and corpus luteum hormones with successful re-establishment of menstruation. In secondary amenorrhoea (eleven cases) good results are claimed with large doses of progynon alone.

Pathology

84 Bacteriology of Acute Peritonitis

P. CAZZAMALI and R. MIGLIERINA (*Arch. Ital. di Chir.*, September, 1933, p. 573) record the results of examination of eighty-one cases of acute peritonitis. The majority of these (sixty-four) followed appendicitis, ten followed perforation of a gastric or duodenal ulcer, while the remainder were of miscellaneous origin. The general technique consisted in the withdrawal of peritoneal exudate by sterile pipettes from different parts of the sac as soon as the abdomen had been opened, microscopic examination of films of the exudate, and cultures under aerobic conditions on blood and ascitic fluid agar, and under anaerobic conditions on these media and in Tarozzi's and glucose liver broth. In nine instances the exudate proved sterile. From ten exudates only one species of micro-organism was cultivated; from twelve exudates, two; from seventeen, three; from nineteen, four; from seven, five; and from two six different species were cultivated. Aerobic organisms accounted for about two-thirds and anaerobic organisms for about one-third of the total isolated. In the sixty-four cases of appendicitis the commonest organisms were as follows: *B. coli* 84 per cent.; streptococci (generally haemolytic or non-haemolytic, seldom of the *viridans* type) 73 per cent.; Gram-positive non-sporing anaerobic diptheroids 30 per cent.; *Cl. welchii* 25 per cent.; and the anaerobic organism sometimes known as *Fusiformis fragilis* 22 per cent. *B. coli* and streptococci were associated in 67 per cent., and *B. coli*, streptococci, and *Cl. welchii* in 25 per cent. In the nine fatal cases of appendicitis *B. coli* and streptococci were both present. Generally speaking, it was found that the more limited the inflammatory area and the shorter the time it had existed, the fewer were the total bacteria present, and the less numerous were the numbers of different species. In point of time the aerobic appeared to precede the anaerobic organisms. *B. coli* seemed to be able to diffuse more rapidly through the peritoneal cavity than any other organism, while streptococci were able to persist for the longest time. As regards prognosis they were unable to confirm the statement that active phagocytosis was necessarily of good omen. The fewer organisms and the fewer different species there were present, the more favourable was the outlook. When organisms were seen in film preparations but little or no growth occurred in culture, the case was likely to be benign. When, on the other hand, more species appeared in culture than were seen microscopically, the case was likely to be serious. It was noteworthy that in perforated gastric or duodenal ulcer cases the peritoneal cavity generally remained sterile for six hours, and sometimes even for twelve hours, but after this time it was always infected. The commonest organism in this type of case was the streptococcus.

85 Blood in Osteo-articular Tuberculosis

M. M. ALTSCHULER and N. W. STRIER (*Zeit. f. Tuberk.*, October, 1933, p. 417) examined the blood of 180 children with osteo-articular tuberculosis aged from 2 to 16 years (by Van Slyke's method) with the following results. (1) In closed forms of the disease the alkali reserve of the blood became increased. (2) In open forms—that is, in mixed infection—the alkali reserve was diminished. (3) There was a certain parallelism between the severity of the disease and the amount of alkali reserve in the blood. (4) In 60 per cent. of the cases there was a parallelism between the amount of alkali reserve in the blood and the leucocyte picture.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

86

Acute Lead Poisoning

A. SCHREITZMAYR (*Deut. med. Woch.*, October 20th, 1933, p. 1601) describes an instructive case of this condition. The young patient was in the fifth month of pregnancy, and although the sequence of symptoms of which she suddenly began to complain were those typical of lead poisoning, this was not diagnosed for a considerable time. The patient at first denied the taking of an abortifacient, but later admitted it. The usual therapeutic measures were of no avail. The spastic ileus was treated with high nutrients, enemata, and intravenous belladonna preparations, and magnesium sulphate and belladonna by mouth were tried without success; the colic was temporarily relieved by the belladonna, but soon returned; iron and liver were used to combat the severe anaemia, but the haemoglobin continued to fall until the figure of 29.4 per cent. was reached. Muscle weakness became more and more marked, the pulse was small and rapid, and blood pressure was low. It was thereupon decided to convert this acute lead poisoning into a chronic form. Large doses of milk and daily intravenous injection of 10 c.cm. of 10 per cent. calcium gluconate were followed by phenomenal success, the symptoms rapidly abating and the haemoglobin percentage showing a quick rise. This treatment was continued for forty-two days, when the haemoglobin had reached 50 per cent. and the red blood cell count was 3,168,000. Stoppage of the treatment for five days brought about a fall in haemoglobin. The patient left hospital a typical case of chronic lead poisoning. Intolerance to calcium now set in, and the administration was stopped. The excretion of the lead now began. Pregnancy proceeded to a normal termination, and a rather weakly child was born, which, however, progressed well on the bottle. The author quotes this case as being an unequivocal demonstration of the value of forcing the circulating lead into the bone depots and then allowing of its slow excretion after the acute manifestations have been controlled.

87

Sinusitis in Scarlet Fever

G. D. HOOPLE and L. S. CAVE (*Journ. Amer. Med. Assoc.*, October 7th, 1933, p. 1121) have made a study of two series of cases of scarlet fever. The first consisted of 292 patients, examined chiefly by x rays, while in the second group, consisting of eighty patients, an attempt was made to correlate the clinical and x-ray findings. In both series x-ray evidence of sinusitis was present in approximately 90 per cent. of the cases. Clinical examination, however, failed to confirm the evidence in every case. There were thirty-three cases of otitis media in the first group of 292 patients, and twelve in the second group of eighty patients. In all these there was x-ray evidence of sinusitis, and in all but one the sinusitis was on the side of the infected ear.

88

Gastritis

The recent reorientation of opinion on the question of gastritis is due, according to J. DOBERER (*Med. Welt*, October 21st, 1933, p. 1493), to the histological examination of resected stomachs, to the introduction by Berg of the relief method of radiography in the examination of the stomach, and to the development of gastroscopy. In past years it is probable that a number of different pathological conditions were referred to loosely as gastritis. Doberer describes one of these conditions, which he has named gastritis adhaesiva. Gastritis adhaesiva is accompanied by all the symptoms of peptic ulcer. On the abdomen being opened at operation, there is a diffuse injection of the serosa of the pyloric antrum and peri-

gastric and periduodenal adhesions. Resected specimens show an inflammation of all coats of the juxta-pyloric portions of the stomach and duodenum, and frequently ecchymosis or erosion of the mucosa; similar findings are present in peptic ulcer, and Doberer considers that gastritis adhaesiva is a pre-ulcerous state. The same aetiological factors are present in gastritis adhaesiva as in peptic ulcer, and the differential diagnosis depends upon the radiographic findings. Treatment is ambulatory, and consists of a bland diet, alkalis, and belladonna. Doberer recommends that general treatment to combat the "ulcer diathesis" should also be employed, and suggests injections of arsenic. Should the abdomen be opened and gastritis adhaesiva without ulceration be found, the author considers that a prophylactic partial gastrectomy should be performed.

89

Pellagra

A. HORMAN-BANG (*Hospitalstidende*, November 2nd, 1933, p. 1089) gives an account of seven cases of pellagra observed in a Danish asylum. He was aided in his recognition of the true state of affairs by the investigations of Hess-Thaysen, who has recently shown that pellagra is by no means a rare sequel to a "sloppy" diet, and that chronic diarrhoea, by interfering with the adequate absorption of the vitamin in question, favours what is now known as secondary pellagra. Hess-Thaysen suggested that a careful comb-out of lunatic asylums would not fail to yield a crop of such cases of secondary pellagra. In all the author's seven cases skin changes characteristic of pellagra were found, and in five cases the patients suffered from stomatitis as well as diarrhoea. The administration of a proprietary vitamin preparation was followed by the disappearance of the cutaneous lesions in two cases. Specific vitamin medication was not, however, strikingly successful as far as the mental condition was concerned, and in no case could it be put in a causal relationship with the pellagra. The chief lesson of this paper is that secondary pellagra may occur in Europe provided the dietary and the condition of the gastro-intestinal tract are favourable to it.

Surgery

90

Drainage in Diffuse Peritonitis

A. J. TRINCA (*Med. Journ. of Australia*, October 7th, 1933, p. 465) attacks the abuse of the drainage tube in the treatment of peritonitis, and records a series of 244 cases in which this procedure was not employed. He maintains that, owing to the nature and distribution of the contents of the peritoneal cavity, it is impossible to effect adequate drainage in cases of diffuse peritonitis, and that no attempt at it is necessary when the primary septic focus has been eliminated. He enumerates the possible harmful effects of using a tube, such as: aggravation of the existing peritonitis; faecal fistula; damage to omentum; injury to the abdominal wall; post-operative hernia; production of adhesions and consequent intestinal obstruction; introduction from the air of organisms, such as *B. pyocyaneus*; induction of ileus; and the delayed convalescence which follows some or all of these complications. In his opinion the rational treatment of peritonitis comprises the lightest possible anaesthesia, the greatest delicacy in operating, the removal of exudate only when mixed with gangrenous debris, visceral contents, or infective material, and the clearing out of omentum which is apparently infected or likely to become gangrenous. He concludes from an analysis of his series of cases that peritonitis in the early stages

is not a serious condition if dealt with on rational lines—namely, rejection of the drainage tube, and no inclusion of purgatives, involuntary muscle stimulants, and other lines of action which tend to accentuate inflammation in the after-treatment. Ileus was not found to be common, and Trinca attributes this sequel to bad surgery or unscientific post-operative care. The incidence of wound infection was high, but many of the cases were mild.

91 Peritoneal Syndrome in Acute Rheumatism

M. STOIANOVITCH (*Bull. et Mém. Soc. Nat. de Chir.*, October 28th, 1933, p. 1225) reports two cases of acute articular rheumatism which occurred in children. In each case the onset was accompanied by severe abdominal symptoms, and diagnosis of acute appendicitis was made. In the first case the child, a girl of 9 years, was admitted to hospital with acute generalized abdominal pain and raised temperature. The following day the abdominal symptoms subsided and pain developed in the left hip, knee, and ankle. The second case occurred in a boy of 7 and was similar in onset, with violent pain in the epigastrium and the right iliac fossa. Acute appendicitis was diagnosed, but the parents refused operation and took the child away. They returned the following day as the child had had an unusually violent attack. As there was now pain and swelling in the knee and ankle and a systolic murmur, with a lessening of the abdominal symptoms, operation was not recommended and treatment with salicylates was given. In both cases the joint and heart signs appeared at the end of four days, and coincided with the subsiding of the abdominal symptoms.

92 Back Pain and Sacralization of L5

According to R. INGEBRIGSTEN (*Zentralbl. f. Chir.*, October 7th, 1933, p. 2368), hypertrophy of the transverse process of the fifth lumbar vertebra is notable radiologically in 70 per cent. of cases, and its clinical significance as a cause of pain in the back has been much exaggerated. A one-sided bony union of the transverse process with the sacrum (sacralization) may, however, cause severe pain in the lumbar and sacral regions and very considerable limitation of spinal movement and walking. The writer describes his third case, in which resection of the ankylosed fifth lumbar transverse process has been followed by lasting cure of pain and crippling.

Therapeutics

93 Sarsaparilla in Chronic Nephritis

F. HUMPERT (*Klin. Woch.*, October 28th, 1933, p. 1696) confirms previous reports of favourable results in chronic nephritis, following the administration of "renotrat," a new preparation of sarsaparilla root. In several cases of chronic nephritis the blood nitrogen content was reduced in quantity, and headache, nausea, and anorexia were relieved. Five patients were treated while taking an ordinary purine-containing diet. Four were men whose ages ranged from 20 to 54 years, and one was a woman, aged 56. All had hypertension with albuminuria, casts, and erythrocytes in their urine. Three patients had albuminuric retinitis. Each patient was kept under observation for periods of from four to twelve days before treatment was commenced, and the total daily excretion of uric acid was estimated, as well as the uric acid blood content. During the ensuing twelve days one tablet of renotrat was given thrice daily. The total daily uric acid excretion was estimated by Benedict and Franke's method and the blood uric acid content by Morris's colorimetric method. After the drug had been discontinued each patient was observed, and the daily estimations of uric acid were continued for a further period of from four to twelve days. It is claimed that the favourable therapeutic action was definite in every case. The average daily excretion of uric acid was increased greatly, and

this persisted during the whole observation period. During the administration of renotrat the uric acid blood content was much reduced, but it usually increased slightly after cessation of the drug. In one case large doses of renotrat appeared to prevent the onset of uraemic coma. This drug is a powerful diuretic and induces a correspondingly increased elimination of uric acid.

94 Endocrine Treatment of Aspermia

W. L. BROSIUS and R. L. SCHAEFFER (*Journ. Amer. Med. Assoc.*, October 14th, 1933, p. 1227) report a case of spermatogenesis following the exhibition of a preparation of anterior-pituitary-like principle from pregnancy urine. A man, aged 33, had complete aspermia, following an attack of mumps at the age of 27, with a complicating bilateral orchitis resulting in bilateral testicular atrophy. Twice a week 2 c.cm. of the preparation (1.7 rat units per kilo of body weight) were injected into the gluteal muscle. Within two weeks there was a definite increase in the size and firmness of both testes, and a week later a few non-motile spermatozoa were found. At six weeks there were numerous non-motile spermatozoa, and at nine weeks large numbers of actively motile spermatozoa were present. The testes continued to increase, and there was a marked subjective improvement, symptoms such as lethargy, tremors, dizziness, and speech difficulties disappearing. The treatment was discontinued, but four weeks later the spermatozoa became few and non-motile, and the symptoms returned with softening and diminution in size of the testes. With the resumption of the injections all the favourable signs were again noticeable, and it was found to be possible to maintain the general health and active spermatogenesis on fortnightly doses of 2 c.cm. The authors argue that there appears to be evidence that the gonad-stimulating extract from pregnancy urine induces spermatogenesis, and that in this case the pituitary gland did not hypertrophy as in castrates with production of an excess of sex hormone.

95 Gold Tribromide in Whooping-cough

J. EPSTEIN (*Journ. of Pediat.*, October, 1933, p. 635) reports his observations on seventy-five cases of whooping-cough which he has treated during the last four years by gold tribromide. Ages ranged from 2 weeks to 8 years; two cases were adults. Treatment consisted in the oral administration of a solution of gold tribromide in water in doses (varying with the age of the child and the severity of the cough) from 1/20 to 1/10 gram three times a day after meals and one at midnight. The results were as follows: In about two-thirds of the cases the cough subsided in three weeks, and in the other in from five to seven weeks. In all cases after three or four days' treatment the cough was less frequent and distressing, and milder, the vomiting ceased, and sleep became more restful. There were no recurrences, complications, or deaths. In twenty-five controls who were given the ordinary remedies for pertussis the cough was frequent and racking, and the duration of the disease ranged from three to four months. The earlier the treatment was begun the quicker and better were the results.

96 Drinker Apparatus in Post-diphtheritic Respiratory Paralysis

J. E. GORDON, D. C. YOUNG, and F. H. TOR (*Journ. of Pediat.*, October, 1933, p. 580), who record two illustrative cases, maintain that the Drinker apparatus, which has been used with success in poliomyelitis for long-continued artificial respiration, forms a valuable addition to present methods of management in post-diphtheritic respiratory paralysis. Of the two cases reported, one, a girl aged 8; recovered, and the other, a youth aged 18, died. The writers believe that if artificial respiration by this method is started at the first sign of respiratory difficulty, a greater proportion of recoveries would be noted among patients with diphtheritic paralysis than with any other of the conditions that may be treated by this method.

Laryngology and Otology

97 Calot's Solution in Chronic Otorrhoea

J. C. SEAL (*Med. Journ. and Record*, October 4th, 1933, p. 244) has obtained excellent results in chronic otorrhoea by instilling into the ear Calot's solution (a mixture of guaiacol, creosote, ether, and iodoform in olive oil). After eradicating any contributory cause, such as diseased tonsils and adenoids, nasal polypi, and sinusitis cholesteatoma, as well as aural polypi and protuberant granulation tissue, the author dries the ear thoroughly and instils five drops of Calot's solution into the meatus. The head is held in a horizontal position, and tragus massage is employed, so that by pushing the tragus against the canal wall, and suddenly releasing it, the alternating pressure permits the solution to enter the Eustachian tube. This procedure is employed once a day for seven days, during which time the discharge will be found to become thin and scanty, and to disappear finally. After the last treatment, boric acid powder is insufflated. The author's percentage of success is 85. He states that in cases of failure tuberculosis of the middle ear should be suspected, or diabetes, syphilis, or cholesteatoma. The efficacy of the mixture is attributed to the guaiacol and creosote, which act as a caustic on the granulation tissue. The ether dissolves and removes the debris and secretion covering the diseased area, permitting the caustic agents to reach the infected parts.

98 The Mastoid Vein in Infected Lateral Sinus Thrombosis

According to E. F. ZIEGELMAN (*Arch. of Otolaryngol.*, September, 1933, p. 298) the external mastoid (emissary) vein, although absent in a fairly large number of persons, may account for some of the high mortality in infected sinus thrombosis. The author records the anatomical results obtained from a series of dissections. He found that this vein was often linked with the general systemic circulation through some route other than that of the internal jugular vein or one of its tributaries. There is a very complex occipital venous plexus, and the mastoid vein may be connected with this in one of various ways. It may be invaded in an infected lateral sinus thrombosis, either by continuity of tissue initiating a phlebitis or by direct extension of a thrombus. The author concludes, therefore, that it should be carefully considered from a surgical point of view in all cases of infected lateral sinus thrombosis.

99 Progressive Nasal Ulceration

J. P. STEWART (*Journ. Laryngol. and Otol.*, October, 1933, p. 657), recording ten cases, describes a disease characterized by progressive destruction of the nose, face, and pharynx, which he terms "progressive lethal granulomatous ulceration of the nose." Nine of his ten patients were male, and eight cases occurred between the ages of 28 and 42. The duration of the disease is from one to two years, and a marked feature is the complete absence of any sign of resistance to it by the patient. There is a mild leucocytosis (about 15,000 cells per c.mm.), or a leucopenia of about 2,200, with no change in the differential count. From the clinical and microscopical appearances Stewart concludes that the destructive process cannot be classed as a tumour, but is essentially a chronic inflammatory and pyogenic condition. He can trace no association between it and Hodgkin's lymphogranuloma. The disease is not one of formation, but rather of destruction; the presence of granulation tissue is held to justify the term "progressive granulomatous ulceration." It has to be differentiated from nasal ulceration due to syphilis, tuberculosis, malignancy, agranulocytosis, the mycosis and myiasis group, yaws or framboesia, leprosy, rhinoscleroma, leishmaniasis, rhinopharyngitis mutilans (gangosa), and trophic post-encephalitic ulceration. In six out of the seven cases in which the results of bacteriological investigations were available, the presence of a streptococcus in association with a

staphylococcus was reported. All local applications and internal medication proved unavailing. Radium treatment was employed in two cases with indefinite results, but deep radiotherapy (tried in one instance) seemed to promise more success, and, in the opinion of the author, deserves further trial. Eight patients died from the direct effects of the disease—namely, sapsaemic cachexia and repeated haemorrhage. One survived for four months after local cure before succumbing to generalized sarcomatous cutis, and one patient died from an atypical form of "miners' phthisis" four years after recovery from the local affection. The earliest symptom is a stuffiness in the nose accompanied by a watery or sero-sanguineous discharge, but with no local pathological change. This is followed by definite nasal obstruction and a purulent or sanguineo-purulent discharge with an offensive smell. The disease then tends to spread from the interior of the nose to the outside, ulcerating the surrounding tissues progressively.

Obstetrics and Gynaecology

100 Construction of Artificial Vagina

G. GAMBAROW (*Zentralbl. f. Gynäk.*, October 28th, 1933, p. 2559) states that formation of an artificial vagina by Schubert's method (from large intestine) is less dangerous than by Baldwin's (from small intestine) but not without mortality. The skin-flap operation of Kirschner and Wagner is safe but far from simple. In Gambarow's clinic a simple operation was successful in one case. Into the wound cavity in the dissected space between bladder and rectum Hegar's dilator 26 was introduced and left for six hours on twenty-eight days following operation. Four months later the vagina, 8 to 10 cm. long, was lined by granulation tissue in the upper half at least. Eight months later the vagina was lined by normal mucosa. Two years later the patient began to menstruate, and eventually became pregnant, a communication having established itself between the artificial vagina and the cervix uteri.

101 Abnormalities of Fallopian Tubes

V. LE LORICR and G. DURANTE (*La Gynéc.*, October, 1933, p. 529) describe the various causes and the appearance and importance of cavities in the neighbourhood of the Fallopian tubes. These comprise: (a) Congenital malformations—(1) a tube doubled for part of its length, both limbs being patent throughout; (2) a depression or sacculus in an otherwise normal tube; (3) doubled tubes blind at one or both ends, each with its own distinct fibro-muscular wall. These latter are true diverticula. (b) Acquired multiple tube formations. These are shown, in an interesting series of sections, to begin by adhesion of one fimbria to a point on the mucous membrane of the inflamed tube wall. The process may extend for a considerable distance along the lumen, forming a septum, which becomes organized and lined with an extension of the tubal mucous membrane enclosed. Hence the possibility of confounding such an occlusion with an endometrioma; the distinction is made by serial sections, which show that the wall of the secondary tube is merely a septum lined by mucous membrane on both sides. The incidence of such acquired doubling of the tubes is said to be much greater than is usually believed, because serial sections are needed for their demonstration. They are a potent cause of ectopic gestation; when the latter occurs decidual reaction is marked in the secondary cavity as in the uterus, but absent from the true Fallopian tube. H. v. KNORRE (*Zentralbl. f. Gynäk.*, November 11th, 1933, p. 2662) discusses the significance of congenital abnormalities of the Fallopian tube as a possible cause of obstruction favouring ectopic gestation. Like Markoff, he found occasional apparent evidence of tubal occlusion by inflation with air of the foetal or infantile tube in the cadaver. Evidence of occlusion was less frequent, however, after ligated infundibula, and in apparently

impermeable tubes retrograde inflation from the abdominal ostium was successful, microscopical sections showing no obliteration of the lumen. Zocchi's histological examinations gave a similar result. It is concluded that congenital atresia is unimportant as a cause of tubal pregnancy, and that impermeability to air is due to a valve-like action of the folds of mucous membrane.

102 Sterilization in Germany

L. NÜRNBERGER (*Med. Klinik*, November 3rd, 1933, p. 1503) discusses practical gynaecological problems which will arise from the German law, coming into force during this year, authorizing compulsory sterilization of those suffering from certain congenital and hereditary defects. The decision of a commission of two specially appointed medical members and one presiding judicial member will authorize sterilization against the will of the person concerned. Haemophilia and hereditary skin affections, such as epidermolysis bullosa, are excluded from the scope of the statute, which is unconcerned also with induction of abortion in those subject to hereditary disease, or abortion or sterilization for social or purely medical reasons. It appears that if medical considerations call for induction of abortion or Caesarean section in those suffering from the specified hereditary disorders, to follow up the operation by tubal sterilization will be illegal. No allusion is made in the statute to the age at which legal sterilization may be performed, and x-ray castration is not mentioned in it. Operative removal of the ovaries is excluded from the scope of the new enactments, and is only to be done when life or health is seriously threatened, and then not without the patient's consent. It would thus appear that the operative sterilizing procedure in the female must not be such as to cause castration, but to prevent union of the male and female germinal cells. Reviewing such operations, Nürnbergger concludes that none is absolutely certain as regards the induction of permanent sterility, but that the following, in the order named, are most likely to be effective: (1) wedge-shaped excision of the fundus uteri with removal of both Fallopian tubes; (2) deep wedge-shaped excision of both tubes from the uterus with careful peritonization subsequently; and (3) transplantation of both tubes with their fixation in the inguinal canal.

Pathology

103 Bactericidal Action of Ketonic Urine

In pyelitis the institution of a ketogenic diet often results in the speedy disappearance from the urine of the bacteria and pus provided that a sufficiently intense ketosis is induced. A. T. FULLER (*Biochem. Journ.*, vol. xxvii, No. 4, 1933, p. 976) attempted to isolate and identify this bactericidal agent, and reports investigations which indicate l- β -hydroxybutyric acid. The inhibitory power of this acid was found to increase steadily and considerably as the urine reaction became more acid. Fuller concludes, therefore, that acidifying salts should be given in association with the ketogenic treatment. Aceto-acetic acid and acetone were found to have a similar but much weaker effect of this kind. The steps in the research are described. Since the estimation of β -hydroxybutyric acid is a very lengthy process compared with the colorimetric method for aceto-acetic acid, the determination of the amount of the latter present is commended as a sufficiently sensitive guide to the efficacy of the treatment. The author's results support to some extent the observation of Helmholtz that ketonic urines are inactive at reactions more alkaline than pH 5.6.

104 Actinobacillosis in Man

D. C. BEAVER and L. THOMPSON (*Amer. Journ. Path.*, September, 1933, p. 603) draw attention to the condition of actinobacillosis, which, while very common in cattle, has rarely been diagnosed in man. The case they now report is the third in the literature, and is of particular interest in that it proved fatal, and a pathological study at post-mortem was carried out. The patient was an

adult male who, after losing weight for about six months without apparent cause, developed symptoms of pneumonic consolidation. Death occurred after a fortnight's acute illness. At necropsy there were multiple firm greyish nodules, measuring 2 to 5 mm. in diameter, throughout both lungs. Some of them contained thick yellowish pus, whereas others were composed of greyish consolidated or caseous material. The spleen was enlarged, and was composed mainly of multiple discrete, sharply circumscribed greyish-yellow lesions, 1 to 10 mm. in diameter. Lesions were observed in the liver similar to those in the spleen, though they were less numerous and somewhat smaller. One very small abscess was present in the cortex of the left kidney. Other organs appeared to be normal. Histologically, the lesions consisted of necrotic foci surrounded by granulomatous proliferative changes. Blood culture made twenty-four hours before death yielded a Gram-negative non-motile bacillus, forming acid in glucose, maltose, mannite, and salicin, producing indole, proving highly virulent to rabbits and guinea-pigs, and bearing a close resemblance to *Actinobacillus lignieresii*. The method of infection was not determined.

105 Bacteriology of Acute and Chronic Appendicitis

R. BURTIAUX and J. TIPREZ (*C. R. Soc. de Biol.*, 1933, No. 29, p. 133) examined thirty-three appendices removed surgically for acute or chronic inflammation. The organ was removed aseptically, taken to the laboratory, opened up throughout its whole length, and washed thoroughly with several changes of Locke's solution. The mucosa was scraped, the scrapings were suspended in Locke's solution, and cultures were made from this suspension on litmus lactose agar plates for aerobic bacteria, and in glucose broth containing minced brain for anaerobic bacteria. The following organisms were recovered: *B. coli*, thirty times; enterococcus, thirteen times; streptococcus, twelve times; Morgan's bacillus, eight times; *Cl. welchii*, three times; *Ps. pyocyanea*, three times; *B. friedländer*, twice; *B. proteus*, twice; and *B. faecalis alkaligenes*, twice. This study reveals the almost constant presence of *B. coli* in appendicitis, and the part played by streptococci and by Morgan's bacillus in severe cases. The streptococci were of a type that grew better under anaerobic than under aerobic conditions—at least in primary cultures. They were found only in severe cases in which the appendix generally showed macroscopical lesions. Morgan's bacillus seemed to be associated with haemorrhagic lesions, sometimes going on to perforation. In two cases in which perforation occurred this organism was found in the appendix and in the surrounding abscess. One of these cases, from which Morgan's bacillus was isolated in pure culture, was complicated by general peritonitis.

106 A Test for Subclinical Scurvy

G. DALLDORF (*Amer. Journ. Dis. Child.*, October, 1933, p. 794) suggests that capillary resistance, as estimated by Hecht's method, may be used to reveal the existence of early or slight degrees of scurvy at a time when no clinical manifestations are observable. Reviewing the literature, he quotes Göthlin's observations (*Scandinav. Arch. f. Physiol.*, 61:225, 1930) to the effect that 18 per cent. of a group of poorly fed school children had an abnormal capillary fragility (which disappeared on the addition of orange to the daily diet), and that two patients, who, intentionally deprived of vitamin C, developed the sign of fragility, lost it when orange juice was given. In Hecht's test negative pressure is applied to the skin, and the point at which petechiae appear is noted. A serious limitation is that individual variations are very common; a single test is therefore of little value. Changes in the capillary resistance in individual cases or differences in average values of groups have, however, some diagnostic significance. In a group of children from poor homes the incidence of subclinical scurvy was found by this procedure to be between 35 and 66 per cent. The correction of dietary deficiencies was promptly followed by improvement in the capillary resistance. According to Dalldorf, no dietary factor other than vitamin C is known to influence the capillaries.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

Cardiac Infarct

107

J. HOCHREIN (*Münch. med. Woch.*, October 20th, 1933, p. 1613), after carefully tracing the history of seventy cases of this condition, found that cardiac infarction occurs four times more frequently in men than in women, and tends to appear after the fourth decade. Subjects whose daily life involved considerable emotional or nervous stress were more liable to coronary stenosis and its consequences (business men, academic workers, signalmen, etc.). In 40 per cent. of the cases it was possible to elicit a family history of cardiovascular disease; in 25 per cent. a history of rheumatism was obtained; in syphilis and gonorrhoea, diabetes and gout played no significant part in the aetiology. In only 25 per cent. of his cases did the author find that the attacks occurred without previous warning; the remainder gave a history of unusually great dyspnoea after slight physical effort, and showed signs of circulatory insufficiency (oedema, ascites, etc.). In 25 per cent. of his cases symptoms of anginal attacks had appeared long before the establishment of the infarct; in many, lesser symptoms of myocardial trouble had been complained of but ignored. Myocardial infarcts were found to be specially frequent in November, December, and January, and were not the unexpected phenomenon described in textbooks. Hochrein believes that psychological factors are of definite importance in the precipitation of the condition, and quotes two illustrative cases. He discusses preventive treatment with nitrates and organ extracts in the untoward symptoms which often occur. Special warning is given against digitalis unless some cardiac decompensation is diagnosed. The value of sedatives is specially dealt with; the author favours barbiturates, and considers morphine derivatives contraindicated. Diet should be of small volume or high calorie value; smoking must be forbidden, as must also coffee or tea; alcohol in small doses is often useful; physical exertion must be controlled according to the general condition of the heart. Atropine, recommended by some, was found by the author to be of little avail.

108

Atherosclerosis

H. GROLL (*Med. Welt*, October 21st, 1933, p. 1485) divides atherosclerosis into the typical atheroma, as seen in the aorta, coronary, and cerebral arteries; medial calcification, especially common in the femoral arteries; and diffuse hyperplastic arteriosclerosis, such as accompanies hypertension. After discussing the histological picture in these conditions he summarizes the present knowledge regarding the aetiology of atherosclerosis. A mechanical factor is frequently present, such as apparently determines the localization of atheromatous patches—for instance, around the mouths of the intercostal arteries—while age is another predisposing cause. Diathesis he considers important, and cites the plethoric type in which all mesenchymal tissues tend to degenerate; the nervous individual with an unstable vasomotor system is also peculiarly liable to arterial disease. Metabolic dyscrasia may play a part, as suggested by the production of fatty changes in the intima of the aorta of guinea-pigs on a high cholesterol diet. This has caused Aschoff to suggest that atheroma is due to an imbibition of lipid in guinea-pigs by a high calcium diet or by injection of adrenaline. In the latter instance it appears to be secondary to angiospasm. It is not known whether hypercalcaemia in the human being will produce it. Further factors are endogenous and exogenous toxic-infective influences, among which may be cited lead, alcohol, nicotine, diabetes mellitus, and nephritis. The part played by syphilis has, he states,

been exaggerated in the past, but other infections such as rheumatic fever may be of importance. Confusion has, he believes, originated in the past from the different viewpoints from which this protean disease may be regarded. Its segregation from other arterial disease is important. From, for instance, Buerger's disease, endarteritis obliterans, and periarteritis nodosa acuta. Groll further concludes that Monckeberg's medial calcification and diffuse hyperplastic arteriosclerosis should probably not be included under the heading of atherosclerosis.

109

Diphtheria in Immunized Persons

W. DAOLIN (*Irish Journ. Med. Sci.*, November, 1933, p. 611) records his observations on seventy-eight cases certified to be suffering from diphtheria, which occurred among 8,027 children, 6,878 of whom had been fully, and 1,149 partially, immunized. In thirty-three cases (42.3 per cent.), however, the diagnosis was not confirmed, but the treatment had been incomplete, and in six cases the diagnosis was confirmed and the treatment had been complete, but the latent period had been insufficient for development of immunity—that is, had been under four months—so that in only twenty-seven cases had the diagnosis been confirmed, the treatment complete, and others doubtful. Of the remaining fourteen cases twelve had not been Schick-tested after treatment. Diphtheria was reported in seven Schick-negative reactors, but in five of these the diagnosis was extremely doubtful, and two negative reactors developed definite diphtheria. All the seventy-eight patients recovered. In all the cases the response to antitoxin was rapid, and in only one instance did complications occur (in the form of cardiac irregularity).

110

Trichlorethylene Industrial Poisoning

K. ROHOLM (*Ugeskrift for Læger*, November 2nd, 1933, p. 1183) draws attention to the growing popularity in Denmark of the fat-solvent trichlorethylene ($\text{CHCl}_2\text{CCl}_3$) as a cleansing agent. He states that it is dangerous, and recalls that in 1931, in Germany, Stüber published 284 cases of poisoning, among which there were twenty-five deaths. The author gives an account of three cases of acute, but not fatal, trichlorethylene poisoning in a factory where, in December, 1932, three apprentices between the ages of 15 and 16 were set to work to clean walls and machinery soiled with oil. The trichlorethylene with which they mopped up the oil was served to them in cans. One after the other the boys collapsed, and had to be taken to hospital. A fourth case was that of a workman, aged 21, who cleaned machinery with trichlorethylene in a room with doors and windows shut. Though he was ill enough to be taken to hospital, he recovered quickly. Not being inflammable, and being a more effective solvent of fats than benzene, trichlorethylene has become popular both in factories and in the home. According to Roholm, its dangerous qualities are inadequately appreciated, and it is not generally realized that some persons, notably women and children, are particularly susceptible to this poison. T. CHRISTIANSEN (*ibid.*, p. 1187) records a case of a woman, aged 30, admitted to hospital with the diagnosis of military tuberculosis of the lungs. She had been ailing for a couple of months, and a skiagram of the lungs had led to a diagnosis of trichlorethylene poisoning. During eighty-one days' residence in hospital the lung shadows cleared up completely. It transpired that the patient's first symptoms of serious pulmonary disease had begun after she had spent half an hour cleaning shoes with trichlorethylene close to a very hot stove.

Surgery

111

Femoral Hernia

L. RONSE (*Journ. de Chir. et Ann. Soc. Belge de Chir.*, October, 1933, p. 306) suggests that the causation of femoral hernia may be similar to that which produces diverticula of the oesophagus. In the latter case inflammation of the peribronchial glands brings about the formation of adhesions between the glands and the oesophagus which, by means of traction, produce a diverticulum. Three cases are reported in which operative treatment disclosed a similar condition. In each instance there was a history of adenitis which had subsided, leaving a femoral hernia. Operation showed a hernial sac which was firmly adherent to one or more glands in the crural canal. It is pointed out that all the lymphatics of the lower limbs, the external genitals, and the anus drain into the inguinal glands. There are many causes of inflammation in these glands, particularly in the female, which accounts for the greater frequency of femoral hernia in women. In chance of the cervix it is usually the inguinal and not the pelvic glands which are affected. The result of inflammation in these glands is that the tissue in this region is replaced by a mass of scar tissue, which contracts round the glands, particularly when the gland of Cloquet is involved, and produces a hernia by traction. It is therefore suggested that all cases of non-suppurative adenitis of the inguino-crural glands should be excised to prevent the later formation of a hernia.

112 Recurrent Dislocation of the Shoulder

P. EWALD (*Zentralbl. f. Chir.*, October 28th, 1933, p. 2564) states that in Germany; but not in Austria, those who habitually dislocate a shoulder are entitled to compensation which is correlated with the trauma, possibly very slight, which preceded the original dislocation. This, he thinks, is unjust; although some cases of habitual dislocation are due to accidental tearing of the capsule or detachment of the supraspinatus muscles from the greater tuberosity, many are due to congenital or non-traumatic slackness of the capsule. Ewald states that he has seen and radiologically demonstrated in school children the occurrence of subglenoid dislocation of the humerus of one side during gymnastic movements of the arms upwards. He relates the case of a man, aged 33, who returned to work ten days after the reduction (in narcosis) of his first dislocation of the left shoulder following slight trauma; during the next three years displacement occurred on innumerable occasions, even during sleep, but with one exception was rectified by the patient himself. Radiological appearances were normal, but an operative tightening of the capsule was undertaken. Responsibility for the 30 per cent. incapacity which followed was laid—wrongly, as Ewald thinks—on the original accident.

113 Malignant Tumours of Long Bones

F. ROSCHER (*Norsk Mag. f. Laegevid.*, October, 1933, p. 1081) records his observations on twenty-two cases of malignant tumours of long bones treated in Professor B. Bull's service of the Rikshospital, Oslo, from 1913 to 1928. There were seventeen cases of primary sarcoma and five of metastatic bone tumour. In the first group the humerus was affected in seven, the femur in eight, and the tibia and fibula in one case each. Seven of the primary sarcomas were observed in women and ten in men, seven of them being probably medullary and five probably periosteal sarcoma. In five cases it was impossible to ascertain their starting-point. Of eleven tumours of the humerus seven were primary sarcoma and four metastatic tumours. Four of the patients with primary sarcoma of the humerus were still in their teens, whereas three were aged from 28 to 55. In three cases there was a history of trauma. All these tumours were localized in the upper third of the humerus. Treatment was operative in every case. In six cases humerus resection and

fibular transplantation were performed. One of the femoral tumours consisted of a metastasis from a hypernephroma. Six of the femoral cases occurred between the ages of 13 and 20, one was aged 29, and another 63. Roscher comes to the conclusion that radical amputation and exarticulation—at any rate in the case of the femur—not infrequently saves the patient's life, whereas resection very rarely produces a good result. Every case of resection should subsequently be treated by x rays.

114 Foreign Bodies in the Alimentary Tract

G. STOEL (*Nederl. Tijdschr. v. Geneesk.*, November 15th, 1933, p. 5274) states that during the period 1930-3 fifty-four patients were admitted to the Coolsingel Hospital, Rotterdam, with the diagnosis of foreign body in the alimentary tract. This number was almost twice as great as that of the admissions for foreign bodies in the respiratory tract. There were thirty-two males and twenty-seven females, and the ages ranged from under 1 to over 70. In fifty-three instances the diagnosis of foreign body was confirmed, the site being the oesophagus in twenty cases, the stomach in six, the duodenum in five, the colon in seven, the rectum in two, and the intestines (without mention of the exact situation) in thirteen. Of the twenty oesophageal cases, seven underwent oesophagotomy; in six the foreign body was extracted by mouth, with or without oesophagoscopy; in six it was passed by rectum; and in one the patient died without having had treatment. Of the thirty-three cases twenty-two had conservative treatment and the foreign body was passed per rectum, in two it was extracted, and nine underwent operation. The operative mortality was nil.

Therapeutics

115 Quebrachitol as a Sugar Substitute in Diabetes

R. A. McCANCE and R. D. LAWRENCE (*Biochem. Journ.*, vol. xxvii, No. 4, 1933, p. 986) have tested the value of quebrachitol (1-methylinositol) isolated from quebracho bark as a sweetening agent for diabetic patients. They found that when taken by the mouth it does not relieve hypoglycaemia, raise the blood pressure, or lead to the deposition of glycogen in the liver. It is much less sweet than cane sugar, and consequently larger amounts have to be taken. Such large doses produce colic and diarrhoea, which may be severe. The authors are therefore unable to recommend this drug as a sugar substitute.

116 Intravenous Liver Extract Therapy in Pernicious Anaemia: Assessment of Potency

F. H. BETHELL and S. M. GOLDHAMER (*Amer. Journ. Med. Sci.*, October, 1933, p. 480) compare the reticulocyte response induced in pernicious anaemia respectively by the customary doses of orally administered liver extract and desiccated stomach (ventriculin) and the intravenous injection of liver extract. Minot and his associates showed that the degree of response was uniform and predictable in relation to the erythrocyte count before treatment with liver. Subsequently, the daily determination of the reticulocyte percentage until a maximum value is obtained has been the generally accepted means of assaying the potency of other modes of treatment proposed for this condition, and a formula was designed to indicate the magnitude of response for liver therapy. There followed another one designed to give corresponding information in the case of stomach extract therapy. When a formula was calculated on these lines for liver injection therapy, it was found that the reticulocyte response was of considerably greater magnitude than in the cases of the orally ingested liver or stomach treatments. The authors suggest that the probable significance of the different degrees of response on the part of the reticulocytes is that it reveals the rate at which the potent material travels to the bone marrow. It is not, they believe, connected with the total amount of potent

material administered to the patient. The oral route is rendered of less value probably by the occurrence of incomplete absorption from the gastro-intestinal tract, or partial destruction by digestion. Tables of normal "reticulocyte response" are provided by the authors as standards in evaluating the potency of liver or stomach preparations. A maximum percentage which was significantly low would indicate that the therapeutic preparation was of inadequate potency, or that there was present an infection preventing proper response, or that absorption was incomplete, or that the patient had arteriosclerosis.

117 Medical Treatment in Obstructive Cholelithiasis

According to J. DIMITRESCO-POPOVICI (*Presse Méd.*, November 8th, 1933, p. 1730) operation should be performed in lithiasis of the common bile duct only after sure diagnosis; the latter is, however, often difficult as the clinical and radiological signs are not always sufficiently clear. Duodenal tubage with instillation of a 33 per cent. solution of magnesium sulphate has been proved a better diagnostic aid than the icterus syndrome or the history of previous attacks. As the procedure causes a discharge of bile in cases of icterus of obstructive origin, the author believes that it may be a curative measure in calculous obstruction of the duct. Two cases are cited which substantiate this opinion; in a third a simple attempt at gastric tubage provoked a biliary attack with a bile syndrome, which was followed by discharge of two calculi. The mechanism of the action of duodenal tubage has been experimentally proved as follows. The presence of the chologogue in the duodenum is followed by a period of muscular tetany, more or less prolonged, and accentuated according to the degree of irritability of the substance instilled. This is followed by peristaltic and anti-peristaltic contractions of varying violence related to the same cause. These are immediately followed by a period of duodenal distension, which relaxes the sphincter of Oddi and withdraws the pancreatic juice and bile of the ducts. Once the ducts are emptied the gall-bladder discharges its contents owing to the aspiration provoked by the duodenal contractions. Relaxation of the sphincter, above which calculi are usually impacted, and the subsequent rapid duodenal evacuation are the two factors in clearing the duct. The author suggests, in explanation of this mechanism, that the gall-bladder alone, by its reflex contractions, is capable of responding to the magnesium irritation; in biliary lithiasis it is atonic, and consequently incapable of contracting and expelling its contents.

118 Simultaneous Bilateral Artificial Pneumothorax in Pulmonary Tuberculosis

G. BARBERA (*Il Polichnico, Sez Prat.*, November 20th, 1933, p. 1841) records twelve illustrative cases in patients aged from 17 to 31, suffering from very severe forms of pulmonary tuberculosis, who were treated by simultaneous bilateral artificial pneumothorax. The treatment was well tolerated in each case, the end-results after a period ranging from two to six years being as follows: one death, no change in two cases, improvement in five cases, and clinical recovery in four.

119 Immunization against Whooping-cough

L. W. SAUER (*Journ. Amer. Med. Assoc.*, November 4th, 1933, p. 1449) states that a *B. pertussis* vaccine containing 10 billion bacilli per c.cm. made from recently isolated strongly haemolytic strains was injected into 394 young non-immune subjects. A total of 7 to 8 c.cm. was divided into three weekly (bilateral) injections of 1, 1.5, and 1.5 c.cm. respectively. Of the injected children twenty-nine were exposed throughout all the stages of pertussis, but none contracted the disease, whereas thirty-one control children in twenty-four families developed whooping-cough. None of 162 children accidentally exposed had a cough which in any way resembled pertussis. Active immunity was completed in four months and lasted for years. The best age for immunization is stated to be the second half-year of life.

Radiology

Duodenal Diverticula

120

C. D. COSTELLO (*Brit. Journ. Radiol.*, October, 1933, p. 577), reporting six cases of diverticulum of the duodenum, comments on the detection of this condition by the barium meal. In four of his cases the diverticula were not observed until after more than one barium meal, and in none were the findings complete. The reason for this was that in every case the indication of the diverticulum was only found on the films taken, and had not been shown by the screen examination. The author remarks that the stomach and the first part of the duodenum take up so much of the examiner's attention that the second, third, and fourth portions tend to be neglected, especially since the symptoms may be misleading. The possible occurrence of diverticulosis should be definitely considered, therefore, at every screen examination, the patient being tested in the erect and the prone positions in all cases. The shadow of the barium meal in a duodenal diverticulum is usually rounded and smooth, both in filling and in outline. The shadow is distinct from that of the duodenum, but a definite connexion can nearly always be traced by following the folds of the mucosal relief into the diverticulum, and by emptying the duodenum by palpation under the screen. According to the author it is important to determine the exact site of a diverticulum, since the nearer to the major papillae it lies the smaller will be the size at which it will press upon the ducts entering there. Differential diagnosis from the niche of gastric or duodenal ulcer, or a colonic haustrum or diverticulum, is, he states, not difficult.

121 Interpretation of Duodenal Motility

N. S. ZEITLIN (*Radiology*, October, 1933, p. 337) record conclusions drawn from the examination of over 2,000 cases of disturbances of the motility of the duodenum, the flow of the barium meal being watched, and careful note being taken of the size of the duodenal cap, the angle formed by the cap and the descending portion, the course over the spine, the length and steepness of the ascending portion, and the angle at the duodeno-jejunal junction. Normal hypotonic and hypertonic cases were used as controls. It was found that duodenal ulcer, gastric ulcer, and pathological conditions of the gall-bladder did not affect normal stasis and surging. Zeitlin satisfied himself that mechanical obstruction alone does not account for either the x-ray signs or the clinical symptoms. Many of the symptoms of dyspepsia have been attributed by other authors to duodenal surging, but no confirmation of this was obtained. Zeitlin believes that this phenomenon, as well as that of stasis, is of physiological origin, being due primarily to the neuromuscular mechanism, and secondarily to the mechanical conditions found variously in different types of patients. He thinks he has obtained sufficient evidence to justify the view that this symptom-complex is due to the lowering of the threshold of the sympathetic sensation centre. He examines critically and rejects other explanations, such as acute angulation at the duodeno-jejunal junction, compression by the mesenteric artery, and duodenal inflammation or intermittent obstruction. He is doubtful whether the symptoms noted in such cases have any direct relation with the duodenal condition.

122 Pyrexial Treatment of General Paralysis

WAGNER-JAUREGG (*Wien. med. Woch.*, Nr. 1, 1934, p. 11) criticizes on various grounds the treatment of general paralysis by short-waved high-frequency currents timed and graded so as to induce a temperature curve resembling that of malaria. This treatment is given on the assumption that the success of artificially induced malaria in cases of general paralysis depends mainly or exclusively on the fever provoked. This assumption is incorrect, for an artificial malaria may be afebrile, or nearly so,

and yet the results are beneficial. Many such cases have been recorded. Their number would be even greater were it not that in some cases the absence of a febrile reaction was promptly interpreted as a failure to induce malaria, and some other treatment aiming at raising the temperature was tried. Good results have, it is true, been claimed for the high-frequency treatment of general paralysis; but these results have been early and have not yet stood the test of prolonged observation. The discomforts of the high temperature induced by radiotherapy or diathermy may be even greater than those associated with malaria, for in the latter case the patient can at any rate move his limbs freely and change his position, whereas the former treatment entails eight hours of immobilization, during which the patient is strapped up like a mummy. There are two other objections to radiotherapy and diathermy—namely, the prospect of burns and the cost of the apparatus. The author professes satisfaction with the results of artificial malaria, the dangers of which he considers apocryphal, and he sees no reason why, for the present, new-fangled and costly substitutes for it should be introduced in Vienna.

Obstetrics and Gynaecology

123 Leucoplakia and Cancer of the Cervix

E. PHILIPP and G. SCHÄFER (*Zentralbl. f. Gynäk.*, October 14th, 1933, p. 2407) discuss the connexion between leucoplakia and cancer of the cervix. Hinselmann, working with the colposcope, which he introduced, has stressed the importance of leucoplakia and described five or six varieties; he regards it as a precancerous condition, and believes that he has found behind a leucoplakia an early carcinoma, and that serial sections of his leucoplakia show various stages of transition to cancer. Others have confirmed the first of these findings. The present authors believe that the crucial test is a clinical one—namely, is carcinoma found to occur in those who are known to have leucoplakia of the cervix? Hinselmann himself has no evidence of this nature to offer, for he removes the leucoplakias by amputation of the portio. A critical consideration seems to destroy the value of the three recorded cases in which the sequence in question has been reported. Philipp and Schäfer, who have used the colposcope for some three years and are convinced of its diagnostic value, have followed up for from six to thirty months forty-nine cases of cervical leucoplakia, but in no instance have they yet noted the development of a carcinoma. In colposcopy, they suggest, erosions deserve particular attention, the occasional formation of a carcinoma in an erosion being undoubted.

124 Late Effects of Pregnancy Toxaemia

M. D. ARWYN EVANS (*Journ. Obstet. and Gynaecol. British Empire*, October, 1933, p. 1024) reports research work on the subsequent effect of a pregnancy toxæmia. The term was taken to cover cases of low reserve kidney, pre-eclampsia, and eclampsia. In round numbers two out of every three cases with albuminuria during pregnancy develop after-effects, mostly renal. Twenty per cent. developed chronic nephritis, so that this becomes a more important consideration than eclampsia, which is generally preventable. Prognosis may be based on the facts that the average age of the non-toxaemic patients was 26.5 years; of the albuminuric, 28.4; and of those who developed a definite renal lesion within four years 28, a doubtful renal lesion 31, and no renal lesion 26 years. Ultimate prognosis was found to be more favourable in primigravidae than in multiparae, but more important was the duration of the albuminuria. This averaged fifteen days in a group of patients who developed no after-effect and twenty-eight days in those classed as probably chronic nephritic—from which is deduced the teaching that albuminuria must be watched for and treated fully by diet and bed, and that if it persists over

a fortnight induction must be considered, as also if blood pressure remains above 170 mm. Hg. In patients with albuminuria present at their discharge two-thirds developed chronic nephritis. Therefore a mother must be kept in bed until there is no albumin in the urine. The presence of headache and eye signs suggests the possibility of permanent damage, but the position and degree of oedema, amount of albumin, and the presence or absence of casts seemed to bear no relation to the prognosis. In the multiparous patients studied 25 per cent. had had previous albuminuric pregnancies. Searching for data for prognosis of recurrence, the author found that this was likely to occur in patients, aged 28 or over, when the albuminuria had lasted twenty-one days during the pregnancy, when the blood pressure had averaged over 160 mm. Hg, and when albuminuria was still present on discharge. If the child survived for fourteen days its future prognosis was good.

Pathology

125 Haemolytic Streptococci grown Anaerobically

R. M. FRY (*Journ. Path. and Bact.*, November, 1933, p. 337) draws attention to an important fallacy in the routine examination of clinical material for β -haemolytic streptococci. During the last three years he has observed a number of cases in which a streptococcus has been isolated that gave green colonies when grown aerobically and typical β -haemolytic colonies when grown anaerobically. In some of these cases β -haemolytic streptococci had been isolated in pure culture from the blood, and the anomalous forms were subsequently grown from the site of inflammation in the cervix uteri. This circumstance inclines the author to discountenance the possibility of a mixed infection with α - and β -haemolytic types, and to regard the anomalous strains as merely reacting differently to different environmental conditions. Further evidence in favour of this view is afforded by the fact that the aerobic green forms produced a strong haemolysin when grown in serum broth, and that one particular strain, in apparently pure culture, gave constantly green colonies under aerobic and β -haemolytic colonies under anaerobic incubation. Practically, it is desirable to put up material suspected of containing streptococci under both aerobic and anaerobic conditions.

126 The Sedimentation Rate in Scarlet Fever

S. FRIEDMAN (*Amer. Journ. Med. Sci.*, November, 1933, p. 683) made a study of the sedimentation rate in fifty-five cases of scarlet fever in patients aged from 4 to 55 years with the following results. In very mild cases which showed no fever or constitutional symptoms there might be no increase of the rate at any time. In ordinary mild cases the rate was elevated at first, but fell fairly promptly and reached a normal level during the second week of the disease. In severe cases the rate remained at a high level throughout the patient's stay in hospital. Complications were accompanied by a rise in the rate unless the rate was already distinctly increased. No conclusions could be drawn as to the effect of the administration of convalescent serum or antitoxin on the sedimentation rate.

127 Oxaluria and Intestinal Tuberculosis

V. GIUDICEANREA (*Il Policlinico, Sez. Prat.*, November 6th, 1933, p. 1755) records a series of personal cases in which oxaluria was associated with the presence of small intestinal parasites, such as chilomastix, various amoebae, trichocephalus, and lamblia. He considers that the frequency of this association is due to changes in intestinal chemistry and to the toxic action on the hepatic function and metabolism. He admits, however, that this is only one of the possible explanations of oxaluria, which may also be regarded as a primary change in metabolism or as one occurring in various morbid conditions, especially gastric hypochlorhydria.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

128

Collapse in Diabetic Coma

For some years M. LABBÉ and R. BOULIN (*Presse Méd.*, November 4th, 1933, p. 1705) have believed that collapse is a pathogenic factor in certain acidotic diabetic comas, and must be regarded as an important cause of mortality. It occurs not only in old subjects with impaired myocardia, but also in the young who have no reason to fear cardiac failure. Collapse rarely occurs at the onset of the coma with the somnolence, but usually six to twelve hours later, and it may be delayed for thirty-six hours. Functional premonitory symptoms (malaise, dyspnoea) are absent; anuria or extreme oliguria, associated with a lowered arterial tension, is a precursor of it, and sometimes of its complication with renal insufficiency. The chief symptom of collapse is hypotension: the maximal tension rapidly and progressively falls; the minimal, often difficult to measure, falls less quickly at the onset. The pulse, when palpable, is always perfectly regular, but accelerates with the collapse. The heart is seemingly little affected, the sounds remaining fairly strong and not markedly muffled. Gallop bruits, functional souffles, and arrhythmia have never been noted. In view of the cardiac conditions, Lewis, who reports two cases of cure, believes that the collapse is due to dehydration consequent on the precomatose polyuria, vomiting, and diarrhoea, and advocates rehydration with large intravenous injections of hypertonic saline serum. On the same grounds, however, the present authors, believing that the collapse is peripheral rather than central, vascular rather than cardiac, administer adrenaline. Citing two personal cases of cure, they emphasize the importance of estimating the arterial tension during the first and succeeding days of the coma. If this falls progressively, intramuscular injections of adrenaline, or oral doses (2 to 5 cg.) of ephedrine, are given prophylactically. If the maximal tension falls below 9 cm. an intravenous injection of 1/2 litre of physiological serum containing 1 mg. of adrenaline is given, and repeated once or oftener if necessary. Should the fall continue during the ensuing days daily muscular injections of adrenaline, or preferably ephedrine tablets, are given.

129

Toxicity of Carbon Tetrachloride

J. W. TOMS and M. M. HELMY (*Journ. Trop. Med. and Hyg.*, November 1st, 1933, p. 334) point out that carbon tetrachloride and its closely allied halogen derivatives of the aliphatic hydrocarbons are capable, even in therapeutic doses, of causing fatal intoxication, accompanied by acute degeneration of the liver. Fatalities from this cause occur much more frequently among children and adolescents than among adults, probably owing to the deficiency of calcium reserves in the young. Immediate poisoning by carbon tetrachloride in therapeutic doses is generally associated with disease of the liver, or with some other clinical contraindication to the exhibition of the drug. Delayed poisoning is generally due to non-elimination of the drug from the intestinal tract, in or without association with clinical contraindications. It can be obviated, where the liver is healthy, by rapid and free evacuation of the drug. In Egypt fatal poisoning by carbon tetrachloride has been found to be closely associated with ascariasis, which would appear to act in two ways. It may cause a mechanical obstruction to be presented to the action of the saline purgative, and increased obstruction of the drugs where worms are numerous in the intestine, through aggregation of the worms into clumps. It may also diminish the natural resistance to the drug in cases where clinical contraindications already exist, either through toxins produced by the worms or in consequence of the unsatisfactory conditions and consequent low state of the general nutrition which ascariasis implies. Where intoxication by carbon tetrachloride has

begun, intensive treatment by intravenous injections of calcium gluconate may save life, provided that the drug has been thoroughly evacuated from the intestinal canal. The authors add that the traces of carbon disulphide found in medicinal carbon tetrachloride are of no toxicological significance.

130

Rheumatism and Environment

G. EDSTRÖM (*Hygiea*, November 15th, 1933, p. 801) publishes statistics dealing with the incidence of rheumatic diseases among the municipal employees of Gothenburg in the period 1928-32. Accidents excluded, the rheumatic diseases accounted for 11.6 per cent. of all the sickness days. A classification of the employees according to their work showed that the incidence of rheumatic diseases was much higher among outdoor than indoor workers. The rheumatic diseases were classified according as they affected the joints or other structures, and it was found that muscular rheumatism and neuralgia accounted for many more sickness days than did articular rheumatism. Thus, among the outdoor employees of the harbour service there were only sixteen sickness days per 100 employees every year due to articular rheumatism, whereas the corresponding figure for muscular rheumatism and neuralgia was 104. So, though articular rheumatism may be practically the only form of rheumatism which inflicts permanent invalidism, it is the muscular and nerve forms of rheumatism which account for most of the sickness rate among persons not more or less permanently on the sick list. In his plea for the organization of special rheumatism services devoted to the betterment of the conditions under which persons subject to rheumatism work, the author draws attention to a statement by Mathieu Pierre-Weil in 1932 at the last Rheumatic Congress in Paris, according to which, in a large administrative railway area, a special rheumatic service had succeeded in reducing the costs entailed by rheumatism by not less than 40 per cent.

131

Tuberculosis and Chorea

E. LOEWENSTEIN (*Wien. Klin. Woch.*, October 27th, 1933, p. 1286) claims to have discovered tubercle bacilli in the blood stream and cerebro-spinal fluid in several cases of chorea. He refers to his previous article (*Munch. med. Woch.*, 1931, No. 7) in which he described positive blood cultures of tubercle bacilli in four cases of chorea. The association of chorea and polyarthritis has been recognized for many years, but Loewenstein believes that "rheumatic" pleurisy, "rheumatic" chorea, and "rheumatic" iritis are actually all of tuberculous origin. "Recently, it has been recognized that 90 per cent. of cases of rheumatic iritis are tuberculous." Several German and Italian authors have confirmed the clinical connexion between tuberculosis and rheumatism, and Loewenstein states that the indisputable occurrence of tubercle bacilli in the blood stream in chorea justifies the opinion that cerebral tuberculous foci may be the origin of chorea. The scarcity of material has prevented histological demonstration, but R. LENS (*Wien. Arch. f. Klin. Med.*, No. 10) described inflammatory changes in the blood vessels and in neighbouring tissues in the region of the island of Reil, the anterior cerebral ganglia, and ventral portion of the mid-brain. Loewenstein states that he has found tubercle bacilli in the blood and cerebro-spinal fluid in many cases of dementia praecox. Two cases are described. The first, a girl aged 9 years, had a positive tuberculin reaction, hilar peribronchial thickening, and calcification of lymph nodes. She was debilitated, with dysphagia, stammer, and violent choreic movements. Culture of blood and cerebro-spinal fluid showed many typical colonies of tubercle bacilli. In the second, a boy aged 11 had a negative tuberculin reaction. He was admitted with very violent choreic movements and dragging of the right leg. Though the blood cultures were negative, cultures from the cerebro-spinal fluid were positive in every instance.

Surgery

132

Bleeding from the Nipple

According to I. PHILIPOWICZ (*Zentralbl. f. Chir.*, November 4th, 1933, p. 2603) the occurrence of the malignant breast tumour after bleeding from the nipple is especially frequent among the Jewish and Eastern races. The author recounts a personal experience of eight cases, in five of which malignant disease was present, and, after discussion of the treatment, comes to the following conclusions. For the cases with quite a small palpable tumour wide excisions should be done: histological evidence of malignancy calls now for radical operation. When no tumour can be felt continuous observation should be carried out: if this is impossible, or if the patient is aged over 40, radical excision should be done. Radical treatment is required also for diffuse disease or non-limited tumour. Non-radical amputation is useless, and biopsy is dangerous as well as uncertain. According to F. KLAGES (*Monats. Krebshepfig.*, August, 1933, p. 321) the frequency of bleeding from the nipple as a symptom in cancer of the breast has been variously reported as from 0.7 to 9 per cent.; in about one in three cases of bleeding from the nipple carcinoma is present at some stage, but the bleeding may occur (in the absence of carcinoma) from an intracanalicular cystepithelioma or papillary cystadenoma, or in the "cystic breast." Vicarious mammary haemorrhage is possible. Injections, aspiration, and radiation are not justified when there is bleeding from the nipple and a tumour is present: the operation should be simple or radical, according to clinical findings, but in the former case sections should be microscoped before the operation is concluded.

133 Instrument for Suprapubic Cystostomy

M. SERRALLACH (*Journ. d'Urol.*, October, 1933, p. 360) describes a new instrument, which he calls a bistoury-harpoon, for use in suprapubic cystostomy. He points out the difficulties experienced in fat patients with small retracted bladders and the necessity for skilful technique in operating where the bladder lies at the bottom of a deep wound. The knife is made in two sections, and has the appearance of a spearhead; it divides down the middle, leaving two bistouries which are easily separated. As soon as the bladder is located with the finger and the peritoneal reflection has been separated, the knife is introduced into the bladder with a sharp cut, being guided by the index finger. The two segments of the bistoury are now separated and each point draws up an edge of the vesical incision, thus allowing the surgeon to see the opening into the bladder. It is then easy to pass a drainage tube through the opening into the bladder, which is firmly held by the two harpoons. As soon as the tube is in place the harpoon is withdrawn. By means of this instrument the author finds that difficult cystostomies are quickly and satisfactorily carried out.

134 Intussusception associated with Tuberculosis

E. EASTON (*Arch. of Surg.*, November, 1933, p. 868) describes an unusual case of intussusception which occurred in a man of 32. Operative treatment for the reduction of the intussusception was carried out and an ileostomy performed. The patient continued to lose weight and strength, and a second operation (entero-enterostomy), for the repair of the intestinal fistula, was undertaken. The patient died on the sixth day. Necropsy showed chronic active bilateral apical tuberculosis of the lungs, with bilateral, caseating, tuberculous bronchopneumonia in both lower lobes, and tuberculous pneumonia in the left upper lobe. Parenchymatous degeneration was seen in the liver and kidneys. There was also necrosis of the ileum, peritonitis of the terminal ileum and ascending colon, ulcerative tuberculous colitis, diverticula of the duodenum, and active tuberculosis of the mesenteric lymph nodes. Easton suggests that pulmonary tuberculosis is a predisposing factor in causing intussusception, and states that gastro-intestinal disturbances have been noted in 70 to 92 per cent. of cases of early

tuberculosis. Ulcers arising from typhoid fever or intestinal tuberculosis are frequent causes of intussusception, whilst trauma and diet are important causative factors. The strong, irregular peristalsis induced by castor oil is another reason given for the lesion. An enlarged tuberculous lymph gland can produce intussusception by pressure into the wall of the intestine until there is complete invagination. The disease, less common in adults than in children, shows a high mortality, which is in direct proportion to the length of time between the onset and the operative treatment. There is a tendency to recurrence even after the affected piece of intestine has been resected. Easton states that every tuberculous patient should be regarded as a potential case of intussusception, special care being taken with regard to nutrition, protection from over-exertion, and an increased watchfulness for gastro-intestinal symptoms.

135

Mesenteric Cyst

M. MILIANITCH (*Bull. et Mém. Soc. Nat. de Chir.*, November 4th, 1933, p. 1269) discusses the various methods of treatment of this rare and interesting lesion. Since puncture and marsupialization have fallen into disuse the chief issues between enucleation or intestinal resection, and the author reports the removal of a mesenteric cyst the size of a child's head by the latter method. Operation revealed a large cyst enclosed in the mesentery, situated at an equal distance from the caecum and the duodeno-jejunal angle, and intimately adherent to a large portion of intestine on one side, whilst the other was surrounded by a rich plexus of vessels. A large quantity of fluid was withdrawn on puncture. It was decided to carry out the resection of a large portion of the intestine together with the removal *en bloc* of the mesenteric tumour and a lateral anastomosis in two layers of the intestine. This was successful and the patient made a good recovery.

Therapeutics

136

Serum Treatment of Tularaemia

L. FOSHAY (*Journ. Amer. Med. Assoc.*, November 4th, 1933, p. 1447) records his observations on sixty-nine cases of tularaemia treated by serum made by inoculating goats subcutaneously with formaldehyde-killed suspensions of *B. tularensis*. The injections were given subcutaneously, intramuscularly, and (most frequently) intravenously. No patient was treated during the first six days of disease, five were treated on the seventh, eight before the end of the tenth day, and the majority during the first five weeks, the average time for receiving serum being the twenty-first day. Four deaths occurred. The mean duration of the disease in the sixty-nine cases was almost half that of a control series. The duration of the adenitis and period of disability were appreciably shortened, but the mean febrile period was not. Foshay recommends that in a moderately severe attack two intravenous injections should be given on successive days, of 15 c.cm. each, of an antiserum made from virulent strains of the organism. When the lymphatic glands are already larger than 5 cm. in diameter, three such doses should be given to prevent suppuration. Cases of the typhoid type should also be given serum in much larger amounts. Early diagnosis is very important so that serum may be given before the tenth day of disease if possible.

137

Drinker Respirator in Poliomyelitis

The treatment in the Drinker artificial respirator of forty-six patients with respiratory failure due to acute epidemic poliomyelitis is described in detail by M. B. BRAHDY and M. LENARSKY (*Amer. Journ. Dis. Child.*, October, 1933, p. 705), who consider that this procedure represents an outstanding advance in therapy. Cases of bulbar lesions were excluded after the first few weeks. It was frequently necessary to give repeated large doses of sedatives after the patient had been placed in the respirator. Constipation was often a troublesome complication, a contributing factor being the inability of the patient to produce a

positive intra-abdominal pressure. Orthopaedic treatment of the lower extremities and trunk was provided, although the apparatus prevented attention to the chest and arms. The youngest patient in the series was 14 months old and the oldest 24 years. The youngest patient to survive was aged 3 years. Those with paralysis of the diaphragm or intercostal muscles, or both, were classified as having spinal lesions. Of these there were thirty-four, and eighteen survived. The twelve bulbar cases, with involvement of the cranial nerves and presumed affection of the respiratory centre, proved fatal. The best indication of the progress of the disease was afforded by the temperature, the pulse rate and examination of the spinal fluid and blood counts giving no useful assistance in this respect. All except six of the patients who survived had temperatures under 101° F. after the third day. With recovery, weaning from the enforced artificial respiration was sometimes rather difficult. The authors emphasize the necessity of careful medical and nursing supervision, timely administration of sedatives, and parenteral injections of fluid, a time schedule for turning the patients on to their backs, and the prevention of any rise of the temperature of the air inside the respirator.

138 Ephedrine in Stokes-Adams Disease

C. S. HIGLEY and R. M. STECHER (*Amer. Heart Journ.*, October, 1933, p. 90) review a case of Stokes-Adams disease in which complete cessation of the attacks was brought about by the administration of ephedrine by the mouth. The patient was first treated with 10 minims of 1 in 1,000 adrenaline solution injected subcutaneously; this gave him relief for several hours. Barium chloride in 30 mg. doses was given three times a day for six days, but was discontinued, having been of no appreciable benefit. It was followed by 30 mg. of ephedrine sulphate by mouth. This afforded instant relief from the attacks, and in one week the individual dose was cut down to 20 mg. There were no more attacks, and after a fortnight the medication was stopped. The patient remained symptom-free for the next ten weeks, and was discharged. The attacks recurred, however, about a year subsequently; the symptoms were again relieved by ephedrine. Four years later, when the patient was aged 70, complete heart-block ensued, and improved for a time on ephedrine treatment, but he died five months afterwards. The authors report the post-mortem findings, and remark that according to Karsner, the most common cause of permanent A-V block is coronary disease with narrowing of the vessels supplying the junctional tissues. As the vessels narrow the A-V bundle and node undergo extensive degeneration and fibrosis. While the present patient showed marked arteriosclerosis of his peripheral vessels, both clinically and at necropsy, the coronary vessels were not seriously involved. There was no evidence of an aetiology relating to rheumatism, syphilis, diphtheria, scarlet fever, or toxic agents, and the authors are led to assume, therefore, that the coronary sclerosis was, nevertheless, sufficient to cause the clinical symptoms and the myocardial changes observed.

139 Avoidance of Embolus after Injection of Varicose Veins

F. REMENOVSKY (*Zentralbl. f. Chir.*, November 18th, 1933, p. 2719) alludes to Nobl's series of 20,000 injections of varicose veins with glucose solution without embolus, and to massed statistics giving 0.0024 per cent. mortality from that cause. He believes that in lethal cases the embolus arises in regions remote from the injection, as a result of inactive venous circulation. He pleads for ambulant treatment after the injections, even when local reaction is marked. If rest in bed is absolutely necessary from intercurrent cause, active and passive movements of the limbs should be carried out frequently, and the patient encouraged to sit up whenever possible. Recently a lethal embolus after varicose vein injection has been reported in Germany; the patient, coming to the clinic with her child, casually remarked that her leg was painful, and she had some local infiltration. She was kept in bed, with raised leg, for nine days—treatment which, Remenovskiy maintains, undoubtedly caused her death.

Ophthalmology

140

The Fundus Oculi in Diabetes

S. H. McKEE (*Canadian Med. Assoc. Journ.*, November, 1933, p. 520), who has studied the ocular fundus in 1,272 cases of diabetes mellitus, points out that, because this disease occurs often in middle life, when arterio-sclerosis generally manifests itself, a variety of conditions, such as retinal arteriosclerosis, vascular disorders, optic neuritis, and secondary glaucoma, may appear coincidentally without being necessarily originated by the diabetes. Cataract and retinitis are, he states, the most frequent lesions met with in diabetes, while retinal arteriosclerosis, disturbances of accommodation and refraction, iritis, chronic retrobulbar neuritis, amblyopia, and muscle disorders are not uncommon. The soft eyeball, found in diabetic coma is pathognomonic, and differentiates this condition from insulin coma. One other similarly pathognomonic sign is the rare lipaemia retinalis, which involves both eyes. McKee believes that there is evidence of a direct causal relation between diabetes and retinitis. He agrees with Foster Moore that there is a clinical ophthalmic picture which strongly indicates a diabetic origin for an existing retinitis. This comprises solid and soapy, or waxy-looking, patches of retinal exudate with sharp-cut edges, distributed irregularly, and sometimes in a ring well wide of the macula; none of the soft-edged cotton-wool patches, frequent in renal cases; roughly circular haemorrhages in the deeper retinal layers; and no circular retinal pigment spots. The author strongly urges a fundus examination when there is any possibility of commencing arteriosclerosis in a case of diabetes in order that early discovery may lead to preventive measures against hypertension and cardiac and cerebral sequels.

141

The Retraction Syndrome

R. AEBLI (*Arch. of Ophthalmol.*, November, 1933, p. 602) summarizes the salient features of this syndrome as complete or partial absence of abduction, partial deficiency of adduction, retraction of the globe on adduction but rarely on abduction, an oblique movement up and in (or down and in) when adduction is attempted, narrowing of palpebral fissure on adduction and a tendency to widen on abduction, and paresis of convergence, the affected eye remaining in primary position. Anatomically there is a more or less complete substitution of fibrous for muscular tissue. The retraction of the globe may measure from 1 to 10 mm. Limitation of adduction is rarely complete, while abduction may be reinforced up and out and down and out by the oblique muscles. The narrowing of the palpebral fissure results from action of the orbicularis. Theories advanced to explain the syndrome include post-fixed tendon (or slip) of internal rectus, deficiency of check ligaments, lack of synergic relaxation of the external rectus, and, finally, action of superior and inferior rectus in the absence of any movement of the internal rectus. The oblique movement up or down on adduction may be due to pivoting on the optic nerve when in the retracted position, excessive spasmodic contraction of the inferior oblique, or abnormally high insertion of the internal rectus. The treatment is surgical, but occasionally the condition of the muscles is such that nothing can be done.

142

Diagnosis of Irido-ciliary Tuberculosis

H. LAGRANGE (*Brit. Journ. Ophthalmol.*, November, 1933, p. 679) states that uveal tuberculosis is a secondary condition, due to a blood stream infection demonstrable by animal injection. The wide clinical differences are due to variations in allergy. Proper diagnosis requires the unmasking of the primary focus, and Meller seeks pulmonary signs in every case, stressing the frequency of pleurisy. After examining the digestive tracts, bones, joints, and lymphatic system, the heart should be considered. The tuberculous heart is characterized by tachycardia, microcardia, and hypotension, and, in the absence of the last, tubercle may be excluded. Assistance may be obtained from tuberculin diagnosis, either by test treatment or by the homotopic technique of Marc Weiss,

the microleucocytic culture of Loewenstein, and the inoculation of aqueous into guinea-pig glands. The lesions of tuberculous iridocyclitis result from varying factors—those referable to the bacillus and those to the conditions of the local tissues. Tuberculous products may produce different reactions in different subjects, or at different periods of the disease in the same subject; hence the protean manifestations of the disease.

143 Chronic Inflammation of the Meibomian Glands

P. D. HENRIKSEN (*Norsk Mag. f. Laegevid.*, November, 1933, p. 1248) records a case of chronic inflammation of the Meibomian glands of seventeen years' duration in a woman aged 24 years. The conjunctivae showed several growths caused by a sticky, purulent fluid, which filled the glands and could be squeezed through the openings in the margins of the eyelids. A few fistulae leading from the growths to the conjunctiva were also present. The condition was found to be due to a Gram-negative encapsulated bacillus, grown in pure culture from the pus, and agglutinated and precipitated by the patient's serum.

Obstetrics and Gynaecology

144 Rectal Ergotamine Tartrate in the Puerperium

W. RECH and F. RÄBER (*Zentralbl. f. Gynäk.*, November 4th, 1933, p. 2594) quote Röthlin's finding, from experiments in cats, to the effect that ergotamine tartrate is absorbed readily after rectal injection in solution, but not at all from suppositories. Clinically, these authors found in a hundred cases in which lochial stasis, delayed uterine involution, or fetidity of the lochia called for treatment by ergot, that rectal injection of 1 mg. of ergotamine tartrate (gynergen) dissolved in 5 to 10 c.c.m. of 5 per cent. dextrose solution was as effective as much larger doses given orally or intramuscularly. Comparing the incidence of puerperal morbidity (as judged by criteria of the type recorded above) in a hundred cases each of normal delivery in which rectal injections of ergotamine tartrate had or had not been given on the second, third, and fourth days of the puerperium, they found that the injections appeared to reduce the morbidity from 60 to 17 per cent. Of the treated cases only one had puerperal pyrexia above 37.9° C., as against eleven untreated cases having a temperature of 38° or over.

145 Nephritis and Pregnancy

J. R. GOODALL (*Amer. Journ. Obstet. and Gynecol.*, October, 1933, p. 556) quotes five cases which, though giving all the data of chronic nephritis, improved under pregnancy. He supports Hofbauer's teaching that both the so-called chronic nephritic and the pre-eclamptic types arise out of a secretory dysfunction which is often pluri-glandular, but in which the main factor is uncompensated overproduction of posterior pituitary hormone. The antidiuretic element from this gland is stated to be consistently demonstrable in the blood of nephropathic pregnant women. The pressor element is demonstrable only when the hormone is in very high excess, raising the blood pressure to 180. Normally these substances are rapidly eliminated post partum; if this relief fails eclampsia follows. A pituitary normal but with low reserve gives rise in pregnancy to low blood pressure, low uterine contractility, and low muscle nerve irritability—that is, hypopituitarism. A hyperactive gland further stimulated from the placenta gives rise to anti-diuresis and raised blood pressure with resulting albuminuria, nephritis, liver necrosis, and their accompanying symptoms. Water retention is a resultant of antidiuretic overaction plus the metabolic poisoning due to lowered elimination; hence, restoration of function follows removal of the placental stimulus. Excess of chloride excretion occurs along with anti-diuresis, with resulting acidosis, and also damage to the glycogenic function of the liver, with transient glycaemia and glycosuria, then enhanced waterlogging. Vagotonic action leading to anaemia of the brain accounts for eclamptic convulsions. Thus the chronic toxic and fulminating cases are traceable to the

balancing of under- or over-activity of the pituitary and other endocrine glands. The parallel with thyroid dyscrasias is perfect. Treatment, according to Goodall, must be the avoidance of emotion and the use of sedatives and eliminants; for severe cases starvation and water-free diet may be tried for three days, followed by chloride and carbohydrate-free diet. A blood pressure of over 180 warrants interruption of pregnancy, which is best performed on the third or fourth day of treatment in chronic cases.

Pathology

146 Virus Origin of Pemphigus and Dermatitis Herpetiformis

E. URBACH and S. WOLFRAM (*Med. Klinik*, November 24th, 1933, p. 1619) describe experiments in which they succeeded in producing symptoms of disease in rabbits inoculated with material from patients suffering from pemphigus and dermatitis herpetiformis. The material used was microscopically and culturally sterile. If only small amounts were available the subdural route was used for injection; with larger amounts the intravenous route was found most satisfactory. Vesicle fluid proved more potent than blood serum. The symptoms produced were either a paralysis of the extremities from which recovery sometimes took place, or a cachexia coming on several weeks after inoculation. Histologically the picture in both types was that of a disseminated encephalomyelitis. In four out of five cases of pemphigus and in seven out of eleven cases of dermatitis herpetiformis positive results were obtained in rabbits. Control experiments made with tissue fluids of normal persons on a total of sixteen animals proved negative. Passage experiments from the primarily infected rabbit to a second rabbit revealed the possibility of setting up a similar clinical and histological picture. In these experiments, fifteen out of twenty-four of which were successful, brain suspension proved the most virulent, but blood serum was found to be sometimes potent. Skin lesions were never observed. The authors conclude that pemphigus and dermatitis herpetiformis are probably virus diseases, the virus being dermatotropic in man and neurotropic in the rabbit.

147 Ultrafiltration of Blood

A rapid method for obtaining protein-free ultrafiltrates of blood and plasma is described by C. WILSON and E. R. HOLIDAY (*Biochem. Journ.*, vol. xxvii, No. 4, 1933, p. 1095). It is based on that suggested by Smith in the same periodical in 1928, but has been modified so as to improve the rate and yield of filtration, and to give membranes which are reliable as well as simple in preparation. The authors found alcohol-ether-acetic acid-collodion membranes ideal for rapid filtration, but too fragile to be used repeatedly. They have found a suitable one to be a glacial acetic-collodion membrane on a filter-paper basis, similar to the type described by Kreuger and Ritter in 1930. Membranes of 4 per cent. collodion can be used for several filtrations without deterioration of the surface. The rate of filtration under pressure of 70 cm. is slightly slower than with the alcohol-ether-acetic acid-collodion membranes. After filtration, the membrane surface is cleaned with 2 per cent. sodium bicarbonate solution, and the membrane is washed on the filter with 50 c.c.m. of the same solution; followed by distilled water. It can then be preserved in distilled water until required for further use. The exact volume of collodion used for each membrane does not need to be standardized, since variations in the filtration rates do not seem to be induced by changes in thickness of the membranes. It is said to be possible to obtain 25 c.c.m. ultrafiltrate from 30 c.c.m. plasma in thirty minutes. In certain injection experiments it was found to be possible to reduce the time from the taking of the blood from the vein to its injection into the animal to forty-five minutes. The filtration can be conducted under aseptic conditions at 0° C. There is thus little danger of loss of labile substances through decomposition.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

148 Temperature of the Gastro-Intestinal Tract

J. S. HEPBURN *et al.* (*Arch. Int. Med.*, October, 1933, p. 693) have investigated the temperature of the gastro-intestinal tract and the influence on it of hot and cold foods and physical therapeutic agents. In both sexes the gastric temperature was usually higher than that of the mouth, the average difference being 0.9° F. in men and 1.25° in women. Great variations were found in the gastric temperature in short intervals of time. In men the temperature of the upper part of the intestine ranged between 98° and 100.1° F., with an average of 99.1° ; in women between 98° and 99.9° , with an average of 98.9° . The sigmoidal temperature was always higher than the oral one, on the average by 2.9° . Ingestion of iced water or ice-cream produced a marked decrease in the gastric temperature, followed by a rise, at first quite rapid, and then progressively slower. The average recovery time was more than half an hour. The use of the ice water in a test meal delayed the emptying time of the stomach from fifteen to thirty minutes. Leakage of a cold beverage through the pylorus seemed to lower the temperature of the upper part of the intestine by several degrees. The authors think that this may throw light upon the aetiology of gastro-enteric disturbances in patients who have a rapid gastric emptying time, and partake freely of cold beverages. The ingestion of hot coffee gave rise to a marked increase in gastric temperature, followed by a decrease which was rapid at first. No evidence was obtained that the application of heat or cold to the abdominal wall caused any change in the gastro-intestinal temperature, and the authors doubt the value of ice applied to the abdominal wall in gastric or intestinal haemorrhage, or of the local application of heat to promote healing in gastric or duodenal ulcers.

149 Diagnosis of Latent Cardiac Insufficiency

K. BARTH (*Munch. med. Woch.*, November 17th, 1933, p. 1817) considers it important, in order to avoid the possibility of over-straining the heart at critical times, to establish indications by which the practitioner can recognize the early stages of that process which leads to a diminished activity of the cardiovascular system. He states that although tests exist for the estimation of the function of the heart, control data from early periods are necessary to enable the proper interpretation of their significance in cases where the insufficiency is very latent. The history of the case is difficult to evaluate properly and the elimination of hysterical or neurasthenic reports requires special consideration. The author therefore gives a series of physical and mental symptoms which increase the likelihood of latent cardiac insufficiency. Of gastro-intestinal symptoms, gastric catarrh, flatulence, constipation, feeling of fullness, and diminution of appetite are considered important. Cervical muscular pain, tiredness, and dullness of the voice are sometimes the first signs. Headache, frontal pressure, general weakness and tiredness, unsteady gait, and sometimes vertigo on standing up or bending down may also be indications, while the presence of haemorrhoids, venous congestion, and pains in the back must be noted. Great stress is placed upon sleeplessness, and especially waking during the night. Such accessory signs as increased perspiration (day and night) and failure of potency are helpful indications. Latent cardiac insufficiency may also manifest itself by certain psychological changes—for example, irritability, depression, impatience, anxiety, phobias, forgetfulness, and often loss of determination and decision. It is considered that many people are unwarned of latent cardiac insufficiency until it is too late.

150

Chronic Barbitone Poisoning

J. RAVN (*Hospitalsliden*, November 9th, 1933, p. 1103) draws attention to the difficulty of detecting the ill effects of prolonged veronal medication. The earliest effects are neurasthenic symptoms, and it is often for just such symptoms that veronal is given in the first place. It is only in the comparatively late stages of chronic veronal poisoning that the patient suffers from weight, lassitude, anorexia, insomnia, convulsions, vomiting, cardiac symptoms, and haemorrhages from the gastro-intestinal tract. In the asylum to which the author is attached veronal is preferred to the other drugs in the same group because it is comparatively cheap and its action is prolonged to the following day. To ascertain if prolonged veronal medication injures the liver parenchyma, the author examined the urine of fifty patients for urobilinogen and bile acids. These patients had been given from 25 to 75 cg. of veronal daily for a minimum of six months and a maximum of five years. Urobilinogen was sought with Ehrlich's reagent and bile acids with Hay's test. As many as thirty-two gave a positive reaction to one or both of the substances looked for. Fifty other inmates of the asylum who had not been given veronal, and who in other respects were comparable with the first group of fifty patients, served as controls. Only sixteen of them gave a positive reaction in the urine to one or both of the substances sought. In no case were they present in large quantities in either group. The author is inclined to consider the high proportion of positive reactors in the veronal group as fairly convincing evidence of injury to the parenchyma of the liver from chronic veronal poisoning. The risks of such poisoning may be reduced by not giving this drug for more than eight to ten days in succession, or by supplementing it with morphine and scopolamine in order that the dosage of the veronal may be appreciably reduced.

151

Vaccination with B.C.G.

W. H. PARK, CAMILLE KERESZTURI, and LUCY MISHULOW (*Journ. Amer. Med. Assoc.*, November 18th, 1933, p. 1619) record the results they have obtained with B.C.G. vaccine in New York. Infants were selected in tuberculous families and either vaccinated orally with B.C.G. during the first ten days of life or kept under observation in a control group. The environmental conditions were fairly similar, though certain differences existed. For instance, the vaccinated infants were removed from their parents for one month after immunization, while the control infants were left at home. Again, the control group was rather more heavily exposed to tuberculous infection than the vaccinated group. Some of the infants were under observation for five years, but with most of them the observational period was shorter. Altogether three out of 239 vaccinated and seven out of 189 control infants died of tuberculosis. The non-tuberculous mortality, on the other hand, was considerably higher in the vaccinated than in the control group. Another series of children from tuberculous families was submitted to parenteral vaccination with B.C.G. These children were not vaccinated till some time after birth, but all reacted negatively to tuberculin. In the corresponding control group some children had a positive and some had a negative tuberculin reaction. During the observational period none of the 150 vaccinated children died of tuberculosis. Of the 155 control children with an initially positive Mantoux reaction, five died of tuberculosis, while of 269 control children with an initially negative reaction, four died of tuberculosis. The authors, while admitting that the differences are not significant, conclude that B.C.G. vaccination apparently gives some measure of protection against tuberculosis, and is worth performing on infants and children who have a negative Mantoux reaction and are to be exposed to infection.

Surgery

152 Dangers of Colloidal Thorium in Pyelography

In a case recorded by K. SCHEELLE (*Zentralbl. f. Chir.*, October 21st, 1933, p. 2483), radiological and necropsy findings, forty days after retrograde pyelography in which colloidal thorium dioxide (thorotrast) had been used, showed retention of the medium in the renal pelvis and parenchyma, with occlusion of the urinary tubules; leucocytes and many casts had been present in the urine. In other cases precipitation of non-excreted thorotrast has led to false diagnosis of stone. Scheelle has found traces of it in the kidneys six months, and Freymann two years, after pyelography. F. KRAUSS (*ibid.*, p. 2487) describes the case of a young female patient in whom pyelography after thorotrast injection was done for suspected hydronephrosis. Twelve months later symptoms were still present, but the urine, cystoscopic findings, and results of kidney function tests were normal. Radiography showed radial shadows in the kidney which, in reality remnants of thorium, were at first taken as evidence of calcification—a suggested diagnosis which considerably aggravated the functional symptoms.

153

Treatment of Scoliosis

J. CORNET (*Le Scalpel*, November 4th, 1933, p. 1134) describes a new method of treatment for scoliosis by means of a special plaster jacket which is applied between periods of treatment by gymnastics, breathing exercises, and massage. The patient is dressed in a cotton vest and is suspended in a Sayre's collar. The plaster jacket is then applied, taking support from the pelvis below, and completely surrounding the thorax. A rubber bladder is then placed over the costal prominence laterally and the plaster is finished off over this and is supported firmly on the shoulders. A large window is then cut in the left side of the jacket. As soon as the plaster is dry the bladder is inflated by a pump, causing pressure which pushes the left side of the chest through the aperture in the jacket. Each week the bladder is further inflated, and the patient is encouraged to breathe deeply inside the plaster. The action of the jacket is twofold. By the suspension of the patient the curvatures of the spine are corrected, whilst the inflated bladder presses the ribs towards the left and also assists in correcting the spinal curvature. The results of treatment by this method are satisfactory, and the amount of pressure is easily regulated, whilst the unimpeded respiratory movements further help to correct the deformity.

154

Cholecystectomy for Typhoid Carriers

P. BRAESTRUP (*Hospitaltidende*, November 16th, 1933, p. 1132) contributes a successful case of cholecystectomy for the typhoid carrier state—a woman, aged 27, whose faeces had continued to contain paratyphoid B from three to four months after infection. After the removal of the gall-bladder, which contained stones, pus, and paratyphoid B, the organism could not be demonstrated by any of the six subsequent examinations of the faeces. Reviewing the literature, Braestrup notes that operations on the gall-bladders of 131 carriers were collected in 1932 by Eichhof. To these he adds sixteen other cases, including his own, and brings the total up to 147. As many as 105 of these cases ceased to be carriers, while twenty-seven continued to be so, eight were inadequately followed up and examined, and seven had a fatal termination—in only two of the latter could death be directly traced to the operation. In the cases reviewed, the gall-bladder was almost invariably found at operation to contain stones or to show some other morbid condition, and the author notes it as curious that, in the few cases in which a normal gall-bladder was found, the operation had no effect on the carrier state. This finding confirms the attitude of those surgeons who prefer to operate on the carriers who present definite evidence of disease of the biliary system, and who are not inclined to take the risks of a cholecystectomy when there are no signs or symptoms referable to the gall-bladder.

364 B

155

Eventual Results of Phrenicectomy

E. RIST and AUERBACH (*Bull. de l'Acad. de Méd.*, November 14th, 1933, p. 358) affirm that the ultimate results of phrenicectomy are not as favourable as the immediate effects might indicate. Of 200 cases in which this operation had been performed two and a half to ten years previously, 100 showed such marked improvement in six or eight months as to give hopes of cure; of these, however, only twenty-six were finally cured, and sixteen showed further improvement. Death has occurred in eighty-six of the 200 cases, and thirty-six are in poor health. Of the 100 patients, seventy-nine had received, after operation, sanatorium or semi-sanatorium treatment; of the twenty-six cures twenty-three and of the improved cases fifteen fall into these groups. The authors conclude, therefore, that phrenicectomy is more successful when followed by prolonged sanatorium treatment, this realizing the two essentials of methodical rest and permanent medical control. Hence, also, artificial pneumothorax is superior to phrenicectomy. In addition, the foregoing results demonstrate the great value of sanatorium therapy in the treatment of pulmonary tuberculosis.

Therapeutics

156

Duodenal Fluid in Pernicious Anaemia

W. KÜHNAU (*Münch. med. Woch.*, November 10th, 1933 p. 1772) states that administration of raw liver or live extract makes up for the deficiency of the anti-anaemic principle, which is absent in pernicious anaemia. Discussing the question as to whether this anti-anaemic principle is a product of hepatic metabolism or is merely stored in the liver, this author favours the latter explanation, which is, he believes, suggested by the characteristic gastro-intestinal symptoms—atrophic and inflammatory changes with abnormal bacterial proliferation. He thinks it probable that the anti-anaemic principle is elaborated in the gastric mucosa as a hormone from albumin-containing vitamin B₁₂, and that this is stored in the liver cells. Recent researches show that preparations of gastric mucosa are as efficacious as liver extract, and actually superior in gastric sclerosis. Pathological changes in the upper intestinal mucosa which accompany pernicious anaemia suggested that the healthy duodeno-jejunal mucosa might contain the anti-anaemic principle as well as the gastric mucosa, and consequently that normal duodenal fluid might supply the deficiency. Bile present constantly in duodenal fluid may carry anti-anaemic substances stored in the liver. Accordingly, Kühnau has treated four cases of severe pernicious anaemia by administration of fresh duodenal fluid obtained from healthy persons. After five administrations rapid increase of reticulocytes occurred. One patient declined further treatment and died shortly afterwards. The others improved greatly. One patient who had degenerative changes in the spinal cord recovered sufficiently to walk considerable distances on level ground without a stick. Two patients look well and have resumed work.

157

Passive Immunization in Poliomyelitis

K. WALTNER (*Orvosi Hetilap*, December 16th, 1933, p. 1137) reports on a major poliomyelitis epidemic in the summer of 1932 in the Hungarian town of Szeged, and on the results obtained by specific protective immunization. Of 7,000 children aged up to 5 years, 790 (11.3 per cent.) received injections of 10 to 20 c.cm. of adult whole blood. The morbidity rate per 1,000 head was 5.1 for children thus protected and 10.9 for children not protected. For the ages 5 to 11 the figures were as follows. Number of children, 15,300; of these, 1,050 were protected—that is, 6.9 per cent. Morbidity rate per 1,000 head: protected children, 3.8; non-protected children, 6.2. For the ages 11 to 14: number of children, 18,000; protected 1,100—that is, 6.1 per cent. Morbidity rate per 1,000 head: protected children, 3.6; non-protected, 5.4.

The majority of the protected children received only one injection. Of the six cases in which protected children fell ill, five were cured, the cerebro-spinal fluid returning to normal after a period ranging from six to ten days. In four cases no paralytic symptoms whatever were observed; the fifth showed only a lack of the patellar reflex on the left side from the fourth to the ninth day of illness. The material used was adult whole blood. The mortality rate of the total number of affected children was 8.8 per cent. for hospital cases and 24.1 per cent. for home cases. Waltner concludes that, although the number of cases was too small to serve as statistical proof of the efficacy of blood prophylaxis as applied to poliomyelitis, it is, so long as no more efficacious method is evolved, the duty of the medical profession to apply prophylactic injections of adult blood in every case that comes under their notice.

158 Malarial Treatment of Chronic Gonorrhoea

P. BERGGREEN (*Derm. Woch.*, November 11th, 1933, p. 1603) describes five years' experience in malarial treatment of 233 cases of chronic gonorrhoea (in both sexes), many of which had proved refractory to vaccine injections of living gonococci. In 90 per cent. of women and 85 per cent. of men, after an artificial infection with malaria, it was not possible, in spite of provocation, to demonstrate the gonococcus after the last rigor. The average duration of treatment was fifty-five days in women and thirty-six days in men. The treatment had to be suspended in six patients, but two instances only of actual ill effect were noted—pancarditis and activation of pulmonary tuberculosis respectively. Pre-existing gonococcal complications were improved or unaffected during treatment. The average reduction in blood haemoglobin during treatment was 20 per cent., and a careful general medical examination preceded the treatment in every case.

159 Treatment of Arteritis Obliterans

J. LOMBA (*Paris Méd.*, November 25th, 1933, p. 425) records a case of gangrene of a toe of the right foot, associated with fainting attacks and acute melancholia. Dietary and insulin therapy produced only a temporary remission, but cure of both mental and arterial conditions was obtained in three and a half months by intravenous injections of hypertonic saline serum. Affirming his belief that chronic arteritis obliterans, of both senile and juvenile types, is a general, as opposed to a purely local, malady of the arterial system, Lomba states that as the pathogeny is yet unknown (infection and endocrine disturbance are theories advanced), treatment can only be symptomatic. Special dieting is inefficacious, though essential in hyperglycaemic cases. Cold and damp must be avoided and the use of tobacco prohibited. Useful physical agents are the passive mechanical treatment of Buerger, thermotherapy and hydrotherapy, diathermy (especially in juvenile cases), ultra-violet and infra-red rays, and radiotherapy. Of chemical agents, intravenous injections of sodium citrate (in senile forms) and of hypertonic saline serum and subcutaneous injections of acetylcholine are of value. Of biological remedies, insulin and the circulatory hormone of Frey have given good results; injections of muscle and ovarian extract and of female blood have also been recommended. Protein therapy with T.A.B. vaccine may be beneficial. Lomba believes that surgical procedures (periarterial sympathectomy, ligation of the veins, unilateral suprarenalectomy, lumbar or lumbo-sacral ganglio-sympathectomy and amputation) should be resorted to only when medical measures fail.

160 Intravenous Morphine in the Relief of Pain

H. IACOBÆUS (*Nord. Med. Tidsskrift*, November 4th, 1933, p. 1321) contrasts the frequent futility of subcutaneous injections of morphine for incurable cancer with the invariable reliability of intravenous injections. He hints at the possibility of the subcutaneous tissues of the dying sometimes failing to absorb certain drugs. In Denmark the preparation commonly employed for subcutaneous injection contains glycerin, which is apt to destroy the red

blood cells. The author recommends for intravenous injection a 5 per cent. solution of the citrate of morphine, which can be kept sterile if a little benzoic acid is added. It is easy to understand why the effect of an intravenous injection should be more rapid and powerful than that of a subcutaneous injection, but what is surprising is the longer duration of the effects of the former.

Dermatology

161

Ringworm of Hands and Feet

E. D. OSBORNE, E. D. PUTMAN, and R. J. RICKLOFF (*New York State Journ. Med.*, November 1st, 1933, p. 1270) recommend the wide use in public baths of a 1 per cent. solution of sodium hypochlorite as a cheap, harmless, and effective prophylactic against ringworm of the feet. The pans of this solution, through which the bathers should be obliged to walk, have to be replenished on alternate days. This procedure proved very satisfactory in schools where it was tried over a period of three years. As regards treatment, the authors favour one hypo-erythema dose of x rays in acute cases of ringworm of the hands and feet rather than the repeated fractional dose method. They add that if four or five fractional doses do not produce a result in chronic cases the treatment should be stopped. Trichophytin yielded disappointing results in a hundred chronic relapsing cases. It is stated that effective treatment of such ringworm cases demands recognition of the part played by allergy and the development of dermatophytids; clinical differentiation from dermatitis venenata; the employment of laboratory investigations; an understanding of the aetiological influences of soil, heat, and moisture of the hands and feet; and an appreciation of any systemic disturbance influencing the sweat secretion. In the acute vesiculo-pustular stage the authors commend the use of wet dressings for twelve to fourteen hours a day, either of metaphen in a 1 in 2,500 to a 1 in 5,000 dilution, or of aluminium subacetate in a 1 in 16 dilution. For the remaining eight to ten hours they employ plain boric ointment, a 2 per cent. sulphur precipitate ointment, or a soothing astringent dusting powder containing 1 per cent. menthol, 5 per cent. chlorotone, 5 to 10 per cent. tannic acid, and 30 per cent. boric acid. Rest in bed, with elevation of the affected limbs, is helpful, and x-ray exposures have special value in this type of case.

162 Occult Venereal Lymphogranuloma (Nicolas and Favre's Disease)

BEJARANO and GALLEGO CALATAYUD (*Crónica Médica*, October 15th, 1933, p. 721), emphasizing the preponderance of this disease in males—95 per cent. of all cases in their practice and in that of Campos Martín—postulate that the lymphatic system of females is much more resistant to infection than that of males, and cite the analogous experience of Ivanyi and Neumann, who in 3,239 cases of soft chancre in both sexes found 2,728 inguinal buboes, of which but 511 were in females. The present authors state that in the three summer months of 1932 a great increase in the incidence of lymphogranuloma in the male was noticed in the Red Cross centre in Barcelona. Inquiry at the various V.D. clinics and among practitioners failed to discover the source of this epidemic. Campos Martín and Calatayud tested forty prostitutes, certified to be healthy, with Frei's intradermic reagent, carefully controlled. A positive response in 15 per cent. of the subjects was the result, though none presented the faintest indication of the disease. De Gregorio of Zaragoza and Nicolau and Banciu of Bucarest had a similar experience. The writers then tested seventy-five prostitutes, certified to be in excellent health and without signs of the infection. Careful control tests were done. Of these seventy-five, only forty-nine were seen again by the writers, and of these, 11 per cent. proved to be strongly positive. They were drawn from the very lowest class of prostitute, their "sisters," plying their trade in more expensive

markets, invariably giving a negative reaction. None of these women had at any time shown a trace of venereal lymphogranuloma; and the question of the origin of the small epidemic remained unsolved until a soldier was found affected by the disease in the military hospital of Barcelona. This man had left his native village but a few months before, and had had no sexual adventures until his arrival in Barcelona, where his experiences were confined to coitus on a few occasions with one public woman. A careful examination of his paramour yielded neither history nor sign of venereal disease, but she reacted in the most convincing manner to Frei's test.

163 Treatment of Suspected Syphilitic Lesions

A. MUSGER (*Derm. Woch.*, October 28th, 1933, p. 1532) discusses the duty of the physician in treating a sore in which, though slightly or strongly suggestive of a primary syphilitic lesion, examination for the spirochaete has been negative. Oppenheim, who has reported fourteen cases, later proved to be syphilitic, in which the chance of early abortive treatment was missed, owing to repeatedly negative examination for spirochaetes, has advocated anti-syphilitic medication (irrespective of microscopical findings) for every clinically suspicious genital erosion or ulcer. Musger reports a series of 120 genital sores clinically diagnosed as erosive balanitis, herpes, erosion, inflammatory phimosis with gland swelling, or ulcus molle, but fraught with a suspicion of primary sore and preceded by a suspicious coitus; twelve weeks or a longer control was possible. In all but two no clinical, serological, or microscopical evidence of syphilis was afterwards obtainable. In the remaining two the spirochaete was found subsequently, but in the sero-negative stage. It is concluded, that antisymphilitic treatment is unjustified if the sore, repeatedly and frequently examined, has not yielded spirochaetes.

Obstetrics and Gynaecology

164 Dangers of Intrauterine Pessaries

A. SJÖVALL (*Zentralbl. f. Gynäk.*, November 4th, 1933, p. 2598) cites from the literature: (1) thirteen cases of death following within one to five days after insertion of a contraceptive uterine pessary; (2) some 120 cases of septic abortion, of which a good number were lethal, following introduction of the pessary in the pregnant or (at first) non-pregnant uterus. The author states that if pregnancy should follow the intervention, abortion during the early months usually follows: nevertheless, not a few cases have been reported in which both the contraceptive pessary and the foetus have been delivered at or near term, the latter sometimes showing marks of injury by the former. In a case of Sjövall's, spontaneous delivery at term of a normal child was closely preceded by expression of a silver intrauterine pessary which the patient herself had introduced two years previously with the aid of an illuminated speculum and removed during the menses.

165 Treatment of Uterine Cancer

H. H. SCHLINK and C. L. CHAPMAN (*Med. Journ. of Australia*, October 7th, 1933, p. 476), who give a good review of the results of treatment of this disease, urge the abandonment of the classical subtotal hysterectomy and the substitution of the total operation, or, preferably, the safer and less difficult subtotal procedure, with enucleation of the endocervix. They think that radium should occupy the same place in operative treatment in cancer as does salvarsan to mercury and iodides in syphilis. Radium acts quickly, kills the local lesion or renders it inert, and thus affords time for operative measures to be undertaken in a clean field. The uterus should always be removed after radium therapy. The authors state that radium had no effect on cancer deposits in the lymph glands, which were secondarily affected in 10 per cent. of their operated cases. They obtained the best results with a dosage of 4,000 to 5,000 milligram-hours with a

1 mm. platinum filter, and consider a dosage of 2,000 milligram-hours inadequate to eradicate even a localized growth. Vaginal dosage should never exceed 2,000 milligram-hours for fear of subsequent injury to the bladder or rectum. The most satisfactory sequels were those after irradiation of the whole uterine cavity. In some cases the authors prefer needles to vaginal corks or plaques (lead boxes), because the first are less easily displaced. The best time to operate is regarded as three to four weeks after the exposure. It is added that diathermy has been abandoned because of the frequency of subsequent rectal, vesical, and peritoneal fistula formation. Radium treatment is held to be contraindicated in very advanced cases; in such it is better to curette away the necrosing tissue, and to apply zinc chloride or acetone.

Pathology

166 Alkaline Therapy and Gastric Secretion

Z. STARY and P. MAHLER (*Med. Klinik*, November 3rd, 1933, p. 1509) report the following findings from giving before or with a test meal in the fasting state sodium bicarbonate, calcium carbonate, or magnesium oxide. The amount of gastric secretion was diminished to the greatest extent by the first, rather less by the second, much less by the third: the reduction was greater when the powder was given with, not before, the meal. Chloride concentration was diminished initially after soda, increased slightly after chalk, and affected inconstantly by magnesium, but the total effective chloride secretion was lowered in each case, in correspondence with the less amount of juice. Free hydrochloric acid reappeared soonest after soda, much later after the other two drugs. Mechanically, soda adhered less closely to the mucosa than the other preparations.

167 The Blood in Whooping-cough

D. MORITZ and L. LACKNER (*Arch. de Méd. des Enf.*, November, 1933, p. 669) made a study of the blood in sixty-five cases of whooping-cough, the ages of the patients ranging from 2½ months to 15 years. In forty-five the disease was uncomplicated, while in twenty, one or more complications occurred. The results were as follows: (1) the haematology of whooping-cough is characterized by lymphocytosis with an absolute or relative retardation of the sedimentation rate; (2) a number of lymphocytes exceeding 10,000 with an absolute or relative retardation of the sedimentation rate is in favour of the diagnosis of whooping-cough, but the absence of these changes does not exclude it; (3) the complications of whooping-cough produce a moderate shift to the left in the leucocyte picture and the sedimentation rate is accelerated; (4) examination of the blood enables the diagnosis of whooping-cough to be made at an early stage or in atypical forms of the disease.

168 Creatine Excretion as a Test of Muscular Impotence

As it has been proved that men of athletic build, after ingestion of large quantities of creatine, eliminate only traces, while in women and children the urinary elimination—never total—continues for many days, W. L. DULIÈRE and J. CORNET (*Bruxelles-Médical*, November 5th, 1933, p. 29) judge that the rapidity with which a quantity of ingested creatine is eliminated by the kidneys is a test of muscular impotence. If in the twenty-four hours following the ingestion of 3 grams (an adult dose) of this salt at least 2 grams are eliminated, and especially if the residual gram is eliminated the following day, the muscular system may be considered as functionally insufficient. An illustrative case of muscular weakness and degeneration is described, in which this test proved of correct value; short notes on the chemical tests for creatine are also given. The authors mention the diuretic action of this salt; after ingestion of 3 grams the daily urinary volume is frequently doubled.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

169 Incidence and Importance of Threadworms

H. HELLSTEN (*Nord. Med. Tidskrift*, November 11th, 1933, p. 1358) has examined 410 persons in Sweden for threadworms. A piece of lint impregnated with vaseline was introduced into the rectum on the index or little finger in a rubber finger-stall. After palpation of the rectum immediately above the sphincter, the lint was withdrawn and washed out in water and ether. An examination was then made for oxyuris eggs after centrifugalization. Among the 410 persons thus examined were 310 hospital patients, sixty inmates of an asylum, and forty school children. As many as 260 of the 310 hospital patients were under the age of 15. The frequency of infestation increased steadily with age. None of the sixty infants examined harboured the threadworm and there were only two who did so out of the forty children between the ages of 1 and 2. Between 2 and 4 years the incidence was 25 per cent.; between 4 and 7, 47.5 per cent.; between 7 and 10, 52.5 per cent.; and between 10 and 15, 58.75 per cent. The incidence of infestation for all the age groups from 0 to 15 was 30.3 per cent. As many as forty-two of the sixty asylum inmates harboured the threadworm. This high incidence of 70 per cent. was presumably due to defective hygiene. Twenty-seven of the forty school children harboured threadworms. The author's review of the opinions expressed as to the harm done to its host by the threadworm and as to the indications for combating it shows little unanimity and still less knowledge of this subject at the present time.

170 Alkali Retention in Essential Hypertension

W. SCHARPFF (*Münch. med. Woch.*, November 3rd, 1933, p. 1739) alludes to recent findings of increased alkali retention in vascular hypertension, peptic ulcer, asthma, and other disorders in the aetiology of which vaso-neurotic factors have been thought to be important. In forty patients, of the average age of 58, in whom raised blood pressure was the only morbid objective sign to be detected, he found that alkali retention, as shown by measurements of the urinary pH before and after intravenous injection of sodium bicarbonate, was very different—extremes of 0.3 and 2 (difference in acidity) being noted. Correlating the findings with clinical data, he noted that treatment was effective in patients with little alkali retention; others did not respond.

171 Primary Cancer of the Lung

R. OVERHOLT (*Amer. Journ. Surg.*, November, 1933, p. 181) points out the discouraging results obtained by irradiation in the treatment of carcinoma of the lung, and considers that at present surgical extirpation of the lesion is the most hopeful method of obtaining a permanent cure. Earlier and more frequent use of x rays may render diagnosis possible whilst the disease is still localized in one of the pulmonary bodies and thus make surgical removal more successful and less dangerous. Bronchoscopy is also of value in diagnosis. Symptoms are determined by the position of the growth, which may be so situated that no apparent disturbance results. If the lesion is growing well out from the hilum it may assume a large size before any symptoms are noticed. A lesion in one of the larger bronchi will initiate a cough reflex, whilst partial obstruction of one of these bronchi may cause a wheezing respiration. If the mucosa of the bronchus becomes eroded haemoptysis is a common symptom. Chest pain is frequently present when the lesion is centrally located or of the hilar type. Intercoastal neuritis may be caused by infiltration in the mediastinum, or by

a peripherally located lesion with pleural involvement. A case is reported in which the patient, a man of 59 years, suffered from chest pain without cough or haemoptysis and had a large lesion at the right base in a posterior position. A diagnosis of a mediastinal tumour was made, but operation disclosed a primary bronchiogenic carcinoma with extension into the mediastinum. Complete removal being impossible, the right lower lobe together with the shell of the tumour was removed, and the patient had an uneventful convalescence followed by deep x-ray treatment. He died suddenly at the end of ten months.

172 Gas Gangrene following Therapeutic Injections

A. PERNYÉSZ (*Orvosi Hetilap*, November 4th, 1933, p. 175) records a case of bronchial asthma in which death from gas gangrene resulted twenty-one hours after the injection of 3 c.c.m. of camphor oil and 3 c.c.m. of cardiazol into the right upper arm; syringe and needles had been boiled for five minutes before use, and though the ampoules could not be examined the contents of others from the same box were found to be sterile. The author states that similar cases observed by him were mainly found in exhausted and febrile patients, while two-thirds of those described in the literature occurred in the course of pneumonia, the rest being found associated with asthma, typhoid fever, malaria, and surgical conditions. Generally the drug used was caffeine, though gas gangrene had also occurred following the injection of many other substances, including normal saline. The site of injection was usually the front of the thigh, but sometimes the puncture had been made in the arm, gluteal region, and abdomen. Cases had been reported by Gross-Frie, Kruse, and Junghans. The cause of the infection could not be traced with certainty. It is important, states Pernyész, to clean every ampoule with alcohol before use owing to the danger of the negative pressure drawing glass splinters inside when the neck is broken. In all cases the skin should be cleaned with benzene and tincture of iodine, the surgeon's hands should be clean, and needles and syringe should be boiled before and after use.

Surgery

173 Statistics of Cancer of the Colon

N. PAUS (*Tidsskr. f. d. Norske Lægefor.*, November 1st, 1933, p. 1143) has made a collective study, clinical or post mortem, of the cases of cancer of the colon observed in several Norwegian hospitals. It was the cause of death in 206 out of 23,356 cases coming to necropsy (0.9 per cent.). The disease was as common in men as in women, and rare under the age of 50. Of the cases coming to necropsy, 73.8 per cent. showed definite strictures of the intestines, and in 19.9 per cent. death was due to acute intestinal obstruction. A classification of the cases according as entero-anastomosis was performed early or late showed that the mortality was 20 per cent. for the patients not suffering from intestinal obstruction, whereas it was 35.9 per cent. for those with chronic intestinal obstruction and 76.5 for those whose intestinal obstruction was acute. In five cases the first sign of the disease was acute intestinal obstruction—a fortunate incident which brought the patient to operation earlier than usual. Of 571 patients operated on, 9.5 per cent. underwent an exploratory laparotomy only; 22.2 per cent. were provided with an artificial anus, 16.8 per cent. with an intestinal anastomosis, while on 51.5 per cent. a radical operation was performed. For this last, the operation mortality was 29.3 per cent. when the operation was performed in a single stage, and 15.7 per cent. when it

was performed in more than one stage. Of those who survived a radical operation, 75.3 per cent. were alive two years later and 30.7 per cent. ten years later. Paus concludes that 'secondary deposits occur comparatively late in the disease, and that the ultimate prognosis is good if a radical operation is performed early enough. The prognosis depends on the general practitioner: were he to secure an expert x-ray examination at once in every suspicious case, the mortality from this disease would, Paus believes, come down with a run. In only 22.4 per cent. of the author's material had a reliable x-ray examination been made.

174 Rupture of the Liver

M. BACHY (*Bull. et Mém. Soc. Nat. de Chir.*, November 25th, 1933, p. 1367) reports eight cases of rupture of the liver. In every case the rupture was due to trauma, and the patients had characteristic symptoms of severe intraperitoneal haemorrhage, pallor, quick pulse, and contraction of the abdominal wall with sharp pain at the point of injury. Operative treatment was carried out as soon as possible, the method of choice being suture of injuries in the liver by means of thick catgut on a large needle, care being taken not to damage the parenchyma of the liver. The subhepatic space was drained in every case. Prognosis depends on the severity of the injury—when there are many bleeding wounds in the liver the outlook is grave owing to severe haemorrhage. There may also be associated lesions such as haemothorax, injury to the diaphragm, pleuro-pulmonary complications, or rupture of the lower lobe of the lung, which add greatly to the severity of the condition. Of the eight cases reported three died, but the remainder recovered after operative treatment.

175 Sympathectomy and Vagus Resection in Asthma

R. GÖBELL (*Zentralbl. f. Chir.*, November 11th, 1933, p. 2662) describes a series of 110 bilateral sympathectomies, with 5 per cent. mortality; this has diminished since ether anaesthesia has been abandoned, and the operation is now done, if possible, in two sittings, separated by fourteen days' interval, in local anaesthesia. Recently avertin has also been used. Operations done for asthma numbered ninety-eight. Unilateral sympathectomy or right vagus resection (eight cases) showed transitory—usually no—improvement. Of twenty bilateral sympathectomies eight were cured and two improved. Bilateral operation on vagus and sympathetic was done in sixty-two cases; twenty-six were cured, eleven improved, and fourteen not improved; the remainder died or could not be traced. Göbell no longer tries the operation in patients aged more than 60, in whom he finds emphysema and bronchitis so firmly established that cure is impossible. He describes fully his technique for removal of the cervical sympathetic ganglia from the neighbourhood of the vertebral artery.

Therapeutics

176 Nucleic Acid Derivatives in Agranulocytosis

W. DAMESHEK (*New England Journ. Med.*, November 23rd, 1933, p. 1054) records a group of three cases of cyclic or relapsing agranulocytosis which were treated successfully with nucleic acid derivatives. He emphasizes the recurrent tendency in this condition, the almost specific response to treatment on these lines, the reactions following the use of pentnucleotide, and the haematological response (with special reference to the histiomonocytosis which occurs during recovery). He concludes that the relatively simple nucleic acid derivative, adenine sulphate, and the more complex mixture of pentose nucleotides are both highly effective and probably specific in the treatment of true agranulocytosis. He thinks that the adenine sulphate may represent the active principle

in the mixture of pentose nucleotides. It is thought probable that the response to intravenous injections of adenine sulphate is more rapid than that of pentose nucleotides given intramuscularly, and that it is to be noted under five days after the commencement of treatment. These derivatives of nucleic acid have apparently a specific action on the formation of bone marrow granulocytes, and thus attack what is probably the essential cause of the disease. Failures which have been reported are probably due to the use of the drug in conditions of leucopenia which were not primary in type but were secondary to severe sepsis, aplastic anaemia, or aleukaemic leukaemia. In one of Dameshek's three cases there was striking improvement in the blood within eight hours after starting treatment, followed by definite clinical amelioration and subsidence of the bronchopneumonia in seventy-two hours. In another case the haematological reaction was noted in seventy-two hours, clinical improvement following after a little further time.

177 Artificial Pyrexia in Trigeminal Neuralgia

T. BÖCKHELER (*Münch. med. Woch.*, November 3rd, 1933, p. 1740), who saw a case in which sciatica, refractory to other treatments, disappeared during an intercurrent attack of erysipelas, has had favourable results from induction of artificial pyrexia in seven cases of trigeminal and three of occipital neuralgia. Recurrences, successfully treated on similar lines, were noted in some cases, but three to twenty-four months' freedom from pain was the usual result. Moewe has seen cure follow pyrexial treatment in a case in which injection of the nerve and Gasserian ganglion had been ineffective. The medium used was "pyrifer," a protein substance derived from non-pathogenic coliform bacilli, given intravenously in small doses, which were followed by preliminary intensification of the neuralgia: occasional fatalities, not necessarily attributable to its action, have followed its use in general paresis, but in the present series, from which old and debilitated subjects were excluded, no inconvenient results were noted.

178 Diphtheria Toxoid Prophylaxis

A. L. MCKAY (*Canadian Pub. Health Journ.*, November, 1933, p. 518) has been for the last eight years employing in Ontario diphtheria toxoid (anatoxine Ramon), and cites statistics in support of his contention that this preparation is a safe and effective agent in the prevention of diphtheria. He estimates that about 15 per cent. of the population has now been thus treated, and the provincial morbidity and mortality rates for this infection show a very marked and continuing fall since 1929, as compared with certain cities where no toxoid prophylaxis was attempted. McKay concludes that now a community can almost eradicate diphtheria by the administration of toxoid to a significant percentage (30) of its child population, particular attention being paid to the age group under 5 years.

179 Influenza and Sterility

A. L. WOLBARST (*Med. Journ. and Record*, November 1st, 1933, p. 293) suggests that influenza may be a possible cause of sterility on the following grounds. Stenosis of the vas deferens may occur as the result of infection when the organs at both extremities of it are apparently normal. Organisms similar to those found in focal influenza infections of the prostate, seminal vesicles, and epididymes can be recovered from the secretion occasionally found in the vas deferens. Influenza infection of the vas may occur and produce stenosis and permanent sterility unless relieved by vasotomy. In cases of azoospermia without obvious cause an inquiry should be made as to a previous infection with influenza, and if such a history can be obtained vasotomy should be performed as the only known means of restoring fertility. The author states that the stenosis in the vas was removed and motile spermatozoa restored to the semen in 45 per cent. of the cases treated by him.

Laryngology and Otology

180 Chronic Paranasal Sinus Infection

According to R. A. KERN and H. P. SCHENK (*Arch. of Otolaryngol.*, October, 1933, p. 425) chronic diseases of the lower respiratory tract that are attended by purulent sputum in large amounts are in most cases associated with chronic sinus infection, bronchiectasis being outstanding in this respect. Whether the sinus infection is primary or secondary is uncertain, but it is clear that attempts to cure such respiratory tract infections are doomed to failure until the sinus condition has been thoroughly treated. Significant points in this group of cases are the constancy of marked clouding of the sinuses on x-ray examination and on transillumination, and the usual finding of a red congested nasal mucosa. Acute sinusitis may lead to a subacute bronchial infection. The patients, usually young adults, suffer from a severe cold in the head, followed by cough, fever, and malaise for a few days. The symptoms ameliorate but do not cease, the cough, purulent sputum, and evening pyrexia persisting. Examination of the sinus often discloses an acute local infection without significant symptoms, but, on treating this effectively, all the symptoms disappear. Chronic inflammation of the sinus mucosa is often found in cases of seasonal hay fever or pollen asthma. Patients with perennial nasal and bronchial hypersensitiveness show a very high incidence of abnormality of the sinuses, both clinically and in radiographs. Whether primary or secondary in occurrence the sinusitis renders the nasal mucosa more sensitive to old allergens, may pave the way for sensitization to new inhalants or bacteria, and perpetuates the bronchial infection. Avoidance of the extraneous substances to which the patient is sensitive is often followed by a complete or partial subsidence of the mucosal swelling and the clearing up of the sinus infection. Only when this measure has failed is an operation on the sinuses indicated.

181 Blood Infection from Otitis Media

E. J. G. GLASS (*Journ. Laryngol. and Otol.*, November, 1933, p. 754) records an analysis of sixty-three consecutive cases of blood infection from otitis media which occurred in Nottingham between 1926 and 1932. It was found that the mortality rate was low in children under the age of 10, in cases of otitis media submitted to operation during the first week, in cases developing metastatic abscesses, and in haemolytic streptococcal infections treated with anti-scarlet-fever serum. The prognosis proved to be bad in patients over the age of 40, in chronic suppurative otitis media with acute exacerbation, when septicaemia had developed before the operation was performed, and in cases showing subcutaneous haemorrhage or jaundice. Of the sixty-three patients death occurred in thirty-five, the commonest terminal cause being such conditions as septicaemia and pyaemia. One recovered apparently from a septicaemic state, only to die from meningitis three weeks later. The blood culture in this case contained a non-haemolytic streptococcus.

182 Autohaemotherapy in Ozaena

M. DO SOUTO (*Rev. de Laryngol., d'Otol. et de Rhinol.*, November, 1933, p. 1171) advises autohaemotherapy in ozaena. He adopted this method owing to the results following its use in many dermatoses and to those obtained by peptone therapy in ozaena. Haemoclastic crisis with leucopenia and fall of arterial tension, an antitoxic and anti-infectious effect producing a stimulation and modification of blood reactions, and desensibilizing anticolloidoclastic effects have all been attributed to autohaemotherapy. The technique in ozaena is extremely simple: with a short-bevelled needle of calibre suitable to the size of the veins 5 to 10 c.cm. of blood are withdrawn from the vein at the bend of the elbow, and immediately injected, with the same needle without the addition of any solution (citrate, etc.), deeply into the

middle of the deltoid region. The initial dose for children is 3 c.cm. and for adults 5 c.cm. every two days. Larger doses than 5 c.cm. for children and 10 c.cm. for adults are never necessary. Though the number of injections is not limited, twelve per series suffice usually. After an interval a second series may be given if necessary. Appreciable effects are not evident before the fifth or sixth injection, after which improvement is astonishingly rapid. The only after-effects are a transitory slightly painful erythema at the injection site and a slight temperature. The treatment is contraindicated in cachectic and cardiac cases and in those with advanced arteriosclerosis, who tolerate protein shock badly. Do Souto does not claim cure by this procedure—cure signifies complete restitution of the bones and mucosa—but merely that it causes disappearance of the crusts and offensive odour.

183 Treatment of Acquired Deafness

J. B. PRAGER (*Med. Journ. and Record*, November 15th, 1933, p. 375) describes a three-stage method of treatment for acquired deafness which comprises diathermy, nebulization, and sound vibratory massage. Through pure aluminium electrodes a current starting with 100 milli-amperes is passed, and is gradually increased until there is a comfortable sensation of warmth in the patient's ears. This is continued for half an hour, and it is argued that the circulatory changes so induced should be of considerable benefit. The patient should be allowed to remain in the chair for at least five minutes after the current has been turned off in order to obviate any feeling of dizziness or vertigo. The nebulization treatment follows. It consists of the introduction into the posterior nares of an oil containing camphor, menthol, and eucalyptus. The patient is finally seated in a comfortable chair before a machine which amplifies sounds transmitted to it by a phonograph record. The volume of these sounds is regulated by a control knob, and is increased until the patient feels a distinct vibration of both drum membranes. This is maintained for from three to eight minutes, the duration being determined by the condition of the patient. Prager states that the advantage of this form of aural sound massage lies in the fact that the amplitude of the sound waves is completely adaptable to the individual condition of the ears in each case. The physiological stimulus causes an active hyperaemia, which is evidenced by a blushing to be observed about the handle of the malleus and the drum membrane, and by a comfortable sensation of warmth. Repetition of the treatment results in improvement of nutrition; adhesions become loosened and disappear. The hearing gets better, tinnitus being abolished or relieved. Care must be taken to deal with any psychological factors present.

Obstetrics and Gynaecology

184

Chronic Mastitis

HOWARD C. TAYLOR (*Surg., Gynecol. and Obstet.*, November, 1933, p. 627) discusses the aetiology and treatment of 102 cases of non-malignant painful breast other than the circumscribed forms of chronic mastitis. Eighty of the cases were aged from 20 to 40. Characteristics are pain, generally bilateral, occurring before, and relieved by, the menstrual flow. An intermittent lump or secretion was found occasionally, and once bleeding. Pathologically the condition is probably only an exaggeration of normal menstrual variations. Relationship to cancerous growth was very doubtful, but that to simple neoplasms was marked. As aetiological factors other workers quote prolonged trauma (for example, in unsupported or compressed breasts), incisions for puerperal abscess, nervous instability associated with tachycardia or dysmenorrhoea, suggestion, ovarian disease, and any pelvic lesion. In the series under analysis sixty-six out of 102 were traceable to some special incident as puberty, marriage,

trauma, or pelvic operation, and thirty had followed the onset of dysmenorrhoea. Some menstrual abnormality was present in sixty-eight. Lactation was apt to be deficient. Low fertility in fifty-five cases resulted from the kind of contraceptives that produce pelvic congestion. Masturbation is considered to be probably a frequent cause. In seventy-three cases examination revealed pelvic lesions which required gynaecological treatment. Treatment, which averaged ten months' duration, is summarized as follows. (1) Observation alone sufficed in twenty cases; resolution at the end of pregnancy or at the menopause is frequent; under 30 years of age symptoms tend to persist. (2) Pelvic operation; when required, very successful. (3) Non-operative gynaecological therapy of chronic pelvic inflammations, etc.; more successful than in Group 1. (4) Radiation of ovaries led to convincing success in eight out of thirteen cases; dosage was being reduced so as to avoid a sudden menopause, and this might be applicable to younger patients. (5) Treatment by ovarian substance produced no better results than those from simple observation.

185 Therapeutic Use of Pregnancy Urine

According to T. WARSCHAWSKY (*Zentralbl. f. Gynäk.*, November 18th, 1933, p. 2729) urine from patients in advanced pregnancy was first used therapeutically in Russia by subcutaneous and by rectal injection. Schildberg, in Germany, has reported good results from rectal injection in treatment of oligomenorrhoea and of metrorrhagia after gonococcal adnexal inflammation. In twelve patients Warschawsky has injected per rectum twice daily 25 to 50 c.cm. of pregnancy urine, corresponding to 1,000 to 2,000 mouse units of folliculin daily; it was previously boiled to destroy prolactin (which according to Mandelstamm and Tschaukowsky has deleterious effects on the ovary in large doses) and bacterial flora, and was given on the seventh to twenty-fifth days of the cycle. The patients with oligomenorrhoea near the climacteric reported relief from their sleeplessness and functional symptoms.

Pathology

186 Blood Calcium Content in Children

G. CAREDDU and R. CENTO (*La Pediatria*, November 1st, 1933, p. 1349) studied the calcium content of the blood in twenty-six healthy children aged from 1 to 9 years and found that the average amount was 10.1 mg. per 100 c.cm. of serum. Treatment with irradiated ergosterol or ultra-violet rays led to a constant increase of the calcium content. The increase ranged from 6 to 24 per cent. in cases treated by irradiated ergosterol, and from 4 to 21 per cent. in cases in which ultra-violet rays were applied. The highest increase was found in normal children who had a low initial calcaemia—that is, under 10 mg. per 100 c.cm. of serum—while the lowest increase was noted in children with a high initial calcaemia (12 mg. per 100 c.cm. of serum). The percentage increase of calcaemia was greater and more rapid in three rickety subjects who showed a low calcium content of the blood, and in four children with definite tetany in whom the level of calcaemia was also low.

187 Toxicity of Tetanus Toxin

S. MUTERMILCH, M. BELIN, and Mlle E. SALAMON (*C. R. Soc. de Biol.*, 1933, cxiv, 1005) draw attention to an important point in the titration of tetanus toxin. CONDREA and POENARU (*ibid.*, 1933, cxii, 1482 and 1484) recently showed that tetanus toxin diluted in peptone broth had a considerably higher titre than when diluted in saline or distilled water, and concluded that the tetanus bacillus formed a protoxin which was activated by peptone. The present authors have confirmed these observations, but have come to a different conclusion as to their interpreta-

tion. They find that a toxin which kills in a titre of 1 in 100,000,000, when all the dilutions are made in peptone broth, kills only in a titre of 1 in 1,000,000 if the first dilution is made in saline, in a titre of 1 in 500,000 if the first two dilutions are made in saline, in a titre of 1 in 100,000 if the first three dilutions, of 1 in 40,000 if the first four dilutions, and of 1 in 20,000 if the first five dilutions are made in saline. Further observations have shown that tetanus toxin when diluted with saline rapidly becomes inactivated on standing in contact with the air. The higher the dilution the more rapid is the inactivation of the toxin. Previous work has shown that oxygen has a markedly destructive action on tetanus toxin, and the authors therefore conclude that the presence of peptone in the diluting fluid protects the toxin against oxidation. It follows that for accurate titration of tetanus toxin some protective substance like peptone or serum must be used in the diluting fluid.

188 The Bacteriological Diagnosis of Gonorrhoea

A. BECK (*Zentralbl. f. Bakt.*, December 4th, 1933, p. 281) discusses the difficulties of diagnosing gonorrhoea, particularly in the chronic stages, by microscopical means alone. In this stage true gonococci are not always situated intracellularly, and they are very difficult to distinguish from other Gram-negative organisms. An investigation was made of seventy cases (eighteen male and fifty-two female) in which organisms microscopically resembling gonococci were found in genital or urethral smears. Cultures from every case were made on a medium consisting of equal parts of 2 per cent. nutrient agar and ascitic fluid. Colony formation was studied on 10 per cent. sheep blood agar, and further differentiation of the various organisms isolated was carried out on the usual media. In only four cases was the gonococcus isolated. *M. catarrhalis* was isolated once, enterococci twenty-three times, *Str. viridans* seventeen times, non-haemolytic streptococci seven times, haemolytic streptococci twice, *Staph. albus* forty-eight times, *Staph. aureus* six times, sarcinae eighteen times, *B. coli* fourteen times, *proteus* twice, *P. pyocyanea* once, diphtheroid bacilli nineteen times, and lactobacilli twelve times. Of these organisms the diphtheroid bacilli and lactobacilli caused no trouble, partly because of their peculiar morphology and partly because they are Gram-positive. The remaining organisms, however, the author considers may readily be confused with gonococci. Staphylococci and streptococci are not infrequently found in pairs, and failure to retain the Gram stain is not unusual. Organisms of the *coli* and *proteus* groups may occasionally cause difficulty if they are seen in pairs end on. The author's conclusion is that the definitive diagnosis of chronic gonorrhoea can be made by cultural means alone.

189 A Sex Determination Test

T. J. CURPHEY and ANNE S. ROMER (*Journ. Amer. Med. Assoc.*, November 18th, 1933, p. 1630) have repeated the sex determination test of DORN and SUGARMAN (*ibid.*, cxix, 1659) using a pure-bred strain of New Zealand white rabbits. The latter observers found a correct prediction of the sex of the unborn child in 94 per cent. of eighty-five cases, when changes in the testicles of immature rabbits which had received intravenous injection of pregnancy urine were taken as a criterion. The present authors, however, found that the deductions based on enlargement or not of the testes proved erroneous in many instances, even when the selected optimum age group of rabbits, as defined by Dorn and Sugarman, was employed. They conclude that the age of the experimental animal and the anatomical position of the testes at the time of the investigation play no special part in testicular stimulation. They are satisfied that the urine of pregnant women contains a spermatogenic factor, which, however, appears to have no relation to the sex of the unborn child. They suggest that further investigation would be worth while to determine whether there is some relationship between this spermatogenic factor and toxæmic states of pregnancy.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

190 Normal and Pathological Red Blood Pictures in Old Age

F. LASCH and K. TRIGER (*Med. Klinik*, October 1st, 1933, p. 1346) have analysed the blood counts of 150 patients over 60 years of age suffering from various diseases. They find that a hyperchromic red blood picture is peculiarly common in old age, not merely in Addisonian pernicious anaemia, but in varying types of secondary anaemia and frequently with a normal haemoglobin content. Thirteen cases with a normal haemoglobin but a colour index above 1.05 were further investigated. The mean erythrocyte diameter was within normal limits in all cases; the volume index ran parallel with the colour index; there was achlorhydria in six of the thirteen patients and four showed slight urobilinogenuria. From these findings the authors conclude that this type of blood picture, which they name "hyperchromia of old age," is distinct from and unrelated to Addisonian anaemia. In the last few years Lasch and Triger have observed sixty-four cases of Addisonian pernicious anaemia in patients over 60 years of age. They stress the frequency of this condition in the senium. The clinical picture differs little from that in younger patients, but an aplastic blood picture from marrow exhaustion is more common. Atypical and secondary anaemias are not infrequent, and these are often hyperchromic, response to treatment being usually poor. They have observed several cases of panmyelophthisis (aplastic anaemia).

191 Anaemia and Hepatic Cirrhosis

K. FELLINGER and R. KLIMA (*Wien. klin. Woch.*, October 6th, 1933, p. 1191) have studied forty-eight cases of portal cirrhosis from the haematological aspect. Of these, fourteen cases (34 per cent.) had a normal blood count; thirty (54 per cent.) were anaemic, eighteen of these having a hyperchromic anaemia; and four (12 per cent.) had an erythraemia. On closer analysis it was found that in early cases the blood count is normal, and as the disease proceeds anaemia, first hypochromic, later hyperchromic, was the rule. The four erythraemic cases were in a relatively early stage of cirrhosis, and were apparently of the type described by Mosso as primary erythraemia with secondary cirrhosis. None of the cases in the series had had haemorrhage into the alimentary tract. The hyperchromic anaemia is considered by the authors to be haemolytic in origin, as evidenced by reticulocytosis, hyperbilirubinaemia, and an erythroblastic marrow reaction. The Price-Jones curve is similar to that of Addisonian pernicious anaemia, there is moderate leucopenia, and the anaemia responds to liver therapy.

192 Constitutional Tendency to Thrombosis and Embolism

H. STOSZ (*Deut. med. Woch.*, November 10th, 1933, p. 1699) gives a useful review of recent findings in cases which recovered from post-operative (or other) thrombosis or embolism. The author had himself previously found well-marked deviations from the normal in these cases, principal among which were a diminished serum-globulin content, a diminished coagulation time, and a slowed rate of sedimentation of red blood cells. These findings suggested a constitutional tendency to thrombosis and embolism originating in an abnormal condition of the serum colloids. Similar findings were obtained in cases showing dermatographia, respiratory arrhythmia, bradycardia, lymphocytosis, and eosinophilia. Having regard to the fact that adrenaline, thyroid, and pituitary medication produce the reverse picture—namely, increased serum globulin, lengthened coagulation time, and more rapid rate of sedimentation—it is considered that these phenomena represent the result of excitation of the sym-

pathetic. Insulin, regarded as a parasympathomimetic hormone, produces the same changes as are observed in vagotonic subjects. Examination of various theories strengthens the author in his view that those cases developing thromboses or emboli are constitutionally predisposed thereto. The lower globulin content is taken as evidence of a diminished heparin or anti-prothrombin content in the blood, and hence a greater tendency to rapid coagulability. In these patients he considers that we have a liability of the vegetative nervous system, with an overbalance in the parasympathetic direction. It is suggested that as a test for this tendency to thrombosis and embolus formation we should take the diminished rate of sedimentation of the red cells. The possibility of prophylaxis by means of sympatol and thyroid preparations is considered.

193 Epidemic Myalgia ("Bornholm" Disease)*

N. L. CRONE and E. M. CHAPMAN (*New England Journ. Med.*, November 16th, 1933, p. 1097) state that thirty cases of this disease, which he terms "epidemic pleurodynia," first described by Dabney under the name of "devil's grip" in Virginia in 1888, were admitted to the Massachusetts General Hospital between August 1st and 25th, 1933. The patients had come from scattered regions in and around Boston. The ages ranged from 2 to 43 years, the majority being between 10 and 25 years. The sexes were equally affected. The onset was usually sudden, with pain in the lower chest, praecordium, and abdomen, and with a rise of temperature to 102° or 103° F. Headache was frequently present; signs of dry pleurisy were found in two cases, but in the rest examination of the chest was negative. The urine was normal in every case and, with the exception of three who showed a polymorphonuclear count, the blood was normal in all. Recurrences occurred in several cases, in some as long as ten days after the initial symptoms. All recovered.

Surgery

194 Contracted Toes

D. GLISSAN (*Aust. and New Zeal. Journ. Surg.*, October, 1933, p. 149) states that primary contracture of the toes is not an uncommon lesion and is a deformity of young adult life, males being most frequently affected. Although the deformity may be biological and the result of modern conditions, a history of gonorrhoea may be obtained in a number of cases; in these instances the bilateral wasting of legs and feet is always appreciable. All the toes are affected, with the possible exception of the great toe; there is no trace of cavus deformity and no shortening of the tendo Achillis. Symptoms consist of pain beneath the ball of the foot and in the toes, which may be associated with tingling and numbness, cramp of the legs and feet, and awkward gait. Examination shows the toes in hyperextension at the metatarsophalangeal, and in flexion at the interphalangeal, joints. The tendons of the common extensor stand out in relief on the dorsum of the metatarsus, and the flexed toes are capped by reddened skin or callosities. The secondary form is found in association with claw-foot, equinus, and hallux valgus, and may follow burns or injury to the foot. In this form one or two toes and only one foot may be affected. Early cases may yield to conservative treatment, but in advanced cases operation is called for. This comprises division of the long extensors of the toes and removal of a section together with the division of the soft tissues down to the bone. The periosteum and collateral ligaments are separated from the metatarsal bones, and sufficient bone is removed from each inter-

* A description of a Yorkshire outbreak of "Bornholm" disease was printed in the *Journal* of November 4th, 1933 (p. 817).

phalangeal joint to straighten the digits and to ensure ankylosis in a straight position. The toes are splinted and fixed in plaster-of-Paris for six weeks, after which the patient is encouraged to walk, a splint being worn at night for a further six months.

195 Adrenal Sexual Precocity

L. P. PLAYER and H. LISSER (*Urol. and Cut. Rev.*, November, 1933, p. 758) record the case of a boy aged 4 years and 11 months whose bone age was between 12 and 13 years. He was tall and large for his age, though not obese. The external genitals were those of an adult. He had the beginnings of a moustache, a little axillary hair, and plentiful pubic hair. The prostate was of almost adult size, and its secretion contained much lecithin and many spermatozoa. He had frequent erections and many nightly emissions. Pyelography showed a round tumour above the left kidney which depressed the upper calyces. A diagnosis of left adrenal cortical tumour was made and confirmed by operation, when a well-encapsulated mass the size and shape of a large apple was removed. Histologically this was composed of rapidly growing adrenal cortical cells. When seen twenty months after the operation the boy was in good health, and showed the following changes of endocrine abnormalities. The axillary hair had vanished, the moustache and pubic hair had thinned somewhat, the boy was more childish in appearance and demeanour, and though the external genitalia had not diminished in size erections and emissions had been rare since the operation. The writers had found eight other instances of sexual precocity in boys in which an adrenal cortical tumour was found at necropsy. In three of these operation was attempted, but the tumours were inoperable in two. In the other case the tumour was removed, but death took place twelve hours after the operation. The present case is therefore the first of the type in which survival had followed removal of an adrenal cortical tumour.

196 Occupational "Fractures" in Soldiers

SCHERF (*Zentralbl. f. Chir.*, November 25th, 1933, p. 2739) alludes to cases of metatarsal or "march" fractures, in which soldiers were found to have callus without history of fracture of the metatarsus as a reaction of healthy bone to long-continued pressure from similar, repeated movements. As possibly coming in the same category of reinforcement zones ("Umbauzonen"), or possibly as examples of spontaneous fractures, he describes nine cases in which recruits had pain, tenderness, and radiological signs of transverse fracture and callus formation at the junction of the upper and middle thirds of the fibula. No accident had occurred, but the exercise of jumping with the hips and knees maximally flexed had been sedulously practised. Displacement was present in one case only, and was regarded as secondary. Full duty could be resumed within a few weeks.

Therapeutics

197 Treatment of Urinary Tract Infections with Dyestuffs

P. SZEGÖ (*Med. Welt*, November 18th, 1933, p. 1644) reports the successful control of infections of the urinary tract with a new preparation, neotropin, which is an azo-dye of the pyridine series, and is administered per os. This substance possesses the important property of being rapidly excreted, 82 per cent. being removed by the urine in twenty-four hours, and only minimal amounts being excreted by the intestinal tract. The maximum concentration in the organism is reached in some four hours after ingestion, the urinary maximum occurring between the third and fifth hours. The bactericidal action of this preparation is so intense that dilutions of 1 in 10,000 are said to kill *B. coli* and staphylococci. Since the substance is so rapidly excreted it is necessary to adjust the times of administration so that lethal concentrations are available in the urinary tract. Restriction of fluid intake,

combined with the use of a diuretic, will aid in attaining the optimum conditions for effective bactericidal action during excretion. The drug is well tolerated, and colours the urine yellow; it may leave stains, but these are easily removed with soap and water. Neotropin possesses a strong penetrating power and a great affinity for tissues. The author recommends its use in all cases where catheterization is undertaken. In cases where local treatment is impossible or too painful—for example, congestion of mucous membranes, tenesmus, burning pains, etc.—the use of neotropin is particularly valuable. The absence of irritation is an important matter in the treatment of vesical catarrh, most other disinfectant remedies producing considerable pain and spasm. In a considerable series of cystitis cases due to a variety of causes the author reports excellent results with this preparation. In addition to the treatment with neotropin the patients were kept in bed, given a diet free from high seasoning and alcohol, and also had warm hip baths.

198 Parathyroid Extract in Cardiac Therapy

ERNST HAMMERSCHLAG (*Med. Klinik*, December 8th, 1933, p. 1681) reports on the use of parathyroid extract in cases of cardiac decompensation of muscular and valvular origin as well as in cases of angina pectoris due to coronary sclerosis. The author's reasoning is based upon the fact that loss, or insufficiency, of the parathyroid gland induces tetanic phenomena and the syndrome known as "spasmodic diathesis," the most prominent symptoms of which are vascular spasms. The function of the parathyroid gland thus appears closely connected with the state of innervation of the vascular system. As the administration of parathyroid extract gives excellent results in tetanic affections and their sequelae, and as, on the other hand, certain effects of cardiac insufficiency show a close resemblance to tetanic symptoms, the author attempted the administration of parathyroid extract in cardiovascular therapy as an auxiliary means of dealing with the conditions caused by insufficiency or vascular spasms—though only in addition to and not in place of the usual cardiac remedies. The preparation used was the parathyroid extract manufactured by the Sanabo-Chinoin works in Vienna, and containing 20 Collip units per c.cm. Describing six cases in detail, the author concludes that the results obtained by such auxiliary parathyroid medication are sufficiently encouraging to justify the continuation of experiments in this direction, and adds that in no case have undesirable effects of the method been observed.

199 Auto-haemotherapy (Intravenous) in Gonorrhoea

A. INGMAN (*Finska Läkarsällskapets Handlingar*, November, 1933, p. 1051) reports his experience with some forty cases of gonorrhoea, complicated by epididymitis, prostatitis or arthritis, in which intravenous injections of the patient's own haemolysed blood were given as a form of protein shock treatment. A 20-c.cm. syringe, containing 14 c.cm. of recently sterilized distilled water, is used. After its needle has been introduced into a vein of the arm, 7 c.cm. of blood is aspirated and mixed with the distilled water by the rotation of the syringe on its own axis while the needle remains in the vein. (It has been found that after thirty to sixty seconds 90 per cent. of the erythrocytes are haemolysed by contact with water.) From one-third to the whole of the contents of the syringe is injected after this interval into the vein before the needle is withdrawn. In this way over 200 injections were given by the author quickly, painlessly, and without any mishap. He tabulates his cases in five different groups, the first four of which (twenty-three cases) concern epididymitis in different stages, the fifth and last including cases of gonorrhoeal arthritis. Occasionally, the patients complained of a short bout of pain in the affected testicle following the injection and interpreted as a local reaction to it. In most cases of epididymitis there was definite improvement on the day after an injection. It provoked a slight rise of temperature, which was greatest after the first or second injection. There were no other general reactions such as giddiness, headache,

etc., nor was there any sign of an old gonorrhoeal focus being stirred into new activity. The author states that though the injections were easy and cheap and were followed by a general improvement, it is doubtful whether they did much to hasten local reabsorption. A drawback was the advisability, amounting almost to a necessity, of controlling them by estimating the rate of sedimentation of the erythrocytes before each injection. When this rate is excessive (negative phase) an injection should, it is stated, not be given.

Neurology and Psychology

200

Trauma in Encephalitis

A. M. RABINER (*New York State Journ. Med.*, July 1st, 1933, p. 796) attempts to estimate the influence of trauma in acute and chronic encephalitis. He cites examples from the literature, and records a series of nine personal cases which have led him to certain definite conclusions. He is satisfied that, following an injury to the head in which there is present some evidence of intracranial involvement, the minimal degree being a cerebral concussion, a later-developing epidemic encephalitis syndrome must be regarded as having been influenced in its production by the trauma. Rabiner gives illustrations of cases in which it seems certain that trauma, whether recent or remote—in one instance seven years previously—must have been responsible for setting up a pathological condition which permitted the entry into the central nervous system of the infectious agent causing acute epidemic encephalitis. He remarks that a patient who has had in the past an attack of this disease may have chronic manifestations, such as Parkinsonism, initiated or produced by an injury to the head; but, again, such an injury must have been severe enough to give rise to the picture of cerebral concussion. A partial clinical evidence of chronic encephalitis, such as a tremor of the hand or loss of associated movements, may be regarded as indicative of the full syndrome developing. If the patient is then injured, the subsequent advance in symptoms is not to be considered attributable to the trauma. An injury to any part of the body other than the skull, particularly when not associated with signs of cerebral concussion, is not to be considered as playing any part in the clinical course of epidemic encephalitis.

201 Physical Derangements in Cyclothymia

C. ROGGENBAU (*Med. Welt*, July 8th, 1933, p. 952) considers that body-weight variations in cyclothymia are due to (a) mental disturbances and (b) physical derangements, such as anorexia. These interact through the vegetative nervous and endocrine systems. In several cases anorexia followed glucose administration. Changes in gastro-intestinal activity are frequent; they are attributable to disturbances of the autonomic mechanism. Metabolism is accelerated (usually) or retarded by similar causes—autonomic hypersensitivity and endocrine imbalance. The endocrine and autonomic nervous systems are connected intimately and reciprocally. The degree of metabolic disturbance depends on organic sensitivity and functional response to stimulation. The functional activity of every endocrine gland should be tested for deviations from normality, and to determine whether the response to psychological influences is pathological. During depressive phases thyroid activity may be accelerated or diminished—the patient's symptoms simulating those of exophthalmic goitre or of myxoedema. The secretion of "gonadotrope" hypophyseal hormone is readily increased or diminished. Gonadal derangements occur in nearly 50 per cent. of all cases. In some depressive states increased electric irritability was observed—unconnected with parathyroid dysfunction, since the calcium content of the plasma remained normal. Manic and depressive phases were unaffected by monosaccharide administration. Definite hyperglycaemia occurred generally, with lengthening of the curve, as in thyrotoxicosis

—probably due to sympathetic stimulation. Glycosuria is a common symptom, unconnected with hyperglycaemia, but due to constitutional factors—for example, increased permeability (to sugar) of the renal epithelium. The cholesterol blood content is generally high, and arteriosclerosis is a frequent complication, although this is not associated with chronic nephritis. Further study of the metabolism of the endocrine system and its relations with the autonomic nervous system may furnish the key to these complex problems.

202

"Retraction Nystagmus"

E. GAMPER and J. KUBIK (*Med. Klinik*, August 18th, 1933, p. 1134) describe a case of cerebral tumour which showed the sign which has been named "retraction nystagmus." Kubik describes this sign thus: "When an eye movement is attempted a backward retraction of the bulb occurs either in place of, or as a concomitant to, the attempted movement." The sign was first described by Koerber in 1903, and since then six further cases have been recorded. The authors consider this rarity as more apparent than real, as, when nystagmus is present, it is easy for the retractory component of the movement to evade observation. The case reported in this paper is one of a pinealoma, and the march of signs and symptoms allowed the authors to deduce the exact situation of the causative lesion. This point is on the dorsal aspect of the mid-brain, slightly caudal to the oculomotor nuclei and close to the aqueduct. "Retraction nystagmus," although of great rarity, is thus of importance as it constitutes a definite localizing sign.

Obstetrics and Gynaecology

203

Treatment of Pruritus Vulvae

C. D. KENNEDY (*Edinburgh Med. Journ.*, September, 1933, p. 125) records fifteen cases of pruritus vulvae which were treated with "A.B.A.," a suspension in an oily medium of 3 per cent. amido-benzoic-acid-ethyl-ester, 5 per cent. benzyl alcohol, and 10 per cent. ether. This combination of local anaesthetics of low toxicity exerts a pronounced action, and there is no initial burning. Kennedy gave weekly injections of this mixture just underneath the skin in such a way as to ensure that a fan-shaped area was dealt with. If the drug is injected into the deeper tissues there is some danger of abscess formation. At each successive injection a different zone is treated, until the whole vulvar region has been infiltrated. The number of injections in a case ranged from three to thirty-three. The quicker the patient responded and the fewer were the necessary injections, the better was the result. The general health improved in ten out of the fifteen cases. Absolute freedom from irritation ensued in five cases, and in another five the itching became much less severe, only recurring after long intervals. Four were slightly improved, there being definite intervals of freedom. In one case no benefit was obtained. The author remarks that pruritus vulvae may occur independently of any accompanying general or local condition, and must therefore be viewed in many cases as a disease rather than a symptom. There is a close relation between pruritus and the menopause, and endocrine deficiency may be an aetiological factor. Although not invariably successful, treatment with "A.B.A." would seem to merit trial.

204

Loss of Weight in the Newborn

I. N. KUGELMASS, RUTH E. L. BERGGREN, and MILDRED CUMMINGS (*New York State Journ. Med.*, December 1st, 1933, p. 1365) believe that too little attention is paid to the loss of weight in the newborn, which they think results from dehydration and semi-starvation. They find that this initial loss of weight can be prevented by the administration of a solution composed of 6 per cent. gelatin (pH 6.2), 3 per cent. glucose, and 0.5 per cent. sodium chloride at two-hourly intervals during the first twenty-four hours after birth. It is claimed that the gelatin hydrates the

blood and tissues, that it raises the body heat by virtue of its specific dynamic action, and that it reduces the clotting time. The dextrose brings the neo-natal hypoglycaemia to the normal. The sodium chloride raises the initial low blood chloride content and favours hydration. The authors found that when newly born infants were placed on this treatment their average loss of weight was 1.7 per cent.—in very sharp contrast with the usual 7 per cent. They add that the characteristic clinical picture of the infant results from birth shock, and that this is more effectively combated by a hydrating solution than by milk mixtures during the first two or three days of life. Prevention of the loss of weight in the newly born child promotes the rapid disappearance of the so-called physiological apathy, somnolence, and stupor, which are secondary to birth shock, and associated with a compensatory acidosis. E. A. RIESENFELD (*ibid.*, p. 1372) believes that chilling at the time of birth is an important factor in this loss of weight. He found experimentally that it was much less when artificial heating by lamps was arranged, particularly in the case of premature children.

205 Pregnancy Tetany and Eclampsia

According to E. KLAFTEN (*Zentralbl. f. Gynäk.*, December 9th, 1933, p. 2915) tetany in connexion with pregnancy, although rare, has a mortality of some 5 to 7 per cent.; it may recur in successive pregnancies in those having latent hypoparathyroidism. Some cases of tetany in or after labour are combined with apparently eclamptic convulsions, and are ascribed by Klasten to hyperventilation of the lungs; and some cases of non-toxic or tetanoid eclampsia, with no oedema, little or no nephropathy, and favourable prognosis, are of similar origin. Accordingly, Klasten agrees with Seitz's distinction between toxic and tetanoid eclampsia. He finds, however, that the measurement of galvanic muscular excitability is not conclusive in diagnosis between the two, for a few cases of the former have increased excitability. As a result of tachypnoea and hyperventilation either tetany, with carpopedal spasm and/or laryngeal spasm on the one hand, or non-toxic eclampsia on the other, may be produced in or after labour. According to Klasten the conditions justifying termination of pregnancy in patients with tetany are failure of medical treatment, affection of respiratory muscles, impairment of consciousness, intractable tachycardia, or signs of liver or kidney affection. This treatment will probably be less frequently required since the introduction of improved preparations, such as the gluconate, for calcium treatment.

Pathology

206 Congenital Syphilis and Mental Deficiency

K. C. L. PADDLE (*Brit. Journ. Child. Dis.*, October-December, 1933, p. 49), after a review of the literature, records his observations on the relation between congenital syphilis and mental deficiency in a paper based on the study of 402 cases of low-grade mentally defective children. The blood Wassermann reaction and the Meinicke macro-clarification reaction were done, together with the Wassermann reaction, Lange's colloidal gold test, Pandey's test, and cell estimations on the cerebro-spinal fluid. Forty-six gave positive results in the blood or cerebro-spinal fluid, and 356 were entirely negative. Of the forty-six cases thirty-five were considered to be congenital syphilitics. Two of the 356 cases were also regarded as congenital syphilitics on clinical grounds, so that the total incidence of hereditary syphilis was thirty-seven cases (9.2 per cent.). The Wassermann reaction in the blood was in the majority of cases much more sensitive than the Meinicke macro-clarification reaction—contrary to what appears to be the case in adults. In five cases the cerebro-spinal fluid showed strong parietic types of curve, associated with positive Wassermann reactions, and increase of cells and protein, but none of the cases could on clinical grounds be regarded as examples

of juvenile general paresis. The cerebro-spinal fluid of twenty mongols failed to give any special type of curve with the colloidal gold reaction. The congenitally syphilitic male defectives showed marked retardation of descent of the testes in 60 per cent., as compared with 39 per cent. in a comparable group of non-syphilitics.

207 Late Effects of "Thorotrast" used in Radiological Investigations

M. E. JÖRG and J. A. AGUIRRE (*Actualidad Med. Mundial*, No. 3, 1933, p. 277) relate their experience of the delayed effects of this substance when used according to the technique described by Radt. Believing it to be a radioactive irritant, they issue a warning against its employment. Within six months after its administration in healthy animals they found that splenic and hepatic cells laden with thorium had been carried by the blood stream into the lungs, where they had produced granulomata, and were but rarely eliminated by the bronchi. Escaping through the pulmonary filter, a few regained the liver and spleen and produced the formation of huge giant cells surrounded by a fibrosis which later caused a necrobiosis of the contents. This irritative process engendered granulomata in the hepatic sinuses and lymphoid foci in the porto-biliary spaces. In the spleen the substance was stored in all elements, but especially in the centres of the Malpighian follicles, impairing their functions and making them appear like great wreaths of lymphocytes in evolution surrounded by capsules of hyperplastic cells. Six months after the injection the liver, blocked by the metal, showed a metaplastic regeneration of the reticulate fibrils, either as an irritative sclerosis of Glisson's capsule or as fibrous foci arising from granulomata. Fourteen months after injection the metal was still encysted in the giant cells already described, which are surrounded by evidence of granulomatous reaction; but the prevailing picture is one of vacuolation and albuminoid degeneration of the liver cells, with karyolysis and compression of the capillaries.

208 Bachman Skin Reaction in Trichinosis

R. A. KILDUFFE (*Amer. Journ. Med. Soc.*, December, 1933, p. 802) states that in 1828 Bachman described an intradermal reaction in experimental trichinosis consisting in the injection of a 1 per cent. solution of powdered trichinella larvae. The reaction, which ranges from a slight area of oedema to a well-defined haemorrhagic area, occurs within a week of injection. Kilduffe tried this test in thirty-three cases of human trichinosis, and came to the following conclusions: (1) the demonstrations of eosinophilia is not only technically simpler than the demonstration of the skin test, but is always feasible, whereas the skin test is not; (2) in point of delicacy and constancy of appearance eosinophilia is a reliable index of trichinosis in the human subject; (3) the Bachman skin test presents no practical advantage over the demonstration of eosinophilia in the study of human trichinosis.

209 Local Immunity to Pulmonary Tuberculosis

R. R. VILLANOVA and J. P. CANALIS (*Bull. de l'Acad. de Méd.*, November 28th, 1933, p. 581) suggest the existence of some substance in the pulmonary tissue capable of immunizing it against microbial invasion. In this connexion, Köbert has investigated silicic acid. Similar experiments have been made by the present writers. As calves possess a great predisposition to, and sheep a great resistance to, tuberculosis, the silicon content in the healthy lungs of seventy of these animals was estimated. The first twenty analyses showed an average content of 0.246 gram in the calf and 0.41 in the sheep; the remaining fifty analyses gave analogous results. These confirm Köbert's observations and, further, show that the quantity of silicon fixed in the pulmonary tissue is in strict relation with natural immunity against tuberculosis, and that increase of this amount produces an increased resistance to infection. Villanova and Canalis deem this to be of prophylactic and curative importance. Further animal and clinical experiments will be reported at a later date.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

210 Innervation of the Bladder and Colon

As the result of experiments on cats, ADAMSON and AIRD (*Brit. Journ. Surg.*, October, 1932) reported that megacolon can be produced by simple section of the erector nerve of Eckard. R. FONTAINE and M. BÉRARD (*Presse Méd.*, January 17th, 1934, p. 81) do not agree with this finding, nor with the classical teaching that section of this nerve alone causes a definite paralytic distension of the colon and bladder; this latter view is shared by Leriche. The extrinsic innervation of these organs is partly sympathetic, partly parasympathetic; the former is derived from the superior hypogastric plexus and the two lumbar sympathetic chains, the latter from branches from the second to the fourth sacral roots, especially the third (the erector nerves of Eckard). These two sets of fibres unite lower down into a single ganglion (the hypogastric); therefore, section of only one set must be made above this ganglion. Experiments on dogs are described; according to these, section of Eckard's nerves causes only a transitory vesico-colic paralysis, normal conditions being restored by the action of the rich intramural nerve supply of both organs. The present authors maintain that this intramural system, reinforced by motor fibres from the sacral cord, ensures all normal vesical functions; to the superior hypogastric plexus, the sympathetic part of the vesical innervation, they ascribe a merely sensory function. They therefore suggest that in painful cystitis necessitating surgical intervention the latter should be directed to the superior hypogastric plexus and not to the ganglion; as the sympathetic furnishes the sensory innervation of the bladder, its section should procure the maximum of relief.

211 Intoxication Coefficient in Carbon Monoxide Poisoning

BALTHAZARD and MELISSINOS (*Paris Méd.*, November 18th, 1933, p. 393), who report a number of cases, contend that carbon monoxide poisoning can be rightly considered to be the cause of death only in cases where the "intoxication coefficient" (ratio of carboxyhaemoglobin to total quantity of haemoglobin) is not below 0.42. Lower values in lethal cases denote the existence of accessory causes of death. In genuine carbon monoxide poisoning the only proper antidote is oxygen, and every other therapy (for example, hypodermic injections of sodium hyposulphite) is to be condemned as based on erroneous notions concerning the chemistry of this intoxication.

212 Prognosis in Pulmonary Tuberculosis by Sedimentation Test

S. BERG (*Nord. Med. Tidsskrift*, November 25th, 1933, p. 1426) finds that though the rate of sedimentation of the erythrocytes is no specific test, being merely indicative of the degree of intensity of a morbid reaction, it is remarkably reliable in prognosis in this disease. When patients are admitted to the sanatorium with a sedimentation rate below 30 to 40 mm., the odds are that this rate will become still slower and that clinical improvement will follow. On the other hand, when the rate is above this figure on admission, there is a considerable likelihood of its becoming still higher, or fluctuating wildly, what time the patient becomes clinically worse. An exception to these generalizations is to be found in those cases in which it is possible to induce a pneumothorax. Here an originally high sedimentation rate may be changed to a normal rate with corresponding clinical improvement. The author has investigated the subsequent fate of 171 patients five years after their discharge from a sanatorium

in 1922. They were classified according to the rate of sedimentation on discharge in the four following groups: 1 to 6 mm., 7 to 25 mm., 25 to 50 mm., and over 50 mm. In the first group the mortality was only 3 per cent. In the succeeding groups it was 32, 80, and 95 per cent. respectively. It will thus be seen that the prognosis for a sanatorium patient on discharge is good or bad according as his sedimentation rate is under or over 25 mm. Under this figure the mortality in the author's material five years after discharge was only 16.5 per cent., whereas over this figure it was 86 per cent. Though the sedimentation test is not absolutely impeccable, events are likely to justify it even in those cases in which other prognostic signs give it the lie.

213 Epidemic Myalgia

R. HUSS (*Svenska Läkarsälls. Förhand.*, November 30th and December 31st, 1933, p. 559) gives an account of an epidemic of myalgia which occurred in Sweden in 1931, and reached its maximum in August and September. There were no fatal cases, in spite of the stormy and painful character of the disease, which in some cases led to the diagnosis of "acute abdomen" and to a laparotomy. As the disease was not notifiable and the slighter cases escaped medical supervision, only an approximate estimate could be formed of the extent of the epidemic. It is probable that there were at least 12,000 cases. The epidemic spread in a jerky fashion along the coastal districts, avoiding for the most part large towns, such as Stockholm and Gothenburg, although they were in the infected zone, and appearing inland only in a few places which were low-lying and near important watercourses. The sex incidence was impartial, and a common age incidence was between 15 and 30. In addition to the violent pain in the lower chest and abdominal muscles, there were the following manifestations observed more or less frequently: vomiting, slight shivering attacks, headache, constipation, pain in the muscles of the back, fever, delirium, excessive sweating, diarrhoea, cough, orchitis, and dry pleurisy. The comparative immunity of the large towns was at variance with the theory of a contact infection from one person to another. The occurrence of the epidemic in the summer months suggested the intermediary of an insect as vector of the disease. According to a third hypothesis, the preference shown by the epidemic for coastal areas pointed to its being a water-borne disease. In this connexion it was noted that gastrointestinal symptoms were far more common than catarrhs of the respiratory tract. The explosive character of the epidemic in several areas was also suggestive of an infected water supply.

Surgery

214 Rupture of Operation Scars

H. FLÖRCKEN and E. KOBEL (*Deut. med. Woch.*, December 22nd, 1933, p. 1886) have reinvestigated ninety-six of the 158 cases operated on in the period 1921-9 for rupture of operation scars. In fourteen of the ninety-six cases a relapse had followed. In six of these cases the patients had been very fat, and adequate measures had not been taken to reduce their weight before the operation. According to the authors the incidence of rupture of post-operative abdominal scars varies greatly according as the abdominal wall is closed at once or not. In the latter case the frequency of such post-operative ruptures ranges from 12 to 20 per cent. with different authors. In the present material the overwhelming majority of the ruptures occurred within the first year after the operation. Hence Flörcken and Kobel's recommendation that patients should present themselves for re-examination after a laparotomy within six months of

it and again within the year, in order that such ruptures may be promptly discovered—they are apt to be completely overlooked by the patients themselves. Such ruptures require an operation both when they are small (as they are liable, surely but slowly, to become larger, and as the operation is usually a simple matter) and when, though large, they are complicated by signs of incarceration, digestive disturbances, or other discomforts. On the other hand, an operation is contraindicated for very large ruptures for which there is little prospect of a complete and effective repair. Dietetic treatment which effectively reduces weight may, however, render such cases operable. Disease of the vascular, respiratory, and renal systems is also a contraindication, but diabetes must be severe to be included among the contraindications. Among the authors' 158 cases there was only one operative death.

215 Treatment of Lymphogranuloma Inguinale

F. KALZ and F. SAGHER (*Derm. Woch.*, December 16th, 1933, p. 1754) describe the course and treatment of thirty cases of lymphogranuloma inguinale seen in Prague in two years: the diagnosis was confirmed by the Frei reaction, which was found to be somewhat modified in cases of seropositive syphilis. The best results were obtained from injections of the serum of convalescents. Local antiseptic treatment and treatment by antimony preparations were practically ineffective; local excision, although successful in small isolated buboes, was followed by protracted fistula formation in other cases. Solganal treatment was associated with a mild course of the affection, but with a long duration and a tendency to recurrence. X-radiation was a useful accessory treatment, and was followed by massive necrosis or accelerated softening. The average duration of treatment after injections of convalescent serum was six weeks: they were given at three or four days' intervals, intramuscularly or subcutaneously, in average doses of 10 c.cm. and total doses of 60 to 150 c.cm.

216 Simple Haemorrhagic Proctitis and Proctosigmoiditis

T. E. HESS THAYSEN (*Hospitalstidende*, December 7th, 1933, p. 1181) records twenty cases of a disease which until a few years ago was given little consideration and was often confused with other conditions, notably ulcerative colitis. He states that, with the help of the rectoscope and microscope, simple haemorrhagic proctitis and proctosigmoiditis can be made to present a well-defined picture with a characteristic clinical course. Fourteen of the patients were women, and the ages of the twenty patients were within the limits of 19 and 59 years. In only ten cases was there a previous history of other intestinal ailments—usually constipation. In the lighter cases the only symptom was haemorrhage, ranging from streaks of blood on the motions to a tablespoonful of blood escaping either directly after defaecation or independently of it. Other symptoms were slight stabbing or smarting in the rectum, with tenesmus and constipation. In the absence of fever, dyspepsia, abdominal pain, and anaemia, patients are apt to neglect this ailment for years. The history of bleeding promptly suggests haemorrhoids, and the correct diagnosis can only be made by rectoscopy, which not only reveals the extent and severity of the disease, but also distinguishes it from haemorrhoids, fissure, cancer, ulcerative proctitis, etc. The condition reacts promptly and satisfactorily for some time to astringent solutions containing tannin or silver nitrate, and to painting with silver nitrate and dusting with bismuth. But the disease is very liable to recur; it may do so after a symptom-free interval of four years. The treatment the author found most satisfactory was the introduction of 300 to 500 grams of a 1 per cent. solution of "yatren" into the rectum in the evening, after a preliminary lavage, with retention if possible overnight. After two months of such treatment an at any rate temporary cure is effected.

Therapeutics

217 Sanocrysin in Diseases of the Joints

K. SECHER (*Nord. Med. Tidsskrift*, November 18th, 1933, p. 1388) is very favourably impressed by the results of intravenous injections of sanocrysin in various rheumatic diseases of the joints. In addition to his many private and ambulatory patients he has treated a large number of patients in a hospital in Copenhagen, and the following results were observed at the time of discharge: thirty-two cures, marked improvement in thirty-nine cases, some improvement in nineteen, and no effect in seventeen cases. In the first category there were nine cases of chronic progressive primary polyarthritis, six of chronic rheumatic polyarthritis, twelve of rheumatic fever, and five of other "rheumatic" manifestations. When little or no benefit was obtained the cases were almost invariably of long standing. Owing to the tendency of this class of case to react violently, the dosage should be cautious; the first two injections should be of 25 cg. each, and the next two of 35 cg. each. It is seldom necessary to give more than 50 cg. at a time. The interval between the first two injections should be four or five days, and thereafter the interval should be prolonged to six or seven days. As a rule the best therapeutic effects were achieved in response to the most violent reactions, general and focal. The author, who controls his cases by blood sedimentation tests, concludes that this treatment warrants more favourable attention, as it is effective in the most serious of all the rheumatic lesions of the joints—chronic progressive primary polyarthritis. One of his private patients, a woman aged 40, who had been ill for eight years and could not get up from a chair without help, was able, after sanocrysin treatment, to ride for several hours at a time and to dance.

218 Pyretotherapy in Gonorrhoeal Arthritis

T. DUMITRESCO and C. PETREA (*Bull. et. Mém. Soc. Méd. des Hôp. de Paris*, December 8th, 1933, p. 1480) record five cases of gonorrhoeal arthritis in which cure was obtained by injections of the antichancrulous vaccine of Dmelcos. The initial dose employed was 225 millions, subsequent doses being from 335 to 675 millions. Equally remarkable results have been obtained by C. Richet, jun., in cases of arthritis of other origin (post-anginal, post-pneumonic, post-abortion, etc.) by a similar pyretogenic treatment. Though in the cases recorded this treatment was given one to two months after the onset of the arthritis, and after other measures had failed, the present authors emphasize the importance of early treatment, and also state that the more intense and persistent the fever produced the better will be the results.

219 Coramine as an Antidote to Narcotics and Other Poisons

C. CLEMMESEN (*Ugeskrift for Læger*, December 14th, 1933, p. 1329) has tested for a year at his hospital in Copenhagen the claims recently made in Berlin for coramine (pyridine-carbonic-acid-diethylamide "Ciba"). During this year every one of the sixty-nine cases (aged from 11 to 83 years) admitted to hospital for poisoning by gas (eighteen cases), barbituric acid preparations (twenty-eight cases), morphine, and other drugs was given coramine treatment in addition to older routine measures such as the administration of caffeine, camphor, etc. The coramine was injected on admission, but usually only after the stomach had been washed out. When the degree of poisoning was slight it was given intramuscularly (5 c.cm.), but all of the fifty-six patients admitted to hospital unconscious or excessively drowsy received it by the intravenous route (5 to 15 c.cm.). The largest single dose was 15 c.cm., and the largest total dosage for the same patient was 25 c.cm. None of the thirteen patients whose poisoning was slight and who were given intramuscular injections died; but among the fifty-six severe cases there were sixteen immediate and two remote deaths, which occurred after a few days, and

were due to infarct of the brain and uraemia respectively. The average interval between the taking of a poison and admission to hospital was twelve hours in fourteen fatal cases, whereas it was only seven hours in twenty-five cases ending in recovery—an observation stressing the value of early treatment. The effect of the coramine was often instantaneous, and comparable to that following an unexpected deluge of cold water on the head; the patient would gasp, breathe deeply, and turn about as if in self-defence, groaning, sneezing, coughing, etc. In six cases the action of the coramine was strikingly successful and durable, and there were only seven patients who did not respond at all to it. Between these extremes was the majority of the patients who derived some benefit from this treatment. It seemed to be more effective in poisoning by gas and morphine than in barbituric acid poisoning. Clemmesen does not discuss the rationale of the treatment.

220 Treatment of Peptic Ulcer

P. MORETTI and N. C. MANNO (*Il Morgagni*, November 26th, 1933, p. 1459) record twenty-one cases of gastric and duodenal ulcer in patients aged from 23 to 60 treated by injections of pepsin, or of pepsin alternately with sodium benzoate. The injections were given intramuscularly every other day in doses of 2 c.cm. of a 10 per cent. solution of pepsin with or without intravenous injections of 2 c.cm. of a 25 per cent. solution of sodium benzoate. The injections were given in from one to three series of twelve injections with a few days' interval between each series. It is stated that the result of the treatment was a considerable improvement in the symptoms and general condition, though without any corresponding change in the radiological picture. It was therefore difficult to say whether the treatment was responsible for the clinical improvement.

221 Laryngoscopy and Aspiration in Laryngeal Diphtheria

L. E. HAMON (*Thèse de Paris*, 1933, No. 518) records twenty-five cases of diphtheria in children, aged from 7 months to 9 years, treated by direct laryngoscopy and aspiration. Twenty recovered and five died. Hamon's conclusions are as follows. Direct laryngoscopy in the child is a simple, easy, and rapid method that does not cause any trauma. It is the first step in the method of aspiration of the diphtheritic membrane, which is applicable in all cases in which intubation is required. Aspiration, moreover, is the only logical method for combating the mechanical obstruction caused by the membrane in the tracheo-bronchial tree. The technique of aspiration is simple, no anaesthetic and no complicated instruments being required. It is indicated in all cases of tracheo-bronchial diphtheria, especially when there is continuous recession accompanied by paroxysmal attacks of dyspnoea. The immediate results are decidedly superior to those of intubation, and the remote results are excellent as the larynx is able to resume its normal function a few weeks at most after the aspiration.

Anaesthetics

222 Dental Anaesthesia

L. T. CLARKE (*Birmingham Med. Rev.*, December, 1933, p. 236) admits the value of the intratracheal method of administering nitrous oxide in dental surgery, but protests against its routine use. Even with careful aseptic precautions there is always some chance of conveying infective material from the mouth and nasopharynx past the vocal cords. Moreover, unless the patient is deeply anaesthetized before the passage of the catheter, there is some danger of injuring the vocal cords; hoarseness may persist for as long as three weeks after intratracheal narcosis. The convenience of the administration may also tempt the surgeon to undertake a more major operation than should be performed in a dental chair. If oxygen is to

be employed, the apparatus should be well designed and in good working order; otherwise it is best not to attempt to give it. Clarke points out that there is as much liability to severe surgical shock in major dental operations as in the operations of general surgery, and nursing homes rather than dental surgeries are the appropriate places for them. Preliminary scaling and the judicious use of mouth washes and nasal douches should not be omitted when indicated lest post-anaesthetic complications multiply. Premedication is generally unnecessary, but atropine should be injected if ether is to be employed. The barbituric acid derivatives are valuable in conjunction with local anaesthetics. In small doses nembutal is useful to render the patient placid. For major operations of short duration ethyl chloride followed by ether and oxygen is most convenient, about fifteen minutes of analgesia being thus obtainable. For longer operations the intratracheal method is used. When gas and oxygen is given after nembutal, less anaesthetic is required, and the proportion of oxygen can be increased, even up to 40 per cent. Clarke commends ethyl chloride as the best anaesthetic for children, given on an open mask or in a bag. Cyanosis is marked in them, as also in old persons, and the addition of oxygen is often a great advantage. Gas must not be pushed too far in the aged because of the danger of apoplexy. In cases of compensated heart disease special care must be taken to avoid inflicting strain; cyanosis appears early. Should the pulse become slow or intermittent, the anaesthetic must be stopped, but the judicious use of oxygen should have prevented this.

223 Intravenous Sodium Evipan Narcosis

H. LÖWENBURG-MARQUIS (*Schmerz Narkose-Anaesthesie*, November, 1933, p. 55) has found intravenous evipan narcosis satisfactory for short operations of twenty minutes or less, but does not recommend it for laparotomies, knee-joint operations, or others in which very full muscular relaxation is required. In young muscular males a supplementary injection or ether inhalation was always found necessary. Seven c.cm. of evipan were given to an adult of 50 kg., with an additional 0.5 c.cm. for each 5 kg. body weight above this; not more than 3 c.cm. were injected in a minute. The injections were followed by temporary reduction in the frequency and depth of respiration, acceleration of pulse, and (usually) fall of blood pressure. Cyanosis was noted in eight cases of a series of fifty. The forty patients who received evipan alone were afterwards free from nausea, vomiting, headache, and local thrombosis. Supplementary evipan injections were given in several instances, the maximum total dose being 14 c.cm. One patient weighing 56 kg. had three injections totalling 12.5 c.cm. for an operation lasting sixty-nine minutes.

224 Lumbar Anaesthesia

I. PHILOPOWICZ (*Zentralbl. f. Chir.*, December 2nd, 1933, p. 2793) discusses the merits and demerits of recent modifications in technique of lumbar anaesthesia, and states that using the older methods he has had two deaths only and three cases causing serious alarm among a series of 5,000 cases. He excludes children under sixteen; pregnant women nearing term; cardiopathic subjects, and those with very low blood pressure, disease of the central nervous system, migraine, or sepsis; and azotaemic and dehydrated tuberculous patients, or those with recent syphilis. This author states that absolutely fresh solution must be used, the needle being free from soda or antiseptics. The injection must be made very slowly in the horizontal posture with the head at first raised, the pelvis not being raised for five minutes. When the blood pressure is low preliminary vasopressor injections are given. This method is regarded as free from danger for low abdominal operations—below the navel, with injection between the second and third lumbar vertebrae. For higher operations the technique is not as yet fully perfected, and Philopowicz points out that the special low position of the head which has to be maintained during and after the injection of air and low-gravity solutions (as in Kirschner's technique) is inconvenient to the patient and may be dangerous to the lungs.

Obstetrics and Gynaecology

225 Rupture of the Liver in the Newborn

EVA HOLMBERG (*Finska Läkarsällskapets Handlingar*, November, 1933, p. 1067) notes that, before 1918, when Hedrén published in a Swedish journal his paper on fatal injuries to the abdominal organs in the newborn, no systematic study had been made of rupture of the liver, and it was not realized that this accident might follow a normal labour. Among over 1,000 necropsies he found only two cases in which the liver had been ruptured during birth. The present author's material comes from a maternity hospital in Helsingfors where, in the period 1924-32, over 1,000 necropsies were performed. Among them were three cases of rupture of the liver in infants born at term and seven cases of such rupture in infants born before term. There were also nine cases of rupture of the liver occurring so long before term that the weight of the foetus in every case was under 1,000 grams. Among the infants born at term were two living at birth after the spontaneous completion of labour; in the third case forceps had been used. There is no reason to suppose that the mechanism of liver rupture in such cases differs from that of adults subjected to compression or flexion involving the liver. In both infants and adults a trauma is necessary. In the case of birth injuries pressure against the symphysis is probably responsible for the lesion, which is more likely to occur in premature than mature infants because of the comparative vulnerability of the tissues of the former. Asphyxia would seem to be a predisposing factor; it had existed in practically all the cases in which the infants were premature. Another predisposing factor is a tendency to bleed verging on the pathological.

226 Alcohol Lavage in Puerperal Infections

M. ROCH (*Zentralbl. f. Gynäk.*, December 2nd, 1933, p. 2860) states that Elgart still prefers 10 per cent. alcohol to Dakin's solution for intrauterine lavage, and has used it with good results in ninety-four cases. Besides its mechanical and bactericidal effects, the alcohol induces prolonged local hyperaemia and has an important general stimulant action. The corrected mortality in the series of cases quoted was 6.6 per cent.; the treatment was used in pyrexia with rigors after labour, or after abortions in which curettage had been ineffective. About 250 c.cm. of the solution was given four or five times daily through a rigid tube stitched to the cervix.

Pathology

227 Limited Diagnostic Value of Subcutaneous Injections of Tuberculin

N. LINDBORG (*Hygiea*, November 30th and December 15th, 1933, pp. 887 and 925) has analysed the findings in 260 obscure cases given subcutaneous injections of tuberculin (A.T.) in a Swedish sanatorium in the period 1916-25. This test was limited to those cases in which the diagnosis of active pulmonary or hilus tuberculosis was doubtful. As a rule, the initial dose was 0.5 or 1 mg. for adults. If there was no reaction after at least two days, this dose was doubled or trebled. In most cases the maximum dose was 8 or 10 mg. The temperature was taken every two or three hours after an injection. In 139 cases it was possible to ascertain the subsequent fate of these persons, sixty-six of whom had been negative while seventy-three had been positive reactors. On re-examination in 1932, as many as fifty of the negative reactors were found to be well. There were, however, eleven who had subsequently contracted tuberculosis, of whom seven had died of it. There were also five deaths among the negative reactors from diseases other than tuberculosis. What was particularly significant was that five of the negative reactors had developed definite signs of tuber-

culosis within a year of the test. It is generally considered to be impossible from a positive von Pirquet or Mantoux test to draw any conclusions as to the activity of the sensitizing lesion. A sharp febrile reaction after the subcutaneous injection of tuberculin is, however, held by some workers to indicate the presence of actively spreading disease. From his findings the author lays stress also on the value of a negative subcutaneous test in the exclusion of active tuberculosis.

228 Bacteriology of the Stool in Anaemia

K. FELLINGER (*Wien. klin. Woch.*, November 17th, 1933, p. 1380) has investigated the bacteriology of the stools in fifty cases of Addisonian pernicious anaemia, nine cases of post-haemorrhagic anaemia, eighteen cases of anaemia of various types, twenty-four cases of achylia gastrica without anaemia, and twenty healthy controls. Aerobic cultures showed no marked difference between the groups; haemolytic *B. coli* were grown from 18 per cent. of the cases of Addisonian anaemia and from 20 per cent. of healthy controls; from two cases of Addisonian anaemia a haemolytic *B. proteus* was obtained. Anaerobic culture showed that the stools of cases of Addisonian pernicious anaemia have a great increase of anaerobes compared with those of all the other groups. This increase affected particularly the content of *C. welchii*. Treatment with liver caused a diminution in the numbers of the latter, but never a return to the level shown by the controls. This increase appears unrelated to the cases of achylia, as cases of achylia without anaemia showed no such change. Investigation showed no constant variation of the amount of haemolytic toxin in the stools.

229 Early Diagnosis of Whooping-cough

M. DÉNES and L. LAJÓS (*Orvosi Hetilap*, November 18th, 1933, p. 1049) have examined the characteristic changes occurring in the blood of whooping-cough patients with a view to facilitating diagnosis in the earliest (catarrhal) stage—when transmission usually takes place, when therapy is likely to prove most effective, and when, consequently, an early diagnosis is of the greatest importance. Sixty-five patients between the ages of 10 weeks and 15 years were examined with the following results: the blood in whooping-cough shows a moderate lymphocytosis coupled with a decrease of the sedimentation rate, absolute in the case of infants and relative in the case of children of more advanced age. A suspicious cough may, it is stated, be safely diagnosed as pertussis if the number of lymphocytes exceeds 10,000 and the sedimentation rate is normal or subnormal. Complications accompanying whooping-cough cause a slight increase in the granulated elements and an increased sedimentation rate in the blood. The authors conclude that, in the initial stage of whooping-cough as well as in doubtful cases, the blood count and sedimentation test constitute a valuable aid towards a sure diagnosis.

230 Blood Constituents in Myxoedema

I. ORNSTEIN (*Bull. Soc. Roum. de Neurol., Psychiat., Psychol. et Endocrinol.*, Nos. 1-2, p. 44) reports the results of the analyses of the blood in twelve cases of myxoedema, the B.M.R. values varying from -11 per cent. to -34 per cent. Total serum protein varied with normal limits, 7.29 to 8.3 per cent.; serum albumin and globulin also were within the normal range, and the non-protein nitrogen was between 20 and 29 mg. per cent. This confirms the findings of several other workers. Analysis of the serum fats and lipoids gave suggestive deviations from the normal. Total lipoids in this series lay between 0.73 and 1.15 grams per cent. (normal range 0.5 to 0.75 gram per cent.); fatty acids lay between 0.59 and 0.96 gram per cent. (normal range 0.35 to 0.60 gram per cent.); serum cholesterol varied from 140 to 193 mg. per cent. (normal range 150 to 170 mg. per cent.). The author takes his results to indicate a definite abnormality of fat metabolism. Details are not given as to the state of digestion of the patients.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

231 Post-vaccinal Encephalitis

As the result of a review of the occurrence of post-vaccinal encephalitis in Holland, E. GORTER (*Journ. Amer. Med. Assoc.*, December 9th, 1933, p. 1871) concludes that the irregularities in the distribution of cases are due to local and seasonal influences, or result from the use of a more dangerous vaccine during the months, and in the regions, of highest incidence. In favour of the first hypothesis is the fact that cases of encephalitis have developed following the use of vaccines imported from other countries. On the other hand, the predominance of cases during March supports the view that lack of sunshine plays a part, a view that has obtained some laboratory confirmation. Experiments seemed to indicate a relation between pigmentation and severe infections or complications. It appears certain, however, that some strains of vaccine have a greater liability to provoke encephalitis than others, sometimes owing to the association in the vaccine of living staphylococci. Gorter inclines to the view that post-vaccinal encephalitis is not comparable with herpes—due to a virus always present in the body and acting only when another disease has prepared the soil—but is rather to be compared with the nephritis complicating scarlet fever. Like many other complications, encephalitis can follow several infections—for example, measles—and the lesions found in this form of the disease are very like those of the post-vaccinal type. An objection is that vaccinal virus is hardly ever found in the cerebro-spinal fluid in post-vaccinal encephalitis, but a corresponding absence has been noted in cases of tetanus and diphtheria. Moreover, Herzfeld succeeded in tracing vaccine virus in the spinal fluid of some encephalitic children; in the Dutch cases it was not found.

232 A Sign in Appendicitis

H. SCHMORELL (*Zentralbl. f. Chir.*, December 2nd, 1933, p. 2792) has found a sign described by Carl useful in diagnosis of acute and chronic appendicitis. When palpation with the patient lying on his back gives no certain evidence of tenderness or rigidity, both may be demonstrated when he lies on the left side with flexed thighs and knees and pressure is made in a medial and backward direction over McBurney's point. The test is said to be invariably negative in acute adnexal inflammation.

233 Subphrenic Abscess

P. TRUESDALE (*Ann. of Surg.*, November, 1933, p. 846) discusses the various avenues by which infection reaches the diaphragm to cause a subphrenic abscess, and is of the opinion that the most common channel is by way of the lymphatics. Twelve cases of subphrenic abscess are reported, eight of which occurred in men and four in women. In seven cases the focus of infection was inside the peritoneal cavity, in one case within the thorax, and in the remaining four the history was suggestive of an intestinal lesion. Four of the intraperitoneal cases followed operation for appendiceal abscess. As so many cases developed after appendicitis, a study was made of the course of the lymphatics from the appendix to the region round the diaphragm. The bacillus-laden lymph passes from the appendiceal abscess to the appendicular nodes, which communicate with the ileo-caecal nodes, and from there to the lymphatic trunk following the superior mesenteric vein, which empties into the portal vein. A focus of infection at any point in the descending colon would gain access to these lymph channels. The lymphatics draining the entire colon reach the liver in juxtaposition with the mesenteric veins. This explains the frequent extension of malignant disease from the colon to the liver. The lymphatic vessels which pass through

the diaphragm terminate in the lower nodes of the inferior deep cervical group, and provide a direct route for the metastasis of the supraclavicular nodes induced by abdominal carcinomata. After coursing through the liver the lymphatic vessels finally reach the diaphragm with their infected lymph. Infection localizes above the liver and an abscess develops. The operative mortality in subphrenic abscess is very high. In the series reported it was 70 per cent.

234 A New Diagnostic Method

W. v. BREHMER (*Med. Welt*, December 9th, 1933, p. 1737) describes a new diagnostic method based on measurement of the hydrogen-ion concentration of the blood. The author designed a special apparatus for measuring, electrometrically, the hydrogen potential of the blood in the circulation itself. In place of the hydrogen potential values (pH) given for human blood in the textbooks, and denoting a slight alkalinity (7.30 to 7.40), Brehmer found in healthy individuals an average of 6.3 up to 14 years, 6.8 up to 24 years, 7.2 up to 40, 7.35 up to 60, and 7.6 and more after that. Thus in young healthy individuals the blood is slightly acid, progressing towards alkalinity with advancing age. Diabetes patients between 45 and 65 showed pH values ranging from 6.6 to 6.9. Gastric ulcers gave two distinct sets of values: one from 5.94 to 6.37 and the other from 7.7 to 8.18. The author maintains that the latter were incipient cancer cases. Pernicious anaemia went with acidosis (pH values 5.9 to 6.98). Syphilis, in the tertiary stage, showed alkalosis with an average pH value of 7.65. Non-treated cancer cases all had values above 7.6. Brehmer believes that alkalosis of the blood is a *conditio sine qua non* of the development of cancer. X-ray or radium treatment shifts the index towards acidosis, the change persisting about two to three months. In no case could cancer be found within the range of pH values reaching from 6.8 to 7.5 (called "neutral zone" by the author), and there were only very few within the range 6 to 6.8. With these latter exceptions all cases showed values above 7.6. Brehmer thinks that should clinical symptoms prove to be accompanied by alkalosis of the blood early recognition of the disease will be assured; he believes, moreover, that, by modifying the hydrogen potential, prophylactic and therapeutic results can be obtained.

Surgery

235 Dislocation of Acromio-Clavicular Joint

K. LASSEN (*Hospitalstidende*, December 7th, 1933, p. 1196) has conducted follow-up investigations in two groups of cases of acromio-clavicular dislocation: (1) those treated in hospital in Copenhagen in the period 1920-31, and (2) those dealt with by the sickness insurance scheme during the same period. Of thirty-one cases in the first group traced and re-examined only four had been operated on; the remaining twenty-seven had been treated only by immobilization or massage. On re-examination, only sixteen were quite symptom-free. The remaining fifteen still suffered from pain and limitation of movement. Many could not carry a weight on the injured shoulder. All the sixteen symptom-free patients and ten of the others were, however, still able to follow their former occupations. In practically every case x-ray changes in the joint were still demonstrable. Indeed, there were only two, both children, who, after three and ten years respectively, showed no x-ray changes. As for the four who had been operated on, two belonged to the symptom-free group, although the x rays showed that the sutures had given way in both cases. In a third case with pain when the patient lay on the affected side, the x rays again

showed that the suturing had given way. In the fourth case it had not done so, but pain and limitation of movement persisted. After dealing in detail with the fifty-two cases in the second group, the author discusses the comparative merits of conservative and operative treatment, and comes to the conclusion that, in spite of the tendency of sutures ultimately to give way, operative treatment is indicated when the dislocation is severe. The course to be followed is less obvious in the comparatively common cases with a displacement of only about 1 cm. The tendency in the author's hospital during the last few years is to prolong the period of immobilization, and at the same time to concentrate on reposition with the help of Sayre's sticking-plaster.

236

Gastrectomy

J. DUVAL (*Bull. et Mém. Soc. Nat. de Chir.*, December 23rd, 1933, p. 1507), advocating gastrectomy as an excellent operation, describes gastro-enterostomy as a palliative operation only and one of necessity rather than of choice. During the last five years gastrectomy has, he states, been carried out with increasing frequency, and in 1933 the author has performed it twenty-seven times out of thirty-three cases. Out of a total number of sixty-five gastrectomies there were only three deaths—one due to an inhalation anaesthetic which has since been discarded and the other two to the giving way of the sutures owing to the weakness of the tissues. He believes that gastric lavage and vaccines are of doubtful pre-operative value, and it is in the perfection of operative technique that the safety of the operation is secured. Local anaesthesia is recommended, novocain 1 in 300 being used. A special type of forceps and clamp are used which lessen the danger of tearing the tissues and facilitate the suture of the duodenum and vessels. Gastrectomy proved successful in seven cases of pyloric stenosis, which comprised five cancers, one ulcer, and an adenoma of the pyloric mucosa. It is considered that gastro-enterostomy is in every respect an incomplete operation which gives a false security and cannot be compared, as regards results, with gastrectomy. Duval states that gastro-enterostomy should be performed only where the removal of the lesion is impossible or dangerous.

237

Post-operative Tetany

O. WINTERSTEIN (*Münch. med. Woch.*, December 22nd, 1933, p. 2007) reports on the results obtained in the treatment of post-operative tetany with a new preparation, "A.T.10," recommended by Holtz (*German Surgical Congress*, 1933), described by him as irradiated ergosterol and prepared by the firms I. G. Farben in Leverkusen and E. Merck in Darmstadt. The dose is dependent primarily on the blood calcium level, and necessitates frequent blood examinations. At the beginning of treatment large quantities of A.T.10 are administered until the calcium level rises to normal, after which it is maintained on this level by smaller doses. In cases with serious symptoms of acute tetany—especially violent spasms and psychic excitement—accompanying a low calcium level, the return of the latter to normal may be accelerated with advantage by intravenous administration of calcium and the intramuscular administration of parathormone Lilly. Winterstein describes six cases treated by him with weekly injections of 2 to 3 c.cm. A.T.10. In all these cases the preparation raised the blood calcium level within a few days. The patients treated included two chronic cases which had been suffering from tetany for eleven and twenty years respectively and had undergone parathyroid grafting without results. The effects of A.T.10 in these cases were striking. The experience gathered up to the present with this treatment of post-operative tetany is slight, but the author states that there is no doubt that excellent immediate results can be obtained by it. It is, however, imperative to keep the blood calcium level under constant observation. Possibly the grafting of parathyroid might also give better results if a normal blood calcium level were first restored through the effect of A.T.10. Winterstein proposes to investigate this problem.

Therapeutics

238

Medical Treatment of Ureteric Stone

H. GISSEL (*Klin. Woch.*, December 2nd, 1933, p. 1867) mentions a series of ninety cases of stone in the ureter in eighty-five of which spontaneous expulsion occurred; administration of glycerin in combination with external hydrotherapy was part of the routine treatment. Small oxalate stones especially seemed to be promptly voided. Although organic and inorganic calcium salts (in contrast with uric acid and its salts) are much more soluble in glycerin than water, Gissel ascribes the effect of the glycerin, which was given in doses of 200 grams in one litre of sweetened water, chiefly to its diuretic action. Observations in men showed that after ingestion of 200 grams of glycerin the concentration in the urine did not exceed 6.2 per cent., with little alteration in viscosity. Haemoglobinuria has been reported after administration of considerably smaller amounts of glycerin in higher concentrations, but was not noted in this series.

239

Sodium Ricinoleate in Mucous Colitis

G. N. BURGER (*Journ. Lab. and Clin. Med.*, December, 1933, p. 234) records the result of treating twelve cases of irritable colon (mucous colitis) with sodium ricinoleate after they had failed to respond to a bland diet and antispasmodics. The doses ranged from 5 to 30 grains repeated four times daily. The drug was well tolerated by most of the patients, the few complaints relating to the large size of the capsules, occasional "sour belching," and a slight burning sensation in the epigastrium. The capsules were administered before meals and at bedtime. In most cases there was diminution of the pain and belching, and the amount of flatus was reduced in five, but no effect on constipation was noted. Mucus in the stools was appreciably lessened or disappeared in 50 per cent. of those patients who showed this symptom. Burger remarks that those patients who did not improve under this treatment had, with one exception, definite gastric symptoms after taking the drug. He concludes that this indicates the need of having a more adequate capsule coating, since the sodium ricinoleate, if liberated in the stomach and acted upon by the gastric secretions, gives rise to distressing symptoms. The skin sensitivity to organisms from the intestinal tract was materially reduced in nine out of ten cases; in two it was impossible to obtain sensitivity records at the end of the treatment.

240

Amidopyrine for Influenza in Infants

G. PETRÁNYI (*Amer. Journ. Dis. Child.*, December, 1933, p. 1011) has obtained good results from the administration of 3 or 4 per cent. solution of amidopyrine for influenza in infants and young children. The dosage was as follows: from birth to 1 month, 0.05 gram; from 3 to 6 months, 0.1 gram; from 6 to 12 months, 0.15 gram; and from 2 to 5 years, 0.2 gram. The temperature usually began to fall after the third or fourth day, and no unpleasant symptoms developed. The drug was continued two-hourly until the temperature reached normal, when the interval between the dose was increased to three hours, then to four hours, and later the drug was given only three times a day. When these doses were given to infants they bore the illness much better and lost less weight, while the other symptoms diminished or disappeared.

241

Insulin Treatment of Morphine Addiction

K. SCHAFER (*Orvosi Hetilap*, December 16th, 1933, p. 1129) comments on the new method recommended by M. Sakel in 1931 for counteracting the disturbances resulting from the short-term cures of the morphine habit at present universally adopted in place of the gradual deprivation cures. The method consists in the administration of insulin, and has been applied by the author since 1932. Giving a detailed account of the first seven patients treated, the author states that in less serious cases, in which the cure is effected in three to five days, deprivation symptoms were eliminated by insulin with the greatest

case. In graver cases requiring cures of longer duration (eleven to fifteen days) symptoms were counteracted in an equally striking fashion. He states, however, that in some particularly serious cases insulin gave no favourable results or caused a severe hypoglycaemic reaction. One of the difficulties met with in the application of the method is the variability of the optimal dose, even in one and the same individual. The doses recommended are 15 to 20 units, which may be repeated in three to four hours' time if found insufficient. The advantages of the method are the short duration of the cure, and the fact that patients take nourishment well from the second day onward and almost immediately begin to put on weight.

Dermatology

242

Loss of Hair

C. BRUHNS (*Deut. med. Woch.*, November 24th, 1933, p. 1751) describes in detail the various types of alopecia and divides them into two groups: (a) that associated with thinning of all the hair without the scalp showing any fibrous change, and (b) that associated with fibrous or atrophic changes in the scalp and usually, but not always, obviously the sequel of an inflammatory process. Alopecia pityroides is described as the most frequent form met with by the practitioner, and is due to hyperactivity of the dilated sebaceous glands. It occurs almost exclusively in men, and is variously called *seborrhoea sicca*, *pityriasis capitis*, and *alopecia furfuracea*. Hereditary tendencies to baldness are well seen in alopecia praematura, in which examination of the scalp shows a much greater loss of pointed hairs than is normal. In such cases anaemia, neuroses, endocrine disturbances, and general debility are not infrequent accompaniments, and *seborrhoea* may not be immediately obvious. In senile alopecia atrophic changes are demonstrable in the hair papillae, and there is a constriction and degeneration of the lymph spaces and capillaries. The same author (*ibid.*, December 1st) gives a useful review of treatment. Though no evidence of specific general stimulation of the growth of hair by means of internal medication has been obtained, he recommends iron, arsenic, and gland preparations. Local treatment directed towards hyperaemia and scalp stimulation includes high sun radiation and the use of the Kromayer lamp, administered until a mild erythema is produced. This is preferred to high-frequency currents, massage, and hot applications. In alopecia pityroides the following spirit application is recommended: resorcin 4 to 6 parts, acid. salicyl. 2 to 4 parts, ol. ricin. 1/4 to 2 parts (according to degree of *seborrhoea*), and 70 to 200 per cent. spirit. Euresol is used in preference to resorcin in blondes, while mixtures containing tincture of cantharides are also useful. Menthol should be added to the lotion (1/3 to 1/2 per cent.) for coincident pruritus. Other points mentioned by the author are: (1) the less frequent the washing, combing, and brushing in *seborrhoeic* cases the better; (2) treatment is relatively useless in pre-senile alopecia; (3) a useful stimulating preparation in alopecia areata is tinct. quin., tinct. cantharid., tinct. capsici, tinct. veratri, aa 10 parts, balsam. peruv. 1 part, and 70 to 200 per cent. spirit.

243

Chronic Paronychia due to Monilia

In thirteen cases of chronic paronychia IVAN CONNOR (*Med. Journ. of Australia*, September 2nd, 1933, p. 312) found that the causative organism was a *monilia*—*Monilia albicans*. All cases except one were in women. The infection caused minute abscesses under the nail fold which produced characteristic pad-like swellings of the fold itself, and on squeezing a small bead of pus could be expelled. The author states that the nail itself may sometimes be infected. Diagnosis was made by direct examination of material from the nail fold, which showed the usual appearance of chains and clumps of oval spores, and by culture on 1 per cent. glucose agar slopes, when filamentous and budding forms were also found. A com-

plement-fixation test was done in each case, but the results were not conclusive. The disease being a chronic one, Connor found in his series that the best results were obtained by keeping the hands scrupulously dry and applying monsol on a pointed match-stick into the pockets between the nail fold and the nail twice daily.

244

The Skin in Trichinosis

A. MUSGER (*Derm. Zeit.*, November, 1933, p. 34), who records an illustrative case, states that the dermatologist may sometimes be able to make the diagnosis of trichinosis from the skin changes, which are of a varied character, and constitute conditions such as urticaria, and morbilliform and scarlatiniform rashes, or may resemble the eruption of syphilis, typhoid, or typhus. They usually appear in the third week, shortly before the temperature has reached its height, and disappear in one to three weeks. During the febrile period miliaria, herpes, small haemorrhages, and pruritus may occur. Loss of hair may take place in convalescence. Musger's case was that of a woman, aged 34, who developed severe urticaria four days after eating a sausage, and subsequently the characteristic facial oedema, pains in the muscles, and eosinophilia (of 35 per cent.). The diagnosis of trichinosis was confirmed by finding trichinellae in an excised portion of the left deltoid. Recovery took place under the usual treatment.

245

Treatment of Staphylococcal Infections

J. I. CONNOR and M. McKIE (*Brit. Journ. Derm. and Syph.*, January, 1934, p. 20) record thirty-six cases of superficial staphylococcal infections in patients aged from 16 to 56, seventeen of which were examples of *syccosis barbae* and *syccosis nuchae*, and nineteen cases of carbuncles, boils, abscesses, and pustules, treated by injections of toxoid. In the cases of *syccosis staphylococcus* toxoid was used, and in the others crude toxoid. Complete cure or considerable improvement occurred in every case.

Obstetrics and Gynaecology

246

Pain Relief in Spontaneous Labour

L. McILROY and H. RODWAY (*Journ. Obstet. and Gynaecol. British Empire*, December, 1933, p. 1175) analyse 560 cases of spontaneous labour in respect of methods for alleviation of pain. Sedatives were used when uterine contractions occurred at about ten-minute intervals, corresponding generally with an os which admitted two fingers. Anaesthetics were given to primiparae throughout most of the second stage, and to multiparae when the head was about to be born. Most cases had potassium bromide and chloral hydrate aa grains xxx three-hourly to four-hourly to allay nervous excitability and prepare the way for stronger drugs. To avoid vomiting, the dose was given in glucose lemonade, and was sipped. Morphine was considered to be less dangerous and much more valuable than barbiturates or any other analgesic drugs; 1/6 to 1/4 grain was given hypodermically when sedatives became insufficient. Its effect was prolonged, sometimes intensified, by injection deep into the gluteal muscles of 2 c.cm. of a 50 per cent. solution of magnesium sulphate, two doses with a two-hour interval between. More often opiodine was used, either two tablets of 1/6 grain each by mouth, or, if distress called for more rapid relief, 1 c.cm. hypodermically—ampoules or a solution containing 1/3 grain per c.cm. Morphine administration proved to have good analgesic results in the majority of cases; to cause no alteration in the pains as a rule, though if they became less frequent they were also more effective; to give three to four hours' sleep or produce drowsiness in most cases; and to have no undesirable effect on the mother (except for rare idiosyncrasies). On the infant, careful inquiry showed no effect, even when morphine had been injected as late as half an hour before birth. The investigators state that prolonged slow or shallow respiration does not occur when CO₂ plus O₂ is used for resuscitation. Anaesthesia was

begun with 50 per cent. N_2O plus 20 per cent. O_2 , the latter being raised, if necessary, to secure the patient's co-operation. Administration started at the onset of each pain, and lasted for a half to three-quarters of a minute after its cessation. This anaesthetic increased the efficacy of the contractions in 50 per cent. of the cases, and enabled the patients to co-operate. The proportion of N_2O was gradually increased, and sometimes sufficed for delivery. More often chloroform was added for the birth of the head, both to ensure analgesia and to relax the perineum. As soon as the head was born, pure O_2 was given from Boyle's apparatus until the cord had been ligated. Used in these minimal doses, neither chloroform nor ether affected the child adversely. No case of post-partum haemorrhage occurred.

247 Rapid Biological Test for Pregnancy

M. R. BECKER (*Zentralbl. f. Gynäk.*, December 30th, 1933, p. 3073) mentions some dozen workers who have had accurate results in diagnosis of pregnancy by use of the Friedmann-Schneider modification of the Aschheim-Zondek test: rabbits are used instead of mice, and the result is available in forty-eight hours. He tested the urine by the original as well as the quick method in 117 cases, and found the tests to give the same result in over 90 per cent. Cases in which the quick test was erroneously negative appeared explicable by the use of too young animals. There were only two cases in which the original test was negative and the quick test rightly positive: in the first, only one of the five test mice survived; in the other the gestation was probably too early for diagnosis by the original test. There were five cases in which a very early pathological or aborting pregnancy gave a positive quick result but an Aschheim-Zondek reaction which was negative with Grade I phenomena.

248 Aschheim-Zondek Test in Pregnancy and Puerperium

Relying completely on the Aschheim-Zondek test as modified by himself, GARCÍA ORCOYEN (*Crónica Médica*, November 15th, 1933, p. 845) calls attention to the value of a positive reaction during the first ten or twelve days of the puerperium as evidence of recent delivery, though he notes its increased intensity in cases of molar pregnancy and chorion epithelioma. For the test he uses both young white rats and young white mice, agreeing with Brohna that the enormous development of the vesiculæ seminales which follows subcutaneous injection of the hormones of the anterior pituitary lobe is of equal value with the ovarian changes noted in young female white rats and mice similarly treated. He reports successful diagnosis of pregnancy as early as one week after the appearance of the catamenia. The technique which he describes is quite within reach of anyone conversant with simple histological methods.

Pathology

249 The Herpes Encephalitis Problem

F. P. GAY and MARGARET HOLDEN (*Journ. Infect. Dis.*, November-December, 1933, p. 287) discuss the origin of epidemic (lethargic) encephalitis, and bring additional evidence that it is due to a modified or adapted neurotropic strain of the virus of herpes simplex. In favour of the herpetic origin of the disease they advance the following arguments: (1) Herpes virus produces in many animals, such as rabbits and guinea-pigs, skin and brain infections that resemble respectively herpes and epidemic encephalitis in man. (2) In rabbits it can be shown that immunologically identical strains of herpes virus vary in their relative dermatotropic and neurotropic tendencies. (3) A subacute disease clinically resembling human encephalitis has been reproduced in *cebus* monkeys by the inoculation of herpes virus, and perivascular cuffing has been found histologically in the more prolonged experimental infections in these animals. (4) There is evidence in man that the naturally occurring antibodies active against the herpes virus suffer fluctuations both in herpes

and in encephalitis, suggesting a causal relationship of this virus to both diseases. (5) Both herpes simplex and epidemic encephalitis belong to the exceptional group of virus diseases in which recovery does not give rise to protection. The failure of many workers to isolate a strain of herpes virus from human cases of encephalitis may possibly be due to the lack of a neurotropic potency of the virus for animals. In illustration of this the authors refer to three cases of encephalitis following measles in which a virus was isolated that produced typical herpetic lesions when inoculated intradermally into rabbits, but failed to cause encephalitis on intracerebral inoculation. An additional case of encephalitis is described in the present paper occurring in a laboratory worker after a monkey-bite. A strain of herpes virus was isolated from the brain and cord that was fatal to rabbits inoculated either intradermally or intracerebrally and that produced a typical syndrome in *cebus* monkeys, while being relatively non-pathogenic for *rhesus* monkeys—a characteristic of the herpes virus. Cross-immunity tests, moreover, revealed the identity of this strain with a known strain of herpes virus.

250 A Modified Bordet-Wassermann Test

R. DEMANCHE (*Presse Méd.*, January 10th, 1934, p. 44) describes a modified Bordet-Wassermann test, which is simpler than, and as specific as, the standard Kahn reaction, and which may also be used in complement fixations with microbic antigens, especially in the gonorrhoea. Four tubes are used in the test: the centre pair (2 and 3), each prepared with a different antigen, are for the test serum, and the end ones (1 and 4) for the control serum; at the end of each series two tubes for the antigens are added. The complement consists of the mixed sera of several guinea-pigs, preferably males; to this is added one and a half times its volume of hypertonic saline solution, and, at the time of testing, three times its volume of distilled water is added to the latter, thus forming an isotonic complement. Before distribution into the tubes, an equal volume of diluted antigen is added for the two tubes of the reaction and an equal volume of physiological saline for the two controls; these mixtures are respectively termed activated antigen and activated physiological saline. The antigen is a 1 in 10 alcoholic extract of powdered heart muscle; this is used both as it is and with the addition of 0.3 per cent. cholesterol: both are diluted to 1 in 50 with physiological saline. Sheep's red cells, washed in and diluted to 1 in 20 with physiological saline, are used. The haemolytic amoceptor is anti-sheep rabbit serum containing at least 100 haemolytic units. A mixture of equal parts (0.3 c.c.m. per tube) of complement and each antigen is made. Into each tube 0.05 c.c.m. of test serum (or 0.5 c.c.m. of cerebro-spinal fluid) is pipetted, and 0.6 c.c.m. of each of the activated antigens added to tubes 2 and 3, and 0.6 c.c.m. of the activated physiological saline to tubes 1 and 4. Fixation is carried out at room temperature for forty-five minutes. Two strengths of red cell emulsion are prepared; 0.6 c.c.m. of the weaker is added to tube 1 and 0.6 c.c.m. of the stronger to each of tubes 2, 3, and 4 and the two antigen controls. All the tubes are then placed in a water bath at 37°C. for thirty minutes. When the antigen controls and tube 4 (serum control) are completely haemolysed, tube 1 should show only a trace of haemolysis. Readings can be made by direct examination, doubtful reactions being exceptional.

251 Spontaneous Reversal of Wassermann Reaction

E. T. HOVERSON, G. W. MORROW, and R. O. HAWTHORNE (*Med. Journ. and Record*, December 20th, 1933, p. 449) record nine cases of general paralysis in which, without treatment, strong positive Wassermann reactions in the cerebro-spinal fluid changed to negative. The authors are satisfied that the original diagnosis was correct in each instance, the clinical symptoms being typical. The view is expressed that such an occurrence points to the need of further investigation of the possibility of reversal of the reaction in the spinal fluid, apart from that of any therapeutic measures.

EPIITOME OF CURRENT MEDICAL LITERATURE

Medicine

252 Large Haemorrhages from Gastric and Duodenal Ulcers: A Survey

O. MOSSBERG (*Hygica*, December 15th, 1933, p. 897) has investigated the 1,032 cases of gastric and duodenal ulcer treated in a Swedish hospital in the ten-year period 1922-31. In 559 of these cases there was no history of haemorrhage in hospital or at any time before admission to it. Among the remaining 473 cases there were 177 in which the site of the haemorrhage was located by the x rays, an operation, or a post-mortem examination. These cases were divided almost equally between the stomach and the duodenum. A classification of the cases of manifest haemorrhage according to the seasons of the year showed that only 25 per cent. occurred during the first four months, 32 per cent. during the next four months, and 43 per cent. during the last four months of the year. The author does not attempt to explain these seasonal fluctuations, but notes that Mattisson corroborates him. Among forty-six deaths from haemorrhage, as many as thirty-eight occurred after the age of 40. Most of these deaths were directly due to the haemorrhage, and only a few occurred after a week or two as a sequel to complications provoked by a lack of circulating fluid. Post-mortem examinations of thirty-five cases showed how apt the clinical findings are to be stultified by a necropsy; in about half of these cases the fatal haemorrhage came from a recent ulcer. The mortality from haemorrhage represented 2.7 per cent. of all the cases and 9 per cent. of all those with manifest haemorrhage. With regard to operative treatment, the author considers it contraindicated when the haemorrhage is presumably due to an acute condition with no, or only a short, history of premonitory symptoms. But when a haemorrhage is preceded by a clinical history indicative of chronic ulceration, or when the position of an ulcer has been located before the haemorrhage set in, an operation may, he states, be undertaken, particularly if the patient is over 40 years of age.

253 An Indicator of the Mean Arterial Pressure

A. G. TETELBAUM, M. I. KRINSKY, and O. F. ROMANOWA (*Presse Méd.*, December 30th, 1933, p. 2111) maintain that, to obtain an exact knowledge of the arterial pressure and circulation in general, the mean pressure (not to be confused with the arithmetic mean of the maximal and minimal pressures) must be ascertained. This pressure presents, in contrast with the great systolic and diastolic liability, a marked stability which gives it the characters of a true physiological constant, analogous to other constants such as the temperature, the blood pH, etc. Vaquez and others consider the mean pressure as a capital factor in assuring the stability of the arterial output of the circulation. The great sensibility of the systolic pressure is, however, valuable in certain circumstances, as in the crises of angina pectoris, and in differentiating hypertensions, etc. According to these authors, it is only by combining the results of both determinations that a correct estimation of the arterial pressure and its oscillations is obtained. Various methods of ascertaining the mean pressure are cited—those of Marey, of Potain, and the oscillometric methods of Vaquez, Gomez, and Gley, of Plech, and of Moritz and Tabora. Vries-Reiling has demonstrated that the venous pressure in a compressed limb never attains the level of the systolic. The present authors concur in this, and utilize this venous pressure to determine the mean pressure, employing a modified Moritz-Tabora technique, which is briefly described. Examinations have been made on ten patients free from cardiovascular disease, on eight with aortic insufficiency, and on six with hypertension. In the first group the

difference between the venous and systolic pressures varied from 15 to 25 mm. of mercury; in the second the difference was greater and oscillated between 40 and 60 mm.; in the third, the venous pressure being greatly raised, the difference was only 25 to 35 mm.—approximately that of the first group. That the venous pressure is an indicator of the mean arterial pressure is explained by the fact that the veins in a compressed limb are not pulsatile, and, the arterial and venous systems being connected by capillaries which do not permit a rapid free displacement of the blood in either direction, the capillaries in the compressed limb can only discharge the blood in one direction—namely, into the veins—at the level of the mean pressure in the arteries.

254 Recto-Abdominal Palpation

To differentiate the muscular "guarding" seen in cases of abdominal inflammatory conditions from that due to non-inflammatory reflexes, A. YÓDICE (*Semana Médica*, December 21st, 1933, p. 1998) uses the following simple technique. With the patient lying on his back, thighs at right angles to the belly, knees at right angles to the thighs and feet planted on the bed or couch, he palpates the rectum with one hand while the other is similarly employed with the abdominal wall below the umbilicus, more especially where the rigidity is manifest. The author considers the result to be positive for the existence of inflammatory trouble when the rigidity persists, and states that the manoeuvre differentiates between contraction arising from peritoneal infection and that produced by intestinal or uterine colic or irritation of peripheral nerves. Phantom tumours disappear, and are thus separated from real ones. He believes that rectal palpation produces a spinal and sympathetic reflex which modifies the rigidity.

Surgery

255 Indications for the Operative Treatment of Goitre

E. RANZI (*Wien. med. Woch.*, January 13th, 1934, p. 61) writing as a surgeon in charge of a university hospital discusses the numerous factors to be considered in the choice of treatment for each case of goitre. One of these factors is the risk of an operative or post-operative death. Between 1925 and 1929 he lost only one patient (from air embolism) among the 714 cases operated on for goitre. This embolism occurred after the completion of the operation, when the dressings had already been applied. The post-mortem examination showed a patent forame ovale. All statistics show that the operation mortality is much higher for exophthalmic goitre than for ordinary goitre; in the author's hospital the mortality for 27 cases of exophthalmic goitre, operated on during the past nineteen years, was 7.4 per cent. In those obscure cases of exophthalmic goitre in which the thyroid is but very slightly enlarged, an operation should not be attempted. The slighter cases of exophthalmic goitre should also not be operated on but reserved for x-ray and medicinal treatment. As for the moderate and severe cases operative treatment is indicated only when the patient can be carefully prepared in advance by rest, diet, and medicinal treatment including the exhibition of iodine under the control of the basal metabolism. When, in a severe case of exophthalmic goitre with a much raised basal metabolism, the patient does not improve under this preliminary treatment, but continues to show signs of serious cardiovascular disease, the operator would do well to hold his hand. In addition to giving his or

experiences, the author quotes extensively from the statistics of other surgeons to show what are approximately the risks and achievements of operative treatment, and how much the former have been reduced within the last few years by a more cautious selection of cases for operation and by prolonged preoperative treatment.

256 Aetiology of Mammary Cancer

According to F. E. ADAIR (*New York State Journ. Med.*, January 15th, 1934, p. 61) there is clinical and experimental evidence that partial or complete obstruction of the mammary duct between the acini and the nipple aperture is a factor of prime importance in the development of mammary cancer. Such blockage may be caused by a localized outgrowth of the duct epithelium, abnormally shaped or fibrosed nipples, scarring involving the ducts, cyst formation, or a plug of desiccated and desquamated lining cells. An inflammatory reaction ensues, followed by hyperplastic changes which gradually become malignant. Chemical analysis of the fluid expressed from such obstructed breasts revealed the presence of lactic and butyric acids, which the author considers to be the irritating factors responsible for the tissue reactions resulting in hypertrophy, precancerous changes, and ultimately cancer. He analyses a series of 200 mammary cancer cases and 100 controls. Only 8.5 per cent. of the cases of mammary cancer gave a normal nursing history or a history entirely free from the various developmental or accidental incidents leading to at least one, and sometimes more, of the various factors in impairment of mammary drainage. In this cancer group every third pregnancy ended in miscarriage or abortion, while in the 100 control cases of normal women there was only one miscarriage or abortion for every seven pregnancies, and the nursing was normal in 80 per cent. In a strain of laboratory mice it was found that 5 per cent. developed mammary cancer spontaneously, but when artificial stagnation of the breasts was induced cancer ensued in 87 per cent. While admitting that this aetiology has yet to be fully substantiated, the author considers that his findings are strongly suggestive, and that the avoidance of lactation may have serious after-effects on the mother.

257 Hydatid Cyst of the Lung

N. ALIVISATOS (*Bull. et Mém. Soc. Nat. de Chir.*, January 27th, 1934, p. 75) gives his observations in thirty-one cases of non-suppurative hydatid cyst of the lung and reports fully one case in which the cyst was of unusual size. It occurred in a girl of 18 who complained of slight pains on the right side of the chest, accompanied by a dry cough and expectoration of mucus. There was no haemoptysis and no crepitations. There was dullness on percussion of the chest. X rays showed a shadow the size of a melon in the right lung. Operation was carried out and disclosed a large hydatid cyst which occupied nearly the whole of the right lung. The cyst was completely removed, but a second operation was necessary to drain a serous effusion which delayed convalescence. After this the patient made a good recovery. In the series of thirty-one cases it was found that pain was the most common symptom, but haemoptysis was only present in thirteen instances. In the majority of cases eosinophilia was absent, and in the case reported it amounted to only 2 per cent. In all the cases the reaction of Weinberg and the intradermo-reaction of Casoni were practised, and it was considered that the former was of the utmost importance as an aid to diagnosis. It was found that this became negative forty-eight hours after operation. Treatment of these cysts should consist of an extensive thoracotomy followed by the opening and removal of the cyst. It was considered advisable to fix the lung to the thoracic wall before opening the parietal pleura to avoid a sudden pneumothorax. Drainage was not found necessary in cases of small cysts, but only where the lesion was extensive and a large cavity was left with consequent risk of infection.

Therapeutics

258 Treatment of Serum Sickness

B. N. ARVAY (*Thèse de Paris*, 1933, No. 593), who reports twenty-six illustrative cases in patients aged from 6 to 40, states that ingestion of ephedrine hydrochloride is a simple and effective method for the prevention of serum sickness. The drug should be given by mouth as follows: The first tablet should be administered an hour before injection of the serum, and similar tablets six-hourly until the fourteenth day. The dosage is 1 cg. for children aged from 1 to 4 years, 2 cg. for children aged from 4 to 9 years, and 3 cg. for older persons. Of fifty-five patients so treated, forty-six of whom were adults and nine children, twenty-seven (49.09 per cent.) showed no reaction at all, and twenty-eight (50.91 per cent.), of whom twenty-six were adults and two children, showed some reaction which was almost always mild.

259 Clinical Applications of the Ketogenic Diet

According to H. GAINSBOROUGH (*Practitioner*, January, 1934, p. 45) the employment of a diet low in carbohydrates and high in fat is a very useful therapeutic measure in the treatment of epilepsy, *B. coli* infection of the urinary tract, and of migraine. A condition of ketosis results from the failure of oxidation of certain fatty acids. This is very effective in the petit mal condition in children, which, as a rule, responds poorly to phenobarbitone and the bromides. Its continuation for a long time in children seems to have no ill effects, although pellagra has been recorded as a sequel when the protein intake was too low. While epileptic children generally do well on a ketogenic diet, the results in adults are less satisfactory. In urinary *B. coli* infections the diet acts by means of the bacteriostatic effect of β -hydroxybutyric acid in a strongly acid urine; this degree of acidity may have to be induced by the administration simultaneously of ammonium nitrate or chloride. Reports indicate that well over 50 per cent. of these cases are curable thus, even though of long standing. Similar benefit has also been obtained in the pyelitis of pregnancy. A series of cases of migraine were treated by a ketogenic diet. The resulting improvement was attributed to the effect of the low carbohydrate intake, the ensuring of active gall-bladder drainage by the high fat content, the possible diminution of the ingestion of proteins to which there was an allergic state, and the anaesthetic action of the keto-acids.

260 Ultra-violet Light in Treatment of Anaemic Blood

C. FEVERS (*Deut. med. Woch.*, December 29th, 1933, p. 1922) has for about two years investigated the action of ultra-violet light on the circulating and shed blood of experimental animals and patients. It was found in both that when whole blood was withdrawn and then reinjected into the donor, there was an average rise of about 5 per cent. in the number of the erythrocytes both in health and (in man) in secondary anaemias. No definite effect followed the exposure to ultra-violet light of blood still circulating but made to pass through a quartz tube interposed in the circulation of the animal examined. But when about 20 c.cm. of blood were withdrawn from a vein and mixed with a 5 per cent. solution of sodium citrate in the proportion of 1 to 4, and left for five to ten minutes in a Petri dish some 20 to 30 cm. from a source of ultra-violet light, the intramuscular reinjection of this blood was followed by a very considerable rise in the number of the erythrocytes—a much greater rise than when non-irradiated blood was reinjected. The same effect followed the reinjection of irradiated blood into a vein. When the number of erythrocytes was already normal the average rise was 0.7 million, and when the number of erythrocytes was originally low (secondary anaemias) the average rise was 1.2 millions. Control observations with patients given arsenic, iron, etc., or none of these remedies, showed figures much below those of the irradiated cases. Within half an hour of such an injection there was a definite increase in the

number of the erythrocytes, which reached its maximum in three to four hours. This maximum was maintained, with slight variations, for twenty-four to forty-eight hours. During the following three to five days the number of erythrocytes would fall. A second injection provoked a second rise, and in one case the number of erythrocytes was raised from 1.4 to 4.8 millions in the course of fourteen days, during which three injections were given. There was a corresponding improvement in the clinical picture. The author suggests that there is a hormone in the blood, probably in its corpuscular elements, which is activated by ultra-violet light in a way analogous to that in which cholesterol is activated by ultra-violet light. The spleen would seem to play an important part, as spleenless patients responded to this treatment with practically no rise in the number of the erythrocytes.

Laryngology and Otology

261 Primary Malignant Tumours of the Trachea

Malignant tracheal tumours may be primary or secondary; the former only are discussed by E. BARATOUX (*Ann. d'Oto-laryngol.*, November, 1933, p. 1272), who records two cases. Though of rare occurrence, they, present, when contrasted with laryngeal tumours, a high incidence of malignancy. They occur more frequently in males than females, and usually between the ages of 35 and 65. Both epitheliomata and sarcomata occur, the latter more rarely; vegetating, infiltrated, mixed, and polypoid forms have been noted. Their usual site is the extremities (especially the lower) of the trachea. Their evolution is slow, the ganglia are rarely involved, and metastases are still more uncommon. Inward extension of the growth causes dyspnoea; external extension forwards is infrequent, owing to the cartilaginous rings, but posteriorly it compresses the oesophagus, and may even invade it. The recurrent laryngeal nerves are often involved, resulting in laryngeal paralysis. Pulmonary infection is common, but gangrene has never been noted. The aetiology of these tumours is unknown; embryonic rests, local irritations, and syphilis have been advanced as possible causes. At onset the growth presents no diagnostic symptoms; this latent phase may last two years. Dyspnoea is the first and most marked symptom, which is often accompanied by cough and expectoration. Voice changes, dysphagia, a special attitude, pain, and subcutaneous venous dilatation in the pectoral and cervical regions are less frequent signs. Various forms—dyspnoeic, dysphagic, etc.—occur; these must be differentiated from cardiac and other dyspnoeas and the dysphagia of oesophageal cancer. Diagnosis is always difficult, and entails indirect laryngoscopy, endoscopy, and biopsies. The prognosis is grave, especially with associated pulmonary infection. Treatment is preferably surgical, and consists of an extensive excision of the tumour, or partial or total resection of the trachea. Radium therapy has been abandoned, though deep radiotherapy has occasionally been beneficial.

262 Infections of the Oesophagus

H. P. MOSHER (*Arch. of Otolaryngol.*, November, 1933, p. 563), who has previously reported his conviction that cardiospasm is due to fibrosis of the terminal portion of the oesophagus caused by infection from contiguous organs, believes that this part of the alimentary canal can be infected from within and without, and is often involved thus in acute and chronic general diseases. Such infection is followed by fibrosis, as is the case elsewhere in the body, and therefore there is ample opportunity for the formation of strictures. Isolated areas of fibrosis may be detected in arteriosclerosis, while in infections of the blood stream the oesophagus may be affected even to the degree of ulceration. Pneumonia may set up an oesophagitis, and dilatation of the subepithelial blood vessels is almost constant in diseases such as cirrhosis of the liver, which impede the venous circulation. This disease and infection

of the gall-bladder are among the chief causes of oesophagitis, as has been shown by necropsies. Haemorrhage into the muscular layers extensive enough to disrupt them may occur when there is back pressure on the oesophageal vessels. Mosher thinks that the glands of the oesophagus, which are especially liable to infection, are probably the chief route by which the infecting agent from within travels. Various clinical cases are recorded in support of these views and practical notes are given on fluoroscopic and barium-bag examination. The typical finding in fibrosis of the terminal portion of the oesophagus is a fibrotic narrowing at the beginning of the crural canal. This is not shown by the examination with barium, but is clearly brought out by the barium striped bag.

263 Leaking Brain Abscess

Under this title D. MCKENZIE (*Journ. Laryngol. and Otol.*, December, 1933, p. 797) discusses the spontaneous rupture and gradual discharge of a brain abscess internally or externally. He cites three cases of leakage into the meningeal spaces, in two of which recovery ensued. The third patient would also have recovered had it not been for the unsuspected existence of a second cerebellar abscess, which persisted after the first one had been drained. This type of case appears to be much more amenable to treatment than is the temporo-sphenoidal abscess, which tends to grow to a larger size, and to be quickly fatal after rupture. The author records a case of external leakage from a large temporo-sphenoidal abscess, in which sudden relief from pain followed the escape of a copious discharge through the wound of a mastoid operation. There were no signs of any intracranial complication until the supraventricular meningitis, which proved fatal. Of thirteen collected cases of external leakage, the abscess occupied the temporo-sphenoidal lobe in ten, in one case the cerebellum, and in two the frontal lobe, following frontal sinusitis. McKenzie comments on various clinical and pathological characteristics. In most cases the pus travels by the route through which the infection entered the brain, the tissues there being devitalized already, and in some cases disintegrated. Relief afforded by leakage is rarely sufficient to neutralize the pressure effects of a brain abscess, or to keep its bulk from enlarging, or its infection of the brain from extending. Rupture into a ventricle may occur in spite of the coexistence of a leak. The time when operative intervention is indicated is often problematical. It is usually wise to restrict its site to the inflammatory zone.

Obstetrics and Gynaecology

264 Pregnancy and Pulmonary Tuberculosis

E. BOVIN (*Hygiea*, December 31st, 1933, p. 945) records observations made at two large maternity centres in Stockholm where since 1917 all the women attending them have been given an expert examination of the lungs with a view to early detection of tuberculosis. During the twelve-year period 1917-29 some 50,000 women were thus examined, and 2,500 were classed as definitely tuberculous or as suspects. In the former category there were 586 women who underwent 676 confinements, not including abortions. Of the 138 deaths among these 586 women, thirteen were not due to tuberculosis. The tuberculosis mortality during an observation period extending to fifteen years in the oldest cases was 21.3 per cent. The cases were classified in four categories according to the severity and activity of the disease. In the last three categories, representing the relatively benign forms of the disease, were 469 women who collectively provided no evidence in support of the teaching that the processes of reproduction favour the development of pulmonary tuberculosis. In the first category, in which the patient's disease was actively progressive and associated with fever, cavitation, haemoptyses, general debility, and, as a rule, tubercle bacilli in the sputum, the situation was very different. The tuberculosis mortality among the 117

women in this category was 88.9 per cent. Among these 117 were sixty-six multiparae, responsible for two to ten confinements each. A study of the 104 deaths from tuberculosis in this category showed that in fifty-two cases the beginning or progress of the disease had not synchronized with the pregnancy or the first year after it. Taken as a whole, these observations should be interpreted as a corrective to the old dogma that the processes of reproduction are necessarily injurious to the tuberculous. In the case of multiparae who are so because contraceptives fail, as with one of the author's patients who underwent eight confinements and died of her tuberculosis seventeen days after the last confinement, a sterilizing operation may be justifiable.

265 Quinine Hydrochloride and Urea in Pruritus Vulvae

H. VIGNES (*Bull. Soc. Franç. de Derm. et de Syph.*, November, 1933, p. 1429) describes a method that he has used for several years for treating pruritus vulvae by local infiltration of a solution of quinine hydrochloride and urea. This substance produces prolonged local anaesthesia. Many of his cases were severe and of long standing, and some of them had resisted all the other known methods of treatment. A 1 in 400 aqueous solution is employed, stronger solutions producing persistent fibrous infiltrations. As quinine hydrochloride has little power of diffusion, it must be injected into every part of the affected area. A fine needle is used, and the vulva and its folds are infiltrated millimetre by millimetre with the solution. Any spots that are missed may be dealt with a day or two later. The anaesthesia obtained lasts for about a month, and if necessary the process may be repeated. Often, however, this is not required, as the pruritic symptoms do not recur.

266 Hysterography in Metritis

E. FORGUE (*Paris Méd.*, December 16th, 1933, p. 496) points out that metritis occurring in the fundus uteri frequently persists at the top, or in the angles of the cavity. The former is the commonest position for placental remains, and the latter may be easily missed by a curette. The injection of lipiodol into the uterine cavity (not tubes) is without danger, and forms a useful new method of localizing a growth before curettage. The radiogram is diagnostic between a tumour and simple hyperplasia. Hysterography may also be of service in showing conditions which obstruct drainage, thus indicating the correct treatment—that is, by dilatation of the cervical canal, correction of retroversion, in application of glycerin tampons, etc. Forgue occasionally removes, by a cone-shaped incision, the portion of the fundus which is the seat of a chronic infection.

267 Placenta Praevia

Discussing the treatment of placenta praevia (other than cases in which simple rupture of the membranes suffices) WEYMEERSCH and SNOECK (*Le Scalpel*, December 30th, 1933, p. 1909) strongly confirm the opinion of Paucot and Reeb, that lower segment Caesarean section is the correct method of delivery. For artificial rupture of the membranes the labour must be in full swing, the canal practically taken up, and the os dilated to at least the size of a five-shilling piece, with only very slight haemorrhage. Foetal mortality in such cases under good conditions is given as 34.5 per cent. The practitioner, therefore, is urged to waste no time in sending to hospital (1) all cases with even mild haemorrhage for a second time during pregnancy, (2) all placenta praevia cases bleeding at term, or (3) at the onset of labour. It is stated that by this means complicated obstetrical procedures with their foetal mortality of 67.74 per cent. are avoided. The authors insist on the value of the low segment operation, whereby they claim to have reduced their own maternal morbidity from 61.53 per cent. to 22.22 per cent. They proceed, moreover, to deliver a case of placenta praevia by this technique if the progress of labour gives the least cause for anxiety.

Pathology

268 Sterility Induced by Injections of Spermatozoa

E. SLOTKIN (*Med. Journ. and Record*, December 6th, 1933, p. 400) reviews various reports of experiments designed to test the possibility of producing sterility in the female by injecting spermatozoa subcutaneously. He believes that if sufficient numbers of spermatozoa are thus injected into a female rat a sterility is produced; this is usually temporary, but may be permanent. The measure does not affect the sexual cycle of the animal, and, when the effects wear off, healthy young are born. The delay in pregnancy seems to be variable with the individual rat, while some require much larger doses than others. Slotkin thinks the effect may be produced biologically, a spermatoxic antibody developing and disappearing later. Direct evidence of this has not yet been obtained, but there seems to be no indication of any action on the female generative organs or on the mechanism of ovulation. There was no change in the behaviour of the rats, and no signs of anaphylaxis could be demonstrated.

269 Diagnostic Value of Sugar in the Cerebro-spinal Fluid

W. MASCHER (*Svenska Läkaresällskapets Handlingar*, vol. lix, No. 4, 1933, p. 233) has collected in this laborious study the scattered publications of other authors, and the investigations conducted during 1931 and 1932 at a Swedish hospital where 289 lumbar punctures on 133 cases were followed by sugar analyses. It was found to be immaterial whether the lumbar puncture was undertaken in the fasting state or not. While there seems to be no hard-and-fast limits within which the sugar content of the cerebro-spinal fluid can be called normal, the figures for most of the authors' findings in healthy persons were over 45 and under 75 mg. per cent. Within the same limits there were many pathological cases. The concentration of sugar in the cerebro-spinal fluid followed that of the blood, but both the rise and fall of the former were comparatively late. The figures for the cases of epilepsy were all within the normal limits, but the cases of meningitis gave, with only a few exceptions, unusually low figures. This finding proved of considerable value to the differential diagnosis, particularly in that between tuberculous meningitis and other ailments such as encephalitis. Thus, in one case the onset of the disease and the clinical picture were suggestive of encephalitis, but the low sugar content of the cerebro-spinal fluid seemed to point to tuberculous meningitis. This diagnosis was confirmed by the subsequent course of the case and by the post-mortem examination. In purulent meningitis this sign is of less diagnostic importance, as the cerebro-spinal fluid contains other signs indicative of the true state of affairs. The author is unable to attach any prognostic importance to fluctuations in the sugar content of the cerebro-spinal fluid, but he notes that, in purulent meningitis, the concentration of sugar is directly proportional to the number of cells in this fluid.

270 Tissue Culture from Cancer of the Cervix

P. CAFFIER (*Zentralbl. f. Gynäk.*, January 6th, 1934, p. 44) has studied the survival and extension of fragments of carcinoma of the cervix in culture *in vitro*, and has observed the effect of simultaneous culturing with fragments of embryonic heart. He finds that the neoplasm survives longer when the latter is present, that signs are notable of invasion both of the outgrowths and primary fragments of fibroblastic tissue by tumour cells, and that connective-tissue cells appear to act as a nutritive depot for these. Such experimental findings run counter to the suggestion that connective-tissue reaction is an important factor in cure of cancer of the cervix: they conform to the finding that the results of wide are better than those of subtotal hysterectomy, although the efficacy of vaginal total hysterectomy shows that the removal of neoplastic lymphatic glands in the extended abdominal operation is not of paramount importance.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

271 Asphyxial Subcutaneous Emphysema following Collapse Therapy

P. BOURGEOIS (*Presse Méd.*, December 9th, 1933, p. 1981), discussing this rare complication of collapse therapy, states that it is mainly caused by futile attempts at pneumothorax, and is almost always due to multiple old pleuritic adhesions. In most cases a pulmonary perforation is made through a pleural symphysis, thus creating a broncho-subpleural and subcutaneous channel which allows gaseous infiltration. The elasticity of the tissues generally suffices to close the small track of a trocar, and the condition only arises when a larger instrument is used, especially if the lung be infiltrated or sclerosed, and the pleura thickened and symphysized. The emphysema only becomes acute when the gas in the pleural cavity is increased by large and rapidly repeated reinspirations. The condition may also arise during a pleuroscopy, followed (or not) by section of the adhesions. Successive violent attacks of coughing cause extreme elevations of pressure of the broncho-alveolar air, thus producing progressive subpleural and subcutaneous infiltration. At the onset the condition is not alarming, but the oedema rapidly extends, and in two or three hours involves, in order, the neck, eyelids, face, shoulders and arms, forearms, thorax, and abdominal wall. The head becomes fixed, the face swollen, and the voice raucous. Marked crepitation is always present, and, finally, cyanosis and dyspnoea develop. If the condition is not relieved, death supervenes in two or three days. Various medicaments (morphine, etc., for the cough, oxygen inhalations, cardiotonics) are enumerated. In moderate cases a compressive dressing usually suffices to arrest the oedema. In rapidly developing asphyxial cases surgical intervention is essential. Various operations are briefly described—incisions in the neck, closing of the fistulous track, and deep incision along this track with tamponing of the wound to allow of free exit of the air bubbles.

272 Tonsillectomy in Kidney Disease

G. CASOLO (*Il Morgagni*, December 10th, 1933, p. 1523) records his observations on cases of focal infection of tonsillar origin which he classifies as follows: sixteen were examples of acute partial glomerulonephritis, in which tonsillectomy was followed by cure in fourteen and improvement in two; eight were cases of acute diffuse glomerulonephritis, of which five were cured and three improved after tonsillectomy; three were cases of nephrosis in which no change took place, and five were cases of acute articular rheumatism in which tonsillectomy did not prevent the development of recurrences. Casolo comes to the conclusion that tonsillectomy is indicated in all acute and chronic renal affections which can be attributed to a tonsillar focus. It is also advisable in those cases in which, though cure is impossible owing to the diffuse nature of the lesions, fresh focal infections can be prevented.

273 Paratyphoid Outbreak Traced to a Carrier

M. GUERDET and M. PARNET (*Arch. de Méd. et de Pharmacie Militaires*, December, 1933, p. 674) relate how, one summer morning, nine soldiers reported sick. All of them had suddenly fallen ill about 2 o'clock that morning with nausea, vomiting, diarrhoea, colic, headache, and pain in the lumbar region. Their temperatures ranged from 38° to 40° C. Next day the number of patients had risen to forty-four (out of a military unit of 150). With rest and dieting most of the patients were cured in forty-eight hours, but thirteen had to be admitted to hospital. On the arrival of a bacteriologist, only two of the patients

were still violently febrile (39° C.). Blood cultures in both these cases yielded bacilli conforming to the characteristics of the paratyphoid B. Hermetically preserved foods could not be held responsible, as some of the patients had not touched any; the only food of which all had partaken, and which was suspect, was a dish of haricot beans. They had been cooked on the morning of June 4th, and had been served cold for the midday meal on June 5th, the day before the first patients reported sick. Between the cooking and the serving of these beans the weather had been exceptionally hot, and the conditions for the growth of organisms on them had been most favourable. All the beans had disappeared, but not the three men who had cooked them. They were accordingly admitted to hospital for examination. After a calomel purge, stool cultures were taken. In two cases only *B. coli* and enterococci could be found, but from the stools of the third cook a bacillus was isolated showing properties identical with those of *B. paratyphosus* B. It transpired that, some five years earlier, this man had been febrile for a month, and that his ailment had been diagnosed as typhoid fever. Various tests identified the bacilli found in the stools of this cook with the bacilli found in the blood of two of his victims.

274 Mistaken Diagnoses of Pernicious Anaemia

A. NORGÅRD (*Hospitalstidende*, December 14th, 1933, p. 88) has studied the records of the Danish national sickness insurance scheme with special reference to the influence that the new liver and stomach treatment of pernicious anaemia has had on this disease. One striking effect of this treatment is the increased tendency for pernicious anaemia to be thought of and diagnosed, often incorrectly. Patients are promptly put on the new treatment without the diagnosis of pernicious anaemia having been based on a thorough clinical and laboratory examination. The treatment obscures the manifestations of the disease so that it is much more difficult to diagnose than at the outset. Consequently, many patients are given a treatment which, though prolonged and costly, does them little or no good. While much valuable liver and stomach extract is being wasted in this manner the partial failures of the new treatment in genuine cases of pernicious anaemia during the last few years must be traced to an inadequate dosage. The author analyses the mistakes made in 102 cases put on liver or stomach extract treatment in slapdash fashion. The diagnoses ultimately arrived at were anaemia achylia simplex in twenty-four cases, neurasthenia and hysteria in eleven, climacteric metrorrhagia in ten, dyspepsia and gastric ulcer in eight, aplastic anaemia in seven, cancer of the digestive tract in six, arteriosclerosis in six, the anaemia of pregnancy in five, operations on the stomach in five, Banti's disease in three, sprue also in three. To the remaining fourteen cases as many as twelve different diagnoses were allotted. The author admits that the diagnosis of pernicious anaemia is difficult for lack of any one pathognomonic sign. But it must be made by a painstaking clinical examination supplemented by special examinations of the blood and functions of the stomach before a lifelong treatment is instituted.

275 Acute Oedema of the Larynx in Measles

K. S. OLIVER and E. L. TURNER (*Journ. Amer. Med. Assoc.*, December 2nd, 1933, p. 1801), who report illustrative cases in boys aged 7 and 4 and a girl aged 3 years, state that acute oedema of the glottis is a rare complication of measles. It may become so severe as to necessitate tracheotomy, as in the writers' cases. In all three instances its onset was several days after appearance of the rash, and not in the prodromal stage as in most of the cases on record. The boys recovered and the girl died.

Surgery

276 Anucaine in Proctology

R. V. GORSCH (*Med. Record*, January 3rd, 1934; p. 35) commends the use of anucaine as an analgesic in painful conditions of the rectum and anus. This preparation consists of five parts each of benzocaine and phenmethyl, one part of butylaminobenzoate, and one-eighth part of basic procaine in sweet almond oil. It is particularly serviceable in anal fissures, the injection being made first into the tissues just lateral to the external sphincter, and then directly below the entire bed of the fissure. The best results are obtained when the drug is evenly distributed, and not pooled in the tissues. Relaxation of the sphincter apparatus usually follows quite promptly, and further examination is rendered possible, the sphincter being gently dilated. Any sentinel piles or hypertrophic skin tags can now be excised. Anucaine must always be injected into the subcutaneous or deeper tissues, since it is apt to cause sloughing when introduced into the skin. In pruritus ani such injections are effective in alleviation, but have no curative value. They permit the performance of minor surgical procedures, such as the removal of excessive thickened skin to promote drainage from the lower levels. Very good results were obtained by the author in the treatment of external thrombotic haemorrhoids by a single injection of anucaine below the pile swelling. The anaesthesia is said to last for a week or more, the pain and discomfort cease, and the clot may be absorbed in time. In operating on internal haemorrhoids anucaine was found to be a valuable anaesthetic, with or without additional novocain or butyn medication. Gorsch injected the drug with good results in several cases of coccygodynia, and prefers it to alcohol. He advises it also for sphincter spasm and scars in the anal canal. He has never encountered the complication of oil tumours or any permanent subsequent changes in the tissues after its use, except scarring.

277 Tumours of the Adrenal Medulla

W. F. SUERMONT (*Zentralbl. f. Chir.*, January 13th, 1934, p. 70) distinguishes between (1) tumours of the adrenal cortex, which occur chiefly in girls and cause obesity, virilism, and hirsutism, and (2) those of the medulla, which cause slight permanent rise of blood pressure, with paroxysms of further rise in blood pressure in which pallor, coldness of the extremities, alterations of sensation, and possibly glycosuria are present, and after which profuse sweating usually follows. He adds a fifth to the four reported cases of successful extirpation of a medullary tumour for the second-named syndrome. The patient was a man, aged 29, whose interval blood pressure was 150/115 mm., and whose pressure during daily attacks of fifteen minutes' duration was 325/200 mm. The right kidney was palpable, and radiography after abrodil injection pointed to a suprarenal tumour. This measured 10 by 7 by 5 cm., and was derived from chromaffin cells; adrenaline injections were necessary for the fall in blood pressure which was noted during the two days following its extraperitoneal removal.

278 Diagnostic Arthrotomy for Chronic Diseases of the Knee

A. LÄWEN (*Deut. med. Woch.*, January 5th, 1934, p. 14) finds that in spite of the number and importance of modern diagnostic tests it is still sometimes desirable to open a knee-joint and look inside. At the surgical hospital of the University of Königsberg during the period 1928-33 there were treated fifty-three cases in which the diagnosis of tuberculosis of the knee-joint was certain or possible. There was no history of trauma, and in most cases there was thickening of the capsule of the joint or an effusion into it. In fifteen of these cases, mostly adult, the clinical and x-ray evidence indicative of tuberculosis was so convincing that resection of the joint was performed forthwith. In three other cases in which

the diagnosis was not obvious an exploratory incision on the inner side of the patella was followed by a rapid histological examination of a strip of excised capsule in which tuberculous changes were found. In four other clinically obscure cases the same procedure led to the diagnosis of synovial tuberculosis, two of these cases being subsequently treated on conservative lines, while in the other two radical operations were performed. In as many as fourteen cases the exploratory arthrotomy excluded the diagnosis of tuberculosis, a considerable variety of other conditions being found. In nine of these cases the histological examination of the capsule of the joint showed a simple chronic synovitis. The author stipulates that three conditions must be fulfilled before an exploratory arthrotomy is undertaken: (1) all the other diagnostic tests must have been given a fair trial; (2) there must be a prospect of the patient receiving better treatment than before as a result of the operation; and (3) it must be performed under irreproachable aseptic conditions by an experienced surgeon familiar with the appearance of the interior of a normal knee-joint.

Therapeutics

279 Mercurial Poisoning from Clinical Thermometer Wounds

According to A. BORCHARD (*Zentralbl. f. Chir.*, December 23rd, 1933, p. 2930) accidental wounding of the hand—usually in nurses—by a clinical thermometer may lead to retention of mercury in the wound: toxic symptoms supervene four to seven days later, the gastro-intestinal symptoms being less pronounced than the general lassitude and headache. Even when the amount of mercury beneath the skin is small, and especially when it is finely divided, chronic poisoning with signs of visceral affection may follow, and in one case at least amputation of the finger has been necessary. Nurses should be told of the dangers of thermometer wounds, and warned not to try to express the quicksilver—this leads to its finer division. A radiogram should be made promptly, and if the metal is in fine spherules the area concerned should be excised as a whole, fine copper drains (on which any mercurial residues may form an amalgam) being then inserted. The sharp spoon should not be used. Individuals show much variation in susceptibility, and when the spherules are coarse expectant treatment may sometimes be adopted: prolonged control of the urine is necessary.

280 Medicinal Treatment of the Common Cold

H. S. DIEHL (*Journ. Amer. Med. Assoc.*, December 23rd, 1933, p. 2042) has studied the relative values of various drugs and drug combinations in the treatment of 1,039 cases of acute coryza, 262 cases of subacute or chronic colds, 114 cases of influenza, and fifty-three cases of acute pharyngitis. The only medicaments found useful in acute coryza were opium and certain alkaloids derived from it. Combinations of papaverine with codeine, dilaudid, or morphine were followed by definite improvement in 74 to 78 per cent. of the cases, the dosages used with these combinations seeming to be practically non-toxic. For general use a mixture of codeine and papaverine seemed to be the most desirable in view of the high percentage of good results obtained, the low toxicity, and the absence of risk of habit formation.* Morphine and dilaudid (dihydromorphinone hydrochloride) combined were nearly as efficacious, but each was definitely more toxic alone than when associated with papaverine. Codeine, papaverine, powdered opium, and the compound powder of ipecacuanha and opium were followed by definite improvement in 56 to 61 per cent. of cases, the toxicity decreasing in that order, and codeine proving practically as toxic

* The dosage of the codeine-papaverine prescription recommended for a patient weighing 150 pounds is: codeine 1/4 grain, papaverine 1/4 grain; one in the morning, one in the afternoon, and three at bed-time.

as morphine. Diehl found that the powder of ipecacuanha and opium, although of value in the treatment of acute colds, was no more beneficial than the same amount of opium without the ipecacuanha. Sodium bicarbonate, acetylsalicylic acid, and a combination of acetylsalicylic acid, acetphenetidin, and caffeine, gave little better results than the lactose tablet used as a control, each being followed by "definite improvement" in from 35 to 42 per cent. of cases. It seemed possible to shorten the course of colds by the codeine-papaverine or dilaudid-papaverine compounds. No medication could be shown to benefit subacute or chronic colds, or acute pharyngitis; morphine was tried unsuccessfully in influenza.

281 Appropriate Use of Digitalis and Analeptic Drugs

To demonstrate that digitalis and the camphor derivatives (cardiazol, hexetone, and especially coramine are cited) have their respective uses, E. FROMMEL (*Rev. Méd. de la Suisse Romande*, December 25th, 1933, p. 865) first reviews the pharmacodynamics of these drugs. Each possesses a cardiac and extracardiac action. Digitalis acts on both the cardiac muscular and excitomotor tissues; it increases the tonicity and refractory phase of the heart, but lessens its conductivity. Its extracardiac action is evinced by bradycardia, due either to its action on the vagus nucleus or through the carotid sinus. Its action on the respiratory and vasomotor centres and the nervous system is stated to be nil. Its action is prolonged over several days, and the drug also possesses marked cumulative properties. The camphor derivatives exert a cardioplegic action on healthy hearts, but on those intoxicated by chloral, the barbiturates, chloroform, etc., they have an analeptic and tonic action. They are powerful excitants of the respiratory and vasomotor centres, and, by their action on the extracardiac nerves, tachycardia and increased conductivity and intracardiac irritability are produced. Their action, however, is only temporary, and they possess no cumulative property. Thus, digitalis and the camphor derivatives cannot be substituted for each other. The former is the medicament of choice in organic lesions, asystole, sinusal tachycardia, etc., and the latter, preferably coramine, in all cases of vasomotor paralysis and of respiratory and cardiac failure. Digitalis is incontestably the therapy for chronic, organic, cardiac affections, while camphor derivatives are essentially a therapy of urgency in the crises of high pyrexias and grave intoxications. Frommel states that, owing to their pharmacodynamic synergy, these two forms of medication can be beneficially combined.

282 Anthrax Treated by Organic Arsenic

H. A. SPENCER (*Journ. Trop. Med. and Hyg.*, January 1st, 1934, p. 9) reports the successful treatment of human cases of anthrax by intravenous injections of novarsenobillon, or, in the case of young children, by injections of sodium cacodylate into the gluteal muscles, which proved equally effective. These procedures were adopted in outbreaks in Bechuanaland in places where the supply of anti-anthrax serum was not immediately available. Spencer has no doubt that the sterilizing effect of these arsenical injections is general and immediate; healing can be seen to be beginning on the day after the first injection, and only in the case of the milder and weaker preparations does a second injection appear to be necessary. Enlargement with tenderness of the lymphatic glands nearest to the ulcers was always present, and this rapidly cleared up after the injections. As a local dressing for the ulcers glycerin of borax was found to be very satisfactory.

283 Fluorides in Hyperthyroidism

L. GOLDENBERG (*Sonoma Médica*, December 28th, 1933, p. 2106), who claims to have been the introducer of the "fluor" treatment of Graves's disease in 1928, having published his results in 1930, states that this treatment has no contraindications, is devoid of all danger, and superior to operative measures. Goldemberg employs

sodium fluoride intravenously, and gives 5 c.cm. of a 2 per cent. solution on alternate days. Orally he prescribes 2.5 cg. of the salt in pill form. After a few doses the malaise disappears, the pulse rate is reduced, weight rapidly increases, and the basal metabolic rate is lowered. Both exophthalmos and thyroid enlargement are slow to disappear, but ultimately are much reduced or become unnoticeable.

Ophthalmology

284 Vaccine and Non-Specific Protein Therapy in Iridocyclitis and Hypopyon Ulcers

PERCIVAL HAY (*Medical Forum*, October to December, 1933, p. 410) finds that many cases, after eliminating those due to syphilis, sinuses, tonsils, cholecystitis, endometritis, and pyelitis, are caused by the *Streptococcus salivarius*. Four strains can now be agglutinated. The initial dose of 5 millions is increased by 1 million weekly. A reaction characterized by an exacerbation of the symptoms, and by lassitude, headache, dental pain, and induration at the site of inoculation, calls for a reduction in the dose. Though autogenous vaccines give the best results, a stock vaccine is, it is stated, very helpful. In protein therapy, milk is allowed to stand for twenty-four hours and is then sterilized in a test tube for four minutes. For an adult, 3 c.cm. (1 c.cm. for a child) is given intramuscularly in the buttock daily. The dose is increased by 1 c.cm. until 10 c.cm. is being given. The reaction is gauged by the temperature. Hypopyon ulcer, ordinarily a very bad prognosis, reacts amazingly well, and good results are claimed for this form of treatment.

285 Primary Carcinoma of the Lachrymal Sac

K. T. A. HALBERTSMA (*Nederl. Tijdschr. v. Geneesk.*, November 18th, 1933, p. 5200) reports a personal case, which is the first to be recorded in Holland, of carcinoma of the lachrymal sac. He has collected five others from the literature, as compared with four cases of sarcoma and one of lymphoblastoma. Benign tumours of the lachrymal sac such as polypi, papillomata, fibromata, and lymphomata are much more frequent than malignant growths, but in rare instances may undergo malignant degeneration. Carcinoma of the lachrymal sac is characterized by its extraordinary malignancy and its liability to cause complications by invasion of the nasal sinuses. In Halbertsma's case, which occurred in a woman aged 68, localized necrosis took place and perforation of the orbito-nasal septum.

286 Variations in the Incidence of Eye Disease

S. WERNER (*Finska Läkarsällskapets Handlingar*, December, 1933, p. 1126) refers to investigations in an eye hospital in Helsingfors, conducted six years ago, which showed that, during a quarter of a century, while both phlyctenules and trachoma had continued to decrease, the latter showed no seasonal incidence, whereas phlyctenules were most common in the spring. Following upon this study, the present publication deals with an analysis of the 59,769 cases suffering from other diseases of the eyes, treated at the same hospital as in-patients or out-patients in the period 1912-26. The card system of classification depended on diagnoses, many of which were symptomatic rather than aetiological. Altogether twenty-three different ailments and anomalies of refraction were considered. In the period under review the attendances per year have doubled, but while some diseases have remained stationary, numerically, the incidence of others has greatly increased. The number of cases of each disease was expressed as a percentage of all the cases taken together. It was found that anomalies of refraction, including presbyopia, have become much more frequent, myopia having increased from 1.7 to 4.3 per cent. of all the cases, and presbyopia from 0.9 to 5.6 per cent.

These figures are, he believes, a measure of the effect of education and the growing tendency of the public to obtain their eye-glasses from doctors rather than from a watchmaker's shop or the market place. The incidence of hordeolum has slowly risen, while chronic conjunctivitis has remained at about 7 per cent. with a dip down to about 4 per cent. in 1918 and the four following years. The curve of gonorrhoeal conjunctivitis was remarkably flat until the last few years, during which it has shown a downward tendency. Parenchymatous keratitis has behaved in the same way, but optic neuritis showed a rise in the period 1917-20, which corresponded with a prohibition that fostered the consumption of intoxicants of exceptionally poisonous quality. In addition to these annual fluctuations, monthly fluctuations were observed in the case of certain diseases.

Obstetrics and Gynaecology

287 Cancer of the Uterus and Ovary

O. FRANKL (*Wien. med. Woch.*, December 9th, 1933, p. 1394) furnishes some original statistical data in an article devoted to the early diagnosis of cancer of the uterus. In his gynaecological hospital 415 cases of cancer of the cervix were operated on in the period 1921-7. As judged by the five-year post-operative test, a cure had been effected in 48 per cent. An even higher percentage of cures could be claimed among those cases in which the patient came very early to operation. Thus, among the twelve cases in which the diagnosis of cancer of the cervix could not be made by a macroscopical examination, but depended on a microscopical examination, there were as many as ten ranking still as cures after five years. Turning to the relative frequency of primary and secondary cancer of the ovary, Professor Frankl disagrees emphatically with the Frankfurt school, according to which most cases of cancer of the ovary are secondary. In the period 1921-7 he observed as many as 103 primary cases, there being only nine cases in which the disease of the ovary was metastatic. It may be objected that a gynaecological hospital does not often admit those cases of primary cancer of the stomach, intestines, liver, and pancreas which yield examples of secondary disease in the ovary. A more complete and reliable picture is therefore to be obtained from general post-mortem statistics. In the period under review the Pathological-Anatomical Institute of Vienna conducted 19,002 necropsies, among which there were 121 showing primary and only 48 showing metastatic cancer of the ovary. The primary seat of the disease in these metastatic cases was the stomach in twenty-eight, the intestines in six, the liver in two, the gall-bladder in nine, and the pancreas in three.

288 A New Treatment of Placenta Praevia

C. J. GAUSS (*Zentralbl. f. Gynäk.*, January 13th, 1934, p. 93) points out that in placenta praevia the outlook for the mother is much improved when operative delivery is avoidable and it is possible to stop the bleeding by compression of the placenta by the foetal head—that is, when rupture of the membranes effectually produces haemostatic uterine contractions. If this rupture is not thus effective, Gauss grasps the foetal scalp by a forceps which he has devised, and maintains traction by connecting it, over a system of pulleys, with a counterweight. The forceps has a pelvic curve and two blades which terminate in transverse, grooved, and toothed plates: the counterweight is a bottle which is filled with 600 to 1,200 grams of water, according to the pressure which is found necessary for the control of the bleeding. Gauss found the method effective in fifteen cases which were without maternal mortality; there were six foetal deaths, but three cases of central placenta praevia were included. To injure the foetal scalp by Gauss's instrument is unavoidable, even if it is ultimately less dangerous than version; but in point of fact the results of the injuries in the present series were of cosmetic importance only.

Pathology

289 Repair of Heart Muscle Damage: Diet Experiments

E. AGDUHR (*Upsala Läkareför. Förhand.*, December, 1933, p. 65) gives the results of a histological and electrocardiographic investigation on the production and repair of damage to the heart muscle in white mice. The animals were fed on a deficient diet and given fish-oil emulsion for periods of three to five months: at the end of this time some were killed; controls were given an adequate diet. Sections showed extensive degeneration of the myocardial cells, with increase in the supporting fibrous tissue. Changes in the electrocardiogram indicating depression of conductivity in the heart—namely, an increase in the PR and QRS intervals—appeared as early as the eighteenth day of the experiment, and reached their maximum about six weeks later. This picture is said to be very characteristic of fish-oil damage. At the end of the dosing period the animals were given a full and adequate diet. This was continued for 200 days, when the animals were killed and examined. Changes indicating regeneration of heart muscle cells were seen in all cases, but they were much more marked in those animals which had been on a full diet in the healing period than in controls. In the process of regeneration amitotic division of some cells and hypertrophy of others were seen. There was a variable increase in the amount of fibrous tissue present. During the healing period serial electrocardiograms showed gradual restoration of conductivity, but the correspondence between anatomical changes and those of function is not exact: functional changes anticipate the anatomical ones in the period of damage and outlast them in the healing period. In one animal no trace of a muscular conducting tissue could be seen in the ventricular septum, yet the tracing did not indicate complete heart-block. Some nerve bundles in the septum were intact, and it is suggested that the impulse for contraction may be carried by these. The author's main conclusion is that repair of a badly damaged myocardium may occur, and be complete if a full diet is given.

290 The Cat in Diphtheria Transmission

E. B. BROOKS (*Amer. Journ. Dis. Child.*, December, 1933, p. 1338), as the result of experimental work, concludes that cats and kittens are not susceptible to diphtheria of the rhinopharynx or lungs. They did not react to the Schick test or to inoculation with virulent diphtheria bacilli. He believes, however, that cats may act as carriers of this disease, their fur or rhinopharynx becoming the habitat of these organisms from one to four days after exposure to diphtheria. He has obtained some evidence, moreover, that cats which are suffering from infection of the pharynx with Vincent's fusiform bacilli and spirochaetes are more likely to harbour and carry diphtheria bacilli on the pharynx than are healthy cats. These animals are, nevertheless, susceptible to parenteral injections of diphtheria toxin, which may cause death, but this can be obviated by the administration of diphtheria antitoxin.

291 Ovarian Hormones and the Post-climacteric Endometrium

K. HÜBSCHER (*Zentralbl. f. Gynäk.*, December 2nd, 1933, p. 2844) recalls that Smith and Engle produced menstruation in a castrated ape by injection of follicular and then corpus luteum hormone; and that Kaufmann by similar measures induced menstrual bleeding in a woman aged 22, whose ovaries had been removed five years previously. Very large doses were used. In a woman aged 80, suffering from total prolapse, Hübscher proved the endometrium to be atrophic. After twenty daily injections each of 10,000 mouse units of follicular hormone, followed by five daily injections of "luteohormone" in doses of ten rabbit-units, the uterus, which had become enlarged to the size of the fist, bled; a second curetting showed the characteristic histological features of the secretory phase.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

292 Non-perforative Peritonitis in Enteric Fever

H. POUDEVIGNE (*Thèse de Paris*, 1933, No. 599), who records ten illustrative cases in patients aged from 6 to 43 years, one of which is original, states, that non-perforative peritonitis in enteric fever, though rare, does occur. It is most frequently found in severe attacks of typhoid or paratyphoid fever, but also occurs in other forms. The symptoms are the same as those of perforative peritonitis. The diagnosis is difficult, especially if the existence of typhoid or paratyphoid has not been suspected. The prognosis is grave, but less so than that of perforative peritonitis. Immediate operation is required, the progress greatly depending on the rapidity of the operation. If the condition is found to be due to typhoid fever a right lateral incision is made, the termination of the small intestine is explored, a caecal fistula is performed, and a drainage tube inserted. If, on the other hand, the presence of enteric fever is not established, a median exploratory incision should be made above the umbilicus, a drainage tube inserted into Douglas's pouch, and a caecal fistula made by a small right lateral incision. Of Poudevigne's ten cases, four recovered, two without operation, and six died, on three of whom laparotomy had been performed.

293 Treatment of Thrombophlebitic Oedema

With a view to determining whether there was any evidence that exposure to x rays was beneficial in acute thrombophlebitis L. M. ZIMMERMAN *et al.* (*Journ. Lab. and Clin. Med.*, December, 1933, p. 243) have tested the effects of salyrgan, the mercurial diuretic, and of x rays on dogs in which acute thrombophlebitic oedema had been produced by the injection of a concentrated tissue extract into the femoral vein. In each series the rate of the disappearance of the fluid was similar, and definitely more rapid than in cases which had not been so treated. The action of salyrgan was capable of explanation, but that of x rays was obscure. It is suggested that the treatment might possibly exert an influence on the lymphatic flow, or cause a breaking down of lymphocytes and leucocytes, with the liberation of proteolytic enzymes and the digesting of the protein-rich exudate, so that it was transformed into a more easily absorbable modification. Or, again, the radiation might result in an ionization of the tissue fluids, or have some action on the general mobilization of fluid in the body. It is concluded that it is not yet possible to decide between these possible mechanisms, more than one of which may be operative. Further clinical and experimental investigations are being conducted to determine the value, limitations, and possible dangers of x-ray treatment in acute thrombophlebitis.

294 Ayerza's Disease

M. SAMOVICI and J. SACK (*Arch. des Mal. du Cœur*, November, 1933, p. 685) put on record a case of Ayerza's disease. The patient, who had had syphilis ten years previously, began to experience cough and shortness of breath on effort at the age of 30. Gradually he became more cyanosed and lethargic, and when he came under observation at the age of 46 he was in a state of advanced congestive failure. Thereafter, by the usual remedies, his condition improved, but considerable cyanosis and dyspnoea remained. The respiration rate was 36, the rhythm normal, and the pulmonary second sound accentuated. The red blood cells numbered nearly nine millions; the Wassermann reaction was negative. The blood pressure was 160/120. X-ray examination showed prominence of the pulmonary artery and increased density

of the lung fields due to sclerosis and bronchial congestion; the right auricle and ventricle were enlarged, and the "hilar dance," characteristic of pulmonary insufficiency, was observed. The electrocardiogram showed right ventricular preponderance and enlargement of P-waves. On retinoscopy the engorged veins were seen to be constricted where they crossed the arteries. The authors discuss the problem of pathogenesis in this case; it is possible that chronic broncho-pulmonary disease was followed by a secondary sclerosis of the pulmonary artery, or that broncho-pulmonary syphilis was accompanied by obliterative disease of the pulmonary artery of the same aetiology. Escudero is quoted as stating that in secondary pulmonary sclerosis, dilatation of the right ventricle occurs, whereas hypertrophy is characteristic of true Ayerza's disease. In the case presented, the evidence of right ventricular hypertrophy, syphilitic infection, obliterative changes in the pulmonary artery, polycythaemia, and cyanosis combine to form the clinical picture characteristic of Ayerza's disease.

295 Nervous Complications of Varicella

D. CORDA (*Arch. Ital. de Ped. e Puericolt.*, January, 1934, p. 286) reviews the literature and records three examples of nervous complications in varicella. The first was that of a female infant, aged 21 months, who on the seventeenth day of disease developed symptoms of poliomyelitis in the right lower limb. Recovery took place in a fortnight. The second case was that of a girl, aged 3 years, who on the sixth day developed symptoms of cerebellar ataxia, which subsided in about three weeks. The third case occurred in a boy, aged 4, and was also complicated by nephritis. Symptoms of encephalitis developed on the sixth day and ended fatally. There was no necropsy, but Corda suggests the presence of a haemorrhagic cerebral lesion.

Surgery

296 Osteomyelitis of the Ilium

C. BADGLEY (*Arch. of Surg.*, January, 1934, p. 83) states that osteomyelitis of the ilium is a rare disease with a grave prognosis. A large number of those who survive the acute infection present severe lesions of the hip-joint, such as bony ankylosis, fibrous ankylosis, or pathological dislocation of the hip. There may also be a chronic suppurative osteomyelitis which may lead to amyloidosis, septicaemia, and death. Twenty-four cases are reported, of which twenty were instances of chronic osteomyelitis of the ilium in which palliative treatment had been unsuccessful. The lesion generally occurs before the period of complete fusion of the epiphyses, but although the usual age period is under 25, the youngest patient in the series was 20 months and the oldest 75 years. There were eighteen males and six females. The outstanding symptom is pain in the hip, frequently in the region of Scarpa's triangle, though it may be felt posteriorly and be referred along the sciatic nerve. Deformity is also noticeable with tenderness on palpation. In subacute cases there may be swelling in Scarpa's triangle with induration and oedema over the ilium. Treatment in cases of subacute or localized lesion should consist of incision, drainage, and removal of diseased bone, with, if necessary, localized resection of the involved area at a later date. This type of case is the most favourable. In the diffuse type of case early drainage alleviates the clinical symptoms and lessens the chance of septicaemia. Trephining of the ilium above the acetabulum is of great value in diagnosis in the early stages. Later, resection of the wing of the ilium to the supracotyloid is easily

carried out. In osteomyelitis of the diffuse type with extensive general infection the mortality rate is very high, and resection of the ilium gives the patient the best chance of recovery. Of the twenty-four cases reported, seventeen were completely cured and two died, and of the remainder four were improved but still had small discharging sinuses. One had a recurrence of infection three years after operation.

297 Congenital Talipes Equinovarus

F. CURTIS and F. MURO (*Journ. Bone and Joint Surg.*, January, 1934, p. 110) comment on the unfavourable results often obtained in the treatment of club-foot by means of tarsectomy. An operation is described which has been carried out for the last two and a half years. This is said to give a better functional result and shorten the period of disability. The operation was performed in fifty-one cases, sixty-nine feet being treated altogether. In the series there was no family history of a similar deformity in the parents, although in four instances a sister or brother had the same condition. In the majority of cases Steindler's operation was necessary before the decancellation, and the lengthening of the tendo Achillis after the decancellation. X-ray photographs after operation showed an alteration in the shape of the os calcis, astragalus, and cuboid, whilst the outer border of the foot was changed from a convex to a straight or concave surface. The joint spaces were well maintained between the bones treated, and there was no growth disturbance in the bones. End-results of the series showed normal appearance and good motion in sixty of the feet treated; in eight the result was fair, and in one poor. The youngest child treated was 1 year old and the oldest 9 years. The operation described consists of the decancellation of the os calcis, astragalus, and cuboid. All the cancellous bone is removed from the cuboid, but only the anterior portion from the os calcis and astragalus. The foot is forcibly overcorrected by manipulation with a Thomas's wrench. To correct the metatarsus varus and decrease the convexity of the outer border of the foot manipulation is done over a rectangular bar, though in certain cases the outer shell of the cortical bone of the cuboid and os calcis must be split vertically with scissors to allow collapse. The leg is placed in a plaster cast for three weeks, when a reapplication of plaster is made after further manipulation. Plaster casts are applied in the overcorrected position for four months, after which an inside upright and outside T-strap brace is applied and physiotherapy and muscle education begun.

298 Surgical Antisepsis by "Activized" Silver

W. KRUSE and M. FISCHER (*Münch. med. Woch.*, January 12th, 1934, p. 49) describe a new method of antisepsis which they have developed. They "activate" silver or silver-plated instruments by dipping them in a solution of sodium carbonate and sodium chloride connected with a storage or dry battery; under the influence of the electric current the oligodynamically inactive pure silver is transformed on its surface into silver carbonate or chloride—that is, "oligodynamically activized." The authors tested the antiseptic qualities of such instruments by placing them on agar-agar staphylococcus cultures, when a sterile area was formed around the place of contact. They claim that instruments treated by this simple process considerably lessen the danger of infection—for example, in wound probing, catheterization, the application of forceps, etc. Such activation can also be carried out with instruments remaining in the human body for any length of time, and the process can be repeated *in vivo* any number of times. The silver plating of instruments is less expensive than chromium plating. "Active" silver can also be used as a colloidal solution or a powder for the preparation of ointments, plasters, tinctures, etc. Hands rubbed with "active" silver powder are described as being turned into antiseptic instruments and surgical dressings, while silk and catgut are made antiseptic instead of only aseptic by impregnation with the same substance.

Therapeutics

299

Treatment of Hay Fever

K. HANSEN (*Deut. med. Woch.*, February 9th and 16th 1934, pp. 210 and 233) reports from his hospital in Lübeck his encouraging observations on the treatment of hay fever with a polyvalent extract of the pollens of the plants he has found most often responsible for hay fever in Germany. Here from 90 to 100 per cent. of the patients are sensitive to grass pollens, while only 10 to 20 per cent. are also sensitive to the products of the lime tree and the acacia. In 1932 the author treated 316 cases, among which he had to register only thirty as not benefiting from his prophylactic treatment. In 1933 his patients numbered 645, of whom 123 (19 per cent.) were rendered completely symptom-free, 370 (57.5 per cent.) benefited decidedly, 96 (15 per cent.) benefited moderately, and only 56 (8.5 per cent.) derived no benefit. Professor Hansen describes in detail the dosage and spacing of what he calls typical or standard treatment by subcutaneous injections. He also refers briefly to three variations from this standard, which include the "rush-desensitization" of Freeman. It is claimed that specific desensitization of pollen allergy can, by appropriate dosage, be effected in more than 75 per cent. of all cases; and that the proportion of failures, already below 10 per cent., can be still further reduced if attention is paid to all the complicating factors in each case.

300 Tobacco Addiction and its Treatment

R. HOFSTÄTTER (*Wien. med. Woch.*, January 20th, 1934, p. 95) considers smoking unnecessary and much more dangerous than addiction to tea, coffee, kola, sugar, etc., on account of the dangers of psychic addiction. According to this author the problem is therefore not so much one of treating isolated adults as of educating the younger generation of both sexes. With regard to the extraction of nicotine from tobacco, he states that while it is true that the August Falk method reduces the nicotine content of cigars and cigarettes by 40 to 50 per cent., it must be remembered that all are not agreed as to nicotine being the most dangerous constituent of tobacco. After discussing the various methods advocated for the gradual cure of the tobacco addict, the author expresses his scepticism about palliative measures, having confidence only in complete abstinence. Nearly all the married women and girls classed as nicotine addicts suffer, in his opinion, from ungratified sexual instincts, and their cure is a most difficult matter, which requires on the part of the physician much time, insight, and some psycho-analytic knowledge. The withdrawal of tobacco may not threaten the patient's bodily health, but her mental state may be seriously affected. The author has known the withdrawal of tobacco from women to be followed by serious mental symptoms, including a strong sense of guilt, fear, aggressive outbreaks against some harmless person, and a craving to masturbate. On two occasions sexual aggressiveness developed in relation to quite new and unsuitable objects. The withdrawal of tobacco may also promote a craving for alcohol or a narcotic. All these manifestations lead to the conclusion that the woman tobacco addict is nearly always neurotic and psychopathic, whose tobacco troubles are only one aspect of an abnormal constitution.

301

Medical Treatment of Bronchiectasis

GIRBAL (*Presse Méd.*, January 20th, 1934, p. 111) agrees with Sergeant that bronchial dilatation is a chronic affection with acute exacerbations, and that infection is the pathogenic basis of both the dilatation and the accompanying lesions and complications. This pathology should dominate and direct treatment. The infection can be carried by the blood and air passages. The former causes a dissecting peribronchitis, followed by hypergenesis and ending in a dense sclerosis—a true defensive reaction. Girbal does not concur in the opinion that syphilis is a frequent infective agent, but believes that descending

primary and secondary infections through the respiratory passages are primordial; these cause repeated lesions of broncho-alveolitis which terminate in peribronchial and pulmonary sclerosis. Pneumococci predominate as infective factors; streptococci and staphylococci, Pfeiffer's bacilli, anaerobic bacteria, etc., are concomitant organisms. Treatment (non-tuberculous cases are alone considered) should be directed to the infectious process and not to the sclerosis; the latter is desirable in isolating the suppurating bronchi from the enviroining parenchyma. In the chronic stage Girbal gives a series of six injections of pulmonary vaccine (*type amphi*); the initial dose of 0.2 c.cm. is progressively increased to 1 c.cm. for the last two doses. These are injected into the suprascapular region every four days; reaction should be noted, an interval of a day or two being allowed if necessary. The series is repeated every six to twelve months according to the patient's sensibility. Bacterial changes and diminution in the purulence and amount of the expectoration ensue. In acute crises small progressive doses (1/10 c.cm.) are given every four days, associated, except in cases of hepatic insufficiency, with intravenous injections of alcohol. With similar exceptions a series of ten alcoholic injections (1 in 5) is given bi-weekly, commencing with 10 c.cm., in non-febrile fetid forms. To restore pulmonary insufficiency caused by the dilatation, opotherapy is employed; a cachet containing 0.5 cg. of pulmonary extract is given orally before each meal five days monthly. Notes of a typical illustrative case are appended.

Radiology

302 X-Ray Treatment of Plantar Warts

E. T. LEDDY and E. JOHNSON (*Minnesota Med.*, September, 1933, p. 574) report 100 cases of plantar warts treated by x rays. The superficial layers were first pared off so as to render unnecessary high dosages and thick filters. The tissues surrounding the wart were protected by lead foil 1 mm. thick, and an opening punched in this gave access to the x rays. A mechanical rectifier and Coolidge tube were used. Low voltages of 80 and 100 PkV were most frequently employed without a filter, but higher voltages were tried for the rare large infiltrating lesions, an aluminium filter of 2 or 3 mm. being introduced. The focal skin distance was 9, 12, or 16 inches, the time of exposure being varied proportionately. The milliamperage was 5, 6, or 8. The total dose ranged from less than 2.3 to 5 skin erythema doses, this dose representing 375 r measured in air with no back scattering. With the lighter doses the treatment was repeated at intervals of one or two weeks on two or three occasions, but when the heavier doses were used the treatment was not repeated until after two months, and then only once, if indicated. Of the 100 cases cure resulted in seventy-six, a new wart followed cure in six, failure was recorded in eight, symptomatic benefit alone was present in four, and in six instances the result was uncertain. The authors conclude that this treatment must be regarded as effective. It is painless and leaves no scar. In 80 per cent. of cases a single application is adequate, but this must be of not less than 14 nor more than 34 unfiltered skin erythema doses. It should not be repeated until after two months, and if this fails some other treatment must be tried, for some warts seem to be peculiarly resistant to radiation.

303 Collapse of Lung and Atelectatic Bronchiectasis

M. DE BRUIN (*Nederl. Tijdschr. v. Geneesk.*, December 2nd, 1933, p. 5345), who records four illustrative cases in children aged from 2 to 8 years, states that x-ray examination sometimes shows a triangular shadow in the medial and lower part of the lung, which has hitherto been regarded as due to mediastinal pleurisy. A study of the literature, however, and his own observations have convinced the writer that this opinion should be revised. Although mediastinal pleurisy may produce this shadow it is often caused by collapse of the whole or part of the

lower lobe of the lung. De Bruin draws attention to the fact that such collapse may be associated with bronchiectasis in the atelectatic region of the lung. Collapse probably occurs first, bronchiectasis subsequently developing in the atelectatic lobe.

304

Oral Cholecystography

S. KADRNEK and L. SECHERHAYE (*Journ. de Radiol. et d'Electrol.*, January, 1934, p. 21) state that the disadvantages of oral cholecystography can be obviated by employing colloidal forms of the iodine salt in divided doses, according to Sandstroem's method. Nissen reports as excellent results by this procedure as by the intravenous. The present authors record those in fifty-six cases, which confirm this finding. In this method the patient need not fast, but all cystokinetic and flatulent foods are prohibited for the last meal before the examination and throughout its duration. The last meal must not be large, and is taken at least three hours before giving the first dose of the salt. Preliminary purgation is unnecessary and undesirable. According to the patient's weight, 1.5 to 2 grams of iodine-tetragnot (Merck) are divided into three equal doses. Each is dissolved immediately before use in a spoonful of water; this is poured slowly into 200 to 400 c.cm. of alkaline gaseous water, such as Vichy, with constant stirring; fruit juice can be added to disguise the taste. These doses are given at twelve hours' interval, the first in the evening, the second the following morning, and the third that evening. To favour the pyloric passage of the salt the patient is placed in the right lateral decubitus. The radiograph is taken on the third morning after administration of an enema of warm water. Plates are taken with a Potter-Bucky apparatus in the ventral and upright positions and in profile. After the examination a purgative or enema is given to promote evacuation of the salt. Should immediate information be desired, Sandstroem gives a full dose (3 to 4 grams) in the evening and makes the examination the next morning after thirteen hours' interval; if results are negative a further dose of 2 to 3 grams is given. In the latter cases the present authors prefer to give the small divided doses, and immediately after the negative examination a second dose and in the evening a third, each of 1.5 to 2 grams. The harmful effects of the tetraiodide are markedly reduced by this procedure. In only six of the fifty-six cases were any noted; these consisted of an urticaria, vomiting, hepatic pains, and laxative effects.

305

Radiography of the Shoulder

J. N. FERGUSON (*Brit. Journ. Radiol.*, January, 1934, p. 33) suggests an improved technique for the radiological examination of the shoulder, the usual single antero-posterior view being supplemented by one more nearly lateral, with the scapula almost "edge on." The patient is placed on the Potter-Bucky diaphragm in the supine attitude in the first instance, and the sound shoulder is elevated by pads so as to cause rotation of the body through 30 or 40 degrees. The head, supported by a firm cushion, is turned sideways towards the damaged side, bringing the scapula forwards in relation to the body, and more nearly parallel with the film. (The curved type of Potter-Bucky diaphragm is specially suitable to this end.) The shoulder need not be kept in the middle, but may slide to one side into a position of stability. The oblique ray in this situation will be perpendicular to the scapula and pass along the plane of the glenoid margin, the film being suitably decentered. The patient is now helped to turn himself over, and to lie nearly prone with the sound shoulder elevated and the damaged one in contact with the diaphragm top, sliding a little to one side for stability. The scapula is now slightly inclined from the vertical, and in the path of the oblique ray. The author remarks that these two positions sound rather uncomfortable, but that most patients can manage them fairly well, slight degrees of maladjustment not affecting the diagnostic value of the resulting picture. Variations of the technique are possible for special requirements. In attaining the position desired the body weight aids the movement of the shoulder, a process well exemplified in

cases of damage to the acromio-clavicular joint. Fergusson adds that undoubtedly many cases of subluxation are missed when the examination is made with the body in the usual supine position.

Obstetrics and Gynaecology

306

Endometriosis

G. COTTE and A. TRILLAT (*La Gynéc.*, December, 1933, p. 641) point out that adenomyoma of the uterine wall is frequently mistaken for simple hyperplasia. There are two types of endometriosis of the fundus: (1) circumscribed, distinguishable from simple fibroma (only at operation) by the fact that there is no capsule, so that excision, not merely enucleation, is required; it contains "chocolate" cysts. (2) Diffuse—(a) localized and nodular, or (b) invading the whole organ and enlarging it up to the size of full-time pregnancy. This calls for hysterectomy. Its nature is evident from the microscopical finding of cystic spaces lined with ciliated cuboidal epithelium. The theory of origin preferred by this author is that of hyperplasia and invasion of the musculature by the endothelium, due to some chronic inflammatory influence. Symptoms are not typical, but may be suggestive. They are: (1) dysmenorrhoea, beginning with puberty or developing gradually—the pains are suprapubic, pelvic, and often expulsive, they begin before and continue throughout the period of the flow; and (2) metrorrhagia, not of distinctive onset, but parallel with the dysmenorrhoea and later becoming prolonged menorrhagia. The comparative regularity of outline in an adenomyomatous as compared with a fibroid corpus is a point in diagnosis. A difference in volume in the pre- and post-menstrual stages is said to be appreciable. In treatment, medical methods are ineffective. Neither menopause nor irradiation checks the growth. Hysterectomy is the rule, but there are exceptions. If the adnexa are healthy, excision of the tumour alone is sometimes possible. Supravaginal hysterectomy is allowable so long as the growth has not passed beyond the uterine walls. If it has, panhysterectomy is required.

307 Treatment of Occipito-posterior Presentation

Analysing 976 cases of occipito-posterior presentations, G. MELHADO (*Amer. Journ. Obstet. and Gynecol.*, November, 1933, p. 696) argues that subnormal formation of the pelvis does not account for all cases. Anterior position of the placenta, uneven development of the two Müllerian tracts, relaxed pelvic floor, inability of the trunk and shoulders to move forward, as well as inadequate flexion of the head, are all causes of persistent occipito-posterior presentations. The shoulders are commonly fixed by an internal contraction ring. To eliminate this and improve flexion the writer advises interference directly, following full dilatation, the head ceases to advance. His method is manual dilatation of the vagina and careful palpation of the head to make sure of the diagnosis, followed by dislodging the head upwards into the pelvic brim. If a contraction ring is forming it is ironed out. The anterior shoulder is found and pushed well forward. The head is then placed with the sagittal suture in the transverse diameter and the posterior ear lying in the operator's palm. Along this is passed the lower blade of the forceps, shorter curve facing the occiput, and fitted over the posterior ear. The upper blade is passed over the anterior ear and the pair locked. By gentle rotation the occiput is brought forward and the head into the oblique diameter. These manoeuvres are safe, because the head is free above the brim. When it is drawn into the brim again it descends with surprising ease, and is delivered. Criticism of the method is met by stating that neither prolapse of the hand or cord occurred in the series, and that operation above the brim, on a head that has previously descended into it, is quite a different matter to the application of high forceps to a head that had never entered it.

698 D

Pathology

308 Diagnosis of Mediterranean Fever

J. C. CARANZA (*La Med. Ibera*, January 13th, 1934, p. 33) who records sixteen illustrative cases in patients aged from 15 to 76, states that Burnet's intradermo-reaction is not absolutely specific for Mediterranean fever, as it may be positive in other conditions. The reaction is, however, always present and well marked in Mediterranean fever. The serum-agglutination test, on the other hand, is not constant. Lastly, leucopenia, lymphocytosis, and monocytosis are always present, so that the association of a positive intradermal reaction with the changes in the leucocytes mentioned is of considerable diagnostic value.

309 Active Immunity in Experimental Syphilis

W. KOELE and R. PRIGGE (*Med. Klinik*, January 12th 1934, p. 46) report an extensive series of experiments to ascertain whether it is possible to stimulate the development of active immunity against syphilis in rabbits. The animals were infected with either the Truffi or the Nichol strain of *Treponema pallidum*. Three to eight months later they were given three doses of neosalvarsan. After a further six months they were superinfected, either with the homologous or the heterologous strain. Finally, six to eight months later, the lymph glands and testicles were excised and inoculated into normal rabbits to determine whether they contained living spirochaetes. Of twenty-seven animals superinfected with the homologous strain one developed a chancre, five showed secondary lesions while the remainder showed no clinical evidence of disease whatever. Yet in eighteen out of these twenty-one animals virulent spirochaetes were demonstrated by inoculation into fresh rabbits. Of twenty-six animals superinfected with the heterologous strain, eleven developed chancre and three secondary lesions. Of the remaining twelve rabbits, which showed no evidence of disease, eight were found to be harbouring living spirochaetes. In both series control syphilitic rabbits that had been treated with neosalvarsan but not superinfected were found to be free from infection. In further experiments on eighty-nine rabbits the animals were left for nearly a year after the first infection, to give them time to develop immunity. They were then treated with neosalvarsan. About a year later some of their glands were excised and tested for virulence. They were then superinfected with the homologous strain, and about nine months later the remaining glands were examined for infectivity to normal rabbits. In forty-seven animals given large doses of neosalvarsan the glands on the first examination proved uniformly negative. None of these animals developed a chancre on superinfection, yet in seven out of twenty tested after superinfection virulent spirochaetes were demonstrated. From these experiments the authors conclude that though a chancre immunity may develop, an immunity of sufficient intensity to prevent reinvasion with fresh spirochaetes does not occur in experimental syphilis. The practical conclusion they draw is that syphilis should be treated as early as possible by chemotherapeutic agents.

310 Pathology of Pernicious Anaemia

J. BENGE (*Orvosi Hetilap*, January 6th, 1934, p. 1), discussing the part played by the stomach in the pathology of pernicious anaemia, defines the latter as a deficiency disease in the sense that some substance stimulating and regulating normal blood production is lacking. Believing that this substance has its origin in the gastric wall, and in support of this thesis, the author carried out a series of experiments, using liver extracts taken from gastrectomized hogs. Liver extracts taken from such animals proved ineffective in cases of pernicious anaemia, which promptly responded to treatment with normal liver extract. The author considers his results as conclusive proof of the gastric origin of the active principle in liver extracts.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

311 Lacquer-work Poisoning

M. ELLERMANN and J. JAKOBSEN (*Hospitalstidende*, December 14th, 1933, p. 1213) have inspected fifteen motor-car factories and workshops where "duco-lacquer" was sprayed on to surfaces through a compressed-air tube. Though most of the dissolved lacquer was deposited, as intended, on some surface, a considerable proportion of the fluid was suspended in droplets in the space about the worker, who thus came to be surrounded, when adequate ventilation was not provided, by a fog of colouring matter and of the substances used to dissolve it. The solvents of lacquer are almost numberless, and the composition of various preparations is apt to be kept a trade secret. Seventy-three workers in lacquer were asked a set of questions by the authors, who found that a fairly well defined clinical picture of acute or chronic poisoning was quite common. As many as fifty-five suffered from a sore throat, fifty from irritation of the nose, and forty-two from smarting of the eyes. There were forty-seven confessing to mental irritability, fifty-four to drowsiness, sixty-three to lassitude, forty-two to giddiness, thirty-three to a sense of intoxication, nineteen to anorexia, thirteen to nausea, eleven to vomiting, and twenty-one to salivation. Many admitted that drowsiness and lassitude had become less troublesome after they had been employed for some time in this occupation, and several stated that they did not feel well until they had sprayed lacquer for some time in the morning. It was a common experience for all the above symptoms to disappear after the employees had been away from work only for ten to fourteen days. None of the masks provided by the workshops were in use, the objection to them being that, if made to fit properly, they were uncomfortable. It is stated that, in addition to forced ventilation in workshops, the elimination of the most toxic solvents of duco-lacquer would do much to reduce its poisonous effects.

312 Early Symptoms of Blood Diseases

C. HEGLER (*Med. Welt*, January 6th, 1934, p. 12) stresses the importance of a precise anamnesis for the early recognition of blood diseases. A hereditary disposition may thus be discovered and facilitate diagnosis at an early stage of such diseases as haemophilia, haemolytic icterus, polycythaemia, and pernicious anaemia. For the last-named disease he accepts a proportion of 6 to 8 per cent. hereditary cases as average. A further indication of possible blood affection is given by certain occupational data. Tropical diseases, syphilis, undernourishment, and previous x-ray treatment, if established in the anamnesis, are also valuable diagnostic factors. Subjective symptoms mostly appear only at comparatively late stages. Enumerating the latter, Hegler mentions that the condition of the skin gives an early warning in lymphogranulomatosis, chronic myeloid leukaemia, and Hodgkin's disease; the swelling of lymph nodes forms one of the earliest subjective and objective symptoms of chronic lymphoid leukaemia; violent nose-bleeding should, he states, always be regarded as an indication for measuring blood pressure and making a blood count, as it is an early symptom of many blood affections; glossitis often occurs early in pernicious anaemia and Biermer's disease, while bleeding of the gums points to polycythaemia and acute myeloid leukaemia. Loss of appetite, dyspepsia, and hiccups often appear as early signs of myeloid leukaemia, while vomiting and abdominal pains may be the precursors of polycythaemia. Accentuation, or premature cessation, of the sexual functions may usher in acute myeloid leukaemia or pernicious anaemia; impaired hearing and Ménière's symptom occur early in leukaemia, and violent bone pains in Hodgkin's disease. The author concludes that although no practitioner can be expected to be familiar with all details of modern

haematology and to interpret correctly every blood picture, it is really important for every practitioner to know when to suspect the presence or imminence of a blood disease, and when to consult the haematologist.

313 Tonsillectomy for Focal Infections

R. GORDING (*Tidsskr. f. d. Norske Lægefor.*, January 1st, 1934, p. 1) has taken a random sample of seventy-nine records of tonsillectomy performed in private practice a year or more earlier. The operation was performed in twenty-nine cases only for local symptoms, and in nine cases for polyarthritis. There remained forty-one cases (twenty-eight women and thirteen men) in which the operation was indicated on account of general symptoms interpreted as those of a focal infection. These general symptoms included lassitude, irritability, and various aches and pains. Some of the patients were apt to be febrile, but articular symptoms were subordinate, and were limited to a transient sense of stiffness. In most of these forty-one cases the symptoms had lasted a year or two. The average age was about 30 years. Results were as follows: In four cases little or no benefit was derived from the tonsillectomy; in the remaining thirty-seven cases it was followed by improvement, the symptoms in most of the cases diminishing after three or four weeks; in some cases the tonsillectomy was promptly followed by the cessation of pain; in eight of the forty-one cases blood counts were made and showed, in seven cases, the characteristic picture of a high leucocyte count with left displacement. Two types of tonsil were commonly observed—a small tonsil embedded in the surrounding tissues, partially or completely hidden by the anterior palatine arch, and a large boggy tonsil, its anterior and upper portion being particularly hypertrophied. Though he has achieved such a high proportion of successes, the author dwells on the difficulties of incriminating, before operation, the tonsils in connexion with various general symptoms, which may be due to a great number of other causes. Neither a clinical nor a bacteriological examination of the tonsils beforehand can be relied on; even when haemolytic streptococci are obtained in pure culture, their host may appear to be blissfully fit.

314 Dietary Adequacy in Diabetes Mellitus

J. A. NIXON (*Practitioner*, January, 1934, p. 25) deprecates the continuance of emphasis on carbohydrate restriction in diabetes mellitus: this often results in the diet being inadequate. He maintains that with the correct employment of insulin a full and satisfying dietary can often be adopted. Having decided on an adequate maintenance diet in terms of protein and calories, the latter must be apportioned between the protein, fat, and carbohydrates. Details are given of the way in which the necessary calculations can be made. As regards the carbohydrates, white bread is particularly valuable, since it contains almost constantly 50 per cent. of these, or 15 grams in each ounce. Nixon describes white bread as the most palatable and economical form of carbohydrate food, the wastage in the faeces being minimal. Certain puddings and sweets can also be allowed, potatoes need no longer be excluded, and the "satiety value" of the meal can thus be materially raised with beneficial results. Diabetic diets should be as nearly as possible identical with those appropriate to healthy persons of like age and occupation. On the whole, diabetics are better without alcohol; it is apt to upset calculations as to carbohydrate utilization and glycogen storage in various ways. The author adds that there is no merit in prescribing large quantities of green vegetables and fat, and that bread substitutes are unnecessary. All that is required is to measure the quantities of the food carefully in relation to the increased capacity rendered possible by insulin, permitting the same proportions of carbohydrate as are regarded as physiologically reasonable for the healthy.

Surgery

315 Operative Treatment of Undescended Testicle

T. WALHEIM (*Hygiea*, January 31st, 1934, p. 49) has investigated the post-operative histories of recruits treated in a military hospital in Stockholm for undescended testicle. In the period 1914-25 eighty-three such cases were observed, the average age being 20 to 21. In eight cases no operation was undertaken, and in eight other cases the patients could not be traced. In two cases the testicle could not be found, either in the inguinal canal or in the abdominal cavity, and in one case the testicle was removed because of torsion of the cord with necrosis of the testicle. Among the remaining sixty-four cases there were thirteen in which the testicles were found in positions not normally occupied either in foetal or in post-foetal life. In 45 per cent. of the operated cases there were also clinical signs of an inguinal hernia. After describing the technique of the operation employed (mobilization of the testicle in such a way that it remains in its new position in the scrotum without any fixation there) the author summarizes the findings of an inquiry by correspondence. Only fifteen of the ex-patients presented themselves for re-examination; the others answered the questionnaire sent them. The cases were classified according to the positions originally occupied by the testicles; there was no great difference in the results of the operation in these various positions. In as many as seventeen cases the testicle had become larger after the operation, attaining the size of its fellow in two cases. In only one case had the operation been followed by atrophy of the testicle. As four of the sixty-four cases were bilateral, there were altogether sixty-eight operations, fifty-four of which were performed by one and the same surgeon. In his material the results were excellent after thirty-eight operations, good after fourteen, and less good after two. The results of fourteen operations by other surgeons were excellent in nine cases, good in two, and less good in three. These results are much more encouraging than those published in 1912 by Hofstätter, who found in the twenty-seven different operations devised for undescended testicle intrinsic evidence of their faultiness.

316 Portal Thrombosis after Gall-stone Operations

According to F. ROST (*Zentralbl. f. Chir.*, January 20th, 1934, p. 159) thrombosis in the portal vein is a common cause of death, apparently due to heart failure, after gall-stone operations: it is often first diagnosed at necropsy. The two clinical signs which Rost has come to recognize as showing portal thrombosis are: (1) sudden and pronounced weakening of the pulse, in the absence of dyspnoea, cyanosis, and severe pain, with failure of response to stimulants or infusions; and (2) a psychic alteration, with dreaminess and retardation. The second sign, which is akin to the psychosis seen in large hepatic sarcomata, is probably due to destruction of the liver parenchyma. The commonly described signs of portal thrombosis—swollen belly, blood in the vomit and motions, splenic enlargement and ascites, with acute pain simulating pancreatitis or ruptured viscus in acute cases, and in the more chronic ones terminal bowel gangrene and peritonitis—have not been met in Rost's experience.

317

Coxa Vara

H. CAMITZ (*Acta Chir. Scand.*, January 15th, 1934, p. 521) doubts if the mechanism of the various forms of coxa vara will ever be completely elucidated only by histological investigations, but, having recently conducted such investigations in three alleged cases of congenital coxa vara, his scepticism has grown as to the very existence of such a condition. It was defined in 1905 by Hoffa on the basis of radiographic, clinical, and histological examinations of two children, aged 3 and 4 years respectively. He concluded that the bony system must have undergone some morbid changes during intrauterine life which led to the outbreak of what he called congenital

coxa vara some years later. In support of this hypothesis it has been pointed out that this disease has sometimes been found in more than one member of the same family or has occurred bilaterally. It has, however, been noted that this disease has never been found at birth nor before the child has begun to walk. In two of the author's cases, aged respectively 14 and 13 years, a partial resection of the neck of the bone provided him with material for a histological examination. The third case was that of a 6-year-old boy who was admitted to hospital for congenital coxa vara, and who died of pneumonia before any operation could be attempted. The author has come to the conclusion that there is no reliable evidence to support the view that coxa vara can be of congenital origin, and for cases which have hitherto been labelled congenital he would like to substitute the term "infantile coxa vara." His researches suggest that ordinary coxa vara, infantile coxa vara, and osteochondritis deformans juvenilis (coxa plana) are but three variations of one and the same developmental ailment, which occurs while the child is growing and is due to defective ossification.

Therapeutics

318 Vaccinal Serum in Post-vaccinal Encephalitis

E. SARDEMANN (*Ugeskrift for Laeger*, January 4th, 1934, p. 10) reviews the results hitherto achieved by the administration of the serum of a recently vaccinated person to cases of encephalitis following vaccination. The literature includes fifteen such cases, only two of which ended fatally. The author adds to this material a new case—that of a girl, aged 6 years, admitted to hospital with the diagnosis of acute anterior poliomyelitis. She had been vaccinated fourteen days earlier. Though the cerebro-spinal fluid showed various morbid changes, no tubercle bacilli could be found in it by staining, culture, or guinea-pig inoculation. Post-vaccinal meningitis having been diagnosed, 10 c.cm. of serum taken from a recently vaccinated adult were given by intramuscular injection, and a similar dose was given next day. Recovery was protracted and not complete on the patient's discharge. From his study of the literature the author comes to the conclusion that the persons most subject to post-vaccinal encephalitis are children about the age of 5 or 6. The Dutch statistics covering the three-year period 1924-6 show that 79 per cent. (ninety-eight out of 123 cases) occurred between the ages of 3 and 5. It has therefore been suggested that children should be vaccinated as early as possible, long before this dangerous age is reached.

319

Treatment of Bilharziasis

F. G. CAWSTON (*Journ. Trop. Med. and Hyg.*, January 15th, 1934, p. 22) indicates lines on which the value of treatment of this disease can be assessed; he urges the importance of recording clinical results to this end. There is, he states, need of a shorter and more effective course of treatment than that of tartar emetic, and "neostam" might prove to be a more suitable drug. Cawston points out that a juvenile with a heavy infection tolerates and requires a larger dose of tartar emetic than does a slightly infected adult; dosage should therefore be calculated on the number of parasites to be destroyed rather than on the age and weight. Early infections are not more easy to cure than old-standing ones. Colloidal preparations of antimony are of limited value in the treatment of schistosomiasis, but the addition of sulphur to overcome the toxic effects of this metal is commended. The mere absence of ova in the urine is not conclusive evidence of the cure of the disease. The author believes that the complete destruction of the parasites can best be effected by two courses of treatment with "fouadin," separated by an interval of a few weeks. This is better than a more intensive course with the risk of toxic effects from excessive doses or daily injections. The death of the schistosomes depends more on the gradual changes in the constitution of the blood while the patient is under

treatment—as shown by blood tests and the acquired tolerance to the drug which develops provided that the necessary doses are not exceeded—than on the direct action of the antimony. Rapid cures are not desirable. Toxic effects from antimony therapy may be avoided by using skilfully regulated doses of the potassium salt in fresh solution.

320 Massive Dosage of Liver Extract in Pernicious Anaemia

J. LENDVAI (*Orvosi Hetilap*, 1934, i, 2) has used single doses of 20 c.cm. "campolon" liver extract intramuscularly (instead of the usual daily injections of 2 c.cm.) with satisfactory results. Such a large dose of liver extract led to a crisis in the reticulo-endothelial system, followed by definite improvement in the blood picture and the patient's general condition. In cases which had not had previous liver treatment one of these 20 c.cm. doses sufficed; otherwise two doses were necessary to effect complete recovery. Where the disease was complicated by paraplegia, paraesthesia, anaesthesia, etc., three or four doses were required. The treatment carried out on twenty-five patients is claimed to have been successful in every case. The remission obtained lasted for from three to twelve months, but in cases with complications it was shorter. The author advises that this treatment should be carried out every two or three months in order to prevent relapses.

321 Sodium Dihydrophosphate in Diabetes

A. LACROZE (*Semana Médica*, January 25th, 1934, p. 291) urges that the neuro-muscular, neuro-circulatory, and neuro-psychical forms of depression so frequent in the diabetic—especially the first and third—yield rapidly and completely to treatment with this salt, of which he gives 2 grams once or twice daily after the chief meals. He has noted an immediate improvement in capacity for muscular exertion, and a sensation of euphoria and calm from eight to ten days after the initiation of the treatment. The capacity to concentrate, to remember, and to engage in prolonged conversation were all substantially increased. Some authors have spoken of the congestive action of phosphoric acid on the liver, but Lacroze saw no sign of this. He mentions two interesting facts—first, that administration of this salt neither provoked nor increased the elimination of ketones by the urine, and secondly, that neither pyrosis nor any symptom of hyperchlorhydria was present.

Neurology and Psychology

322 Acute Neuromyelitis

Many cases of this apparently new neurotropic infection—a neuromyelitis or a myelitis clinically resembling the ascending paralysis of Landry—have been noted during recent years. A. AUSTREGESILLO (*Rev. Sud-Amér. de Méd. et de Chir.*, October, 1933, p. 713), reviewing the affections relatively attacking the nervous system (encephalitis lethargica, etc.), believes that a neurophilic virus is the causal agent of diverse diseases, particularly during the course of influenza. Notes are given of ten cases, presenting both neuromyelitic forms (of polyneuritic onset with myelitic complication or termination) and bulbar forms. The prognosis of this malady is always grave. The onset may be severe or slight; frequently only malaise, lassitude, pains, or anorexia are noted. Polyneuritic symptoms (numbness, pains, weakness, usually in the lower, more rarely in all the limbs) appear in from a few days to four months. These may attenuate or totally disappear; they are of a motor type with changes of the subjective sensibility. Later, medullary or bulbar manifestations, resembling acute myelitis, supervene. Sphincteric troubles are constantly present. Dysphonia, dysphagia, and dyspnoea and tachycardiac crises are the most frequent bulbar symptoms. Muscular atrophies and myalgias are common.

Usually the deep reflexes are abolished; the superficial reflexes may also be absent or only present in slight degree. Babinski's sign may be noted, especially in chronic cases, and vasomotor symptoms may also occur. Only during the course of the disease when medullary symptoms persist is a certain degree of spasm noted. The results from lumbar puncture are not uniform. Often the infectious phase, which may assume an influenzal, typhoid, or slight general infectious form, precedes the neurological syndrome. In some cases recurrences aggravate the condition, which either becomes chronic or ends fatally. Two cases are cited of the fulminating type, bulbar symptoms occurring early with a rapidly fatal termination.

323 The Barbiturates in Neuropsychiatry

C. P. WAGNER (*Journ. Amer. Med. Assoc.*, December 2nd, 1933, p. 1787) points out that, while the barbituric acid derivatives are usually employed for their sedative action, their various side actions have some therapeutic value in neurosis. Thus, the longer-acting drugs may be used successfully in the treatment of a psychosis with cerebral arteriosclerosis. Given in small doses three or four times a day with potassium iodide they decrease agitation and motor restlessness and reduce the hypertension. The shorter-acting drugs must be used with extreme caution in such cases because the fall in blood pressure which usually accompanies their administration results in a feeling of dizziness, and may lead to collapse. It must be remembered also that the longer-acting drugs are excreted more slowly, and the cumulative effect of them when administered for a long time may lead to delirium. When difficulty occurs in falling asleep, one of the shorter-acting barbiturates, such as sodium amytal, is often effective, but if the sleep is broken by periods of wakefulness during the night a longer-acting drug is advisable. Too early waking may be treated by a short-acting drug, sodium amytal or pentobarbital sodium (nembutal) being given on waking. The drug is eliminated in a few hours, and the patient, having gone to sleep again quickly, eventually wakes free from depression. Deep narcosis for several days is sometimes advisable, and the barbiturates of the longer-acting kind are appropriate in these cases, since they promote physiological and psychological rest. Better co-operation in treatment often follows the administration of small doses of sodium amytal, which can be continued for three or four weeks. This may interrupt the neurosis and hasten recovery. Wagner adds that toxic symptoms most commonly arise from the too long exhibition of moderate doses.

324 Recurrent Narcolepsy following Lethargic Encephalitis

S. KOSTER (*Nederl. Tijdschr. v. Geneesk.*, February 24th, 1934, p. 883) records the case of a young man, aged 19, who suffered from recurrent hypersomnia following lethargic encephalitis. The attacks occurred at first every month, and afterwards the intervals varied in length from three to fourteen months. The encephalitis had occurred five years previously. The case was of special interest owing to the long duration of the hypersomnia, which always lasted for a week, the absence of any other symptom of an organic lesion except a facial tic, and the fact that large quantities of food were consumed during the periods of hypersomnia.

325 Neurinoma of the Cervical Sympathetic

According to M. AMANO (*Zentralbl. f. Chir.*, January 13th, 1934, p. 78) the cervical sympathetic, although frequently affected in von Recklinghausen's generalized neurofibromatosis, is rarely (as in two cases now described) the sole site of a neurinoma. The patients were males, aged about 40; the tumours had existed six and ten years respectively; one of them had ptosis and myosis, which persisted after excision of the tumour. This was a neurinoma—of fibrillary type in one case, in the other partly fibrillary, partly reticular, with blood-cystic degeneration which predominated in the clinical signs.

Obstetrics and Gynaecology

Pathology

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External Version

L. M. RANDALL (*Proc. Staff Meetings Mayo Clinic*, January 3rd, 1934, p. 5) urges the more frequent practice of the Wiegand or external version procedure in cases of transverse or breech presentations in primiparae, and especially when the latter condition is associated with pelvic contraction. The best time for it is stated to be the thirty-sixth week of pregnancy, but it is better to perform the manipulation too early, and to have to repeat it, than to wait too long. The pressure should be gently applied, and no attempt should be made to turn the infant if the breech cannot be dislodged from the lower segment of the uterus or the inlet of the pelvis. No manipulation should be made during a contraction of the uterus. If the organ is very irritable, it is better to give a sedative by mouth or hypodermically, or even to anaesthetize the patient, than to persist in manipulation in the presence of a tonic uterus. As a rule, version is started by elevating the breech and pushing it towards the side of the uterus which is occupied by the foetal back. Frequent observation of the position and presentation of the foetus in the last two months of pregnancy is desirable in order that unfavourable presentations may be corrected if possible. A radiogram is sometimes advisable, particularly when version cannot be performed or when there is a spontaneous return to a breech position after external version, since some anomaly of the infant may thus be detected. When the change in presentation has been achieved the patient is allowed to be up, but is examined after a week. The author does not advocate the use of binders. He has not encountered such complications as placental detachment, twisting of the cord, and premature labour.

327

Pregnancy and Heart Disease

CARR and HAMILTON (*Amer. Journ. Obstet. and Gynecol.*, December, 1933, p. 824) report observations on a continuous series of 500 definite cardiac cases during twelve years: 94 per cent. were rheumatic and 77 per cent. of these had mitral stenosis. Hypertension was only slightly commoner than in patients with sound hearts. Auricular fibrillation, probably owing to the low age limit for pregnancy, was of small incidence—fourteen cases only—but of high fatality (43 per cent.). This is noted as remarkable when compared with the number (thirty-four) treated for toxæmia. Paroxysmal tachycardia is not dangerous, except when serious heart damage is also present. Post partum only four cases had symptoms attributable to their heart disease originating after confinement, so that the problems occur before cardiac patients come to delivery. Of the fatal cases twenty-seven were of rheumatic origin and twenty were congestive; two had congenital morbus cordis, two hypertensive hearts, and one bacterial endocarditis. With reference to the last, the prognosis for the mother is hopeless, but she may have a living child, so that therapeutic abortion is not called for. In congenital morbus cordis—2.4 per cent. of the 500—prognosis proved best when there was no communication between right and left sides of the heart. The maternal death rate was reduced from about 12 per cent. to nearly 3 per cent. Foetal mortality was 18 per cent., 500 cardiac mothers producing 416 viable babies. The authors' deductions are as follows. The clearly bad risks are: (1) cases of present or precedent congestive heart failure; (2) damaged hearts in the presence of other complications. Active or recent rheumatism is a temporary contradiction of pregnancy. Age above 35 doubles the risk. Cardiac patients must be rigidly controlled by a regime prescribed individually. There must be no over-exertion or fatigue, they must be confined to bed at the slightest sign of a cold, and even trifling symptoms must be reported. The earliest reliable clinical sign of failure is rales at the lung bases. Rapid delivery must be secured. Ether or $N_2O + O_2$ without previous medication is preferred.

740 D

328 The Immunology of Staphylococcus Toxin

W. A. JAMIESON and H. M. POWELL (*Amer. Journ. Hyg.*, January, 1934, p. 246) have studied the production of staphylococcal toxin and antitoxin, and their value in the treatment of pyogenic infections in man. They find that only a few strains produce a potent toxin, and that the best medium for its formation is a semi-solid agar. The best toxin was necrotic to the rabbit's skin in a dose of 0.001 c.cm. Rabbits were immunized with increasing doses, and sera were obtained that neutralized up to 5,000 skin necrotizing doses per c.cm. Higher values still, up to 20,000, were observed in the sera of experimentally immunized horses. Staphylococcal toxin, diluted from 10 to 50 per cent. with saline and preserved with 1 in 10,000 merthiolate, was used in place of the usual vaccines for the treatment of patients with furunculosis, acne, prostatitis, and phlebitis. No evil effects were noticed, and in some cases the response appeared to be favourable. Attempts at the passive immunization with horse antiserum of patients suffering from severe staphylococcal infections had little or no success, though the results appeared slightly more promising when the predominant feature of the case was intoxication.

329 Amyl Nitrite and Sodium Hyposulphite in Potassium Cyanide Poisoning

Experimenting on rabbits, A. Buzzo and R. E. CARRATALÁ (*Semana Médica*, December 7th, 1933, p. 1772) record success in 80 per cent. of all cases treated with inhalations of amyl nitrite associated with intravenous injections of sodium hyposulphite, even after the animals had taken very many times more than a lethal dose of potassium cyanide. They declare that the hyposulphite is almost non-toxic to the rabbit and is manifestly superior to sodium nitrite, which is poisonous, even though when given in fractional doses it has been sometimes successfully employed in cyanide poisoning. Rabbits subjected to inhalation of amyl nitrite did not succumb until it had been kept up for fifteen minutes continuously. The experiments performed were as follows. With a stomach tube the cyanide was introduced into the stomach of the rabbit, after which 4 or 5 grams of hyposulphite were injected into a vein. Simultaneously inhalations of Martindale's amyl nitrite were given for fifteen to forty seconds, every three or five minutes at the commencement, but with lengthened intervals if the pulse and respirations approximated the normal rates, so that finally the drug was being administered only every two or, in some cases, every five hours. Success was achieved in all cases in which the poison had been administered in fourteen times the lethal dose, and in eight cases out of ten in which the animals had received doses sixteen times greater than this.

330

Experimental Rickets

M. DE BRUIN (*Nederl. Tijdschr. v. Geneesk.*, January 27th, 1934, p. 397) found that rats fed on a diet consisting mainly of oatmeal contracted rickets in a much more marked degree than rats fed on rice. In both diets the absolute values of calcium and phosphorus were the same, the proportion of calcium to phosphorus being 4 to 1. No difference was observed between the intensity of rickets on a diet in which the rice or the oatmeal had previously been extracted by ether and the untreated cereals. Addition of ethereal rice extract or oatmeal extract to the original diets did not perceptibly affect the intensity of rickets. On addition of barley extract, however, to the oatmeal diet the development of rickets was markedly inhibited, as had already been shown by De Ruyter, De Wildt, and Brouwer. It is added that barley probably contains a considerable amount of vitamin D.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

331 Tuberculosis in Asylums

A. J. NISSEN (*Tidsskr. f. d. Norske Lægefor.*, January 15th, 1934, p. 78) has investigated the incidence of fatal tuberculosis in the asylum in which he works, and also in all the Norwegian asylums between 1872 and 1929. Of the approximately 6,600 mental patients residing in asylums in any year at the present time, some 110 die of tuberculosis annually. About 30 per cent. of all the asylum deaths are due to tuberculosis, and about 2.6 per cent. of all the deaths from tuberculosis in Norway occur in asylums. Considering that only 2.4 per 1,000 of the population are accommodated in asylums, this ratio is most impressive, and the author calculates that the tuberculosis death rate is approximately ten times greater inside than outside asylums. In the period under review there were 57,677 admissions to asylums (several patients were re-admitted once or oftener). In the same period there were 2,758 deaths from tuberculosis within the asylums. A chart showing the incidence of these deaths in twelve different periods indicated little change from one period to another, but the curve showed a tendency to rise steadily, reaching its maximum height in the period 1917-21. It should be noted in this connexion that during the period under review the average number of days spent by each patient in an asylum has risen from 593 to 1,209. The average age of the patients has also risen, and there has been an increase in the proportion of cases of dementia præcox in relation to the other diseases. This is a disease with a tuberculosis mortality of about 50 per cent. The high tuberculosis mortality in asylums does not concern them alone, for every year some 1,300 to 1,400 patients are discharged and may become sources of infection to their neighbours. The author recommends systematic Pirquet examinations of all new patients on admission, the test to be repeated later if negative.

332 Subacute Poisoning from Luminal and Bromine Derivatives

J. ZAITERT (*Wien. med. Woch.*, No. 1, 1934, p. 14) draws attention to the risk, illustrated by three cases, of diagnosing tumour of the brain or some other lesion when all the signs and symptoms are due to subacute poisoning with luminal and bromine derivatives given over a considerable period, but left out of account when a practitioner presents the case to a consultant. In one of these cases, a boy of 5, the consultant was presented with the diagnosis of tumour of the brain from the outset. The practitioner stated that the symptoms had begun with attacks which he had interpreted as epileptic. Subsequently, headache, vomiting, lassitude, and definite ataxia had set in. Meanwhile the epileptic fits had ceased. The child looked very ill and had a staggering gait. His speech was slow and monotonous. In addition to a high degree of drowsiness there was slight ptosis, with tremor of the tongue and arms. Even with his eyes open the child presented a high degree of ataxia, but his intelligence appeared to be normal and there was no disturbance of vision. Later, it transpired that the child had been given 0.1 gram of luminal daily for several months, and that, in order to supplement its supposedly inadequate effects, a bromine derivative had also been given daily for some weeks. The child recovered promptly when these sedatives were discontinued, and the recurrence of the epileptic fits was met by moderate doses of luminal. Though these cases are cited as a warning against the prolonged exhibition of sedatives, the author does not accept the common view that the prolonged action of bromine derivatives weakens the patient's intelligence. This view is, he states, probably due to a misinterpretation of the observation that though bromine often reduces the number of epileptic fits, it does not diminish the characteristic mental features of the epileptic.

333 Nephritis following Infectious Diseases

V. BIE (*Ugeskrift for Læger*, January 4th, 1934, p. 1), who is in charge of a Danish fever hospital, has come to the conclusion that the overwhelming majority of cases of acute haemorrhagic nephritis are due to acute infectious diseases. Scarlatina is the disease most frequently complicated by nephritis. Among 1,200 cases of scarlatina treated in hospital in 1915, there were sixty complicated by nephritis, the date of onset of which was noted in all but two cases. Though the textbooks are inclined to teach that the onset of such nephritis occurs nearly always during the third or fourth week of the scarlatina, the author found that among his fifty-eight cases there were only thirty-one in which the nephritis appeared during this interval. Nine cases developed before it and eighteen after it. The extreme limits were the first and sixty-fourth days of the scarlatina. Apart from these cases of acute nephritis developing in connexion with epidemic diseases such as scarlatina, there were fifty-four cases treated in hospital between 1929 and 1932 in which the aetiology was as follows: unknown, fifteen cases; angina faucium, sixteen; erysipelas, nine; pneumonia, eight; septicaemia, four; rheumatic fever, one; and pulmonary tuberculosis, one. During the same period the number of cases of angina faucium treated was 2,600. The corresponding numbers for erysipelas and pneumonia were 550 and 1,100 respectively. These figures show that haemorrhagic nephritis is a comparatively rare sequel to the above-mentioned diseases. While most textbooks put the onset of haemorrhagic nephritis at the third or fourth week after the development of an angina faucium, the author has found that both in angina and in erysipelas this complication appears at the outset of the primary disease, at the latest within a week of its onset.

Surgery

334 Primary Carcinoma of Ureter

W. W. SCOTT (*Surg., Gynecol. and Obstet.*, February, 1934, p. 215), who records two illustrative cases in men aged 55 and 36 respectively, states that primary carcinoma of the ureter is a relatively rare disease, there being only sixty-one acceptable cases in the literature. The most common type of tumour is papillary carcinoma. The disease occurs with equal frequency in the fifth, sixth, and seventh decades of life. The right ureter seems to be attacked slightly more frequently than the left, the lower third being involved in 5.7 per cent. of the cases. The post-operative mortality in forty-four cases was 27 per cent., but of the cases which were followed up only two were reported within five years after operation.

335 Kienböck's Disease of the Semilunar Bone

A. RINGSTED (*Hospitaltidende*, January 16th, 1934, p. 57) discusses the treatment of Kienböck's disease of the wrist in the light of fourteen cases on which he has operated. When this disease was first defined in 1910 by Kienböck, he regarded it as a post-traumatic osteomalacia of the semilunar bone. Many surgeons, however, consider this condition as nothing more than a compression fracture, and it must be admitted that, a day or two after an accident, such fractures have been found at an operation, or on post-mortem or x-ray examination. On the other hand, in more than half of the cases on record there was no history of trauma, and even in the so-called traumatic cases the injury was rather a strain than anything more violent. In six of the author's cases there was a moderate degree of trauma just before the first appearance of symptoms. In 139 of the 231 cases collected from the literature by Christensen there was a history of trauma, for the most part slight. The author concludes that the

aetiology is still obscure, that none of the hypotheses hitherto advanced in explanation of the genesis of this condition is correct, but that it is quite clear that necrosis of the bone is demonstrable in all recent cases. The treatment most suitable is also still in dispute; but the author's survey of the literature suggests that, on the whole, better results can be achieved by operative than by conservative treatment. His fourteen cases were represented by thirteen patients, in one of whom the semilunar bone was removed on both sides. In all the cases the semilunar bone was removed through a dorsal incision, and the space thus created was filled by a fat graft, taken from the thigh, and encouraged to attach itself to the surrounding structures by the scraping away of the cartilages of the neighbouring bones. In eight cases a cure, and in three improvement, was effected. In the remaining three cases there was no change.

336 Results of Gastrectomy for Gastric and Duodenal Ulcer

In the opinion of W. RIEDER (*Zentralbl. f. Chir.*, January 27th, 1934, p. 198) the results of gastric resection for peptic ulcer, in properly chosen cases, are so good that to return to gastro-enterostomy would be unjustifiable. He publishes records of 574 gastrectomies for peptic (including a few post-operative jejunal) ulcers, with 5.9 per cent. mortality: perforation cases are not included. Of the 254 cases which could be traced, about 75 per cent. were cured (free from pain and the necessity of dieting); if fifteen secondary operations and twenty-five resections done in the absence of ulcer be deducted, cures amounted to 80 per cent. The same percentage of success was attained in sixty-three traceable cases of resection for perforated ulcer. The non-cured cases, which included three recurrences of ulceration, were all associated with absence of free hydrochloric acid; they appeared to be due chiefly to gastritis, but some to adhesions, duodenitis, or jejunitis. Except in neuropathic subjects the unsuccessful cases responded to prolonged treatment by pepsin and hydrochloric acid. E. KOCH and BELOZER-KOVSKY (*ibid.*, March 3rd, 1934, p. 486) report 94 to 96 per cent. of lasting cures after primary stomach resection for peptic ulcer. They quote the reported proportion of 0.8 per cent. of jejunal ulcers occurring subsequently, as contrasted with 1.5 to 10 per cent. after gastro-enterostomy. They cite three cases from the literature, and three from 427 gastric resections for ulcer in Sokolow's clinic, of gastrocolic fistula resulting from penetration of a jejunal ulcer, and point out the importance of early treatment of jejunal ulcer, lest a gastrocolic fistula—which is inevitably fatal in spite of temporary improvements after medical treatment, and which calls for an extensive and serious operation—should result. The operative mortality in the 427 cases was 6.3 per cent.

337 Solitary Cysts of the Kidney

B. GREENBERG, M. BRODNY, and S. ROBINS (*Amer. Journ. Surg.*, February, 1934, p. 271) report ten cases of solitary cyst of the kidney. These cysts are usually voluminous and non-parasitic, single and generally unilateral, containing serous fluid, and growing in a comparatively normal kidney. They originate in the renal cortex, are slow in development, and are benign. In the cases described the average age was 56, and although in this series the sexes were equally represented, the lesion is usually twice as frequent in women. The right kidney is the most common site, particularly in the lower pole, although the cases reviewed did not agree with general statistics. The symptoms of renal cysts are vague owing to the slow growth of the disease, and vary according to the site and size of the cyst. Large cysts of the upper pole cause diaphragmatic pressure and irritation with resulting dyspnoea, cough, and pain in the chest and shoulders. Cysts of the lower pole exert pressure on the intestines and stomach and may cause gastro-intestinal symptoms such as epigastric pain, vomiting, and loss of appetite. These cysts, unlike those of the upper pole, can usually be palpated. Diagnosis by pyelography or

x rays alone is difficult, but intravenous urography intensifies the outline of the cyst and demonstrates changes in the size and shape of the kidney. In about 40 per cent. of cases of solitary cysts additional pathological lesions are present, and in the ten cases reported there were two with tumour of the kidney, two with renal calculi, and one with associated cyst of the liver. The best results are obtained by complete excision of the cyst.

Therapeutics

338 Subcutaneous Oxygen in Pulmonary Embolism

J. L. H. SPECKEN (*Nederl. Tijdschr. v. Geneesk.*, January 20th, 1934, p. 274), who records an illustrative case, emphasizes the value of subcutaneous injection of oxygen in pulmonary embolism. The technique is simple and almost painless: 400 c.cm. can easily be injected into the subcutaneous tissue of the abdominal wall. Specken's patient was a woman, aged 39, who, four days after supravaginal amputation of the uterus for chronic endometritis, developed symptoms of embolism. No benefit was derived from the administration of stimulants and pantopon, but rapid recovery followed subcutaneous injection on three consecutive days of 400 c.cm. of oxygen.

339 Vaccine Treatment of Hay Fever

E. WESSELY and V. KOERBEL (*Wien. med. Woch.*, January 27th, 1934; p. 124) began by treating their cases of hay fever with injections of pollen extracts chosen in each case to correspond to individual idiosyncrasies. The successes achieved were at the cost of considerable trouble. Accordingly, during the past year they have made use of a standard extract containing a mixture of substances. Twenty cases of hay fever were given subcutaneous injections of steadily increasing quantities of this extract, at first three times a week, and later twice a week. Focal reactions were frequent in the form of snuffling, sneezing, and (less frequently) nasal obstruction and conjunctivitis. When the higher doses were reached, and frequently also quite early in the treatment, there would be a transitory general reaction consisting of universal itching, urticaria, congestion, lassitude, palpitation of the heart, asthma, fever, shivering, and diarrhoea. There was often a severe reaction to small doses in patients who later tolerated much higher doses with impunity or only little discomfort. The most severe of the general reactions, observed in five cases, passed rapidly off in response to rest, black coffee, and the application of an ice-bag to the heart. Most of the patients were tired for several hours after an injection. In two cases an old articular rheumatism, and in one case psoriasis, flared up again. In compensation for all these discomforts, freedom from hay fever was achieved by eight patients, considerable improvement by ten, and a moderate degree of improvement by two. In other words, the effects of this treatment, as far as the hay fever was concerned, were invariably more or less beneficial.

340 Intravenous Injections of Alcohol in Pulmonary Abscesses

V. HINKOVA (*Thèse de Paris*, 1934, No. 18), who records twelve illustrative cases in patients aged from 5 to 55, maintains that intravenous injection of alcohol is often effective in the treatment of pulmonary abscess. Although, according to Professor Sergeant, pulmonary abscess requires surgical treatment at the end of six weeks, medical treatment by alcohol should first be tried, although the mechanism of its action is still obscure. The technique is as follows: 20 c.cm. of absolute alcohol is mixed with 80 c.cm. of isotonic glucose solution, or 33 c.cm. of absolute alcohol with 67 c.cm. of isotonic glucose solution. The injections are given daily or every other day, six to twelve injections being usually required. As a rule rapid improvement results, and there is no need to continue the treatment if a distinct clinical or radiological improvement does not take place after ten injections.

Anaesthetics

341. Pernocton plus Posterior Pituitary Extract as a Labour Anaesthetic

According to H. BRAMMER (*Schmerz Narkose-Anaesthesia*, November, 1933, p. 59) "twilight sleep" is now secured at the Freiburg Universitäts-Frauenklinik by a combination of pernocton medication (partly intravenous, partly intramuscular) with injection of a posterior pituitary preparation from which the principles affecting blood pressure and intestinal peristalsis are absent. The combination eliminates the weakening of the pains which temporarily follows exhibition of pernocton; it is found to show an antispasmodic action on the rigid os. The initial injections are 3 to 4 c.cm. pernocton intravenously, 1 to 2 c.cm. intramuscularly, and 0.5 c.cm. of the pituitary extract intramuscularly. Not more than three hours' "sleep" is secured, and additional injections of 1 to 2 c.cm. of pernocton intravenously as well as intramuscularly, with 0.5 c.cm. of pituitary extract, may then be required. By the combined treatment, in both primiparae and multiparae, it is possible to start the injections at an earlier stage (usually with the os at two to four fingers in primiparae). In spite of the earlier commencement the average duration of labour after the injections was about three hours in primiparae and two in multiparae. Amnesia was complete in ninety-nine out of 110 cases, and no foetal mortality was recorded.

342. Anatomy of Sacral Anaesthesia

According to L. ELAUT and G. VERDONK (*Zentralbl. f. Chir.*, January 6th, 1934, p. 12) current accounts of the surface anatomy of the posterior sacral foramina are erroneous in several important respects. Thus, the uppermost is not 4 cm., but only 2.7 cm., from the middle line, and the line joining the four foramina of one side is much less inclined upwards and outwards than is commonly stated. A line joining (1) a point 2.7 cm. external to the middle of the tangent to the iliac crests, and (2) a point 0.7 cm. external to the cornu of the sacrum passes through the four foramina in the great majority of cases. The fourth foramen is 1 cm. above the lower end of the line; the distances separating the fourth and third, third and second, and second and first are respectively 1.9, 2.2, and 2.5 cm. From the "regional" posterior superior spine—that is, the lowermost palpable point of the iliac crest—the second foramen is distant not 1 cm. but 2.5 cm. or even more. The four posterior foramina from below upwards are 1.75, 1.95, 2.1, and 2.3 cm. respectively from the middle line. The average height of the hiatus sacralis is 0.5 to 0.6 cm., and its breadth at the level of the cornu 2 cm. In eight of ten cases the hiatus does not extend above the third foramen. The injections should be done with the patient lying on the belly, the pelvis supported by a pillow. The needle should not penetrate more than 5 to 6 cm.; the dural sac is 8 cm. from the sacral cornu.

343. Evipan in Dental Anaesthesia

D. H. LE GOOD (*Pub. Dent. Service Gaz.*, January, 1934, p. 99) reports favourably on the use of evipan in this field, good results having been recorded in all except one of a consecutive series of fifty-three cases. In the unsuccessful instance there was restlessness with limb tremors, and coughing became exaggerated. Ether was required. Exposure of the drug in the syringe to light for five minutes before use was found to diminish markedly the muscular tremors. The drug was usually injected intravenously, but in five consecutive cases it was given subcutaneously, and in another five intramuscularly, in both series without any adverse local effects being noted. The muscular relaxation obtained was never sufficient to permit satisfactory orthopaedic manipulations. In most of the cases anaesthesia was required to last eight to twenty minutes; no case lasted longer than twenty-six minutes. Most patients received 10 c.cm., and

a maximum of 16 c.cm. has been given. Nearly all of the patients would otherwise have required endotracheal anaesthesia. With the one exception the anaesthesia was excellent; the cough reflex was always retained, and the bleeding from the gums was similar to that in ether anaesthesia. The patients usually awoke within thirty minutes after returning from the theatre, and after about fifteen minutes went to sleep again for three to five hours. The purely dental patients were all able to walk home nine hours after the extraction. Headache ensued in four cases some hours later, but was easily controlled by a mixture of phenacetin, aspirin, and caffeine.

344. Contraindications to Avertin Narcosis

A. A. FINOCHIETTI (*Semana Médica*, December 21st, 1933, p. 1999) gives a review of 300 personal cases in which this anaesthetic was employed. He states that it should not be used while local anaesthesia is practicable and will suffice. Amongst the contraindications he mentions shock and hypotension, blood diseases, conditions of dehydration, and acidosis untreated by glucose and insulin. As a general rule avertin should not, in his opinion, be used for gall-bladder surgery. In renal surgery damage to the parenchyma is a contraindication, while in respiratory conditions avertin should not be used where the lung function is much reduced. The author is also against its use in paralytic ileus and infections of the large intestine, rectum, and anus. In obstetrics non-cephalic presentations and a second stage with few and feeble pains are contraindications. The author states that during the anaesthesia CO₂ and epheдрine should always be handy.

Obstetrics and Gynaecology

345. Vesico-Vaginal Fistula

G. G. WARD (*Surg., Gynecol. and Obstet.*, January, 1934, p. 67) reports a case of vesico-vaginal fistula, with extensive loss of tissue, cured by the following plastic operation and a pessary. The author raised a flap of mucous membrane from the anterior wall of the vagina up to the fistula, and converted this, by sutures, into a tube. After preparing a bed for it, he drew the end of this tube through the original meatus, securing it there by means of sutures. This, the patient's eighth plastic operation, did not result in good control in the erect posture, but a completely satisfactory condition was arrived at by the insertion of a Thomas Hodge pessary in the reverse position. The pessary was warmed, and so moulded that the thick end gave just sufficient pressure on the urethra to prevent incontinence. The patient was able to remove, cleanse, and replace the pessary at will.

346. Aetiology and Treatment of Anaemia in Pregnancy

M. B. STRAUSS (*Journ. Amer. Med. Assoc.*, January 27th, 1934, p. 281) discusses the common anaemia in pregnancy, which appears to be of physiological aetiology. In many cases the condition would be more correctly described as a hydraemia, and consequent on change in the blood volume rather than on alteration of the corpuscular elements. Hypochromic anaemia in pregnant women is due, he thinks, either to a direct dietary deficiency or to a deficiency conditioned by gastric anacidity, hypo-acidity, or associated defects brought about by the foetal demand for blood-building materials. It may be completely relieved during or after pregnancy by the administration of iron, usually in large doses. According to Strauss the macrocytic anaemia is generally attributable to a temporary lack in the gastric juice of a specific intrinsic factor, which has been shown to be absent from the gastric secretion of patients with pernicious anaemia in the course of a relapse. This factor presumably returns after parturition. In other cases lack of an extrinsic factor (associated with vitamin B) in the diet may produce similar effects. This macrocytic anaemia may be entirely

relieved by the exhibition of liver extract, although iron is frequently required in addition. The author calls attention to the similarity of the aetiological mechanisms involved in the hypochromic anaemia of pregnancy and the idiopathic hypochromic anaemia which may occur in the absence of pregnancy; he also compares the macrocytic anaemia of pregnancy with pernicious anaemia. As bearing on the aetiological issue he remarks that disturbances of the gastric secretion occur to a greater or less extent in more than 50 per cent. of pregnant women. He concludes that the development of anaemia in pregnancy may best be prevented by ensuring that the diet is adequate as regards iron and protein. As a further precaution iron may be prescribed.

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Uterine Inversion

Five instructive cases of inversion of the uterus are reported by D. BARROWS (*Amer. Journ. Obstet. and Gynecol.*, January, 1934, p. 105). All were recent and, except possibly in one case, occurred spontaneously. On admission to hospital treatment was by potassium permanganate douches, mercurochrome instillations, and vaginal packing, the elevated foot position being maintained. Case No. 1 was found to have recovered spontaneously and unexpectedly after three weeks of this treatment. Case No. 2 had had a placenta attached as though fibrous; relief was obtained by incision of the cervix per vaginam (Spinelli operation), but two years later, after an apparently normal labour, the patient died owing to rupture of the scar. Case No. 3 also had a Spinelli operation and was in good health four and a half years later, but had risked no further pregnancies. In Case No. 4 reduction of the inversion was undertaken from above, and was so easily brought about that this method is recommended in preference to Spinelli's. In Case No. 5 reduction was also attempted abdominally, and required incision of the cervical ring posteriorly—a much easier approach than that per vaginam—which left a stronger scar. In conclusion, treatment of shock, rather than of inversion, is urged as of first importance. Abdominal operation may follow four to six weeks later. Delivery of a subsequent pregnancy would preferably be by Caesarean section.

348 Mandelstamm's Operation for Artificial Vagina

A. MANDELSTAMM (*Zentralbl. f. Gynäk.*, January 27th, 1934, p. 222) regrets that outside Russia no reports have been published of the trial of his modification of the large intestine technique of formation of an artificial for a congenitally missing vagina. He describes a further eight successful cases: the essential point in his method is that the gut, freed from the anus and mobilized, is implanted (into the vaginal introitus) before its section, which is accomplished through the dilated anal ring. The length of gut required is easily assessed, the danger of pararectal infection is diminished, and the operation field is free of clamps.

Pathology

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Types of Bacilli in Diphtheria

D. T. ROBINSON and F. N. MARSHALL (*Journ. Path. and Bact.*, January, 1934, p. 73) have examined 542 consecutive cases and carriers of diphtheria received into the Monsall Fever Hospital from the Manchester area, and have endeavoured to correlate the type of organism isolated with the clinical severity of the case and its resistance to serum treatment. Of the 542 strains examined, 129 were of the gravis, 104 of the mitis, and 296 of the intermediate type, eight were atypical, and five consisted of mixtures of types. The intermediate type therefore constituted 54.6 per cent. of the strains, in this respect differing from the findings at Leeds, where only 5.5 per cent. were of this type. Of the gravis strains 65.1 per cent., and of the intermediate strains 63.8 per cent., were isolated from haemorrhagic, severe, or moderately severe

cases of diphtheria; on the other hand, only 25 per cent. of the mitis strains came from these types of case. The death rate in patients infected with the gravis type was 13.8 per cent., with the intermediate type 15.7 per cent., and with the mitis type only 2.6 per cent. Twelve cases of diphtheria occurred in Schick-negative reactors; eight of these were infected with the gravis and four with the intermediate type. Tests to compare the virulence of the three types were made on 311 strains by the subcutaneous inoculation of guinea-pigs with 10,000 million organisms. While 96.9 per cent. of the gravis and 94.1 per cent. of the intermediate strains proved virulent, only 80 per cent. of the mitis strains did so. Moreover, the organisms were recovered from the heart blood of the guinea-pigs in 44 per cent. of the gravis and 45 per cent. of the intermediate type, but from only 22 per cent. of the mitis type infections. The authors state that the classification of diphtheria bacilli into the types already mentioned presented little difficulty, and conclude that the gravis and intermediate types are more frequently the cause of severe and fatal infections than the mitis type. Mitis infections are rarely fatal except in complicated cases, and are readily controlled by serum therapy; many gravis and intermediate type cases are resistant to serum, even in very large doses.

350 Occult Infection by *Leptospira icterohaemorrhagiae*

According to figures quoted by J. TROISIER, M. BARIÉTY, B. ERBER, and P. GABRIEL (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, January 22nd, 1934, p. 26) serological tests have pointed to infection by *Leptospira icterohaemorrhagiae* in horses, monkeys, and sewer rats both in Paris and in Fribourg. Agglutination against the organism of Inado and Ido in titres of 1 in 10, 1 in 50, and 1 in 100 was noted in the serum of a Parisian patient who for many years had spent much time in and under the water of swimming baths, but showed no signs of jaundice. In typical spirochaetosis, agglutination was noted in dilutions of 1 in 1,000.

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Filterability of Tubercle Bacilli

A. W. DOWNIE and GERTRUD MEISZNER (*Zentralbl. f. Bakt.*, January 31st, 1934, p. 465) report the results of an extensive and very careful investigation into the possible existence of a filterable stage in the development of the tubercle bacillus. Preliminary experiments showed that the ordinary bacteriological filters could not be relied upon to keep back all acid-fast bacilli. With Berkefeld V candles acid-fast bacilli could frequently be demonstrated both microscopically and culturally in the filtrate. Berkefeld N candles were considerably less porous, and though occasionally permitting control bacteria such as *B. prodigiosus* or *V. percolans* to pass through, they were generally successful in holding back tubercle bacilli. Chamberland L2 candles occupied an intermediate position. Guinea-pigs inoculated with Berkefeld V filtrates frequently developed tuberculosis, usually of a local, but sometimes of a generalized, type. Only one Berkefeld N filtrate produced tuberculosis directly, but in another filtrate tubercle bacilli could be demonstrated by passage through a second guinea-pig. Chamberland L2 filtrates not infrequently gave rise to lesions in guinea-pigs, the tuberculous nature of which could be proved only by further passage. Experiments with culture filtrates and suspensions of tuberculous tissue, carried out by Ninni's technique of direct intraglandular inoculation, or by Van Deinsse's technique of intraperitoneal inoculation following on a previous injection of sodium phosphate, failed to call forth the appearance of definite macroscopic lesions or of acid-fast bacilli that could be shown to be real tubercle bacilli. The authors conclude that there is as yet no satisfactory evidence to prove the existence of a filterable stage in the development of the tubercle bacillus. The lesions observed are either (1) those of definite tuberculosis demonstrable in the inoculated animal or in passage animals, or (2) glandular and splenic enlargement whose tuberculous nature has not yet been demonstrated. It seems probable that these lesions are due to toxic substances in the filtrate or to other non-specific causes.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

352 Contraindications to Vaccination

W. BLACHER (*Jahrb. f. Kinderheilk.*, February, 1934, p. 26), who records four illustrative cases in children, maintains that special care should be taken in the choice of subjects for primary vaccination. Attention should be paid not only to the present condition, but also to past diseases. If it is suspected that such a disease as influenza, septic infection, or the like is not completely cured, the vaccination should be postponed from the spring to the autumn, or at least for a few weeks or months. In cases of latent tuberculous infection the vaccination should be postponed for one or more years, or until the time when the practitioner is convinced that the disease has passed the labile stage. The best method of avoiding this infection is to carry out vaccination between the fourth and sixth months. Children in a tuberculous environment require special attention. Owing to the liability to disease and tendency to allergic inflammation at that time the spring is not a suitable season for vaccination.

353 Therapeutic Incompatibilities

Discussing the question of therapeutic incompatibilities, F. EICHHOLTZ (*Med. Welt*, January 6th, 1934, p. 9) points out that the so-called "allergic" conditions may often be due to an injudicious combination of incompatible drugs. Every change in the mineral contents of the system, any disturbance in the interplay of the hormones, any modification of the metabolic processes, be they due to disease or to the administration of other drugs, can, to a very considerable extent, influence the effect of drugs. This has, he states, been shown by Bless with narcotics, by Schuntermann and Birch-Hirschfeld with digitalis, by Heinrich with analgesics, and by Weiss and Hoppe with local anaesthetics. Present experience shows that the greatest therapeutic incompatibilities may be expected where substances exercising catalytic influences are involved. Newer research has proved that x-ray therapy is no exception from the general rule of variable sensibility to drugs. By a new quantitative method, the author succeeded in measuring the biologic effect of x-ray treatment in tumour-affected animals, with the surprising result that previous administration of insulin enhanced the effect of x rays by nearly 100 per cent., while adrenaline not only counteracted this effect, but induced an increased growth of the tumour instead of the usual arrest of growth. Possibly this observation may explain why intensive x-ray treatment of the abdomen often has a damaging instead of a beneficial effect in tumour cases. Eichholtz comes to the conclusion that whenever certain measures cause a change in the "inner milieu" of the human system either through a modification of the mineral balance, through hormonal or metabolic disturbances, or through the simultaneous administration of drugs or toxic substances, such an organism will always react to the administration of any chemical substance in a manner differing from normal. In such circumstances the toxicity of even the best-known drugs may increase to a dangerous extent, and great care should be exercised in the simultaneous administration of several drugs, the combined effects of which are not sufficiently explored.

354 Suprarenal Cortical Extract in Myasthenia Gravis

M. ROCH, M. J. DEMOLE, and P. DUCHOSAL (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 5th, 1934, p. 113) record the case of a man, aged 19, who had suffered for two years from slowly progressing myasthenia gravis: a varied but ineffective therapeutics had included pituitary extract, whole suprarenal extract, insulin-glucose, glycochol, and hepatic extract. Rapid improvement followed three

courses of intravenous injection, given on ten successive days at varying intervals, of "cortigène," an extract of suprarenal cortex free from admixture with medulla; it was not only subjective but objective, for response to faradic stimulation of the biceps continued for six minutes after, but less than three minutes before, treatment. Since no signs suggestive of Addison's disease were present, the result is attributed to direct action of the cortical hormone on the musculature, activating oxidation, and facilitating synthesis of sulphydric bodies.

355 Aetiology of Bronchiectasis

P. JACCHIA (*La Pediatria*, February 1st, 1934, p. 173), in support of his hypothesis that some forms of congenital bronchiectasis are connected with changes in the germ plasm, reports the case of a boy, aged 14, who presented a deformity of the right external ear with occlusion of the auditory meatus as well as an almost symptomless bronchiectasis of the right lower lobe, which could only be congenital owing to the absence of any history of respiratory disease and the dilated and tortuous appearance of the bronchioles on x-ray examination. Jacchia also records the case of a boy, aged 14, with an ampullary form of bronchiectasis in both lower lobes and the right upper lobe, in whom there was a history of prolonged asphyxia at birth, which suggests some relation between diffuse bronchiectasis and delayed resolution of foetal atelectasis.

356 Irradiation of the Pituitary in Arterial Hypertension

P. L. DROUET (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 12th, 1934, p. 139) describes two cases in which a lasting reduction in blood pressure followed x-radiation of the hypophysis. Both patients were females. One had symptoms of hyperthyroidism and the other had been castrated. Signs of posterior hypophyseal hyperfunction were present, it was thought, in (1) the demonstration of a melanophorotropic hormone in the urine, (2) the visual fields—one patient had very marked retraction of the fields for red and green, the other a contracted field for white on one side and for red and green on both. Drouet quotes the finding of Cushing that hypersensitive subjects may have pronounced basophilia of the pituitary pars nervosa.

Surgery

357 Extra-articular Resection of the Knee

L. SARADINI (*Presse Méd.*, February 21st, 1934, p. 297) describes his technique for this procedure. The anatomy of the knee, here briefly discussed, shows that the joint can be excised without opening it. Its musculo-aponeurotic coverings are non-adherent, except at the condyloid attachments of the plantaris muscles. Section of these attachments reveals a plane of cleavage permitting of their detachment from the condyles and posterior surface of the capsule. The subquadriceps synovial cul-de-sac can easily be freed anteriorly from the quadriceps tendon and posteriorly from the femur. With the limb extended, an oval incision is made on the anterior surface of the joint, the upper curve passing just above the patella, the lower $1\frac{1}{2}$ cm. below the tibial plateau. The skin being raised, the femoral and tibial pre-articular teguments are detached. Along the upper cutaneous incision the fascia lata, vastus externus, quadriceps tendon, and vastus internus are severed from without inwards, the capsule not being entered. The upper ends of these are then separated to the upper limit of the synovial sac, which is plainly visible and is then detached from its adhesions. The femur is thus revealed, and, after pulling the quadriceps upwards and the cul-de-sac down, is sawn

perpendicularly to its axis at the upper part of the condyles. The muscles are then separated from the posterior articular surface. The limb being then placed vertically, with the sole of the foot on the table, the tibia is sawn from behind forwards, 1 cm. below the margin of the plateau. The patellar tendon is separated from the articular surface and cut level with the bone; thus, it is almost entirely conserved and forms a solid resistant plane in front. The tibia and femur are then brought into contact and kept in position with or without metallic sutures; the muscles, aponeurosis, and patellar tendon are joined with interrupted sutures, and the skin closed with a horizontal suture. The joint is thus removed *en bloc* without being opened and without the slow and always incomplete dissection of the synovial membrane and culs-de-sac of the classic operation. Notes of six cases are appended.

358 Gas Bacillus Infection of Urinary Tract

B. W. TURNER (*Urol. and Cut. Rev.*, March, 1934, p. 153) states that gas bacillus infection was first described by Maisonneuve in 1853, and sixty-five examples during the Crimean War were collected by Sailleron. The cardinal symptoms of such infection are fever, local discoloration, and subcutaneous crepitation. Death is due to profound toxæmia from absorption of autolytic products of protein digestion in the wound, and to paralysis of the adrenals. Of fifteen previously recorded cases of gas bacillus infection of the urinary tract, nine developed after operation on the kidney, in six of which perirenal induration was present. Turner records two personal cases of gas gangrene, in a man aged 36 and a woman aged 30, following operations upon the kidney. The man, in whom the diagnosis was delayed and there was no x-ray treatment, died, while the woman, in whom the diagnosis was made early and x-ray treatment was given, recovered. According to the author, gas infection should be suspected whenever a high fever persists after operation upon the urinary tract.

359 Parathyroid Tumours associated with Hyperparathyroidism

E. CHURCHILL and O. COPE (*Surg., Gynecol. and Obstet.*, February 15th, 1934, p. 255) describes the alterations in the metabolism of calcium and phosphorus in hyperparathyroidism. The outstanding clinical manifestation is a generalized decalcification of the skeleton due to the inability of the bones to retain calcium. An increased excretion of calcium and phosphorus in the urine may cause a progressive calcification of the cortex of the kidney, and there may be calculi in the pelvis of the kidney. Other clinical signs may be bone tumours, fish-type vertebral bodies with kyphosis and skeletal shortening, fractures following slight trauma, and bone tenderness. Polydipsia, polyuria, general debility, constipation, and anaemia with leucopenia are other signs and symptoms of hyperparathyroidism. Eleven cases are reported in which an adenoma of one of the parathyroid bodies was present with the changes in calcium and phosphorus metabolism that are associated with an increased secretion of the parathyroid hormone. In only two of these cases was there any external evidence of a tumour in the neck. Operation was carried out in every case, and a benign tumour of the parathyroid body was removed either completely or by subtotal resection. The immediate result of the operation was a correction of the disturbance in calcium and phosphorus metabolism. The muscle and joint pains were promptly relieved. Convalescence was frequently associated with tetany, but this may be controlled by administration of calcium gluconate, irradiated ergosterol, and parathormone. All the patients made a good recovery with the exception of one who died following the removal of a ureteral stone several weeks after the primary operation. In one other patient the bones showed no evidence of increased density, and her fractures failed to develop callus. She was being treated by high calcium diet, vitamin C, viosterol, and calcium glycerophosphate.

Therapeutics

360 Chrysotherapy in Pulmonary Tuberculosis

A believer in the efficacy of gold salts in oily suspensions in cutaneous and pulmonary tuberculosis, H. MOLLARD (*Presse Méd.*, March 10th, 1934, p. 395) replies to Giraud's criticisms of this method. His results, previously published, are revised in support of his contention. From these he maintains that results are more stable and recurrences rarer with oily suspensions of gold salts than with aqueous ones. If immediate results are not obtained, later improvement much more frequently occurs with oily than with aqueous suspensions. The only inconvenience to the use of the former is the necessity of long intervals between each series. Stored for a long time and slowly absorbed, there is a risk, if treatment be recommenced too quickly, of exposing the patient to accidents of sensibilization. If, however, the interval between each series is sufficiently long, the method is without danger and the accidents of late solubilization do not occur.

361 Complex Mercurial Diuretics

Of these, R. FLECKSEDER (*Zeit. f. Urol.*, 1934, Heft I, p. 32) prefers salyrgan or novurit to novasurol, and combines them with administration, before or at the same time, of ammonium chloride—5 grams and upwards in 120 c.cm. of flavoured water. Intravenous injection of salyrgan (in doses of 1 to 3 c.cm. or more of 10 per cent. solution) is preferable; in combination with 10 c.cm. Cecholin and 20 c.cm. 33 per cent. dextrose solution it has led, in cases of cardiopathy and portal stasis, to a daily diuresis of 6 to 8 litres, and in a case of contracted kidney with tricuspid regurgitation to one of 13½ litres. The intramuscular route is chosen when veins are inaccessible or thrombosed; salyrgan is given in the peritoneal cavity (with or without ascites) when a universal hydrops puts the veins out of reach and impedes absorption from a muscle. Oral administration, in doses of 1 to 5 c.cm. of 10 per cent. solution, may be carried on for many days, and in combination with ammonium chloride treatment is called for when other modes of administration have been refused or found only temporarily effective. The mercurial diuretics are useful not only in cardiopathic conditions, but also in portal obstruction, obesity with water retention, ascites from peritoneal tubercle or carcinoma, and pulmonary or cerebral oedema. They are contraindicated in advanced marasmus or cachexia, open lung tuberculosis with danger of bleeding, very grave degrees of heart weakness, peritonitis, intestinal stenosis or tenesmus, cholaemic states, and especially in nephritis and all uraemic or pre-uraemic conditions with a tendency to nitrogen retention. Their use also calls for care in renal sclerosis, prostatic hypertrophy, or hyperthyroidism. After tissue acidification by the ammonium chloride treatment the diuretic action of salyrgan is chiefly extrarenal: both dehydration of tissue colloids and increased permeability of the cell membrane are concerned, and possibly a diuretic combination of mercury and bile acids is formed in the liver.

362 Intravenous Animal Carbon in Infections

During the course of researches on immunity Coghlin of Montreal employed intravenous injections of animal carbon in various infections in animals. Of 738 thus affected all were cured, and the course of the disease was shortened by this therapy. The endothelial cells of the liver, spleen, and marrow were found to absorb part of the carbon particles, the remainder being ingested by the phagocytes (which rapidly increased) simultaneously with the bacteria. A single injection also cured a human case of furunculosis of eighteen months' duration. SAINT-JACQUES, also of Montreal (*Bull. de l'Acad. de Méd.*, January 30th, 1934, p. 169), has tested this treatment clinically, and records the results in 100 cases of various infections (acute and chronic metro-salpingitis, acute puerperal infection, phlebitis, infected perineal tears, pneumonia and post-operative pulmonary congestion,

acute cholecystitis, etc.). Short notes are given of a few of these. With the exception of a case of acute articular rheumatism in which the pains alone were relieved, a case of polyarthritis which did not respond, and one death, all these cases were cured. The injections caused no reactions or ill after-effects. Saint-Jacques does not claim that this treatment is a universal panacea, but maintains that it is a valuable, effective adjuvant in the majority of cases of infection. He employs a 2 per cent. suspension of finely pulverized animal (not vegetable) carbon in intravenous (not subcutaneous) doses of 3 to 4 c.cm. In the majority of the above cases one injection sufficed for cure, though in the more serious six were necessary. The syringe and needle should be paraffined with liquid vaseline before being charged with the carbon, to prevent the piston sticking.

Dermatology

363 Treatment of Pruritus, Chronic Eczema, and Kraurosis Vulvae

B. KRIS (Wien. klin. Woch., December 8th 1933, p. 1490) recommends infiltration of the affected skin areas with a local anaesthetic for these complaints. Other writers have, he states, recorded good results from infiltration with physiological saline, 1 per cent. novocain or quinine-urea solution, while one author has introduced perineural anaesthesia of the pudic nerve. For nearly seven years Kriss has treated kraurosis and chronic eczema of the vulva and anus on similar lines by infiltration of the affected areas with 0.5 per cent. novocain or 0.2 per cent. tutocaine solutions. Excellent results are claimed in approximately fifty cases of vulvar and anal eczema. The technique is as follows: the skin is disinfected with benzene only; the syringe is fitted with a long needle which is introduced subcutaneously in the direction of the posterior commissure; in vulvar and anal eczema infiltration is carried out until the entire region is infiltrated and oedematous. The usual quantity of anaesthetic solution employed is approximately 2½ ounces. The first puncture is usually painful, especially around the clitoris and anus. No untoward complications have occurred. The majority of patients examined on the fifth day report that the chronic pruritus has subsided completely. The skin is softer and more supple; fissured hyperkeratotic areas assume a normal appearance, and blood supply improves. Should small traumatic haematomas occur, they disappear spontaneously. The author states that many chronic cases are cured by a single infiltration, but if the pathological conditions of some areas remain unchanged, further infiltration may be required after some weeks.

364 Eruptions following Gonorrhoea

S. J. SULLIVAN (Urol. and Cut. Rev., February, 1934, p. 93) states that four gonorrhoeal conditions of the skin were described by Buschke in 1899—namely: (1) simple erythema, (2) urticaria and erythema nodosum, (3) haemorrhagic and bulbous exanthems, and (4) hyperkeratosis or keratoderma blennorrhagica. Simple erythema is the most frequent, but is usually a forerunner of the other types. It is commonest over arthritic joints and next common in the inguinal regions. It is often seen during acute epididymitis and vesiculitis, or an acute exacerbation of chronic vesiculitis. Sullivan reports a case of haemorrhagic eruption in a man aged 35, in whom rapid recovery followed vasotomy. Hyperkeratoses are the most infrequent skin eruptions following gonorrhoea. Thick calcified plaques form on the palms and soles, as well as on other parts of the body. N. TOBIAS (ibid., p. 99), who reports an illustrative case, states that keratoderma blennorrhagica is a skin manifestation of an allergic reaction to the gonococcus. Pathologically the lesion is not primarily a keratosis, but a parakeratosis with many features of psoriasis, from which it must be differentiated. Tobias's patient was a man aged 34, who had recently had an attack of urethritis and presented arthritis of the

left knee and both ankle-joints and keratotic lesions on the forearms, wrists, penis, and soles. Repeated examinations of the blood and skin were negative for gonococci. The eosinophil count was 11 per cent., which was suggestive of an allergic basis. Considerable improvement followed immobilization of the affected joints and treatment by gonorrhoeal vaccine therapy.

365 Infra-red Photography of Subcutaneous Veins

H. HAXTHAUSEN (Brit. Journ. Dermatol. and Syph., December, 1933, p. 505) has found that infra-red photography has a useful clinical application, serving to demonstrate the presence of varicose changes in the small and medium-sized veins which elude direct observation or photography in ordinary light. Normally, the medium-sized veins which connect the great saphenous vein and its tributaries, and form with their many anastomoses a network under the skin around the entire leg, are rather slender vessels, running a straight course, and without any marked dilatations or other changes in calibre. The differences from the normal revealed by infra-red rays consist of a thickening of these vessels, irregularly localized pouchings of their walls, and a winding and twisted course. Such varices presumably play a pathogenic part, in at any rate some cases of ulcer and eczema of the leg, similar to that played by the large varices of the saphenous veins. Infra-red photography of these patients showed in some instances the unexpected presence of varicose conditions of the smaller veins, even when there was no varicocity of the larger ones. When the ulcer or eczema was unilateral, the varices were nearly always more pronounced on the affected side. The author urges the further application of this method in the investigation of the smaller subcutaneous veins.

366 Liver Treatment of Psoriasis

T. GRÜNEBERG (Derm. Woch., December 23rd, 1933, p. 1793) agrees with Spiethoff that administration of liver greatly diminishes the tendency to recurrences of psoriasis. He finds in addition that in irritative cases of psoriasis, which in response to applications of even indifferent ointments show itching or acute inflammation and exudation, a few weeks' hepatotherapy will enable ordinary local treatment to be applied effectively. On psoriasis in general, liver treatment, although occasionally brilliantly successful, appears to have an effect not superior to that of arsenic, manganese, or gold. Grüneberg suggests that the liver may act partly by increasing the sulphur (glutathione) content of the skin: he finds it most effective when accompanied by artificial-light applications of strictly moderate intensity.

Obstetrics and Gynaecology

367 "Elective" Treatment of Carcinoma of the Cervix

F. V. MIKULICZ-RADECKI (Zentralbl. f. Gynäk., January 6th, 1934, p. 13), avoiding as relatively unimportant the old comparisons between operative and radiotherapeutic treatment of cancer of the cervix, concludes in favour of "elective" treatment. In this some cases are operated on, but not all "operable cases"—only those which seem well suited. In operative cases radiotherapy is employed after and sometimes before operation. Other cases are treated by radium and x rays only. A combined statistical report is given of 5,500 cases treated on "elective" lines at eleven clinics. Operation, and usually post-operative x-radiation, was done in 35 per cent. With the exception of 5 per cent. untreated incurable cases, the remainder had radiotherapy only. Five years' cure was attained in 24.5 per cent., in some clinics in as many as 36.5 per cent. (Stoeckel): this general average of cure is stated to be higher than those previously reported for large series. Some 20 to 40 per cent. of cases required hysterectomy. The author's conclusions are as follows. Simple hysterectomy is to be rejected in favour of the extended opera-

tion: this is preferable as removing more paravaginal, parametrial, and pararectal tissues, not as removing iliac and hypogastric glands, for the vaginal and abdominal routes are equally effective in the end. It follows, since the vaginal operation has much less risk of infection and a much lower mortality rate, that it is preferable. Routine post-operative x-radiation is possibly useful, and should be done; post-operative radium treatment, with intraparametrial or rectal application, has a place in treatment of advanced cases. Pre-operative radiation has its scope in rendering cases operable, but wastes valuable time in those which are primarily suitable for operation. Its efficacy in diminishing infection is not yet proved.

368 Treatment of Primary Carcinoma of the Vagina

M. NILSEN (*Ugeskrift for Læger*, January 11th, 1934, p. 47) gives an account of twenty-six cases of primary carcinoma of the vagina in three hospitals in Copenhagen. The first symptoms were, on the whole, those of cancer of the cervix, but what was distinctive of the vaginal disease was the average brevity of the interval between the first symptom and inoperability; only two of the twenty-six patients were operable when first seen. In as many as eighteen cases the symptoms had lasted less than two months before the first examination. As a rule, symptoms were not noted before ulceration of the lining of the vagina had begun. In addition to the two operable cases there were two borderline and twenty-two inoperable cases. Only thirteen were given combined radium and x-ray treatment. Among the twenty-six there were only four survivors, all of whom had been given combined radium and x-ray treatment. In two of these cases there was no sign of relapse after 2½ and 2¾ years respectively. In the remaining surviving cases the observation period was still shorter. There were as many as thirteen cases in which treatment was followed by temporary improvement, which in two cases even amounted to the apparently complete disappearance of the tumour. But in all these cases relapses occurred in two to eight months. The disease often reappeared in other parts of the vagina, at a considerable distance from the seat of the primary growth. The author's statistical survey of the literature of 334 cases of primary carcinoma of the vagina shows that, if a post-treatment observation period of at least five years be required, the recovery rate is only about 10 per cent., the results being equally good, or bad, for radium alone or supplemented by the x rays. The author concludes, however, that radiotherapy is superior to operative treatment in this field.

369 Trichomonas Vaginalis in Gynaecology

N. KISSLING (*Gynéc. et Obstét.*, February, 1933, p. 116) reminds gynaecologists that *Trichomonas vaginalis* is a frequent inhabitant of the vagina and a cause of chronic leucorrhoea which is overlooked unless it is sought for by the correct methods. The organism is recognizable in the hanging drop by its motility in various forms, sometimes flagellated. Culture is in beef broth, and staining by Gram, Loeffler's blue, or gentian violet. When this is the causative organism the leucorrhoea is not cured by the usual injections. The author finds no method successful except that of painting out the vaginal canal and cervix with 1 per cent. lotio hydrarg. perchlor., which is mopped off and followed by the application of 5 per cent. glycerin of borax. This treatment must be daily at first. It quickly brings relief, but the use of glycerin of borax must be maintained for several weeks—"ovules" can be substituted for direct application. Alternatively, one or two applications of mercurochrome, 5 per cent., can be followed by yaten 105 (Bayer) pessaries daily for at least a month, and for several months before and after the monthly period. A 100 per cent. success is claimed for the latter method. The symptoms of leucorrhoea due to this protozoon, while not distinctive, are as follows: greyish or yellowish-white discharge (sometimes greenish) which is frothy, liquid, and offensive, and accompanied by pruritus and discomfort. It may be associated with any other organisms, and is occasionally found in the virgin vagina.

Pathology

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Prediction of Sex

An attempt to predict the sex of the unborn child is recorded by M. DAVIS (*New England Journ. Med.*, February 22nd, 1934, p. 421), who injects testicular extract intradermally into the mother in doses of 0.2 to 0.3 c.cm. The reactions were arbitrarily classified as negative (no reaction); one plus (a red area 12 mm. in diameter); two plus (a red area from 12 to 20 mm. in diameter); and three plus (a red area with a diameter of over 20 mm.). The readings were taken in from four to ten minutes after the injection, and the reactions disappeared usually within a few hours. The injections were slightly painful owing to the stretching of the skin, but few complaints were made. A negative reaction indicated a female foetus, and the two and three plus reactions were obtained in the case of the children being male. The records of the one plus reactions were almost equally divided between male and female offspring. The findings of 136 cases giving relatively poor results, the tests were repeated with a testicular extract from which more of the extraneous matter had been removed. In a series of 534 new cases the results were better—namely, 85.1 per cent. correct. Of 294 diagnosed as males the result was correct in 82.3 per cent., while the corresponding percentage was 89.6 for females. Davis suggests that the mechanism of the test is based upon some form of allergic reaction. It is easy to perform, but further research work is necessary to improve its accuracy. Tests were made from the third month of pregnancy onwards.

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Influenza Bacillus Meningitis

J. B. NEAL, H. W. JACKSON, and E. APPELBAUM (*Journ. Amer. Med. Assoc.*, February 17th, 1934, p. 513) report their observations on 111 cases of *B. influenzae* meningitis with four recoveries which they have seen in the course of the last twenty-three years. The symptoms differed in no way from those of meningococcal meningitis. More cases occurred in the first year of life than in any other year (thirty-four), and more than half the total (sixty-two) occurred in the first two years of life; fifty-nine occurred in females and fifty-two in males, contrary to the distribution in meningococcal meningitis, poliomyelitis, and epidemic encephalitis; the incidence was highest in the last quarter of the year; primary infections accounted for sixty-eight (61 per cent.). Pathological examination showed severe toxic degenerative changes in the liver and kidneys, and bronchopneumonia was fairly common. Endocarditis and acute splenitis were occasionally found, as were also arthritis, peritonitis, and gastritis. There was no particular tendency to the development of adhesions or to the formation of abscesses in the brain.

372 Reversion of Negative to Positive Schick Reactions

P. FEUILLIE, P. THURY, and C. BLANCARDI (*C. R. Soc. de Biol.*, 1934, cxv, 367) draw attention to the occasional occurrence of diphtheria in persons who have at some time previously given a Schick-negative reaction. In the Belfort epidemic of 1920 Vincent, Pilod, and Zoeller recorded four cases of this type in a total of 1,472 cases. Seeking an explanation for the phenomenon, the authors made observations on Army recruits. Schick tests were performed, readings were not made till the eighth day, and every reaction that was not certainly negative was regarded as doubtful, and the recruit was vaccinated with anatoxin. There were 246 subjects who gave a definitely negative response. Two months later they were retested, and no fewer than seventeen of them—that is, 6.9 per cent.—now gave a positive reaction. The explanation favoured by the authors is that, as a result of the entirely new conditions of barrack life with the extreme fatigue incidental to army training in those unaccustomed to it, the immunity tends to flag and the antitoxin titre falls. These results do not lessen the value of the Schick reaction. They show, however, that a negative reaction, though indicative of immunity to diphtheria at the time, cannot always be trusted to remain negative.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

373 Epidemic Vertigo

S. WATEFF (Deut. med. Woch., February 2nd, 1934, p. 167) gives an account of an epidemic of vertigo which began in Bulgaria in the autumn of 1929. He observed sixty-two male and eighty-four female cases under ambulatory conditions. There were twenty-one patients between the ages of 4 and 15, thirty-five between the ages of 16 and 30, fifty-two between the ages of 30 and 50, and thirty-eight between the ages of 51 and 75. There were seven cases in 1929, eighty-one in 1930, forty-two in 1931, and sixteen in the spring of 1932. The giddiness was most frequently felt only when the patient was lying down, notably when he turned his head or was about to get up. At the same time there would be a momentary, more or less complete, loss of consciousness. Headache was common, being most often localized to the back of the head. Epilepsy and hysteria could be excluded from the diagnosis, although several of the symptoms were suggestive of one or the other. The mode of spread of this epidemic indicated an infection, and its manifestations were reminiscent of those forms of epidemic encephalitis which have been described as rudimentary, atypical, or subacute. Professor Wateff is not, however, prepared to say whether or not this epidemic can be classed as some form or other of lethargic encephalitis.

374 Injury to Liver from X-Ray Examinations of Stomach

K. GERMER and A. MELLENGAARD (Ugeskrift for Læger, February 1st, 1934, p. 124) have conducted investigations which show that ordinary examinations of the stomach by the x rays disturb the functions of the liver, if they do not actually injure it, in a high proportion of cases. The material investigated consisted of eleven men between the ages of 26 and 56 and thirteen women between the ages of 16 and 62. All had been admitted to hospital on account of digestive disturbances due to such ailments as ulcer, cancer, gastritis, colitis, etc. One skiagram was taken in each case, in addition to three transilluminations. Altogether, 177 estimations of the liver-lipase content of the blood, 169 of the icterus index, 168 of the urobilinogen content of the serum, and 180 of the biliary acid and urobilinogen contents of the urine were made. These examinations showed that in 60 to 70 per cent. of all the patients the functions of the liver were disturbed. Similar observations were made on a member of the hospital staff who, for two or three months, had worked in the x-ray room, but always with protective coverings.

375 The Heart in Myxoedema

As the result of a careful study of thirty-five cases of myxoedema, in thirteen of which there were abnormal changes in the electrocardiogram, and a review of the literature, W. R. OHLER and J. ABRAMSON (Arch. Int. Med., February, 1934, p. 165) believe that the signs and symptoms are sufficiently numerous and distinctive to warrant the term "myxoedema heart." After the diagnosis of myxoedema had been definitely established clinically and by tests of the basal metabolism, radiograms were taken of the heart at a distance of seven feet, and electrocardiographic records were made. The specific alterations in the electrocardiogram were a decrease in voltage of all the complexes and a frequent inversion of the T waves in all the leads. Increased auriculo-ventricular conduction time was noted in some cases. These abnormalities were observable with few exceptions when the basal metabolic rate fell to a level of -25 or lower. Enlargement of the heart was frequently revealed by the x rays in cases with abnormal electrocardiograms. Sluggishness of the cardiac contractions was demonstrated by fluoroscopy. Thyroid gland extract proved to be a specific in these cases, the electrocardiogram and the size of the heart returning to the normal after its exhibition. In myxoedema there is no definite and regular height

of blood pressure; in patients with dilated hearts the pressure tends to be normal or subnormal. The authors found that thyroid therapy tended to decrease high blood pressures in their series, and to raise those that were low. Distant heart sounds and mild congestive failure were frequent clinical findings. The authors comment on the paucity of careful pathological studies of the heart muscle in myxoedema, and think that no definite explanation of the cause of the cardiac changes will be forthcoming until such studies are more numerous and detailed.

376 Sulfosin Treatment of Schizophrenia

J. RAVN (Nord. Med. Tidsskrift, January 27th, 1934, p. 106) argues that before any therapeutic claim can be established in connexion with schizophrenia, it is necessary to discount the mistaken diagnoses, the spontaneous recoveries, and the well-known tendency of schizophrenics to react to treatment by suggestion. He has drawn up a table in which the fate of 1,534 patients is analysed, with special reference to the proportion of cures and partial recoveries. In a second table he analyses in the same way 366 sulfosin-treated cases already published. He notes how closely the figures in one table correspond with those in the other. This comparison suggests that whatever good sulfosin may do it must be attributed to suggestion. Among the cases treated by Ravn himself was one in which tuberculosis broke out in connexion with the injections.

Surgery

377 Surgical Treatment of Diabetes

M. DONATI (Med. Welt, January 13th, 1934, p. 36) maintains that, although insulin therapy has done much to rob diabetes of its dangers, the fact remains that some cases do not respond to it, or may require auxiliary therapeutic measures to assist its effects. Such considerations, he believes, justify the attempts at a surgical therapy, based on the study of the relations between the nervous system and the internal secretion of the pancreas, as well as between the function of the pancreas and other endocrine glands—these attempts aiming not so much at a "cure" of diabetes as at the increase of carbohydrate tolerance and, if necessary, of insulin sensibility. Monolateral denervation of the adrenal gland, resection of one or both splanchnic nerves, extirpation of the coeliac ganglion, sympathectomy of the arteries supplying the pancreas, partial isolation and ligation of portions of the pancreas, grafts of pancreas substance, extirpation of the salivary glands, ligation of the parotid duct, and partial parathyroidectomy are cited by this author as attempts at a surgical treatment of diabetes, and are described in detail. He comes to the conclusion that, although it is not yet established for which categories of diabetics these methods are indicated, the carbohydrate metabolism of diabetic patients may be definitely influenced—that is, the carbohydrate tolerance and insulin response increased—by surgical methods.

378 Maggot Therapy in Chronic Osteomyelitis

J. BUCHMAN (Ann. of Surg., February, 1934, p. 231) emphasizes the difficulty experienced in the treatment of chronic osteomyelitis. Disseminated foci of infection and devitalized particles of bone and soft tissue are found enclosed by the rigid-walled cavities of the bones. These foci must be removed by radical bone surgery, care being taken to preserve the epiphyseal plates, the periosteal covering, and the circulation of the bone. There then remains a large cavity to be filled by granulation tissue, and this usually presents a serious difficulty due to unequal healing, which may result in well-formed scar tissue at the periphery with an unfilled bone cavity beneath. It is therefore necessary that successful treatment should consist of a surgical removal of all diseased

parts, some method of sterilization of the wound, and removal of wound discharges and sloughed-off tissue, and some agent that will produce even a rapid growth from the bottom up with complete filling of the bone cavity before the circulatory changes incidental to scar formation occur. It has been found that maggot treatment is the most satisfactory. The wound is actively sterilized by the maggots, which remove micro-organisms by ingestion, and the proteolytic activity of the maggot enzymes breaks down the wound discharges and sloughs into end-products, which are then consumed by the maggots. In addition to this, they succeed in irritating the wound sufficiently to stimulate rapid growth. By this method of treatment convalescence is reduced in length and failures and recurrences are said to be greatly diminished. Immediate healing can be obtained in two to three months. Two cases are reported which contrast the efficacy of treatment by the Orr method and by maggot therapy. It is claimed that by the latter method the character of the healed bone is more nearly normal than by any other procedure, as there is no residual sclerosis or rarefaction, but an actual re-formation of the bony parts.

379 Prognosis in Gastro-duodenal Perforations

G. DALAGENIÈRE (*Bull. et Mém. Soc. Nat. de Chir.*, February 10th, 1934, p. 216) draws attention to a sign which he has observed in cases of gastric and duodenal perforation—namely, the dilatation of the first part of the jejunum. A case is reported which first drew attention to this sign, and in which the patient died; after operation, from paralytic ileus. Operative treatment was carried out three hours after perforation and disclosed a very dilated and abnormal jejunum. It is not suggested that this abnormality is the cause of death, but that it is a sign which indicates the extreme gravity of the prognosis. A further five cases have been observed, two of which died from paralytic ileus following a general peritonitis. Both these cases presented a marked dilatation of the upper part of the jejunum at operation. The remaining three cases were of similar severity, and sometimes of longer duration, but no abnormality of the jejunum was noticed, and intestinal function was re-established after operation. It is suggested that dilatation of the first part of the jejunum is an early sign of paralytic ileus, and that this condition spreads downwards. A further instance is reported of a twisted ovarian cyst which was operated on six days after torsion. The patient was gravely shocked, and operation showed that the upper two-thirds of the intestine was dilated and without peristaltic movement, whilst the lower third was normal. In spite of strong saline injections the patient died forty-eight hours after operation from paralytic ileus. The conclusion is reached that, when the upper loop of the jejunum is normal in a case of gastric or duodenal perforation, the patient will make a good recovery, but when dilatation is present the prognosis is very unfavourable.

380 Polyvalent Antisera in the Treatment and Prevention of Surgical Peritonitis

E. SCHNEIDER (*Zentralbl. f. Chir.*, February 10th, 1934, p. 325) regards the use of antisera against the organisms causing peritonitis as a notable surgical advance. At the Heidelberg Universitätsklinik it is the practice, in operations in which purulent peritonitis (from whatever cause) is present, to give a polyvalent serum intraperitoneally, as well as intravenously, in combination with dextrose solution. The latter mode of administration is also adopted prophylactically after every major abdominal operation. The serum given, in accordance with the findings of M. GUNDEL and F. SÜSSBRUCH (*ibid.*, p. 306) that surgical peritonitis is in the overwhelming majority of cases a mixed infection, is active against *B. coli*, the anaerobic gas bacilli, and enterococci; the importance of the last-named is very considerable. Mortality from appendicitis and perforated ulcers has been considerably diminished, it is stated, by use of this serum.

Therapeutics

381 Intramucosal Auto-serotherapy in Asthma and Allied Conditions

Subcutaneous or intradermal injections of autoserum (the Achard-Flandin method) have given good results in urticaria, hay fever, etc., but have proved ineffective in asthma, spasmodic coryza, etc. This technique aims at the patient's desensitization to autotoxic substances liberated by repeated shock. A. JACQUELIN and G. BONNET (*Presse Méd.*, February 14th, 1934, p. 249) believe that in certain conditions and in asthma without signs of sensitization to inhaled particles there exists an auto-sensitization of the affected mucosae to toxic products from a digestive, hepatic, or endocrine malfunctioning, or from cellular lysis. They therefore advocate intramucosal auto-serotherapy in such conditions, and employ the following technique. The serum of 10 c.cm. of blood from an elbow vein is injected into the mucosa of the inferior turbinate or into that of the internal face of the nasal fossa. To avoid alteration of the serum this amount of blood withdrawn must not be exceeded, and further punctures must be made if necessary; the fresher the serum the greater its desensitizing power. The injection must be made deeply into the mucosa; intramucosal oedema appears if the injection is correctly made. Doses commencing with 2/10 c.cm. and increasing by 1/10 c.cm. to 1/2 c.cm. are given daily for twenty days. The injection is usually painless, and causes no inflammatory reactions. Results of this treatment have been previously published in 1932; notes on nine further cases are here given. Jacquelin and Bonnet claim that various grave forms of asthma and asthmatic states can be favourably influenced by this treatment.

382 Treatment of Soft Chancre

C. P. SCHOKKING (*Nederl. Tijdschr. v. Geneesk.*, February 17th, 1934, p. 773) records his observations on fifty-eight seamen (eighteen of whom had chancreoid only, thirty-one chancreoid plus buboes, and nine buboes only) who were treated by the Dmelcos vaccine, which consists of an emulsion of different strains of Ducrey's bacillus. Each case required on the average three injections of 1.4 c.cm. The average duration of treatment for the chancreoid and the buboes was reduced by eleven and seven days respectively, and in most cases complications could be prevented. In only one case was there a severe reaction, followed by an attack of jaundice. The vaccine, which should be given in small doses, is especially indicated in cases of chancreoid and buboes which do not heal readily under local treatment.

383 Typhoid Perforation

C. CASCO (*Semana Médica*, January 25th, 1934, p. 305), dealing with the aetiology, symptoms, and treatment of intestinal perforation in typhoid fever, notes 9,781 cases of this disease in which the average of perforations was 3.51 per cent. (Nacke, in 133 cases of perforation, found that the site was the ileum in 106, the appendix in fifteen, and the colon in twelve.) Perforation occurs as early as the first week and as late as the hundredth day, but it is most frequent about the third week. It may be very small and solitary, or it may reach the size of a five-cent piece, and as many as twenty-five perforations have been found in the same patient. Casco notes that the fall of temperature due to a haemorrhage is transient, and is quite soon followed by an ascent to a still higher point. The change of the blood picture from leucopenia to leucocytosis, if the latter be polynuclear, is, he states, a very valuable sign in the absence of any complication ordinarily accompanied by this phenomenon. Treatment must be early, and consists of opening the abdomen, under local or mixed anaesthesia, through MacBurney's incision, identifying the perforation with the very gentlest manipulation of the intestine, isolating with gauze, closing with an "N" suture of silk or linen if small (if large, with Connell and Cushing stitches, and not purse-string sutures), gentle, if thorough,

peritoneal toilet, and drainage. After-treatment consists in overcoming dehydration, attending to the heart muscle, and maintaining intestinal tone with "pitressin" and hyper-tonic saline for a few days, and then resuming the usual routine treatment. The prognosis of success following upon such an operation is affected by four chief factors: (1) the age of the patient (the percentage of successes among patients of from 6 to 15 years is double that of adults); (2) the stage of the disease at which perforation occurs, the first and second weeks and those of convalescence being the most fortunate; (3) promptness in surgical intervention (twenty-three out of forty-nine successes recorded by Cazin were operated upon within twelve hours); (4) simplicity and rapidity of the operative measures—hence the writer's recommendation of simple suture and drainage.

384 Serum Treatment of Tularaemia

L. FOSHAY (*Amer. Journ. Med. Sci.*, February, 1934, p. 235) records fifteen cases of tularaemia treated by intravenous injections of a potent specific serum prepared from a goat in doses varying from 5 to 26 c.cm. With the exception of one patient who was moribund on admission, all showed a marked and prompt improvement, even when the serum was given as late as the second or third month of the disease. The therapeutic properties of the serum were found to be closely related with its desensitizing action.

Radiology

385 Radiographical Control of Duodenal Ulcer Treatment

D. M. CLARK and M. J. GEYMAN (*Journ. Amer. Med. Assoc.*, January 13th, 1934, p. 107) discuss the value of repeated x-ray examinations in determining the response of duodenal ulcers to treatment and when the healing process has been completed. In gastric ulcers this mode of control is well known, but in duodenal ulcers it has been employed to a lesser extent, since the niche sign is the only pathognomonic evidence, and it is only possible to observe the niche in less than 10 per cent. of duodenal ulcers. With the introduction of the compression technique, however, the duodenum filled with barium can be clearly brought into view, and abnormalities can be noted. The authors report their reasons for believing that the disappearance of a niche, thus viewed, indicates a favourable initial response, but not necessarily that the ulcer has healed completely. Symptoms may persist for a considerable time after such disappearance, and, conversely, a patient may be quite free from symptoms and yet have a demonstrable duodenal niche. This is explained by the fact that, when the oedema and infiltration surrounding a healing ulcer subside and the crater becomes plugged with a bud of granulation tissue, the niche no longer retains barium, and is therefore not demonstrable radiologically. This probably occurs relatively early in the course of healing. There is a wide range in the amount of time required for disappearance of the duodenal niche. As a general rule these ulcers heal more slowly than do gastric ones. The characteristic bulbar deformity of the duodenum in ulceration certainly indicates that an ulcer is, or has been, present, but it has no relation to activity, and is of little or no value in measuring the response to treatment. The absence of this bulbar deformity does not preclude the possibility of active ulceration, for such a deformity may also be caused by spasm.

386 X-Ray Treatment of Malignant Disease of the Upper Respiratory Tract

ENGELMANN (*Deut. med. Woch.*, January 25th, 1934, p. 127) gives an account of the recent achievements of a radiological institute in Hamburg under the direction of Professor Holthusen, who was the first in Germany (1929) to apply the principles advocated by Coutard. According to these principles, the therapeutic superiority of radium over x rays observed in the past does not mean that the latter necessarily possess an inferior elective action, but that the dosage was inappropriate. Coutard has shown

that the action of x rays may be improved by spacing the dosage in such a way that small daily exposures of low intensity are given over such a long period that the total dosage is considerable. The statistical table Engelmann publishes covers the period 1929-32, and concerns eighty cases—carcinoma fifty, sarcoma ten, histological definition lacking twenty. Twelve patients did not complete the treatment. Six were given radium treatment for the primary tumour and later treatment with x rays for the enlarged glands. In sixty-two cases only x-ray treatment was given. Of the twelve patients given inadequate treatment none survived; of the six given radium and then x-ray treatment five showed no clinical sign of disease; while of the sixty-two cases given x-ray treatment alone twenty-nine showed no symptoms. Altogether thirty-four of the sixty-eight patients were clinically symptom-free from twelve to thirty-six months after treatment. All the fears as to the subsequent appearance of clinical symptoms due to the treatment have hitherto proved groundless. The author concludes that the x-ray treatment which has achieved these results must be regarded as very valuable in the case of carcinoma of the upper respiratory passages. He has also had certain successes with this treatment in malignant disease of the upper third of the oesophagus.

387 Rad'ography of the Chest

F. B. EXNER (*Radiology*, February, 1934, p. 236) discusses the relative value of stereoscopic and single films in the routine examination of the chest. He believes that the tendency in the United States to insist on stereoscopy as a routine is often inadvisable in view of the greater expense rendering it prohibitive in investigating early cases of tuberculosis or their contacts. He states that only rarely will a single chest film fail to show any lesion which would have been demonstrated by a stereoscopic pair, provided that the film is of good quality and is carefully studied by a competent radiologist. He has estimated that such failure will only occur in about 0.4 per cent. of pathological chests; his estimation was based on a series of 500 such cases. In routine tuberculosis surveys a considerable saving can be effected without any significant loss of efficiency by the use of the single film unless the particular circumstances necessitate so many re-examinations as to offset the saving in expense. The chief value of stereoscopy is derived from the ability it confers upon the radiologist to recognize at a glance three-dimensional relationships, to distinguish as artefacts certain shadows which appear in one film but not in the other, and to appreciate the relative change in the position of various shadows which permits images obscured in one plate to be seen in the other. Exner disputes the value of the three-dimensional image, but admits the help given by stereoscopy in evaluating shadows of doubtful significance observed at a previous single-film examination. Moreover, he does not think that any patient should be diagnosed as tuberculous on the basis of a single film unless the pathological indications in it are indisputable. The personal equation of the radiologist is another important factor, for the stereoscopic method probably requires more rather than less skill in interpretation to avoid error. Some can make more dependable diagnoses with the stereoscope. In consultant work, however, it is argued that some type of multiple-film examination is much to be preferred.

388 X-Ray Treatment of Vaccinal Reaction

E. BARLA-SZABÓ (*Arch. f. Kinderheilk.*, December 19th, 1933, p. 1) employed irradiation with x rays in thirty-seven recently vaccinated children, who, with the exception of a child aged 7 years, were between the ages of 4 and 12 months. The application was made during the stage of formation of the areola, only one being given, except in very severe reactions, when it was repeated in two days. The result, as confirmed by observation on controls, was a rapid subsidence of the reaction and general symptoms, without interference with the attainment of complete immunity. The method is suitable for cases with an abnormally severe reaction, for sensitive children, and in cases in which unexpected intercurrent disease develops during the period of reaction.

Obstetrics and Gynaecology

389 Aschheim-Zondek and Friedman Tests Compared

From an analysis of the literature and their own experience with 546 Aschheim-Zondek and 566 Friedman tests, H. C. MACK and G. H. AGNEW (*Amer. Journ. Obstet. and Gynecol.*, February, 1934, p. 232) conclude that both methods have a high degree of accuracy as hormone tests of the presence or absence of pregnancy, the latter being slightly more reliable as well as more quickly and easily performed. In proved cases of normal pregnancy they obtained 97.3 per cent. accuracy with the Aschheim-Zondek test and 97.8 with the Friedman method. In patients in whom pregnancy was definitely excluded the authors obtained an accuracy of 98.5 per cent. with both procedures. They remark that in abnormal or interrupted pregnancy the result of the test should be interpreted in association with the clinical findings. A negative result signifies either a non-pregnant state or an interrupted pregnancy; a positive reaction strongly denotes the presence of living foetal elements, but, due to a temporary delay in elimination of the hormone, a recent interruption of pregnancy or a foetal death cannot be excluded. The authors add that in cases of hydatidiform mole and malignant chorion epithelioma the amount of hormone excreted is many times greater than that excreted in normal pregnancy. The persistence of positive tests after treatment of these neoplasms strongly suggests continued chorionic proliferation. It is added that, while the variations in the figures reported by different investigators may indicate some divergencies in technique, the chief reason for the discrepancies appears to be the interpretation of the results recorded.

390 Lipiodol Injections in Treatment of Sterility

G. K. F. SCHULTZE (*Zentralbl. f. Gynäk.*, January 20th, 1934, p. 180) points out that hystero-salpingography by lipiodol injection is of therapeutic as well as diagnostic use in certain cases of sterility. When both tubes are occluded treatment by forcible injection at high pressures, although recommended by some, is too dangerous to risk. In a series of 154 women in whom lipiodol injection showed one or both tubes to be patent at the outer end, about one-quarter afterwards bore one or more children; after deduction of cases in which more than five months intervened between treatment and conception, cases receiving accessory treatments, and those in which anti-conceptual measures had at some time been used, there remained twenty-one cases (13 per cent.) in which the hystero-salpingography and the loss of sterility appeared to be directly connected. In two of these cases abortion occurred; ectopic pregnancies (not included in them) numbered two only.

391 Placental Separation following Acute Infarct

R. A. BARTHOLOMEW (*Journ. Amer. Med. Assoc.*, March 3rd, 1934, p. 676) reports a case of abruptio placentae following acute placental infarct. Caesarean section was followed by staphylococcal septicaemia, but complete recovery ensued after blood transfusions from donors who had been immunized by daily injections of a vaccine prepared from the organism. The author deduces evidence from this case in favour of the view that abruptio placentae is the result of poisonous split products of placental protein, particularly histamine, elaborated during the autolysis of an acute infarct on the maternal surface of the placenta. He remarks that the case also illustrates the conditions warranting the employment of Caesarean section rather than slower conservative measures in the treatment of this condition, the ever-present possibility of infection following section even in a clean case, and the apparently life-saving value of blood transfusions, particularly from donors who have been immunized against the specific organism concerned. He suggests, therefore, that in such infected cases it would be advisable to recover the organism by blood culture as quickly as possible in the course of the illness, and to maintain the

patient's resistance as much as possible until suitable donors can be immunized with the specific vaccine. In the present instance it was noted that the injections from the immunized donors were far more quickly and lastingly effective than were those of the donors who preceded them. The author adds that such an infarct probably permits a concentration of histamine in the decidual sinuses; the subsequent dilatation and rupture of these causing extravasation of maternal blood and placental separation.

Pathology

392 Photodynamic Action of Methylene-blue on Fixed Rabies Virus

H. E. SHORTT and A. G. BROOKS (*Indian Journ. Med. Research*, January, 1934, p. 581) have successfully inactivated fixed rabies virus by making use of the photodynamic action of methylene-blue. An opalescent suspension in distilled water of the brain of a sheep, that had been killed in a moribund condition nine days after infection with the virus, was mixed with equal quantities of varying strengths of methylene-blue solution, and exposed in Petri dishes to sunlight. At intervals the mixtures were tested for infectivity by subdural inoculation of rabbits. Two control suspensions were used. One consisted of the same series of mixtures kept in the dark, the other of brain tissue suspensions mixed with an equal quantity of distilled water (instead of methylene-blue) and exposed to sunlight. The results were striking. Judged by the rabbit inoculations a decrease in the virulence of the suspension became evident in a 1 in 20,000 final dilution of methylene-blue in about five minutes. Very marked diminution was apparent in ten minutes with a 1 in 10,000 and a 1 in 200,000 dilution. After an hour all methylene-blue suspensions proved inactive, while the control suspensions were still infective. It is interesting to note that the inactivation occurred in spite of the presence of living tissue cells. Experiments are now in progress to ascertain the practical value of immunization by rabies virus inactivated by this method.

393 The Conversion of Typhus Strains

H. MOOSER, G. VARELA, and H. PILZ (*Journ. Exper. Med.*, February, 1934, p. 137) bring extremely important evidence to suggest that all typhus is derived originally from the rat. It has been previously shown that in Mexico strains of typhus virus isolated from human patients, though immunologically identical with strains of Old World typhus, differ from these in two main respects—namely, in the production, after intraperitoneal inoculation, of scrotal swelling in guinea-pigs with numerous rickettsiae in the tunica vaginalis, and of a febrile, often fatal, disease in rats, again with numerous rickettsiae in the tunica. The Old World virus rarely produces a scrotal reaction in guinea-pigs, and causes in rats only an inapparent infection. The authors now describe the isolation from a severe louse-borne epidemic of typhus in Mexico of viruses, some of which conform to the classical European type, while others are intermediate between the European louse-borne and the Mexican murine type. Working on the hypothesis that the typhus virus can multiply freely only in the presence of mammalian blood, and that the louse-borne type is more haemophilic than the murine type, the authors carried out experiments in which daily blood injections were made into the peritoneum of rats that had been inoculated with louse-borne virus. The results were very encouraging. It was found that by this method the louse-borne virus frequently acquired the ability to cause a scrotal reaction in guinea-pigs and a fatal febrile disease in rats. In other words, the louse-borne virus became indistinguishable from the murine type. These findings are critically discussed, and it is concluded that the rat is the real reservoir of the typhus virus, and that the virus found in epidemic European typhus is merely an adaptation to a man-louse-man cycle of the original murine virus.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

394 Prognostic Value of Diazo Reaction in Tuberculosis

J. MILLE (*Nord. Med. Tidsskrift*, January 27th, 1934, p. 102) has investigated the subsequent fate of all the patients who gave a diazo-positive reaction in the urine on admission to a sanatorium between 1916 and 1930. Every patient's urine was thus tested on admission, and when the reaction was positive it was repeated every month till it became permanently negative. Altogether 362 patients gave a positive diazo reaction. There were ten cases of pleurisy with effusion, 331 cases of pulmonary tuberculosis, and twenty-one cases of tuberculosis in other organs. From four to fifteen years after discharge, nine out of the ten patients with pleurisy were still perfectly fit for work. The results were very different where the diazo-positive cases of pulmonary tuberculosis were concerned. As many as 226 terminated fatally in the sanatorium, and only seventeen patients were fully fit for work from one to ten years after discharge. Yet this 5 per cent. of cures, in addition to a certain number of cases which became sputum-negative and partially fit for work, are enough to justify active therapeutic enterprise (an artificial pneumothorax or a thoracoplastic operation) even in the face of a positive diazo-reaction.

395 Aleukia Haemorrhagica

According to N. FIESSINGER, F.-P. MERKLEN, and G. BROUET (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 5th, 1934, p. 98) aleukia haemorrhagica, as described by Frank in 1915, is a syndrome due to acute failure of both haematopoiesis and capillary-endothelial resistance; cognate with agranulocytosis, its clinical picture is dominated by fulminating purpuric phenomena. Two cases are recorded, characterized by diffuse cutaneous, muscular, visceral, and mucous haemorrhages. There was a rapidly fatal course, in spite of a transitory response to blood infusions, and a progressive leucopenia (2,000 to less than 200 white cells per c.mm.) in which leucocytes were chiefly affected. Aetiologically, an intoxication by benzol, arsenic, gold, or bismuth has usually been reported, but of the present cases one followed an apparently benign catarrhal jaundice, the other an attack of chicken-pox.

396 Disease of the Coronary Arteries

D. RIESMAN and S. E. HARRIS (*Amer. Journ. Med. Sci.*, January, 1934, p. 1) conclude that there is an actual and not merely a relative increase in the mortality from cardiac disease, and that degenerative processes are largely concerned in this. Syphilis is not a prominent factor, but the authors incriminate worry, over-indulgence in food and sexual relations, and tobacco smoking to excess. Above the age of 70 death from coronary occlusion is rare. In the differential diagnosis from angina pectoris important points are ascertainable from the symptomatology and electrocardiogram. In coronary thrombosis the pain begins during rest, behind the lower part of the sternum or in the epigastrium, and may not radiate, whereas in angina it starts during an effort, behind the middle part of the sternum, and radiates to the left shoulder and down the left arm. Dyspnoea is marked in thrombosis and rare in angina; the attack lasts for hours to days in the former, and only for a few minutes in the latter. In thrombosis, shock is present, and vomiting frequent, while the pulse is small and often rapid, the temperature raised, and the blood pressure lowered; the reverse is usual in angina. There are no characteristic electrocardiographic changes in angina, but in coronary thrombosis the QRS complex soon becomes slurred, or decreased, or widened, and the T wave in Lead I starts off high on the downstroke of the R,

with an initial upward deflection and a terminal depression. Coincidentally the S-T interval in Lead III is depressed and the T wave inverted. Similar though less characteristic changes occur in Lead II. During the succeeding days the T wave in Lead I and often in Lead II becomes deeply inverted with an elevated S-T interval, while in Lead III the S-T interval remains depressed, and the T wave becomes upright. The acute abdominal conditions which have to be distinguished from coronary thrombosis include gall-stone colic, mesenteric thrombosis, rupture of a peptic ulcer, tabetic crisis, acute pancreatitis, and diabetic acidosis. The authors do not recommend the use of digitalis in treatment unless there is auricular fibrillation or congestive failure. After the initial full doses of morphine such a cardiac stimulant as caffeine sodio-benzoate is advisable in full doses of 2 to 3 grains hypodermically. Prolonged rest subsequently is essential for about six to eight weeks.

397 Toxic Diphtheria

B. SCHIRWINDT (*Jahrb. f. Kinderheilk.*, January, 1934, p. 318) records his observations on 205 cases of toxic diphtheria observed in a children's hospital at Moscow during the year 1929. Nasal involvement was frequent, its maximal incidence (80 per cent.) being found in haemorrhagic diphtheria. On the other hand, involvement of the larynx and the lower respiratory tract was much less common, and was often not discovered on clinical examination. The most frequent complication of toxic diphtheria was renal involvement, which occurred in 67.4 per cent., and after exclusion of the subtoxic cases in 82 per cent. The most serious complication was myocarditis, which was found in 20 per cent. of the cases and proved fatal in 77 per cent. The prognosis was better in cases of myocarditis occurring after the third week. Examination of the blood pressure was of no essential diagnostic or prognostic significance in toxic diphtheria, but was only of secondary importance. Paralysis occurred in 24.4 per cent., and its most frequent time of onset was at the end of the second week. Toxic diphtheria was usually toxic from the first, but in some cases the toxæmia did not occur until the second or third week. The fatality of the toxic cases was fairly high—namely, 21.6 per cent., and after exclusion of the subtoxic cases 32.8 per cent. Death usually occurred in the course of the first three weeks and most frequently in the second week. Only a small proportion of the cases of toxic diphtheria were admitted before the third day of disease.

Surgery

398 Tumours of the Parotid Gland

S. STEIN and C. GESCHICKTER (*Arch. of Surg.*, March, 1934, p. 492), in discussing tumours of the parotid gland, point out the difficulty in determining the nature of the growth. Benign neoplasms of the parotid gland show signs of malignancy in that they frequently recur after excision, whereas the malignant tumours rarely develop distant metastases. A review is given of 241 parotid tumours which occurred in a series of 50,000 surgical cases. Of these 241 cases 17 per cent. were considered to be malignant. The majority of patients were between 20 and 45 years, with the highest incidence in the third decade. The average duration of the benign mixed tumours from the onset to the time of operation was eight years, whilst in the malignant group it was slightly over four years owing to the more rapid growth of the malignant type of tumour. In the latter group the chief symptoms were pain, interference with hearing or sight, and involvement of the seventh nerve, whilst with benign mixed tumours the most frequent symptom was gradual

growth with intervals of quiescence. Although pain occurs in both the mixed and the malignant tumours, in the former it is usually discomfort rather than pain, which is local rather than radiating. The benign tumours were of firm, rubber-like consistency, sharply circumscribed, and not attached. Malignant tumours were usually more diffuse and more often attached to the surrounding tissues. Enlargement of the cervical lymph nodes occurred in 31 per cent. of malignant cases, but in only 4.5 per cent. of benign tumours. It was found that malignant tumours were more common over the age of 45. The growths with basal cell features were more liable to recur after treatment. Surgical treatment and irradiation both have their place in the removal of parotid tumours. Small benign mixed tumours should be excised, care being taken to preserve the facial nerve. Malignant tumours should be irradiated first and later excised if they become operable and freely mobile, otherwise irradiation should be continued. Following excision in operable cases, interstitial irradiation may be applied to the tumour bed.

399 Treatment of Parotid Fistula

G. E. KONJETZNY (*Zentralbl. f. Chir.*, February 3rd, 1934, p. 243) describes two cases of chronic fistula following incision of a parotid abscess, with stenosis of the duct and secondary multiple calculus formation. In one case excision, cauterization, x-radiation, and denervation of the parotid had been tried without success. The parotid duct was sounded from the mouth, first by fine catgut and then by fine metal sounds: a specially prepared laminaria tent of 1 mm. thickness was then passed through the constriction and left *in situ* for eight hours, and the dilatation of the duct was completed by the introduction of another tent, a few days later, for five hours. Stones were now felt and removed, and after a few days' irrigation from the mouth through a ureteral catheter the fistula closed. In the second case opening of the fistula and removal of the stone did not cure the fistula, which, however, was healed three weeks after dilatation of the duct by laminaria sounds.

400 Surgical Treatment of Haemorrhage from Gastric and Duodenal Ulcers

M. FRIEDEMANN (*Münch. med. Woch.*, February 16th, 1934, p. 239) opposes in some detail the view that the acute haemorrhages from ulcers should in no case be regarded as indications for immediate surgical intervention. This view has been expressed by Schlecht, who states that the mortality of such intervention is very high, whilst the haemorrhage itself is rarely fatal. Friedemann quotes Finsterer as having shown that such haemorrhages do not in the great majority of cases stop spontaneously, and also that the danger of operation during, or soon after, the haemorrhage is inordinately great. The author also refers to his own published work in support of operative intervention. Operation has come to be more frequently recommended since the later methods of transfusion and better anaesthesia have been available. Two personal cases are quoted of acute haemorrhage which were treated expectantly with transfusion of blood, saline, sugar, etc. Both died, and post mortem it seemed reasonable to suppose that operation could have prevented the fatal outcome. In a third in which the course of events was exactly similar, an immediate operation was performed, and resection (Billroth II) carried out, transfusion being given immediately after the operation. The patient was discharged nineteen days later. Further cases are quoted in which success was attained by rapid operative intervention. Even when the actual ulcerated region is small there is, says Friedemann, no certainty that the haemorrhage will not turn out to be either very severe or even fatal. Emphasis is laid upon the necessity of anaesthesia which is not too depressing. The author used evipan and avertin, and local anaesthesia. Whilst not claiming that all cases of haemorrhage should be subjected to surgical intervention, the author emphasizes that the extreme view of some physicians as to medical treatment in all cases of haemorrhage from ulcers is dangerous.

Therapeutics

401 Surgical Tuberculosis treated by Finikoff's Method

A. D. PARIS (*Crónica Médica*, February 15th, 1934, p. 93), reporting twenty cases, of whom one died of air embolism, declares that Finikoff's method is the treatment of choice, but, unlike its originator, he declines to ignore the help of heliotherapy and climate. Ankylosis is no longer the end to be sought in the treatment of articular and peri-articular tuberculosis, and Finikoff does not endeavour to immobilize the joint except for very short periods during the acute phase, and when movement causes great pain. His theory is that sufferers from surgical tuberculosis are in a highly allergic or receptive condition, that the affected areas are decalcified, and that caseous lymph glands act as centres for the dissemination of Koch's bacillus and its toxins. To counter all this, he relies on massive doses of calcium chloride intravenously, intramuscularly, by enema, or by mouth, as a recalcifying agent, together with peanut oil mixed with 10 per cent. tincture of iodine, and given intramuscularly to increase the action of the lipolytic enzymes of pancreas, spleen, liver, lungs, and lymph glands, and thus dissolve the fatty envelope of the bacillus. With these he gives a diet as rich as possible in calcium salts, and quite acid-free. Calcium should, it is stated, be given for a full year after a cure has been achieved. In 160 cases Finikoff has had but six failures, and the writer suggests that some of these might have been successful had he adopted surgical measures and heliotherapy as adjuvants. The treatment is warmly endorsed by Delbet, under whom Finikoff has worked in Paris, by Aimes of Montpellier, and by Zalewski in Poland.

402 Sodium Thiosulphate in Chronic Arsenical Poisoning

A. WERNER (*Klin. Woch.*, March 10th, 1934, p. 381) reports on a case of polyneuritis resulting from chronic arsenical poisoning which was immediately and lastingly improved by intravenous injections of sodium thiosulphate. The author remarks that though the efficacy of sodium thiosulphate in the acute stage of metal intoxications is well known, the only case on record of a cure of chronic arsenical poisoning by its means is the one published by Halliday and Sutherland (*British Medical Journal*, 1925, i, 407). He proposes to investigate whether sodium thiosulphate has a similar effect in other chronic cases of metal poisoning with or without neuritis.

403 Treatment of Adder Bites

S. FREY (*Deut. med. Woch.*, February 16th, 1934, p. 240) reviews the experiences at his hospital in Königsberg, where thirteen cases of adder bite have been treated without one death. Ten of these bites were inflicted by the *Vipera berus* and three by the *Vipera prester*. Six of the patients were children between the ages of 8 and 13. In six cases, including two children, there were no general symptoms. They were severe in the case of a girl of 17 and a man of 30, and consisted of extreme collapse, vomiting, the passage of blood-stained stools, and cerebral manifestations. The therapeutic measures adopted before admission to hospital included ligation of the limb in six cases, sucking of the wound in three, the administration of large quantities of alcohol in three, and the application of compresses also in three. In two cases the wound had been excised and in one case it was cauterized. Potassium permanganate had been injected around the wound in one case, and only once had serum been given. In three cases no therapeutic tinkering had been attempted. In hospital the routine treatment consisted of immobilization with dressings, the injection of serum, and general measures. Discussing the literature, the author remarks that writers are more concerned with the giving of therapeutic advice than with the investigation of its value. He is profoundly sceptical as to the beneficial effects of sucking out a wound, excising it, and alternately tighten-

ing and loosening a bandage round the limb with the effect of letting the poison reach the rest of the body in waves. Cauterization and the injection of chemicals such as potassium hypochlorite and potassium permanganate should also be avoided, as these and similar therapeutic ventures are calculated to do the patient more harm than good.

Disease in Childhood

404

Empyema in Children

H. T. ASHBY (*Brit. Journ. Child. Dis.*, January-March, 1934, p. 1) states that empyema in children must always be considered with pneumonia, as it is rare to find an empyema at that age following any other disease. Empyema is often difficult to diagnose, but should always be suspected if the temperature does not settle after an attack of pneumonia, or if the temperature due to pneumonia is prolonged. Absolute or stony dullness to percussion is the most valuable physical sign. *Synpneumonic* empyema, which arises while the pneumonia is still active, commonly follows bronchopneumonia, especially during an influenza epidemic. It is always best treated by aspiration of the fluid at the earliest possible moment. Open rib resection can be done a week or two later when the child can stand the operation better. Metapneumonic empyema, which comes on more slowly, is a sequel of pneumonia, and is best treated by operation as soon as possible. In the case of empyema in infants the mortality from the usual open operation is at least 80 to 90 per cent. Aspiration alone is therefore indicated at this age, and should be done at intervals directly the cavity fills up. In pneumococcal cases optochin (22 mg. per kilo body weight dissolved in 2 oz. of water, with a few drops of diluted hydrochloric acid) should be injected into the pleural cavity and the process repeated, if necessary, two or three times.

405

Anorexia in Children

L. SCHALL (*Münch. med. Woch.*, November 17th, 1933, p. 1805) examining in some detail the aetiology and treatment of failure of appetite in children, draws attention to the lack of knowledge of the physiological basis of appetite, and discusses the alternative theories—mechanical, chemical, and nervous—which have been put forward. The first matter to be settled in a case of anorexia in a child is whether an organic cause underlies the symptom. He believes that the condition is often a manifestation of acute gastro-intestinal disturbances or a posterior rhinopharyngitis. Loss of appetite in pyrexial conditions is frequent, but is not a constant symptom. In conditions like pyuria, tuberculous bone fistulae, bronchiectasis, etc., where absorption of the products of necrosis or purulent processes occurs, anorexia appears in very severe forms, while a similar condition is also described in cases when, for one reason or another (epilepsy, diabetes, renal disease), one-sided diets are given. When it is decided that the anorexia is due to some psychological cause a very careful consideration of the history must be made. Not infrequently the symptom can be traced to errors in feeding—as, for example, too long a retention of a semifluid diet—or to actual laziness on the part of the child to initiate the act of mastication. This soon leads to an actual distaste for food in general, since such semifluid diet is seldom appetizing: application of force in such cases leads to a psychologically conditioned anorexia. Overfeeding in the earlier days is a common cause of later loss of appetite, the child frequently becoming autocratic in the acceptance of food. Among other abnormalities in appetite the author emphasizes certain (apparently) inherited tendencies to be repelled by definite types of food or methods of cooking. Schall states that in the treatment of the neurotic type of anorexia the abandonment of all force or scolding is a *sine qua non*; the diet offered should vary greatly, be stimulant to the appetite, and not be given in large quantities. Efforts must be made to

give the necessary number of calories in as small a diet as possible (fat:carbohydrate = 1:3). Good results are sometimes obtained with glucose and insulin. Drugs and suggestion may be useful, but best of all is a removal of the child from the family circle and its tensions.

406

Treatment of Erysipelas in Children

L. M. NIGHTINGALE and S. STARR (*Journ. Amer. Med. Assoc.*, March 10th, 1934, p. 761) have treated fifty-one children under 12 years of age suffering from erysipelas by ultra-violet rays. Of these, twenty-three were under the age of 1 year. They found that the results were better than those obtained by serum therapy. As with serum treatment, the earlier the ultra-violet ray therapy was given the better the results. There was no difference in severity observed between the facial and the body type of erysipelas, except that the genital type was usually severe. Among previously healthy children over 2 years of age the mortality was almost nil, and death when it occurred was due to complications, such as mongolism, pneumonia, and so on.

407

Acute Transitory Cerebral Manifestations

A. LEVINSON (*Journ. Amer. Med. Assoc.*, September 2nd, 1933, p. 765) observes that differential diagnosis and treatment of these conditions in children are very difficult. Cases occur more frequently during autumn and winter, and often at night. Onset is sudden, with fever, apathy, or convulsions. The child is drowsy or comatose; usually the neck is rigid, and the Brudzinski and Kernig signs positive. There may be facial paralysis, hemiplegia, or diplegia. Occasional rales may be heard in the chest, the throat may be red, and the tympanic membranes congested. Apart from cerebral symptoms, physical examination may give negative results. Diagnosis may be established in a day or two, otitis media or pneumonia may appear, or the patient may recover entirely. Levinson terms this syndrome "acute transitory cerebral manifestations." He has studied eighty children, of ages ranging from 2 months to 13 years, of whom 82 per cent. were boys. The acute symptoms persisted usually for one or two days, and then subsided. The underlying causes were pneumonia, upper respiratory tract infections, otitis media, pyelitis, and acute rheumatism. In three cases no cause was found. Blood calcium and phosphorus were normal; blood sugar was usually increased. The cerebro-spinal fluid was increased in amount and pressure. The cell count was usually normal and the sugar content increased. He states that a normal count indicates no meningeal reaction, and that a normal, or even high, sugar content does not exclude meningitis. In meningococcal meningitis respiration is normal or only increased slightly. Petechiae indicate meningococcaemia. In obscure cases spinal puncture should be performed, except during convulsions. No generalizations can be made about treatment, which is sometimes unnecessary. Intramuscular injections of 10 per cent. magnesium sulphate solution have relieved convulsions. Cerebral oedema is always present.

Obstetrics and Gynaecology

408

Relaxation of Pelvic Joints in Pregnancy

Combined work by obstetricians and orthopaedists, D. ABRAMSON and others (*Surg., Gynecol. and Obstet.*, March, 1934, p. 595), on relaxation of the pelvic joints in pregnancy is based on direct x-ray measurements of the symphysis pubis. Nulliparae and males showed no distinction, the average width of the symphysis for both being 4.4 mm. Multiparous women averaged 5 mm. with considerably greater variation. Parity was recognizable from irregular margins, and sometimes a cystic appearance at the tips of the pubes. Age and multiparity exercised no influence. Skiagrams of the pelvis in 111 unselected cases of pregnancy showed increase of 3 to 20 mm. (average 7.7 mm.). The symphysis normally widens by 3 to

4 mm.; but in 25 per cent. of all pregnancies the increase is greater and becomes pathological. Relaxation is shown to begin early and not to increase during the last two or three months—nor during parturition except with gross trauma. Recovery began in the first month post partum, and was complete in three to five months, changes in density and outline of the joint being left. Motility at the symphysis can be demonstrated by having one leg pushed up while the other is pulled down by an assistant, the patient being recumbent. Chamberlain finds no relaxation of the sacro-iliac joints, but takes pubic motility as an early sign of pregnancy. The cause of the relaxation is attributed to a hormone in the corpus luteum, named "relaxin" by Hisaw. Symptoms vary with the individual rather than with the degree of separation shown radiologically. These are: pain at the symphysis or down the thighs, usually worse on beginning movement after sitting or lying; and difficulty in walking. Sacro-iliac relaxation gives backache and pain localized over one or both joints. On palpation of the symphysis, tenderness or even a sulcus may be found, and localized pain on pressure over the sacro-iliac joints. Complaint is not usually made before the eighth month, and sometimes not till after delivery—hence the importance of routine examination for relaxed pelvic ligaments before and after confinement. For treatment, a simple type of webbing belt is recommended. This fits round the iliac crests and symphysis so as to press on the pelvic articulations only. Strapping might be substituted. During the puerperium a marked case is well restored by lying with a muslin sling round the pelvis and suspended from overhead poles.

409 X-Ray Treatment of Malignant Ovarian Tumours

MARCEL JOLY (*Bull. Soc. d'Obstet. et de Gynéc. de Paris*, February, 1934, p. 128) maintains that the place of x-ray treatment in ovarian cysts is (1) preparatory to operation, (2) to complete the destruction of a growth which may not have been extirpated successfully, and (3) to attempt prophylaxis after excision. He analyses a series of thirty-six cases. The primary treatment of a cyst should be surgical. Only after laparotomy and microscopical examination of the tissue can the diagnosis be established. Radiologically the type of growth is not important, because no correspondence appears between the histological type and radio-sensitivity (except for seminoma which are highly radio-sensitive) in the cases discussed. Nothing is known as to the determinants of radio-sensitivity. Empirically, the author finds that forms with ascites react best, but that the pseudo-myxomatous semi-malignant type is definitely radio-resistant. Surgical removal of a growth should be carried to its limits, always leaving the smallest possible amount of malignant tissue to be absorbed after irradiation, which necessarily involves the passage of toxic products into the blood stream. The sudden growth of metastases, though possibly due to lowered systemic resistance, may conceivably be the result of the dilatation of local capillaries, which is the first effect of irradiation. Probably almost all malignant ovarian tumours have passed beyond complete extirpation; hence the importance of x-ray treatment. The time for applying x rays is as soon as the operation scars have become resistant—that is, three weeks after excision of the tumour. If ascites has supervened, a small amount causes a favourable dispersion of the rays: sufficient to act as a screen must be removed by paracentesis. But the ascitic fluid itself becomes toxic as the effect of irradiation, so that paracentesis during or immediately after it is dangerous: in one case it was fatal. In any event the patient must be watched, and dosage regulated according to the general reaction.

410 Evipan Narcosis in Midwifery

According to C. HOLTERMANN (*Zentralbl. f. Gynäk.*, February 3rd, 1934, p. 287) evipan sodium, rightly administered in labour, is less likely to be dangerous than in surgical operations, because (1) less is required, abolition of reflexes not being necessary, and (2) the patients are young and healthy. It is the best method of securing brief narcosis, as for the termination of the second stage,

and it affects the child less than any other anaesthetic drug. Two cases which caused anxiety are described: in the first, dosage was too high and the patient recovered after artificial respiration, but the second case was lethal (from circulatory failure) in a patient with pyrexia and hepatic degeneration. In over a thousand other labours evipan narcosis was satisfactory and gave rise to no anxiety.

Pathology

411 Metabolism of Iron and Copper in Anaemic Rats

F. C. BING, E. M. SAURWEIN, and V. C. MYERS (*Proc. Soc. Exp. Biol. and Med.*, February, 1934, p. 619) rendered rats anaemic by feeding them exclusively on cow's milk. One group of five rats was then sacrificed; the stomachs and intestines were removed, and the iron and copper content of the carcasses was estimated. A second group of five rats received by the mouth daily supplements of 0.5 mg. of iron as pure ferric chloride. A third group of six rats received daily intraperitoneal inoculations of 0.5 mg. of iron; and a fourth group of five rats received by the mouth 0.5 mg. of iron and 0.025 mg. of copper as copper sulphate. In seventeen days the animals receiving iron by the mouth had increased their haemoglobin from an average concentration of 4.15 grams to 7.23 grams per 100 c.cm. of blood. The corresponding rise for the rats receiving iron intraperitoneally was from 4.03 grams to 12.92 grams, and for those receiving iron and copper by the mouth from 3.90 grams to 13.40 grams. From this it appears that anaemic rats given iron by the peritoneal route form haemoglobin at almost the same rate as those given iron and copper by the mouth. The animals were killed and the carcasses analysed. The copper content of the control rats and of those receiving iron by the mouth was 0.051 mg. and 0.061 mg. respectively, while in those given iron intraperitoneally it was 0.104 mg., and in those given iron and copper by the mouth it was 0.115 mg. The conclusion is that anaemic rats treated by direct introduction of iron into the tissues are capable of retaining a far greater proportion of the copper normally present in milk than are rats having iron only by the mouth.

412 A New Chemico-hormonal Pregnancy Reaction

E. CUBONI (*Klin. Woch.*, February 24th, 1934, p. 302) describes a new chemico-hormonal pregnancy reaction developed by him, for which he claims greater simplicity and ease of execution than for the usual biological reactions. He filters the urine of mares through a paper filter, added 1 c.cm. of concentrated hydrochloric acid to every 5 c.cm. of urine, and leaves the mixture in a test tube in a boiling-water bath for ten minutes. After cooling the tube in cold water, 6 c.cm. of benzol are added to the same quantity of urine and the mixture thoroughly shaken. The urine is then poured off and the benzol collected, allowed to settle, and passed through a paper filter. Of this benzol extract 3 c.cm. is dried by heating to 60° to 80° C., 0.80 c.cm. concentrated sulphuric acid is poured over it in the test tube, the whole heated for a few minutes in a water-bath of 78° to 80° C., and finally the results are observed. The reaction is negative—that is, the subject is non-pregnant—if the fluid obtained is of a reddish-brown, brown, or malaga-wine colour, and not fluorescent; while if the reaction is positive, the fluid shows a distinct green fluorescence with transmitted light. The whole process requires no more than 15 to 20 minutes. The reaction was tested by the author in 165 cases with the following results: eighty-six non-pregnant mares and thirty-eight castrated horses were all negative; thirty-five pregnant mares were all positive; two mares covered but not impregnated were negative; four stallions were negative. In addition to its simplicity the author claims, as a further advantage of this reaction, that it is not influenced by the addition of carboic acid as a preservative, and that even without such precautions filtered urine kept in a refrigerator may be used after a month and still give a distinct positive reaction.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

413 Mercury Inunction in Septic Infections

WIETVELDT (*Münch. med. Woch.*, February 23rd, 1934, p. 238) records remarkable successes in the treatment of various acute infections, following the inunction of ungu. hydrargyri, which he has used in whitlow, gluteal, tonsillar, and mammary abscesses; malignant tonsillitis, and diphtheria. Inunction—preferably with a steel spatula—should be continued until the skin becomes reddened, though not discoloured. The author also finds this ointment efficacious in incipient tonsillitis. A thick layer of it is spread over the neck twice or thrice a day, and covered with a dressing. He recommends internal administration of ten drops daily of 0.1 per cent. mercuric chloride. In diphtheria, he employs a similar dosage of mercuric cyanide. In epidemics, or when there is a shortage of serum, this is stated to be a valuable prophylactic treatment. In puerperal fever mercurial ointment should be spread over the whole abdominal wall with inunction over the posterior and lateral thoracic surfaces every second day. In the author's hands this treatment has proved very useful in pulmonary abscess, after evacuation. Wietfeldt describes the case of an army surgeon who pricked his thumb at a necropsy on a case of septicaemia. In thirty-six hours he had severe axillary lymphadenitis and a temperature of 103.2° F. Inunction treatment was adopted, and in four days he was convalescent, without incision. Good results are recorded in two cases of furuncle of the upper lip with high temperatures and signs of septicaemia. In one case of lactational mammary abscess rigors and evening temperatures persisted for a week after incision and drainage. Inunction of the entire dorsal region was followed next day by free discharge of pus from the incision. No untoward symptoms were observed after this treatment.

414 Apyrexic Mediterranean Fever

C. CONESA (*La Med. Ibera*, March 17th, 1934, p. 326), who records an illustrative case, states that this disease may occasionally be apyrexial. In cases of obstinate neuritis of which the aetiology is obscure and in which the possibility of syphilis can be excluded, the diagnostic tests for Mediterranean fever infection should be performed. Nervous manifestations are not infrequent and may occasionally predominate. The blood in Mediterranean fever shows a constant lymphocytosis, monocytosis, and more or less marked leucopenia. Conesa's patient was a man, aged 41, who had probably been infected by contact with diseased goats. In addition to the characteristic blood changes his principal symptom was intercostal neuralgia. Burnet's intradermo-melitin reaction and the agglutination test were positive, and rapid recovery followed intramuscular injection of "nos I.C.I. 930" (3 to 70 grams).

415 Coronary Thrombosis

H. EPPINGER (*Wien. klin. Woch.*, February 16th, 1934), reviewing this disease, states that in most cases coronary thrombosis occurs as the end-result of a previously established angina pectoris, and the characteristic pain and anxiety are in both conditions the outstanding symptoms. After dealing with the differential diagnosis, Eppinger states that in coronary thrombosis the pain may continue for many hours unabated, and that the patient may not react to large doses of morphine; in any case, large doses must be tried. Whereas in an attack of angina pectoris the patient will most often realize that rest is the best treatment and consequently will tend to remain immobile and even hold his breath, the reverse is the case with coronary thrombosis, where the subject develops dyspnoea and great unrest. Clinically, the heart may show nothing special; the lungs show, in those cases not rapidly becoming fatal, signs not unlike those of acute pulmonary

oedema, and if they are x-rayed they appear deeply shadowed as in severe cardiac stasis. The sputum is scanty and contains protein and cells. The longer the attack lasts the more likely is the patient to survive it. After the acutest stage is passed, fever sets in (? reabsorption of metabolic products) from the diseased myocardium, and may disappear only after a week or so. There also appears in nearly all cases a considerable leucocytosis. Pericarditis and pleuritis may follow. The electrocardiograph is of importance in diagnosing involvements of the conduction system, and hence myomalacia or fibrosis may occur in the heart without any reflection in the electrocardiogram. Thus a normal electrocardiogram does not exclude occlusion of a coronary branch. Recovery from an acute coronary thrombosis may be almost complete and the patient may later die of quite another condition. As regards treatment, the author mentions the usual methods, warns against strophanthus, speaks in favour of purine derivatives, and especially "corphyllamin." Intravenous glucose injections in 20 per cent. solution (10 c.cm.) are recommended.

416 Prodromal Measles Angina

E. MAYERHOFER (*Zeit. f. Kinderheilk.*, February 19th, 1934, p. 42) describes two forms of prodromal measles angina—namely, an early form, which is rare and occurs four to eight days after infection, and a late form, which develops on the ninth to the twelfth day of the incubation period, but always before the appearance of Koplik's spots. Prodromal measles angina is often associated with pseudo-appendicitis. Prodromal measles angina, which had been previously described by C. Herrman in 1915 and Veilchenblau in 1933, is regarded by Mayerhofer as an allergic reaction affecting the lymphatic system of the buccal cavity, analogous to the angina which accompanies vaccination, serum sickness, leukaemia, and agranulocytosis. It is rather a misleading symptom than otherwise, and it is only in cases of an outbreak of measles, especially in institutions, that its real nature is likely to be recognized.

Surgery

417 Injuries to Articular Cartilages of the Knee

O. ALEVAN and S. FRIBERG (*Acta Chir. Scand.*, 1934, lxxiv, Fasc. IV-V, p. 319) discuss the treatment of injuries to the menisci of the knee on the basis of 186 cases operated on in a military hospital in Stockholm in the period 1914-32. Most of the patients were about the age of 20. The medial meniscus was involved in 160 cases and the lateral meniscus in twenty-six. In 135 of the medial cases there was a history of indirect trauma, and in twenty-three of these cases the primary trauma was hyperflexion. In seventeen of the twenty-six cases of injury to the lateral meniscus there was no history of trauma. The most characteristic sign of injury to the medial meniscus was locking of the joint, observed in 132 of the 160 cases. The authors attach no diagnostic value to the x rays, and what they consider most important in the differential diagnosis is knowledge of a fairly recently discovered disease—chondromalacia patellae—which often interferes with movements to such an extent that locking is imitated. The clinical manifestations of this common disease are well defined, and it is therefore apt to be overlooked only by those who have never heard of it. The operation the authors recommend for injuries to the menisci is resection, but not complete extirpation. Of 132 re-examined cases of medial rupture, 132 represented complete recoveries. In the remaining twenty cases the patients were quite able to work, but suffered from some local discomfort. As far as the re-examined medial rupture cases were concerned, no evidence of subsequent arthritis deformans could be found. It was, however,

demonstrable in two out of the twenty-four re-examined cases of injury to the lateral meniscus. Among these twenty-four ex-patients were nineteen who had recovered completely. The discomforts in the remaining cases were quite slight. It may therefore be concluded that the prognosis for injuries to the menisci treated by operation is good.

418 Static Electricity in Anaesthetic Explosions

According to H. SCHRÖDER and T. C. NEEFF (*Schmerz Narkose-Anaesthesie*, March, 1934, p. 103) explosions during ether administration are as frequent as in that of newer inflammable anaesthetics such as ethylene, and in the absence of an unguarded flame or heated cautery are explicable only by ignition from a spark caused by the presence of two bodies charged with static electricity of different potentials. The present writers feel that insufficient heed has been given to the warnings of Ritter and Rimarski (1928), and they have investigated experimentally spark production in an apparatus (in an insulated trolley) in which the issues of cylinders of compressed oxygen and anaesthetic gas were mixed. They come to the following conclusions. Spark production may follow from different electrical charges in an apparatus, its component parts, and/or the attendant persons. The differences are due chiefly to non-"earthed" apparatus being moved about, the movements of a personnel wearing rubber soles or silk stockings, and the rapid passage of gases through constricted tubes. An arid atmosphere favours production of faradic charges. The practical preventive measures to be taken in operation theatres (concerning these measures W. SCHULTZ—*ibid.*, p. 98—who describes a serious explosion during ether narcosis, agrees), consist chiefly in (1) effective "earthing" of the anaesthetic trolley, apparatus, and operation table; (2) use of good conducting rubber for connexion tubes; (3) "earthing" of the patient by efficient electrical connexion with a well-"earthed" operation table; (4) "earthing" of all persons in the theatre and wearing by spectators and personnel of conducting rubber shoes; and (5) avoidance of a dry atmosphere.

419 Osteochondritis Dissecans

F. CONWAY (*Ann. of Surg.*, March, 1934, p. 410) describes osteochondritis dissecans as a non-infectious process involving the articular cartilage and the subchondral region of certain long bones of the extremities. This process, by sequestration from the cartilage, produces a loose body. A series of ten cases is reported in which there were eight instances of the knee-joint being affected and two of the elbow. The aetiology of the condition is uncertain, but trauma, low-grade bacterial infection, mycotic embolus, and congenital predisposition of the femoral epiphysis are some of the causes suggested. The commonest site is the lateral aspect of the medial epicondyle of the femur, and the condition is more often seen in males than in females. The average age in the series reported was thirty. The loose body may be completely or incompletely detached, or may acquire a secondary adhesion to the synovial membrane. Its continued presence in a joint may bring about osteoarthritic changes. Early symptoms are indefinite and consist of a feeling of disability in the affected joint, but a later development, following the further sequestration of the fragment, is locking or catching of the joint, and synovial membrane involvement. Swelling of the knee is a persistent feature, and during this period lamellation of the fragment occurs by deposition. A radiogram is valuable in diagnosis, and presents a characteristic appearance. Treatment of osteochondritis dissecans is arthrotomy with the removal of the sequestered fragments. The most satisfactory time for intervention is during the stage of demarcation, before complete sequestration has occurred. Stress is laid on the importance of a forty-eight hours' preoperative skin preparation. In seven cases operation was carried out with complete success, convalescence was uneventful, and movement was started by the patient about the twelfth day after operation. The remaining three cases refused operative treatment, and were given radiant heat treatment with slight relief of symptoms.

Therapeutics

420 Prophylactic Immunization in Measles

Pointing out the unquestionable connexion existing between measles and tuberculosis—that is, the lessened resistance to tuberculous infection and the tendency towards the reactivation of a latent tuberculous process in the relative allergy induced by measles and persisting after the disease has passed—J. SURANYI (*Orvosi Hetilap*, February 24th 1934, p. 31) advocates the prophylactic treatment of this affection by passive immunization in every case of children suffering from active tuberculous processes, general debility, rickets, whooping-cough, scarlet fever, etc., if they are exposed to any danger of infection, or if an epidemic of measles occurs. The author recommends the intramuscular injection of convalescent serum taken from a measles patient on the sixth to the eighth day after the return of the temperature to normal. The dose is from 3 to 10 c.cm., according to the age and general condition of the patient. Children already suffering from other diseases require doses about 80 per cent. higher than those considered normal for their age. The best protective results are obtained if the immunization takes place before infection, while the incubation period offers less chances of complete protection, but even in such cases the process is much milder than if the child were unprotected. The duration of such passive immunity is about four to eight weeks.

421 Tannic Acid in Treatment of Pressure Sores

In addition to commending lead tannate dusting powder as a prophylactic against the development of pressure sores E. O. LATIMER (*Journ. Amer. Med. Assoc.*, March 10th, 1934, p. 751) advises the application of a freshly prepared aqueous solution of tannic acid to the developed lesions. The presence of infection is not necessarily a contraindication to its use, unless this is virulent and there is advanced tissue necrosis with bone involvement. If possible, treatment is begun before the skin is broken. The area and surrounding skin are cleansed, and all crusts, debris, and macerated skin removed. If a blister is present, the elevated epithelium is removed aseptically. Lesions that may be exposed to the air are sprayed hourly with the tannic acid solution, and between sprayings the region is kept exposed to dry heat from electric lights or an electric hair drier. Wounds that must be dressed to be maintained clean, or to prevent direct pressure, are covered with sterile gauze which is kept saturated with the solution. The treatment is continued until a heavy coagulum has been formed. This usually requires about twenty-four to forty-eight hours. Afterwards no dressing is applied, nor is sterile gauze used to keep the coagulum clean and dry. Healing occurs as in burns, and as the coagulum separates at the edge it is clipped away. Should it be necessary to remove it prematurely, it may be softened with sterile paraffin. If a virulent infection occurs during this treatment, the crust should be removed and the lesion treated as an ordinary infected wound. The author reports that the results of this method were especially gratifying in lesions following cord injuries or occurring in bed-ridden diabetic patients, and in lesions under casts.

422 Symptomatic Therapy in Arthritis

J. L. KENDALL (*Med. Record*, March 7th, 1934, p. 245) reports good results in arthritis from "kiuma," a preparation first used at the Royal Mineral Water Hospital, Bath, by Watson in 1931, and containing a salicylic ester content of 15 per cent. Kendall agrees that this unguent relieves pain, inflammation, and swelling, and he adds that it also seems to promote vaso-dilatation. A type of shea butter (derived from the nuts of *Bassia farkii*) incorporated in kiuma probably has some specific effect. Nine cases are briefly described by the author. He first applies a pad soaked in chloroform to redden the area and open the pores without blistering. The ointment is then rubbed in gently, and is quickly absorbed with speedy relief.

Ophthalmology

423 Operations for Detached Retina

In an extensive comparative study of the relative merits of Gonin's and Guist's operations for detachment of the retina, H. RIEGER (*Graefes Archiv für Ophthalmologie*, cxxxi, No 3, p. 410) analyses 101 unsuccessful cases on the grounds that these offer better possibilities of detecting mistakes, determining indications, and setting up prognosis than do successful cases. According to this author a reattachment of the retina following operation was observed in 21.4 per cent. of the Gonin and in 18.2 per cent. of the Guist cases. This proportion is certainly higher than the proportion of spontaneous cures. As to vision, 20.6 per cent. of the Guist and 6.7 per cent. of the Gonin cases showed definite improvement; no change was observed in 38.2 per cent. of the Guist and in 15.5 per cent. of the Gonin cases; worsening appeared in 41.2 per cent. of the Guist and in 77.8 per cent. of the Gonin cases. Amaurosis occurred after 26.5 per cent. of the Guist and 22.2 per cent. of the Gonin operations; the respective figures for complicated total cataract were 26.5 per cent. and 42.2 per cent. Complete loss of the eye resulted by atrophy of the bulb in 11.1 per cent., and by enucleation of the bulb in 13.05 per cent. after Gonin's operation, and in 17.6 per cent. after Guist's operation. The factors influencing the process were found to be: advanced age of the patient or of the lesion; extension of the latter; existence of multiple or extensive lacerations; restlessness or nystagmus of the patient. Under otherwise identical circumstances the forecast is dependent on the condition of the vitreous body. Myopes have comparatively favourable chances. This can be explained by the fact that in high-degree myopia the vitreous is either detached or extensively liquefied, in which case there is a better prospect of the inflammation induced by the operation resulting in a union of retina and choroid. That absence of the crystalline lens is an unfavourable factor is a well-known fact, and is probably due, in the opinion of the author, to the effect of the immediate contact with the aqueous humour of the vitreous.

424 Diagnostic Value of Tricoire's Reaction in Trachoma

M. A. EL-BAKLY and A. F. ABBASSI (*Bull. Ophthalmol. Soc. Egypt*, 1933, vol. xxvi, p. 61) describe Tricoire's technique as published in 1923. He obtained 100 per cent. positive results in trachoma. Belot, working with larger numbers, obtained 89 per cent. positive reactions in trachomatous cases and 43 per cent. positive in non-trachomatous controls. Mikaelian's positive reactions were 48 per cent. in trachomatous and 14 per cent. in non-trachomatous cases. The authors' experience has been similar. In the most acute types of trachoma the positive reactions did not exceed 54 per cent., while comparing all trachomatous cases with controls, the percentages were similar. The authors therefore conclude that the reaction has little or no diagnostic value.

425 Vision by X Rays

A. H. PIRIE (*Brit. Journ. Radiol.*, February, 1934, p. 111) describes an apparatus which enables the patient to see with closed eyes by the use of x rays. A complete x-ray outfit apparatus is used with an eyepiece, behind which is a transparent wheel having on it mounted lead letters forming words. These can be read through closed lids, since the x rays are perceptible by the retina. Among the possible uses listed by the author are the following. A patient with a foreign body in his eye can see it, locating it in two dimensions and with moderate accuracy in the third. Damage to the retina caused by a foreign body can be located by the patient. He can also distinguish between these two contingencies, and it is suggested that he might be able to detect a foreign body lying behind the eye, the rays being passed through the skull to the retina from behind. The condition of the retina can be ascertained in a case of complete cataract. The field of vision can be mapped out by the patient, and minute scotomata localized at once. A foreign body lying laterally to the retina can be made to cast its

shadow on the near side and on the far side of the retina, and the patient can thus be enabled to see two shadows—proving that the foreign body is outside the globe. The patient cannot recognize his own blind spot, as it is lost in the brilliant field of light which is seen. Pirie states that an examination lasting two minutes is quite safe, and well below epilation dose. A time switch, which runs for ten seconds, reminds the examiner of the quantity of rays entering the eye. In order to locate a foreign body or scotoma, or to map out the field of vision, a lead diagram, consisting of a cross with a perpendicular and a horizontal arm, is placed in front of the eye. This casts its shadow on the retina, dividing it into four quarters. The patient describes what he sees in each quarter. If a foreign body is present, casting its shadow into the upper and outer quadrant, the observer reports it in the inner and nasal quadrant. Finer subdivision for localization is obtainable by using a star with eight arms, and by having a lead circle, or even two concentric lead circles, to measure the distance from the centre of the retina. The depth of a foreign body from the front of the cornea can be roughly estimated by its change of apparent position when oblique rays are cast on the retina. It is suggested also that glass fragments might be localized by the fluorescence they set up in x rays.

426 Effect of Tryparsamide on the Eye

N. K. LAZAR (*Arch. Ophthalmol.*, February, 1934, p. 240) states that the literature from 1919 to 1930 only records transitory ocular changes. The writer found no ocular lesions in rabbits until large doses were used, and then only a mild reaction, which was by no means certainly due to the drug. In the post-mortem on a case of syphilis blind for some years, multiple organized foci of softening in the occipital cortex may have been due to the tryparsamide treatment. In thirty-two cases of syphilis of the central nervous system the central vision and fields were recorded before giving tryparsamide, and at weekly intervals during treatment. Five cases showed alteration in vision, two with permanent loss, and three with temporary constriction of fields and reduction in central acuity. These changes became apparent early in the treatment. If examination before the first three to six doses shows optic atrophy or constriction of fields, no tryparsamide should be given, or the course should be stopped for a period and sodium thiosulphate administered.

Obstetrics and Gynaecology

427 Dextrose Pessaries in Treatment of Leucorrhoea

According to E. KOTTLORS (*Med. Klinik*, February 23rd, 1934, p. 273), vaginal injections of dextrose assist in the treatment of leucorrhoea by (1) increasing the glycogen content of the lining membrane, (2) inducing hyperaemia, and (3) effecting some bactericidal action. Dextrose applied in pessaries is more effective than in solution. The pessaries are introduced (usually by the patient) at bedtime, the vulva and introitus being previously smeared with grease and an absorbent tampon being inserted subsequently. In the large series which Kottlors reports recourse was had at the same time to (1) general tonic treatment and exhibition of large doses of ovarian hormone where there was evidence of hypofunction, and (2) local treatment of existing cervical catarrh by cauterization, caustic applications, or abrasion of the cervical mucous membrane. The cases were non-gonococcal ones of various ages: they include diabetic subjects, those who had had total hysterectomy with vaginal drainage, and some examples of trichomonas infection.

428 The Obliquely Posterior Occiput Presentation

G. E. HUDSON (*Minnesota Med.*, February, 1934, p. 64) pleads for conservative treatment of the obliquely posterior occiput presentation. Weak pains should not be allowed to persist more than four or five hours, after which castor oil or quinine, or preferably both, should be given, a hot enema being of value. If this fails, or if the patient, after the four or five hours of weak pains, obviously needs a rest, she should be given 1/4 grain of morphine and a hypnotic.

Labour often follows naturally after such a rest. Through the first stage sedatives and food should be given, but the former must not be allowed to shorten the pains. Hudson waits until the pains are constant in interval and thirty-five to forty seconds in duration before administering 1/6 grain of morphine and 1/200 grain of scopolamine every four to six hours; provided that the pain lengths are as above and the cervix has not dilated more than 8 or 9 cm. The patient should enter the second stage of labour free from the influence of drugs, for it is only when the abdominal muscles are acting effectively that the majority of primiparae with an occiput in the obliquely posterior position can deliver the child without operative intervention. The author thinks that the value of food in sustaining the patient's strength has been overlooked, and favours small amounts of solid foods as well as fluids. In the second stage a Beck binder should be applied as soon as the cervix is fully dilated, since it often renders intervention unnecessary. If the occiput fails to rotate manual rotation is most likely to succeed. The patient may remain in the second stage for three hours, or even longer, provided that the foetal heart sounds are normal and the general condition of the mother is good.

429

Pregnancy Dermatoses

A. LYSANDER (*Zentralbl. f. Gynak.*, March 10th, 1934, p. 562) states that, apart from rare cases of herpes of gestation (identical, according to Buhning, with dermatitis herpetiformis), and the still rarer impetigo herpetiformis (a serious condition justifying induction of abortion), the very great majority of pregnancy dermatoses are morbid vascular (and especially vasomotor) conditions, such as erythema, exanthemata, urticaria, pruritus, and prurigo. Itching is a prominent symptom, and is not infrequently confined to the vulva: response to ordinary therapy is often disappointing, and it is then necessary to give protein injections. These originally took the form of serum from healthy gravid subjects, but other human or animal sera were found equally effective. Lysander reports thirty-one cases, twenty-seven occurring in the last two months of gestation; no fewer than sixteen had albuminuria, including two eclampsics. All were treated by intramuscular injection of small doses—for example, 1 c.cm. increasing to 3 c.cm.—of the patient's own blood, kept in a syringe about two minutes until commencement of coagulation. Two to three days' intervals separated the injections. The results were uniformly satisfactory, and the treatment is recommended as being free from danger of anaphylaxis and non-irritant.

Pathology

430 Resistance of the Cholera Vibrio to Phage

Y. N. YANG and P. BRUCE WHITE (*Journ. Path. and Bact.*, March, 1934, p. 187) have studied the relation between antigenic roughness in cholera vibrios and their resistance to the action of bacteriophage (Type A). They find that the smooth to rough transformation with *V. cholerae* is similar to that occurring in organisms of the Salmonella group, and involves a loss of the characteristic soluble specific substance, which is apparently of non-protein carbohydrate-containing nature. All intermediate stages between smoothness and complete roughness may apparently exist. The action of the A type cholera phage on a pure culture of *V. cholerae* is to destroy sensitive organisms and to leave resistant organisms untouched. These resistant organisms may consist predominantly either of smooth, intermediate, or rough serological types. Examination has failed to show any difference between rough phage-resistant types isolated by use of the phage and similar types isolated by special techniques not involving the use of the phage. For instance, by exposing a culture to a smooth cholera antiserum plus complement, it proved possible to kill off the smooth and leave the rough organisms. These rough organisms were indistinguishable from resistant rough strains isolated from phage-treated cultures. The conclusion reached is that in all probability resistance to

A type phage is not a modification induced by phage action, but is the result of selection of resistant elements present in the original culture.

431

Infectious Mononucleosis

W. ANTON (*Zentralbl. f. Bakt.*, February 28th, 1934, p. 89) has studied *Bact. monocytogenes*, the organism isolated originally by Murray at Cambridge from an outbreak of infectious mononucleosis in rabbits. He finds that, besides giving rise on intravenous inoculation to a typical increase in the blood mononuclears, it is capable, on simple instillation into the conjunctival sac of rabbits, of causing severe inflammation with involvement of the cornea. The possible aetiological relationship of this organism to infectious mononucleosis and glandular fever in human beings is discussed. In 1929 Nyfeldt isolated from the blood of a case of infectious mononucleosis an organism very similar to *Bact. monocytogenes*. No confirmation of his work has so far been forthcoming, but it is pointed out that blood cultures in naturally infected rabbits are almost uniformly sterile. The organism is most frequently isolated from the glands. The disease in rabbits presents many points of similarity with that in human beings, particularly in relation to the pathological findings of enlargement of the lymphatic glands, lesions of the spleen, and necrotic foci in the liver.

432 Therapeutic Action of Different Parts of the Stomach in Pernicious Anaemia

E. MEULENGRACHT (*Ugeskrift for Læger*, February 15th, 1934, p. 179) considers that the treatment of pernicious anaemia with stomach preparations should replace that with liver as the former is more effective and cheaper. Hitherto, the active principle in the stomach has not been identified, but the following investigations by the author show how greatly the potency of different parts of the stomach varies. Pigs' stomachs were dissected in such a way that the parts belonging to the cardiac, fundus, and pyloric areas were separated from each other. They were dried, defatted, and pulverized. After giving details, with numerous tables, of nine experiments, the author points out that fundus powder invariably proved to be inactive. Pylorus powder, on the other hand, was invariably potent, even to a high degree. The pyloric glands would therefore seem to be responsible for the secretion of the specific but hitherto unidentified anti-anaemic factor. As for the powder from the cardiac area of the stomach, the final verdict must rest in abeyance, as some of the patients on whom it was tested were unsuitable for the experiment, and some of the tests were still proceeding. But the technique of these tests having been worked out, the potency or lack of potency of the glands of the cardiac area of the stomach should be ascertained in the course of a few months. Already it can be claimed that the pyloric glands have a secretory function which is reflected in the vascular and the nervous systems, and which is essential to life.

433 Identification of *V. cholerae* by Fermentation Reactions

B. HEIBERG (*C. R. Soc. de Biol.*, 1934, cxv, 934) has studied the fermentation reactions of 375 strains of vibrios coming from various sources. Twenty different substances were used, but it was found that six groups could be established on the basis of sucrose, arabinose, and mannose fermentation. Groups 3 to 6 were easily distinguished from the true cholera vibrios by their failure to give the cholera red reaction. The strains of group 1, which were the most numerous, produced acid in sucrose and mannose in twenty hours at 37°C., but not in arabinose; 239 of these were agglutinated by a cholera antiserum, while twenty-seven showed no agglutination. In group 2 sucrose alone was acidified; one strain was agglutinated, while seventy-six strains failed to agglutinate with a specific antiserum. It would appear, therefore, that the rapid fermentation of sucrose and mannose and the failure to ferment arabinose is characteristic of the true cholera vibrio. While the use of these reactions cannot replace the agglutination test in the examination of unknown strains, it is, nevertheless, likely to prove of value in the identification of inagglutinable cholera vibrios.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

The "Rheumatic" Tonsil

434

C. DIAZ *et al.* (*Anales de Medicina Interna*, February, 1934, p. 143) have made an exhaustive research into the history of thirty tonsillectomized subjects, of whom twenty had suffered from rheumatism, and, after a series of control experiments on individuals with healthy tonsils, they conclude that the aetiological problem presented by tonsillitis has not yet been solved. They emphasize the importance of streptococcal foci in the tonsils in the evolution of rheumatic diseases. The parallergeric action of these foci causes recurrence and chronicity, and renders cure impossible even in the absence of any other toxic agent. In twenty of the forty-seven cases examined the infective germ was a haemolytic streptococcus. Non-haemolytic streptococci were found in ten cases, *S. viridans* in four, *B. coli* in two, and staphylococci alone or in combination with other organisms in the rest. They believe that it is impossible to differentiate the rheumatic from the non-rheumatic tonsil, but advise that when a haemolytic focus is present the tonsil should be removed, even though the endocardium is infected and the temperature is raised. In very septic cases with high temperature, positive blood culture, or astylosic signs, extirpation should be postponed. When the inflammation of the tonsil is great, but the temperature is not very elevated, and sedimentation not much accelerated, they advise enucleation, for a day or two previous to which salicylates by the mouth or acriflavine intravenously should be given. This should also be given on the day after operation. Risks of enucleation, when it is properly performed, are hypothetical. They had two cases of septicaemia following incomplete tonsillectomy, in both of which *Streptococcus viridans* was found to be the active agent. Hence they advise caution with regard to the operation when this organism is detected.

435 Indications for Nerve Blocks

Discussing the diagnostic, prognostic, and therapeutic applications of nerve blocks induced by injecting alcohol or procaine hydrochloride, H. S. RUTH (*Journ. Amer. Med. Assoc.*, February 10th, 1934, p. 419) indicates how a differential diagnosis may be made of the origin of abdominal pain, a particularly valuable result in cases of malignant disease. Nerve block has therapeutic value in such conditions as aortic aneurysm (when only two thoracic nerves have to be infiltrated), in inoperable malignant disease, tuberculous laryngitis and pleurisy, and in arthritis deformans, when associated with vascular changes and pale clammy cold extremities, and before the occurrence of severe bone involvement. Ruth draws attention to the delay that may occur before the full benefit of an injection is manifest; the time can be shortened by using full doses, but the escape of alcohol into the adjacent tissues must be avoided lest degenerative processes ensue.

436 Detection of Latent Tetany in Exophthalmic Goitre

D. W. C. NORTHFIELD (*Guy's Hosp. Report*, January, 1934, p. 118) has applied the minimal electrical stimulus test to cases of exophthalmic goitre in order to determine whether it is possible in this way to indicate cases which would undoubtedly develop frank symptoms of tetany after thyroidectomy. He reports that in this disease there is a marked diminution in the minimal electrical threshold stimulus of peripheral nerves, and that this diminished threshold is much improved by operation. In a young patient with a short history a low figure is to be expected, and is an indication in some measure of the severity of the condition. A low post-operative figure is also to be taken as a warning that further treatment may be necessary. When the disease has existed for a long time before relief is sought, this figure will probably

remain below the normal. Northfield is satisfied that a markedly low threshold (in the region of 0.6 mA.) constitutes evidence of latent tetany, and may lead to frank post-operative tetany. Hyperpnoea and pyrexia are considered to be the chief primary factors in producing latent tetany. The author concludes, therefore, that the alleviation of the former by complete rest and of the latter by adequate methods of cooling are the best means of preventing post-operative tetany. In the test the weakest galvanic current is determined which will evoke a muscular contraction. The brachio-radialis muscle is always used, and the conditions of moisture of skin and temperature which affect the contact of the electrodes are kept constant. In forty-one cases of exophthalmic goitre it was thus shown that the average threshold was 1.4 mA. instead of the normal of 2 to 3 mA.

437 Erythema Nodosum and Syphilis

P. EVRENIADIS (*Thèse de Paris*, 1934, No. 110) records nine illustrative cases in patients aged from 17 to 37 in whom erythema nodosum appeared in the course of secondary or tertiary syphilis. He maintains, however, that the coexistence of the two conditions does not prove the syphilitic origin of erythema nodosum, but merely indicates that the unknown pathogenic agent of erythema nodosum has been activated either by syphilis itself or by antisyphilitic treatment.

Surgery

438 Hydrotherapy for Stone in the Ureter

K. VOLKMANN (*Zentralbl. f. Chir.*, March 10th, 1934, p. 559) recommends for treatment of ureteral stone the method of Payr's Clinic, in which the patient, immersed in the bath, is given slow high rectal injections at low pressure; he also receives atropine or papaverine, and large amounts of tea. In thirty-four cases there were seven failures only; six cases are reckoned as successes in which after a bath the stone descended so as to be visible cystoscopically at the ostium and accessible to endovesical removal. Hydrotherapy, if successful, is usually so by the twelfth, but in Volkmann's experience occasionally up to the nineteenth, bath.

439 Recto-sigmoid and Sigmoid Surgery

H. B. DEVINE (*Aust. and New Zeal. Journ. Surg.*, January, 1934, p. 211) emphasizes the greater risk to the patient from operations on the distal half of the colon than from those on the proximal part. This is due to the poor blood supply in the distal segment, to its thin walls, and to the fact that in some parts the peritoneum is absent or fatty. In the most distal part of the colon the contents are semi-solid and infective, and the muscular contractions are powerful. A recto-sigmoid anastomosis which is rendered necessary after the removal of a lesion at the lower end of the distal colon or the recto-sigmoid junction is too dangerous to be readily undertaken. An operation has been devised which is a modification of the Paul type of partial colonic resection. By this method the peritoneum is not soiled, and as no sutures are used the anastomosis does not become infected. In ordinary circumstances the mortality is negligible, but the method of operation is not applicable to growths in the upper or lower end of the sigmoid, in the descending colon, or in the splenic flexure. The advantages of this method are that the operation is carried out on a distal part of the colon which has been aseptically prepared, rendered functionless, and is allowed to remain functionless until the anastomosis has completely healed. The distal segment of the colon is deprived of its function by the construction of a mid-colic anus. In the formation of this the spur should be about $3\frac{1}{4}$ inches long, and exactly at right angles to the axis of the bowel. The end of the

spur should be attached to the skin to prevent retraction and consequent soiling of the distal segment, and the artificial anus should be as small and neat as possible. A resection and anastomosis of the sigmoid may subsequently be performed without danger, as the bowel has no septic content, is devoid of peristaltic movement, and its walls are retracted and thick. The artificial anus can easily be closed. Three cases are reported in which this method of operative treatment was carried out successfully.

440 Primary Tumour of the Renal Pelvis

G. NICOLICH (*Zeit. f. Urol.*, 1934, Heft 2, p. 73) describes five cases of primary tumours of the renal pelvis, occurring in thirty-five years at Trieste, and constituting one-fourth of primary renal tumours: four were in males. In no case was it possible before operation to distinguish the pelvi-renal from a renal tumour, and "snowflake shadows" were absent on x-radiation. All the tumours were papillary, and three were histologically benign; yet in these three metastases afterwards occurred in the ureter, while one of the apparently malignant cases was cured by operation—so that histological criteria appear to be of minor importance. Nicolich concludes that in all tumours of the pelvis, nephro-ureterectomy is the operation of choice. Being a severe operation, it must be replaced in debilitated subjects by nephrectomy, which led to lasting cure in one case of the present series. Long after-care is necessary: one patient, three years after nephrectomy, had bleeding from papillary tumours of the ureter, probably present at operation. Secondary ureterectomy should be done, if possible, in such cases; if not, endoscopic electro-coagulation.

Therapeutics

441 Liver Extract Intramuscularly in Pernicious Anaemia

P. SCHULTZER (*Ugeskrift for Læger*, March 22nd, 1934, p. 319) has investigated in a hospital in Copenhagen the action on pernicious anaemia of a liver extract, "hepsol," prepared by the Danish firm—Medicinalco. This hepsol, which is an alcoholic extract of raw liver (1 c.cm. to every 5 grams of liver), was administered by intramuscular injection, which provoked neither a local nor a general reaction. The results were, on the whole, very encouraging, and the author concludes that this treatment is particularly valuable when the patients are very debilitated at the outset. It is not likely, however, that such intramuscular medication can effect more than does intensive treatment by the mouth. Several of the patients were at a later stage given an injection of 5 c.cm. of hepsol every fortnight, with the result that the blood picture continued to improve. In one case the interval between each injection was increased from a fortnight to a month, the dosage being raised to 10 c.cm. During an observation period of nine months there was no sign of relapse. It would seem from these observations that the anti-anaemic factor in the liver can be artificially stored in the body, which draws on its reserves according to its needs. Unlike insulin, the anti-anaemic factor does not apparently cause harm in large doses, even when given by injection; and there seems, therefore, to be no objection to the creation of such a depot in the body.

442 Cod-liver Oil Sensitivity

R. M. BALLYEAT and R. BOWEN (*Amer. Journ. Dis. Child.*, March, 1934, p. 529) report four cases of children in whom, owing to the addition of cod-liver oil to their diets, various types of allergic manifestations developed other than the one for which they first came for treatment. In one instance asthma, urticaria, and vomiting resulted, asthma and hay fever in another, asthma and eczema in the third, and diarrhoea with vomiting and urticaria in the fourth. The authors substituted carotene fortified with vitamin D in each case with entirely satisfactory results. The carotene was extracted with ether, thus eliminating all plant proteins. The added concentration of vitamin D

was such that ten drops of the mixture were the equivalent of three teaspoonfuls of ordinary cod-liver oil. On no occasion did untoward symptoms follow its administration.

443 Prophylaxis of Impetigo Neonatorum

W. H. GUY and F. M. JACOB (*Journ. Amer. Med. Assoc.*, March 17th, 1934, p. 840) describe the method adopted at the Elizabeth Steel Magee Hospital since 1930 for the prevention of impetigo neonatorum. As soon as possible after birth the infants are cleansed thoroughly with sterile paraffin. Each is then rubbed from the top of the head to the soles of the feet with 2 per cent. ammoniated mercury ointment before it leaves the delivery room. In the nursery daily cleansing is effected with cotton-seed oil, cotton balls and this oil being used for the buttocks and anus. Soap and water and powder are not employed. During the first few months of this procedure several cases of a more or less generalized chemical dermatitis were encountered. At that time 5 per cent. ointment was being used, and the complication was stopped by changing to the diluter form. No kidney irritation was found at any time. Whereas in 1929 there were thirty-four cases of impetigo at this institution in 2,344 births, there were only two in 1930, one in 1931 (when the prophylactic treatment was omitted), one in 1932, and none in 1933. The authors are satisfied that this simple and inexpensive method is worthy of adoption on a general scale.

444 Bilateral Artificial Pneumothorax Treatment

K. TÖRNING and N. F. MICHELSEN (*Nord. Med. Tidsskrift*, March 17th, 1934, p. 321) report from the Vejlebjerg Sanatorium in Denmark observations on fifty-four patients treated since 1925 with a bilateral pneumothorax. The chief object of their paper is to prove that even cavernous bilateral pulmonary tuberculosis is amenable to this treatment. In eleven cases it is still proceeding. The authors' analysis concerns the remaining forty-three, of which nineteen terminated fatally. Of the twenty-four survivors, nine derived no benefit from this treatment. The remaining fifteen patients were symptom-free and sputum-negative, as many as ten being fully fit for work. The successes achieved in these cases depended to a certain extent on the intrapleural pressure being kept so low that the retraction of the lungs was of a selective character, the healthy lung tissue being allowed still to function as well as it could under the circumstances.

445 Massage and Anaesthetic Injection in Muscular Rheumatism

R. BARANY (*Nord. Med. Tidsskrift*, March 10th, 1934, p. 295), the Austrian Nobel Prize winner, who has settled in Sweden, has during the past three years studied aseptic inflammation provoked by the injection of various saline solutions. He has also been in the habit of treating himself for muscular rheumatism, whatever its localization. The observations made on himself and others have led him during the past year to adopt a treatment which he has found effective in a variety of conditions other than muscular rheumatism. An area of pain or tenderness in the skin, or fascia superficial to a muscle, having been located, a subcutaneous injection of 3 to 5 c.cm. of a 1 per cent. solution of aethocaine or novocain is given at this point. After an interval of less than a minute for the tissues to become anaesthetic, they are vigorously massaged for half a minute. This combined treatment has proved effective in supraorbital neuralgia, and in the one case in which a relapse occurred after six weeks there was no obstacle to a repetition of the treatment. Itching in the ear, with or without eczema in the auditory meatus, disappears after one or two injections supplemented by massage behind the ear and towards it. In a case of chronic eczema of the fold of the elbow, hitherto refractory to treatment, rapid and striking improvement followed the author's treatment. Another patient was a man of 75, who showed a patch of skin as large as a hand, covered with crusts, at the back of one knee. This area was exquisitely painful, and the patient could hardly walk. The two skin specialists he consulted first recommended ointments and then resignation. The author, having noticed that his injections of saline solution

had reduced the sensitiveness of skin and promoted desquamation, gave his treatment in this apparently intractable case. Not only was the pain reduced but the sore healed. When it recurred five weeks later it was painless. The same treatment is also remarkably effective for huskiness in public speakers, and for the chronic cough and irritability of the upper respiratory passages after an attack of laryngitis.

Neurology and Psychology

446. The Amino-acids in Muscular Dystrophy and Atrophy

C. J. TRIPOLI and H. H. BEARD (*Arch. Int. Med.*, March, 1934, p. 435) record a study of the clinical and biochemical results following the oral administration of glycine and glutamic acid. In muscular dystrophies the creatine metabolism of the muscles becomes deranged, but investigations have shown that the administration of glycine increases the excretion of creatine by 40 per cent. The authors report results obtained by giving daily doses of 10 or 20 grams of glycine or glutamic acid to six patients with various dystrophies or atrophies. The average increases in the excretion of creatine ranged from 48 to 303 per cent., and in the excretion of creatinine from 11 to 46 per cent. Although at first the creatine formed was passed from the body in large amounts, it began to be retained in the muscles after a few weeks, and the patients then began to show clinical improvement. It appeared that the amino-acids supplied a deficiency in muscle metabolism. The creatine, retained as phosphocreatine, served over and over again to supply the energy for muscular contraction, and the muscular efficiency of the patient increased at a remarkable rate. When the therapy was discontinued the amelioration ceased and the patient began to revert to his previous condition. The authors think it possible, therefore, that the treatment should be continued for the remainder of life. The total number of cases of such treatment, reported by the authors and others to date, is 69, of which decided clinical improvement was observed in 51, and most obviously so in the muscular dystrophies. Only slight benefit was observable in cases grouped as progressive nuclear muscular atrophy. The administration of creatine was not found to be an effective measure. The authors suggest that patients with muscular dystrophies are not ingesting enough protein, or are not utilizing that ingested, or are not ingesting it in suitable form for muscle metabolism, or are suffering from some dysfunction of protein digestion which results in inability to utilize properly the ingested or formed amino-acids. They thus explain the success of amino-acid therapy in myasthenia gravis, pseudo-hypertrophic muscular dystrophy, and progressive muscular dystrophy.

447. The Argyll Robertson Pupil

J. Bussy (*Journ. de Méd. de Lyon*, March 20th, 1934, p. 237) deals with certain non-syphilitic conditions in which the Argyll Robertson pupil occurs. Duverger and Redslob have advanced several theories as to its pathogeny—namely, medullary lesions involving the cilio-spinal nerves (the opinion of Argyll Robertson himself); lesions of the junction between the sensory path and the nucleus of the third pair of nerves; lesions of this nucleus or of the nerve itself; lesions of the peripheral neurone lying either on the ciliary ganglion or on the ciliary nerves, with involvement and partial atrophy of the iris. In the following conditions the lesion is in undeniable relation with this pupillary sign: cranial traumatism involving the cerebral peduncular region; tumours in either the anterior quadrigeminal tubercles or the optic thalami; tuberculous meningitis; lesions of the orbit and optic nerve; lesions of the sensory nerves (ophthalmic zona); and lesions of the globe and ocular affections (glaucoma). In all these cases a unilateral (or predominant on one side) Argyll Robertson pupil is nearly always present. It has also been noted in encephalitis and certain infections due to undetermined neurotropic viruses. While cautioning against a too hasty diagnosis of a non-syphilitic origin

in these last conditions, Bussy, in view of our present knowledge of epidemic encephalitis and traumatism of the neuraxis, does not consider the Argyll Robertson pupil as a completely specific sign of syphilis.

448

Optic Neuromyelitis

R. A. PERRITT (*Arch. of Ophthalmol.*, March, 1934, p. 492) describes this rare disease as showing bilateral optic neuritis followed, after a variable interval, by myelitis. Sometimes only a retrobulbar neuritis is seen. Any degree of a rapid visual impairment to complete blindness may be present, while in 50 to 60 per cent. vision is more or less fully restored. The myelitis may, however, progress. In 75 per cent. of cases the optic neuritis precedes the myelitis by twelve hours to eighty-one days. While the fields may be variously affected, there is always a defect for red and green. Syphilis and nephritis are sometimes present, but most cases occur in perfect health. There is fatty degeneration and replacement of all or part of the optic tracts by neuroglia. Mercury, iodides, salicylates, strychnine, protein shock, and electrotherapy have all been tried. The disease differs from disseminated sclerosis in that the course is very acute, ending either in death or in practically complete recovery from the general and visual defects in 50 per cent. of cases.

449. Hyperpyrexial Treatment of Multiple Sclerosis

C. A. NEYMANN and S. L. OSBORNE (*Journ. Nerv. and Ment. Dis.*, April, 1934, p. 423) record the treatment of twenty-five cases of multiple sclerosis by hyperpyrexia induced by diathermy, radiotherapy, and the electric blanket. Considerable improvement was shown in 44 per cent., and a less but still definite degree of benefit in another 40 per cent. During a subsequent testing interval after treatment, ranging from a few weeks to eighteen months, all the patients remained stationary. Those selected for treatment showed predominantly the symptom of spasticity of the lower extremities, associated with loss of the abdominal reflexes, nystagmus, temporal pallor of the disks, and tremors of the trunk and extremities. The authors do not claim their results as indicating the success of the therapy, but rather as suggestions for further research. They point out that this form of hyperpyrexia permits accurate graduation of the doses of fever, and has none of the disadvantages of introducing chemicals or infections into the body. One fatality occurred, the patient being in the final stage of the disease, unable to move his arms or legs or utter sounds. The fourth treatment culminated with a temperature which suddenly rose to 108° F. In the evening he developed respiratory difficulties, which were followed by hypostatic pneumonia and death. The authors state that it is not easy to control the temperature in such advanced cases, and counsel great caution. In their entire series of diathermic treatment they only had two burns, however, both of which healed without complications. It is recommended that the heels of all patients should be padded with cotton, and a rubber ring placed under the buttocks, so as to avoid blistering.

Obstetrics and Gynaecology

450. Coagulation Diathermy in Gynaecology

A. BINET and J. MARCEL (*Gynéc. et Obstét.*, March 1934, p. 206) discuss the application of coagulation diathermy in gynaecological practice. A simple high-frequency apparatus is required, and suitably shaped electrodes. Coagulation is achieved by the passage of a current which blanches the part and leaves a pliable scar. If carbonization takes place destruction will be too deep. For surface destruction, a strong current for a short length of time; for a deeper penetration, a weaker current for a longer space of time, is the rule. In the cervix, bold application is rewarded by the best results. The slough separates in a week or two, and the patient need not be seen for a month, when another diathermy treatment can be given if required. Oedema, leucorrhoea, and a slight sanguineous discharge are to be expected, but not infection. Older women heal slowly, and

touching with silver nitrate may hasten separation of the sloughs. Douches, hot fomentations, ultra-violet light, and occasionally repetition of the diathermy may be required. Indications for diathermy. (a) in *vulva and vagina*, are: (1) benign tumours, especially urethral caruncle—if multiple, local anaesthesia enables a large area to be treated at one sitting. (2) leucoplakia, (3) skenitis, Bartholinitis, if subacute—gonococci are eradicated, (4) cancer of vulva or vagina—neoplastic cells are destroyed by fulguration, and growth excised by diathermy knife, with sealing of vessels; (b) *cervix*: (1) adenoma, (2) polypus, (3) stenosis—cured by conical electrode, followed by linear cauterization which produces soft distensible scars (for congenital cases this suffices, for cicatricial stenosis Hegar's dilators must be used subsequently), and (4) endocervicitis, the treatment of election—no anaesthesia, cure requires destruction of the cylindrical epithelium down to the muscularis (less than this induces deep cyst formation and Nabothian follicles). Here the electrode must be pushed through the internal os, which is often a reservoir of infection, then withdrawn to that level, and the current passed. The eschar may separate in a cast in a few days. Epithelium takes five to eight weeks to cover the area. Nabothian follicles and hypertrophic cervicitis are cured by needling. The external os may be corked by debris, which can be removed by forceps forty-eight hours after treatment. Contraindications are: near approach of the menstrual period, pregnancy, and uncured pelvic inflammation.

451 Maternal Mortality in Manitoba

F. W. JACKSON, R. D. DEFRIES, and A. H. SELLERS (*Canadian Pub. Health Journ.*, March, 1934, p. 103) record a five-year survey of maternal mortality in Manitoba from 1928 to 1932 inclusive, comprising 364 deaths, and with an average rate for the period of 5.1 per 1,000 live births. Data were collected by questionnaires, and replies were received for more than 90 per cent. of the series. The percentage distribution of deaths by major causes was: puerperal toxæmias, 28; puerperal sepsis, 25.3; abortions, 17.1; phlegmasia alba dolens and embolism, 9.3; and puerperal haemorrhage, 9.1. The safest age period for maternity appeared to be from 20 to 29, but race emerged as a factor in maternal mortality. The highest death rate occurred in primiparae, this being more than twice that in the case of women in their second and third pregnancies. One-third of all the deaths were not associated with a birth, and one-fifth were related to a stillbirth. A seasonal variation in the deaths from puerperal sepsis was observed, the rate being higher in the first and fourth quarters of the year. The maternal mortality rate for cities was estimated at 4.2; for towns of one to five thousand population, 7.1; and for the rural areas excluding such towns 5.5. For institutional cases it was 4.1, and for domiciliary cases 2.8. The corresponding figures for deaths from puerperal sepsis were 1 and 1.3. Only 23 per cent. of the patients received ante-natal supervision, the proportion of urban cases being twice that of the rural group. Nearly one-third of the patients (excluding those suffering from other toxæmias, abortion, and ectopic gestation) were only seen by a physician when the outcome was in grave doubt; poverty and ignorance were the two outstanding reasons for this.

452 Technique of Low Caesarean Section

H. FUCHS (*Zentralbl. f. Gynäk.*, March 17th, 1934, p. 610) states that of forty-three isthmo-cervical Caesarean sections, with curved transverse incision over the head, delivery was effective manually in thirteen, by version in sixteen, by lever in ten, and by forceps in four. The risk to the foetus from intracerebral lacerations and bleeding is considerable. Such risk can be greatly diminished, and the ease of delivery is increased (together with lessened tendency to bleeding and escape of liquor amni into the peritoneal cavity) by combining the curved low incision with: (1) the initial application of Bonney's isthmus compressor, and (2) completion of the uterine incision after application of Willett's forceps to the foetal scalp, the head being delivered by the same instrument with the aid of abdominal pressure.

Pathology

453 Demonstration of Tubercle Bacilli in Children following Gastric Lavage

N. LEVIN (*Svenska Läkarsällskapets Handlingar*, No. 1, 1934, p. 108) publishes as a monograph his studies, conducted in the Swedish hospital of Söderby, of the technique and findings of gastric lavage in obscure cases of tuberculosis. His material consists of 457 children, forty of whom were tuberculin-negative and who served as controls. In none of them were tubercle bacilli found in the contents of the stomach. The remaining tuberculin-positive children (417) were submitted to 680 such examinations, 249 of which proved positive (162 children with positive findings). After excluding from his further analysis the fifty-two cases in which no radiological examination was made at the time of the gastric lavage, the author confines his remarks to 365 children, 159 of whom yielded tubercle bacilli from the stomach. Of the three tests (direct microscopic examination of the sediment, growth on culture media, and guinea-pig inoculation), the first was found to be so faulty that little value could be attached to it. The second test proved very reliable, but the third was the most accurate of all. He states that it is indeed so decisively superior to the other two that it should never be dispensed with if reliable findings are required. But it should be supplemented by the culture test, for in twelve cases it, alone of the three, proved positive. If the absence of tubercle bacilli from the contents of the stomach is to be considered proven, gastric lavage should be repeated once at any rate, and preferably twice; and before it can be assumed that a positive has become a negative case, gastric lavage should thrice consecutively yield negative results at intervals of at least two months between each examination. After correlating the radiological findings with those of lavage, the author concludes that, at the present time, there is no other clinical-bacteriological examination which can compare in accuracy with gastric lavage for the discovery of tubercle bacilli in children suffering from early tuberculosis.

454 Puerperal Scarlet Fever

R. DEBRÉ *et al.* (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 23rd, 1934, p. 348) agree with Lermierre and Bernard that puerperal and surgical scarlet fever are identical with, and should not be differentiated from, the ordinary form of the disease, and that the scarlatiniform erythemas occasionally complicating puerperal infections are merely attenuated abortive forms of puerperal scarlet fever. Details of a case are given which substantiate these opinions. Typical scarlet fever developed in the hospital intern attending the case, and also in a patient in a separate building attended by this intern, and facial erysipelas developed in another intern in contact with the affected one. Attention is especially drawn to the laboratory findings. An erythrogenous streptococcus, of the type studied by the Dicks, was isolated from the lochia. Similar streptococci have been recovered from other infections. The authors have isolated them from the pus of a digital whitlow, and the Dicks have produced typical scarlet fever by rubbing a volunteer's pharynx with a streptococcal culture from a whitlow of a scarlet fever patient. As in all scarlet fever cases, the Dick reaction, with absence of antitoxin from the serum, was negative at the time of the eruption. The reaction of Schultz-Charlton (reaction of extinction) was positive, as in all cases of this nature. Only slight pharyngo-buccal symptoms were present, and streptococci were not isolated from the throat. The authors believe that a pharyngeal reaction and penetration of the germ at this site is of no significance in these cases; this point is discussed, experiments being cited. J. HALLÉ (*ibid.*, p. 353), discussing this paper, agrees that surgical and ordinary scarlet fever are identical. He cites such a surgical case, and relates the good results following the use of convalescent serum in these patients.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

455

Epidemic Myalgia

A. B. RICHTER and H. D. LEVINE (*Journ. Amer. Med. Assoc.*, March 24th, 1934, p. 898) record their observations on twenty-four cases of "epidemic pleurodynia" admitted to the Peter Bent Brigham Hospital, Boston, in July, August, and September, 1933. The ages ranged from 12 to 28 years. The sexes were equally affected. In most cases physical examination was entirely negative. In only one case was there a transient pleural friction rub. Most of the cases showed a high leucocyte count with polymorphonuclear predominance. The symptoms were similar to those described by previous writers. The treatment was that of acute pleurisy. All recovered.

456 Intestinal Parasites in Hospital Patients

R. WIGAND (*Deut. med. Woch.*, March 30th, 1934, p. 461) has studied in East Prussia the intestinal fauna of 1,330 hospital patients, 330 of whom were children under 14. The patients were classified according to the localization of their ailments. As far as *Ascaris lumbricoides* was concerned, 13.3 per cent. of the skin cases, 9.4 per cent. of the respiratory tract cases, and 8.8 per cent. of the cases of infectious disease were its hosts. The frequency of the association of this parasite with skin diseases in childhood suggested a causal relationship, the more so because skin tests with an ascaris extract provoked urticaria and anaphylactic phenomena. As for the frequent coincidence of infestation with this parasite and disease of the respiratory tract, the peregrinations of its larvae through the lungs may be responsible. An investigation of the story that the ascaris actively deserts its host when he or she is very ill provided little substantiation of it; and though a close watch was kept in the cases in which therapeutic pyrexia had been induced, no fugitive worm was caught during the fever. There was but one case (pneumonia in a child) in which the worm made its escape during its host's fever, and the author is inclined to suspect that, when a worm escapes from a sick host, this action is prompted by the sickness of the worm itself. The frequency and degree of eosinophilia in the hosts were lower than those of other observers, and the absence of severe anaemia was notable. It is suggested that the frequent inclusion of fish liver in the dietary of the population of East Prussia may avert an anaemia which certain intestinal parasites would otherwise provoke; and the author publishes a table showing how effective in the treatment of pernicious anaemia is a dietary of fish liver (*quappnleber*).

457

Hodgkin's Disease

A. HERZ (*Wien. Arch. Klin. Med.*, 1934, vol. 24, Heft 3, p. 428) reports the results of investigation of forty-five cases of definitely established lymphogranulomatosis. There were twenty-six male and nineteen female patients, the great majority being in the third and fourth decades. Most were chronic, and in only six cases was there a rapid course leading to death in a few months. Whilst the glands first affected were generally those in the neck, the first manifestations may, he states, also occur in other regions, and the disease may remain more or less localized. The spleen was enlarged in twenty-six cases. Skin affections are described as frequent, mainly comprising unspecific affections such as pruritus, eczematous and urticarial exanthemata, etc. Herpes zoster was noted in three cases, and in a similar number there was lymphogranuloma of the skin. No characteristic blood changes could be established, though eosinophilia was sometimes marked, together with a diminution in lymphocytes. In five of the cases described foci of disease were found in the lung, but it is doubtful whether these foci could have led to symptoms during life. Herz describes specific changes in the heart as rare. In twelve cases the liver

was enlarged, and in those examined post mortem there were foci of granuloma. The intestinal tract may, he states, be the seat of extensive granulomatous infiltration and may only be recognized at operation or post mortem. In three cases granulomatous nodes were found in the bone marrow, the blood giving no indication of an irritation of this structure. No symptoms of involvement of, or pressure on, nervous tissue were found in the series. The author advocates properly controlled x-radiation over large areas.

458 Sweating as a Symptom of Heart Failure

Profuse sweating, accompanied by coldness of the extremities, pallor, and tachycardia, is regarded by J. URIOSTI and R. P. BLANCO (*Arch. des Mal. du Cœur*, March, 1934, p. 155) as a symptom of grave significance in certain forms of heart disease. It is thought that those disturbances of cardiac function which lead to acute pulmonary oedema or angina pectoris may alternatively express themselves on occasion by the syndrome, of which sweating is the chief symptom described, and which has been termed "diaphoretic astylose." The clinical features of the attacks lead the authors to conclude that they must be considered as equivalents of angina or acute pulmonary oedema. They appear to be provoked by exertion. They are accompanied by a low blood pressure, restlessness, and a feeling of indefinable malaise, and, finally, are relieved by depletive measures—morphine and strophanthin. As in acute pulmonary oedema and anginal pain, it is suggested that the pathological basis of the sweat crises is sometimes an infarction of the myocardium.

459 Suprarenal Insufficiency in Typhoid Fever

W. RUBINSZTEIN (*Thèse de Paris*, 1934, No. 130), who records eight illustrative cases in patients aged from 3 to 46, states that typhoid fever is one of the infectious diseases which most tend to affect the suprarenals, whose function it is to regulate the blood pressure and to act as an antitoxic defence to the system. Suprarenal involvement is manifested by a typhoid state, prostration, and a low blood pressure, such symptoms being most marked in the ataxo-adyamic, asthenic, and pseudo-meningeal forms of typhoid fever. The development of suprarenal incompetence due to the typhoid toxin explains the occurrence of certain syndromes in the course of typhoid fever, such as attacks of hypothermia and the syndrome of pseudo-perforation. Slight involvement of the suprarenals in the course of typhoid fever may be the starting-point of a slowly developing syndrome of suprarenal incompetence at a more or less distant date. The diagnosis is of the utmost importance, as the prognosis depends on the early application of treatment, which should consist in the administration of adrenaline or suprarenal extract.

Surgery

460 Radium Treatment of Cancer of the Lip

K. F. B. BUSCH (*Ugeskrift for Læger*, April 5th, 1934, p. 376) reports from the Radium Station in Aarhus, Denmark, 157 cases of cancer of the lip observed from the beginning of 1923 to the end of 1932. In every case the diagnosis was confirmed by microscopical examination. The patients' ages ranged from 39 to 87 years, the average age being 62. Of the 144 patients with cancer of the lower lip, as many as 136 were men, whereas of the thirteen patients with cancer of the upper lip seven were women. In nearly all the cases the symptoms had lasted for less than a year. There were forty-five who were much addicted to tobacco, and twenty-six who suffered from severe pyorrhoea. In thirteen cases there was a history of trauma. The cases were classed as operable when the diameter of the lesion was under 2 cm., and when there was no evidence of metastases. Thus defined,

there were 113 operable and forty-four inoperable cases. After a year's observation, 101 of the operable and thirty of the inoperable were still alive. Of a total of 112 patients observed for three years, as many as ninety were symptom-free at the end of this period. A study of the deaths from cancer showed that nearly all of them occurred within the first two years after treatment. There were, of course, several deaths from intercurrent diseases, notably among the patients already over 70; and when such deaths occurred more than two years after the institution of radium treatment the case was included for statistical purposes among the cures. There were nineteen cases in which the radium treatment of the primary tumour had to be repeated, as traces of the disease persisted; all these cases became symptom-free. There were also thirty-four cases in which a relapse occurred, but it proved fatal only in twenty cases. In his study in the literature of the comparative merits of operative and radiological treatment of cancer of the lip, the author shows that the former assures recovery in 60 per cent., whereas the latter does so in 80 to 85 per cent. of the operable cases.

461 Rupture of the Bladder

L. BOGART (*Amer. Journ. Surg.*, March, 1934, p. 442) classifies bladder injuries as intraperitoneal or extraperitoneal, and traumatic or spontaneous. Trauma, external or internal, is the most common cause of the lesion, which occurs far more frequently in males than in females, owing to the more protected position of the bladder in women. Predisposing causes are full bladder and diseased bladder, with chronic distension and alcoholism. Associated injuries of the traumatic type are usually fractures of the pelvis, and are most common in extraperitoneal cases. In cases of intraperitoneal rupture the most common site is the posterior superior portion, and in extraperitoneal rupture the neck is the most frequent site. In the former variety the abdomen becomes filled with urine, which becomes infected and causes an active peritonitis. In the extraperitoneal variety the space of Retzius becomes filled with blood and urine, and appears oedematous and fluctuating. Symptoms in these cases are shock, strangury, pain above the pubis with bulging, infiltration of the deep perineum or abdominal wall and of the superficial abdominal fascia, symptoms of infection, and uraemia. In cases of intraperitoneal rupture the injury may be slight. The early symptoms are shock, severe pain in the bladder, strangury, urine or blood trickling through the urethra, peritoneal irritation, and catheterization of bloody urine or clear blood. Later symptoms are principally abdominal, with distension, pain, and peritonitis, ileus, fluid in the abdomen, and uraemia. In cases of intraperitoneal rupture laparotomy should be performed as soon as possible, with closure of the opening and suture of the serous and muscular coats. If the mucosa is sutured absorbable sutures only should be used. Operative treatment in cases of extraperitoneal rupture should consist in exposing and closing the rupture, combined with bladder drainage. Mortality depends on early diagnosis and immediate treatment. Six cases are reported, with four recoveries.

462 Joint Injuries in Pneumatic Drill Workers

According to P. ROSTOCK (*Zentralbl. f. Chir.*, March 17th, 1934, p. 630) the vibration of compressed-air tools may produce in those using them morbid changes in (1) joint capsules and the adjacent points of insertion of muscles into bones, and (2) the articular cartilage and underlying bones. The former changes are due to degeneration followed by calcification; they are typically seen in the lower end of the humerus near the attachment of the capsule of the elbow-joint and the insertion of the brachialis internus. In joints such as those of the hand, in which vibration cannot be compensated by muscular activity, pressure-necroses of the articular cartilage are followed by partial necrosis of the underlying bones, with formation of free bodies and an osteochondritis dissecans. Necrosis of the semilunar is much more common than in the os magnum and scaphoid bones. Morbid changes in the

shoulder-joint (periarticular bony outgrowths below the glenoid cavity, and from the adjacent part of the head of the humerus) are much rarer than in the superior radio-ulnar joint. The frequency of pneumatic drill disease has been exaggerated; in the Ruhr coal area only some 300 cases have come to medico-legal notice.

Therapeutics

463 Treatment of Radio-dermatitis

CRAPS and A. ALECHINSKY (*Le Scalpel*, April 14th, 1934, p. 497) have found a combined treatment with silver nitrate and ultra-violet rays to be most beneficial in radio-dermatitis. A similar method has been previously employed by Schindler in chronic peribuccal or intertriginous eczema, by Huldshinsky in infantile eczema, and by Boisson in microbic dermo-epidermatites and dermatomycoses. The present authors employed it in radio-dermatitis, owing to the results they obtained in other cutaneous affections necessitating stimulation of the cellular vitality and of cicatricial repair. The following is their technique. The healthy parts being suitably protected, the lesions are completely coated with a 5 per cent. solution of silver nitrate (Schindler uses an alcoholic solution); this is applied without rough friction after removal of scales and crusts; to facilitate its adherence and absorption, the lesion may be previously cleansed with sulphuric ether. The affected area is then irradiated by a mercury-vapour quartz lamp at as close a distance as possible, dependent on the extent of the field to be treated and the heat given by the lamp. The optimum distance for a Bach lamp with large reflector is 20 cm., for a Dufestel or Kromayer one 10 cm. The duration of irradiation is five to ten minutes; it must cause complete drying of the solution and blackening of the treated area. Should the blackening be insufficient, silver nitrate is again applied. Drying of the lesion usually occurs at the first application; the treated region is then merely covered with a sterile gauze compress. No fatty substances should be applied during treatment. Irradiations are made every two days. The pain of the dermatitis often disappears after one or two applications, and cicatrization commences rapidly and progresses regularly. No failures have occurred with this method. Notes of five cases are appended.

464 Cod-liver Oil Applied to Wounds

W. LÖHR (*Deut. med. Woch.*, April 13th, 1934, p. 561) has during the past three years treated several thousands of cases with cod-liver oil applied as a local dressing to wounds. He was prompted to do so by the successes achieved with cod-liver oil in children whose convalescence from infections had hitherto been protracted. In the treatment of wounds, chemical disinfectants should be used as much as possible, as well as foreign bodies removed as drains and strips of gauze. It is not clear how cod-liver oil acts locally; but it is, like most other oils, practically sterile, and when staphylococci, streptococci, and other germs are introduced into it, they are soon destroyed. As cod-liver oil is too fluid by itself, it is combined with other fatty substances in an ointment which is fairly firm at room temperature. This ointment is pasted in a thick layer over a wound, the discharge from which oozes out from under it. It tends to saturate the tissues with which it comes in contact and to promote the separation of living from dead tissues. This treatment is not indicated in acute inflammatory processes, but it is useful in recent wounds, when there is little or no infection, and also in chronic, sluggish conditions, such as varicose ulcers. Once the tissues have shown themselves capable of some degree of resistance to an infection, the additional stimulus given by cod-liver oil proves most useful. Burns and bed-sores also react satisfactorily to the treatment, which possesses the great advantage of being quite painless. In burns, the amount of cod-liver oil required is considerable, but this expense is more than repaid by the increased rate of recovery. While the author admits that the vitamins in cod-liver oil may be

more or less responsible for its local therapeutic properties, he is inclined at the present stage to observe facts rather than to try to interpret them.

465 Urinary Antiseptics in Relation to Fluid Intake

N. F. MILLER and C. C. CHU (*Amer. Journ. Surg.*, March, 1934, p. 557) have conducted an investigation to determine the relative effectiveness of urinary antiseptics to the amount of the fluid intake. They administered standard doses of urinary antiseptics to laboratory animals, first on limited fluids and later on forced fluids, with simultaneous bacteriological studies to estimate the efficiency and inhibitory influence of the excreted drug. They also administered urinary antiseptics to a group of voluntarily co-operative patients, at first on restricted fluids and later on a high fluid intake, with bacteriological tests to ascertain the power of the excreted antiseptic to inhibit bacterial growth in the urine. Evidence was obtained that the restriction of fluids during the time of administering antiseptic drugs definitely enhanced the inhibitory power of the drug on bacterial growth in the urine. The patient's immediate needs have to be considered, however, in applying the conclusions. For example, patients with urinary tract infection and high pyrexia are probably better treated with a high fluid intake until the time when the febrile reaction has subsided. Since the inhibition of bacterial growth noted in rabbits and human subjects receiving urotropine was considerable, the question arose whether this inhibition was referable to the urotropine or to the ammonium chloride which was being given concurrently. The exhibition of ammonium chloride alone was found to have no notable inhibitory effect, thus revealing that the action was attributable to the urotropine.

Laryngology and Otology

466

Tracheotomy

F. A. FIGI (*Proc. Staff Meetings Mayo Clinic*, February 7th, 1934, p. 86) reviews a series of 206 tracheotomies performed on 200 patients, seventy-one being emergencies and 135 elective. The most frequently encountered primary pathological conditions necessitating tracheotomy were: carcinoma of the larynx (133 cases), goitre (twenty-five cases), foreign bodies in the tracheo-bronchial tree (fourteen cases), and multiple papilloma of the larynx (eight cases). Although there was no immediate surgical mortality directly attributable to the operation, eighteen patients died subsequently. Bronchopneumonia was the most common post-operative complication, but it occurred in only thirteen cases in the entire series, and was probably already present in two of these before the trachea was opened. Only three of these thirteen patients recovered. Mediastinitis was not encountered in a single instance. The deaths in the series were almost entirely the result of dyspnoea and delay in opening the trachea rather than of the tracheotomy.

467 Sclerosing Injections in Hypertrophic Rhinitis

Alluding to the rich nasal vascular supply and to the frequent ill effects (slow cicatrization of the scar, osseous necrosis, etc.) following galvano- or thermo-cauterization, W. J. BONTINEK (*Rev. de Laryngol., d'Otol. et de Rhinol.*, December, 1933, p. 1285) discusses the use of sclerosing injections in hypertrophic rhinitis while the condition is still in the congestive retractile state. Though the ultimate effects of this treatment have yet to be ascertained, the immediate results have, he states, been so successful as to lead to its possible employment in other conditions. The substances used are a 5 per cent. solution of the double hydrochlorate of quinine and urea, an 80 per cent. solution of glycerin, "sclero-serum," and glucose solution. As the injection of sclero-serum is more painful and glucose gives less encouraging results, the two former are chiefly employed. Bontinek prefers glycerin. This substance occasions a mild but rapid and complete phlebo-sclerosis (due to its concentration), is perfectly tolerated, and its injection is painless. At least

10 c.cm. is injected into the diseased turbinates at two different times. Local cocaine-adrenaline anaesthesia of ten minutes' duration is performed to ensure perfect retraction. A Luer or Robert's syringe is used with eccentric end and a needle of 8 cm. length and 8/10 mm. calibre, having a short bevel. The needle is forced into the turbinate with its head towards the back and just grazing the bone; the injection is made while withdrawing it; if an osseous irregularity is present, two or three injections are made. Dutheillet advises a further injection at the inferior face of the turbinate. Immediately after the injection a sufficiently tight tampon is inserted to prevent haemorrhage and reflux of the liquid. Three to five days later a second exactly similar injection is made. No complications ensue after this operation. The only change noted for a few days is a slight hydropsy. Improvement commences in from fifteen to twenty-one days.

468 Punctured Wounds of the Oesophagus

A. J. WRIGHT (*Journ. Laryngol. and Otol.*, March, 1934, p. 175) records three cases of accidental puncture of the oesophageal wall by bone fragments, with serious complications resulting from neglect or unwise intervention. He concludes that any history of the supposed sticking of a small fragment of bone in the throat should always be regarded with respect. The blind passage of instruments in such a case should be strictly avoided as being likely to force the foreign body more deeply into the tissues. The persistence of pain on swallowing, or its increase after the lapse of a period of twenty-four hours or so, makes the presence of a foreign body highly probable. Local tenderness on pressure over the trachea is a sign of considerable importance in such a case. Where the presence of a sharp fragment of bone is likely, oesophagostomy should be performed at the earliest possible moment and in spite of a negative x-ray examination. A small splinter of bone cannot as a rule be identified in a radiogram. In spite of early removal infective complications may follow a punctured wound of the oesophagus, but such complications are not invariably fatal. Gastrostomy would seem to be indicated immediately if there is any sign of the passage of food through the perforation in the oesophageal wall. Wright considers that there is probably a greater capacity for the localization of infection in the loose peri-oesophageal tissues than is generally supposed.

469

Treatment of Cancer of the Larynx

K. AMERSBACH and L. KRAUS (*Med. Klinik*, March 9th, 1934, p. 321) report from Prague their experiences with the treatment of cancer of the larynx and hypopharynx between October, 1927, and December, 1933. Their material in this period consisted of 163 cases, fifty-six of which concerned the hypopharynx and the remainder the larynx. For more than twenty years Professor Amersbach has familiarized himself with the operative, Roentgen, and radium treatment of laryngeal cancer, and the present paper represents the balancing of his experiences and opinions. With the introduction of Coutard's x-ray technique it would now seem that, where cancer of the hypopharynx is concerned, this system is at present the best. When the disease is extensive, and either the radiologist or the patient refuses x-ray treatment, "intratumoral" radium treatment is indicated, as it usually rids the patient of dysphagia and renders life less unbearable. Indeed, it lengthens the expectation of life in such desperate cases for from six to sixteen months. Though Coutard's technique has contributed greatly to the displacement of operative treatment in favour of the x rays, it must be remembered that this procedure demands much of the patient's general vitality, and also provokes a very troublesome irritation of the skin and mucous membranes. However, the call made on the organism by an operation is even more exhausting, and if the authors still prefer operative treatment when the disease is limited to the vocal cords and epiglottis it is because they lack experience of the late results of Coutard's treatment.

Obstetrics and Gynaecology

470 Surgical Treatment of Dysmenorrhoea

J. L. DE COURCY (*Amer. Journ. Surg.*, March, 1934, p. 408) strongly recommends resection of the presacral nerve for the relief of obstinate cases of dysmenorrhoea which have proved resistant to ordinary measures. In six months he has obtained immediate favourable results in a series of twenty-one cases, but his final statistics await the test of time. He agrees with Cotte that the indications for this operation are pelvic neuralgia, vaginismus, resistant dysmenorrhoea, uterine hypoplasia accompanied by insufficient and painful menstruation, metrorrhagia of ovarian origin, and certain sexual neuroses such as nymphomania. In women, section of the presacral nerve does not lead to any loss of vesical control. In his technique De Courcy places the woman in the Trendelenburg position, opens the abdomen through a left rectus incision, deals with any pathological condition of the ovaries and uterus, removes the appendix as a routine, opens the posterior parietal peritoneum, and strips away the nerve fibres in the triangle between the right iliac artery and the left pelvic vein. Pain is immediately relieved, and menstruation regularly ensues within forty-eight to seventy-two hours later, no matter at what stage of the menstrual cycle the operation has been performed. Most of the author's patients had to be catheterized for two or three days subsequently, but the inhibition of bladder function was no more marked than in the case of any other gynaecological operation. Several patients later became pregnant. De Courcy remarks that the technique is somewhat delicate, requiring a discriminating eye. Given the right conditions it affords a means of aiding a large class of women who must otherwise suffer a monthly martyrdom, as well as a chronic disability involving lowered physical and mental efficiency.

471 Vitamin Enrichment of Human Milk

With a view to increasing the concentration of vitamin A in breast milk, SYLVIA S. MCCOSH *et al.* (*Journ. of Nutrition*, March 10th, 1934, p. 331) administered daily doses of 15 grams of cod-liver oil in gelatin capsules to three lactating women. Six weeks after parturition, when the mature milk flow had been established, samples were repeatedly taken to determine the average vitamin A content in each. Cod-liver oil administration was then begun. The quantity of milk secreted daily by each woman remained approximately unaltered throughout the investigation, as did the fat content. The results of the biological assays were based upon the average gain in body weight of experimental rats and on vaginal smear records. It was found that no increased content in the milk of vitamin A could be detected. The authors conclude that there appears to be no way of transferring increased quantities of vitamin to maternal milk when women are on an adequate diet, but that starvation may well be capable of being relieved by such adjuvant measures. Reference is made to the literature to show that this inability of augmentation appears to hold also for vitamin B, but not for vitamin G, which is increased by supplementing the diet with daily doses of 10 grams of yeast.

472 Utero-vaginal Prolapse as a Cause of Uraemia

A. BELLO (*Semana Médica*, March 15th, 1934, p. 819), impressed by the similarity between prostatic enlargement in its first and second stages and prolapse of the uterus and vagina (in that both conditions produce deformity and dilatation of the ureters), has been investigating the incidence of nephritic phenomena in females with prolapsed uterus and cystocele. He notes that the insertion of the ureter into the bladder changes its relations *passu* with the degree of prolapse, so that the intra-parietal and terminal portions of both ureters become stretched and flattened, so reducing the ureteral calibre until it becomes almost entirely obliterated. To this is

added traction on the uterine blood vessels, and the combination of both phenomena produces dilatation of the ureters above the site of the compression with resulting damage to the renal pelvis and, later, uraemia. In such patients he has frequently observed a high blood urea, quite irrespective of their age, but this becomes markedly reduced, or may altogether disappear, when the prolapse has been successfully cured by operation, except when the damage to the renal pelvis is irretrievable. Further, he notes that, even if the blood urea be not substantially diminished after operation, the general condition of such patients is almost constantly improved, both mentally and physically. He deprecates the idea, so often expressed, that the aged should not be operated upon for the relief of their prolapse, and states that, apart from advanced cardiac and renal changes, old age offers no contraindication to hysterectomy combined with perineal repair. Details of operative treatment are not given.

Pathology

473 The Pathogenicity of *B. alkalescens*

H. WELCH and F. L. MICKLE (*Amer. Journ. Pub. Health*, March, 1934, p. 219) have isolated an organism similar to that described by Andrewes as *B. alkalescens* from an outbreak of what seems to have resembled food poisoning in some respects and dysentery in others. The outbreak, in which several students and two nurses developed abdominal pain and diarrhoea, occurred in a university infirmary. *B. alkalescens* was isolated from the faeces of each of the patients and from those of a healthy person employed in handling the food. Agglutinins acting on the organism were demonstrable in the blood serum of the patients after some time. The healthy carrier was removed, and no further cases occurred. *B. alkalescens* was also isolated from the urine of four patients with chronic nephritis. Agglutination and absorption studies seemed to show that the strains of *alkalescens* were closely related to each other antigenically, and had some relation to other members of the dysentery group. All strains were non-motile. Acid was produced in glucose, maltose, and mannite, but not in lactose or sucrose. Litmus milk was unaltered or rendered alkaline. The methyl-red test was positive, the Voges-Proskauer negative. The indole test was uniformly positive, and nitrates were reduced. The authors conclude that *B. alkalescens* must be included in the dysentery group as potentially pathogenic for man.

474 Second Attacks of Poliomyelitis

T. B. QUIGLEY (*Journ. Amer. Med. Assoc.*, March 10th, 1934, p. 752) records the case of a second attack of poliomyelitis which proved fatal. A girl aged 7 had her first attack in the course of an epidemic in August, 1931, recovered, and had no illness until mild pertussis in June, 1933, which was followed rather more than a month later by the onset of a second typical attack. A mild indefinite infection of the upper respiratory tract was followed a fortnight later by a slight sore throat and difficulty in speaking. Four days subsequently there ensued vomiting, cyanosis, and dyspnoea, which increased and caused death. The necropsy revealed changes similar to those found in the post-mortem examinations made during the previous epidemic. There was a mild haemorrhagic gastritis, with definite hyperplasia and congestion of the lymphoid tissue. The cut surface of the liver showed the characteristic pale, muddy, and granular appearance, without any specific microscopical signs. Although there was no involvement of the extremities in the second attack, yet at every level of the spinal cord which was examined there appeared marked nerve-cell degeneration, neuronophagia, congestion, and oedema. The author refers to the literature of the fourteen reported cases of true second attacks, and comments on the diagnostic criteria of this rare occurrence.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

475

Aetiology of Appendicitis

K. WESTPHAL (*Deut. med. Woch.*, April 6th and 20th, 1934, pp. 499 and 600) remarks that even in the most severe forms of appendicitis no organisms have yet been found which are not more or less frequently demonstrable in the normal appendix. Also it is the autogenous, enterogenous infection which plays the most important part in the genesis of appendicitis. Probably appendicitis does not depend on any one specific organism, but on the lowered resistance of the mucous lining of the appendix to whatever pathogenic germ may be in contact with it. Such lowered resistance may be due to more or less complete obstruction of the lumen of the appendix, microbic activity being promoted under the same conditions which favour infection of the urinary and biliary tracts when their normal evacuation is interfered with. During the past five years Professor Westphal has been studying the movements of the appendix, and in two cases of appendicular colic he has noted the changes in the shape and position of the appendix with the help of the x rays after a barium enema. Spontaneous pain and tenderness on pressure coincided with severe spastic contraction of the appendix, either in part of it or in its entirety. These observations afford an explanation of those cases in which, though the clinical picture of appendicitis was well defined, a laparotomy revealed nothing amiss with the appendix. Aschoff has observed this state of affairs in 18 per cent. of his appendicectomies. Considered from this spastic angle, a goodly proportion of cases of appendicitis should react satisfactorily to atropine, papaverine, adrenaline, etc., and when there are no immediate facilities for operation this procedure is to be recommended. The author does not, however, advocate it as a substitute for the comparatively safe operation of appendicectomy performed under ideal conditions.

476

Gastric and Colonic Flatulence

O. LLOYD-JONES and E. M. LILJEDAHN (*Med. Record*, April 4th, 1934, p. 320) discuss the mode of production and of dispersion of gas in the stomach and bowel. In addition to gas being a natural and inevitable by-product of the hydrolytic, fermentative, and oxidative processes of digestion, air is swallowed, and gases are absorbed into the alimentary canal from the blood stream. Yet in many persons there is no belching or flatus, and the gas must therefore be absorbed by the blood stream. Patients complaining of excessive gas usually present few clinical signs, and the authors have therefore started to examine them radiographically. It was found that with appropriate technique gas bubbles in the colon and large intestine were clearly demonstrable, but only rarely in the small intestine. These manifestations bore no definite relation to the extent of the symptoms, and the authors doubt whether "gas pains" exist as such; they are more probably attributable to sudden changes in the vascularity of the bowel wall or to increased gas secretion into its interior. Both eructations and the passage of flatus can be resisted voluntarily without any adverse sequelae, the gas being reabsorbed by the body. The majority of sensations referred by patients to bloating, gas, or abdominal distension come about through the same mechanism which produces gurgling, borborygmus, and excessive flatus—namely, unsynchronized contraction and dilatation of random segments of the colon, as a result of disturbed tone and irritability of the musculoneural tissues of the bowel wall. It is therefore useless to confine therapy to measures directed towards the reduction of the production of gas. It will be necessary to soothe, rest, relax, and even depress the alimentary neuro-muscular tissue by regulating the diet and supply-

ing suitable medication. In this way the peristaltic unrest can be corrected and the synchronized rhythm restored. The authors add that patients must be taught that frequent belching is an artificially acquired habit, that even necessary belching can be conducted with no spastic or sound phenomena, and that the retention of flatus is not harmful.

477

Aural Complications of Diabetes

P. VAN DEN BOSCHE (*Thèse de Paris*, 1934, No. 203), who records forty illustrative cases in patients aged from 35 to 69, fourteen of which are original, states that aural complications are not uncommon in diabetes. Pruritus, eczema, epidermal plugs, and especially recurrent boils are the commonest lesions. Some severe forms of otitis externa may give rise to coma. As regards the middle ear, a distinction must be made between cases of severe diabetes in which necrotic mastoiditis may be observed and mild cases in which all forms of otitis may occur. There is, however, a frequent tendency to haemorrhage and a rapid extension of the process attacking the bone, which explains the relatively early occurrence of endocranial complications, the frequent delay in cicatrization, and the possibility of recurrent sequestra. As regards the internal ear, in addition to labyrinthitis secondary to suppurative otitis media, diabetes may be responsible for a number of disturbances, either indirectly, through vascular changes such as labyrinthine haemorrhages and hypertension, or directly, from alteration in the composition of the endolabyrinthine fluid, involvement of the organ of Corti, or neuritis of the auditory nerve.

478

Indoxyluria and Indoxylaemia

According to G. LAROCHE and A. GRIGAUT (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, April 13th, 1934, p. 247), an estimation of the concentration of the urinary indoxyl is a valuable test of intestinal functioning and of toxic resorption. The normal urinary indoxyl content of 10 mg. per litre may be increased to 100 mg. or more in disorders of this nature. For these estimations the authors use the morning urine and a method based on Jolles's reaction. Numerous factors influence resorption of the intestinal indole with consequent hyperindoxyluria. These, which are briefly discussed, are: water absorption and diuresis; digestive troubles; the albuminous secretions of the caeco-colon; the state of the intestinal organisms and of the food; hydration of the colic contents; and, chiefly, the permeability of the caeco-colic mucosa. Thus, this test is a useful control in the treatment of intestinal disorders. The same authors (*ibid.*, p. 258) show that estimations of the blood indoxyl are of great diagnostic and prognostic value in chronic nephritis. For these tests, Grigaut's technique and Jolles's reaction are employed. Normal blood gives a negative reaction; a permanently positive reaction during chronic nephritis indicates the existence of serious lesions of the renal parenchyma; readings of 10 mg. or higher per 1,000 are evidence of a grave chronic nephritis in its final period, and death may be predicted in a few weeks or a few months. Two cases are cited to illustrate the diagnostic value of this test.

479

Cancer in Cavities of the Lung

R. GOMES DE MATOS (*Thèse de Paris*, 1934, No. 81) who records fourteen cases in patients aged from 18 to 68 states that cavities are found in a quarter of all cases of cancer of the lung. The cavities are of two kinds—namely, a frequent form, which occurs in the body of the tumour, and a rare form, which develops in its neighbourhood. Both forms may be either necrotic or suppurative. Necrotic cavities, whether occurring in or by the side of the tumour, are accompanied by few clinical or radiological signs, and have little effect on the general condition, but they may give rise to haemoptysis.

Suppurative cavities, on the other hand, are almost always situated in the new growth. They have a considerable effect on the general condition, for, besides causing haemoptysis, they are always accompanied by profuse purulent expectoration, and are usually manifested by clinical and radiological signs. The initial lesion is necrosis, which results from circulatory changes in the bronchial vessels obliterated or compressed in cavities. Infection is always a secondary phenomenon.

Surgery

480 Elective Indications for Sympathetic Resection

W. RIÉDER (*Zentralbl. f. Chir.*, March 31st, 1934, p. 734) concedes that in morbid vasomotor conditions of the limbs (Raynaud's disease, causalgia, endarteritis obliterans, etc.) the effect of surgical excision of the sympathetic cord or its contributory rami, although frequently excellent, may be disappointing. He finds that a preoperative prognosis may be made by measuring the rise in cutaneous temperature which occurs in the limb concerned after induction of spinal or plexus anaesthesia. A rise in temperature of less than 1° C. indicates that operation will be of little benefit, but if a satisfactory local pyrexia is noted the operation can be carried on forthwith. Six illustrative cases are described. Rieder finds that after peripheral periarterial sympathectomy the rise of skin temperature is temporary, but that after the more central operation it is lasting.

481 Treatment of Congenital Pyloric Stenosis

A. ECKSTEIN (*Klin. Woch.*, February 24th, 1934, p. 295), who describes 202 cases of this condition, of which ninety-two were treated by medical and 110 by surgical methods, finds that the latter were undoubtedly superior to the former. Under identical conditions and a uniform distribution of subjects the mortality of the medical cases amounted to 18.4 per cent., while that of the surgical cases did not exceed 3.4 per cent. Needless to say, such results are only obtained through complete mastery of surgical technique and careful post-operative treatment. The average duration of treatment was ninety-one days for medical and only thirty-four days for surgical cases.

482 Actinomycosis

A. GRAVES and A. OCHSNER (*Amer. Journ. Surg.*, January, 1934, p. 54) state that the organisms causing actinomycosis are widespread and occur in dust, pollen, or in the chaff from grain stalks. The saprophytic members of the group are found also in the soil, in the alimentary tracts of insects, in the tonsillar crypts, and in the gastro-intestinal tract in man. It is most common in the third and fourth decades of life, and 80 per cent. of cases occur in males. In a series of 680 cases it was found that 60 per cent. of lesions occurred in the head and neck, 14 per cent. in the thorax and lungs, 18 per cent. in the abdomen, and the remaining 8 per cent. as generalized infections in various parts of the body. In the abdominal type of actinomycosis the symptoms may be chronic, when a palpable mass is the first sign of the disease, or acute, when the symptoms of acute appendicitis are present and appendicectomy is usually performed. During convalescence an abscess forms, the incision of which is followed by the formation of a persistent sinus. If the disease is not eradicated while it is still localized, multiple abscesses will form, and treatment will be impossible. The common route of spread is by continuity following the growth of the fungus along fascia and muscle. Ultimately the blood stream may become infected and cause metastatic lesions. Two cases are reported where the actinomycosis spread from the caecum to the subphrenic space, causing a subphrenic abscess some weeks after an appendicectomy had been carried out. Both cases ended fatally after drainage and partial excision of the infected tissue. It is suggested that early recognition of the

disease will increase the hope of successful operative drainage of a subphrenic abscess by a retroperitone approach is of great advantage when the abscess is due to actinomycosis. In all cases large doses of potassium or sodium iodide should be given post-operatively, and intensive deep x rays should be used.

Therapeutics

483 Intravenous Serum Therapy in Gonococcal Arthritis

L. MATEOS (*Rev. Med. de Barcelona*, March, 1934, p. 27) declares that this is the treatment of election on account of its speedy action and efficacy. It is not followed by early "serum accidents," and its curative effects are constant. None the less he notes that the later complications of serum injection often follow, even though the disappear quickly when treated by calcium chloride, magnesium hyposulphite, and adrenaline. The biological and morphological affinity of the meningococcus and gonococcus induced Heresco and Cealic to employ antimeningococcal serum in four cases of gonococcal arthritis with results so successful that Cole and Weaver followed the example, but employed it intravenously. Mateos treated ten cases with antigonococcal serum, and his results have convinced him of its superexcellence. The method which he used is as follows. Antigonococcal serum (20 c.cm. in 200 c.cm. of slightly hypertonic saline—9 per 1,000—is slowly injected into a vein of the fasting patient. Forty eight hours later 30 c.cm. in 300 c.cm. of saline is similarly given, and followed at like intervals with 40 c.cm. of serum in 400 c.cm. saline, and finally, 50 c.cm. serum in 500 c.cm. of saline. By the time that the last injection has been given all pain and exudation will have disappeared, and a little massage and diathermy will complete the cure.

484 Endocrine Therapy in Arthritis

In the course of research on the cerebro-spinal fluid F. NEGRO (*Med. Welt*, April 7th, 1934, p. 480) found a striking improvement in a case of primary ankylosing polyarthritis on administering parenterally great doses of cerebro-spinal fluid from the horse. Convinced that this result was due to the hormone content (particularly the posterior pituitary) of the cerebro-spinal fluid, the author treated twenty-six cases of ankylosing polyarthritis with posterior pituitary extract in large doses. Seven of these cases are described in detail. Five showed marked improvement, while two were complete failures. Of the remaining nineteen cases eighteen were successful and only one failed to improve. Negro concludes that certain diseases of the joints are probably due to an insufficiency of the pituitary gland, and that certain cases of chronic primary ankylosing polyarthritis may be favourably influenced by the administration of posterior pituitary hormones.

485 Treatment of Pulmonary Tuberculosis in Diabetics

According to M. LABBÉ, R. BOULIN, JUSTIN-BESANÇON, and J. E. THIÉRY (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 9th, 1934, p. 204) artificial pneumothorax, completed if necessary by phrenic avulsion and combined with insulin therapy, is the only hopeful line of treatment in diabetics having pulmonary tuberculosis. Unfortunately, effective collapse is difficult to induce in these patients, whose lesions are apt to be diffuse, bilateral, and rapidly progressive, and in whom inflation is particularly liable (46 per cent.) to be followed by effusion. Young subjects, in spite of wasting, respond better than the aged, and men better than women. Of a series of twenty-six cases ten survived, two having a pneumothorax of some two years' duration, and seven having had effusions followed by adhesion (two to five years). The sixteen lethal cases included four in which artificial pneumothorax could not be induced on the contralateral

side because of adhesions, one of speedy pleuro-pulmonary perforation, and one in which a sero-fibrinous exudate became purulent: nevertheless the time of survival reached in some cases two to four years, and was considerably greater on the average than that of diabetes otherwise treated—namely, two to eighteen months.

Anaesthetics

486 Intravenous Sodium Soneryl as a Basal Anaesthetic

B. DESPLAS and Mlle G. CHEVILON (*Bull. et Mém. Soc. Nat. de Chir.*, March 31st, 1934, p. 519) state that sodium soneryl possesses the greatest coefficients of security and utilization of all the barbituric derivatives, and may be used for long operations without the danger of overdosage. It has a profound narcotic action, causing lowering of the arterial tension and diminution of the respiratory amplitude. The latter can be prevented by a few whiffs of carbon dioxide at the commencement of the anaesthesia, and the fall in blood pressure, if necessary, by the same means, together with injections of ephedrine. The drug has no effect on the hepato-renal elimination. The authors use the following technique. The evening before operation 0.3 grain of soneryl is given orally; this calms the patient and ensures a good night's sleep. Half an hour before the anaesthesia an intravenous injection of a 5 per cent. aqueous solution of the drug is given in doses of 1 cg. per kilo of weight. The injection must be given very slowly, and strict attention paid to the pulse, respiration, and arterial tension. This may be followed by a general anaesthesia with ether, regional anaesthesia, or no other anaesthetic may be required. Regional anaesthesia permits of all interventions above the abdomen; the spinal method should be reserved for subumbilical operations and those on the lower extremities. Soneryl associated with ether is the anaesthetic of choice for operations on the stomach and the biliary passages. The authors report that no failure occurred in eighty-seven anaesthesias with intravenous soneryl; the anaesthesia was always sufficient, and no post-operative complications or deaths attributable to the anaesthetic occurred.

487 Short Anaesthesia with Evipan

J. NORDENTORP (*Hospitalstidende*, February 27th, 1934, p. 261) reports from a Danish hospital his experiences of intravenous injections of sodium evipan. This barbituric acid preparation decomposes rapidly in the body, so that the general anaesthesia it induces is very brief and practically free from danger. The cases for which it is primarily recommended are those in which ethyl chloride or a short ether anaesthesia has hitherto been employed. The dry contents of an ampoule (1 gram of powder) are dissolved in 10 c.cm. of water. Four c.cm. of the solution is injected into a vein of the arm in the course of one minute, and 6 c.cm. in the second minute at the rate of 1 c.cm. every ten seconds. The anaesthesia is complete at the end of the second minute, but if the operation is very short the operator may wait two or three minutes so as to assure a still more complete narcosis. At the author's hospital evipan has been given between March and November, 1933, to fifty-five patients for whom, with only one exception, it was not necessary to give any supplementary anaesthetic. There were no alarming incidents. The age of the youngest patient was 9 years, that of the oldest patient 86 years. In forty-three of the fifty-five cases the anaesthesia proved satisfactory. Among the twelve cases in which the evipan did not give full satisfaction were four curtailings of the uterus. None of the four appendicectomies lasted over fifteen minutes, and in only one of these cases was it necessary to supplement with ethyl chloride. The average interval in forty-five cases between the injection of the anaesthetic and the patient's response to questions was thirty-eight minutes. The author concludes that for operations not lasting more than fifteen to twenty minutes evipan is

a useful general anaesthetic which, if its action is not prolonged enough, can be supplemented by another anaesthetic such as ether.

488 Spinal Anaesthesia with Percaine

VAN ERPS (*Journ. de Chir. et Ann. Soc. Belge de Chir.*, February, 1934, p. 90) gives a short summary of 125 spinal anaesthesias with weak solutions (1 in 1,500) of percaine given by Jones's technique. This method was not employed in certain cases, such as cachectics, the aged, etc. All preoperative care was taken, but no narcotics were given, as the author believes that these, especially scopolamine-morphine, are contraindicated in spinal anaesthesia. If agitation, nausea, or vomiting occurred at the commencement of or during the operation a few whiffs of carbogene were given. A condensed table shows that twenty-two patients suffered post-anaesthetic effects—headaches, nausea, and vomiting. The headaches started from the second to the twelfth day, were frequently accompanied by fever, and disappeared in two hours after a daily injection of septicemine, which proved the only satisfactory remedy. Nausea and vomiting are, he states, caused by tensional variations in the cerebro-spinal fluid; ephedrized patients presenting these symptoms together with agitation rarely showed respiratory signs. These after-effects were relieved by carbogene, which stimulates the respiratory centre, increases the tone of the inspiratory muscles, and is antispasmodic to the arterioles in general. Serious sequelae, such as paraplegia or paralysis of the sixth pair of nerves, were not noted, but only a transient paresis or vesical paralysis. Van Erps maintains that these post-anaesthetic manifestations should not prevent the use of this anaesthesia in view of the operative facility and abdominal relaxation obtained by it.

489 Choice of Anaesthetic in Diabetes, Pulmonary Disease, and Children

In diabetic patients requiring some surgical operation B. C. SMITH (*New York State Journ. Med.*, March 1st, 1934, p. 175) does not use ether because it provokes or exacerbates acidosis. He frequently employs spinal anaesthesia in abdominal work, but only occasionally in amputations, when pulmonary complications contraindicate a short nitrous-oxide-oxygen administration. Ethylene is disliked owing to its risk of explosion. Infiltration with novocain is commended in non-inflammatory lesions, and the author has used it occasionally for leg amputations in cases with acute pulmonary complications. Avertin is not suitable owing to its depressing effect on the blood pressure. Smith considers nitrous oxide and oxygen the best anaesthetic for amputation of the toes, legs, and thighs; incisions and drainage of infected parts; breast operations; plastic procedures; and as a supplementary to spinal anaesthesia. In abdominal operations he introduces novocain in spinal fluid at a point between the third and fourth lumbar vertebrae, preceding it with an intramuscular injection of ephedrine. In operations on patients with chronic pulmonary disease F. B. BERRY (*ibid.*, p. 183) prefers nembutal as the basal anaesthetic to avertin and amytal, which are respiratory depressants with prolonged action. He gives 90 grains of sodium bromide on the night before the operation; this is followed by 3 grains of luminal or 1½ grains of nembutal one and a half hours before the operation, and 1/6 grain of morphine with 1/200 grain of hyosine one hour later. For the general anaesthetic ethylene is preferred to nitrous oxide, because it affords better relaxation and an abundance of oxygen. In acute pulmonary cases Berry uses spinal, regional, or local anaesthesia whenever possible, and he has recently been employing high spinal anaesthesia for some upper stage thoracoplasties with good results, though he thinks that there may be an unjustifiably thin line of reserve and safety in operations above the level of the mid-thoracic region. In this group rectal ether, inhalation anaesthesia, ethylene, or nitrous oxide, preceded by adequate basal preparation, can be used with perfect safety. E. J. DONOVAN (*ibid.*, p. 187) insists

that the open cone ether method is essential for operations on children. He has found it advisable to induce anaesthesia with ethyl chloride, and to follow by the open drop ether method. The only indication for local or spinal anaesthesia is the presence of an acute respiratory infection. Avertin as a basal anaesthetic is better tolerated by children than by adults.

Obstetrics and Gynaecology

490 The So-called "Safe Periods"

The existence of periods of sterility during the menstrual cycle in women of child-bearing age is confidently asserted by A. C. NUÑEZ (*Crónica Médica*, March 15th, 1934, p. 176), although he acknowledges that the moralists Capellmann, Ferreres, and Lehmkuhl, none of whom was a physiologist, were wrong in their estimation of the times at which these periods occur. Basing his calculations on the assumption that the ovule survives its liberation and deposition for no more than two days, and that the spermatozoon lives free in the female genital tract for but four, Nuñez concludes that coitus (1) antecedent to the four days prior to the deposition of the ovule, and (2) after the second day subsequent thereto, must of necessity be infertile. Hence it follows that, for women whose menstrual cycle is of regular twenty-eight-day type, calculation of the "safe periods" is easy. For those whose cycles occur with regularity at definite periods, but of a duration longer or shorter than twenty-eight days, he has drawn up a table or "ready reckoner" which he alleges is of great value. Nevertheless, he admits that since dehiscence of the follicle does not occur with mathematical precision, inasmuch as its maturation and rupture may be precipitated by causes which he mentions, and as a second follicle may rupture prematurely, errors of calculation are possible, though unlikely. And though not a little dubious of the theory that the sperm lives but four days in its feminine surroundings, he adduces the cases of eighty-seven women of eight different nationalities who were partners in 725 complete acts of coitus during the periods mentioned, none of which were fecund.

491 Haemorrhage at the Menopause

J. QUÉNU and C. BÉCLÈRE (*Bull. Soc. d'Obstét. et de Gynéc. de Paris*, November, 1933; p. 742) analyse forty-four cases of menopausal metrorrhagia. While 27 per cent. are due to organic causes, such as carcinoma of the fundus uteri (9 per cent.), fibroma, polyp, etc., they regard no less than 73 per cent. as functional—of ovarian origin, either hormonal or infective. For this group they suggest the term "benign glandular hyperplasia." For all cases of menorrhagia at the menopause, they strongly advocate diagnostic curettage. Of the benign cases, two-thirds are cured by curettage without further treatment. The remaining one-third start bleeding again after a few months, and for these x-ray treatment of the ovaries is recommended to hasten the menopause. In a subsequent paper C. Béclère further discusses benign glandular hyperplasia. Analysing thirty-eight more cases of menopausal metrorrhagia, he attributes 64 per cent. to this condition. Microscopically, these cases show no inflammatory or neoplastic change, the uterine mucosa having the physiological appearances of premenstruation and nidation. That these are due to a modification of the ovarian hormones is borne out by the fact that if these cases are treated by x rays to ovaries only, the haemorrhage is arrested, whereas after curettage it often recurs and continues till ovarian function finally ceases at the menopause. The clinical syndrome is: (1) abrupt onset of metrorrhagia in patients previously regular in menstruation; (2) periods of two to three months' complete amenorrhoea; (3) irregular alternation of amenorrhoea and metrorrhagia. These features, in the author's opinion, further indicate the origin of the bleeding to be ovarian

dysfunction, since in cases of pathological changes in the uterine mucosa there is usually some previous menstrual irregularity and no such periods of amenorrhoea. Although the syndrome described is characteristic of functional metrorrhagia of ovarian origin, curettage and microscopic examination of the debris is recommended, both to confirm diagnosis and to stop haemorrhage temporarily at least pending permanent cure by the application of x rays to the ovaries. In atypical cases hystero-graphy should precede curettage to indicate any area of the uterus particularly suspicious of pathological change.

Pathology

492 Detection and Estimation of α -Dinitrophenol

The phenol derivative α -dinitrophenol greatly stimulates metabolism, and is being applied on an increasing scale to the treatment of obesity. A. BOLLIGER (*Med. Journ. of Australia*, March 17th, 1934, p. 367) points out that its success in this respect may lead to the appearance of proprietary products containing it secretly or openly, that diagnostic and even medico-legal problems may consequently arise, and that some qualitative and quantitative tests will then be required. This substance forms very readily with methylene-blue an addition compound, similar to that formed by picric acid, and crystallizing out quickly in fine bronze-coloured crystals. The test based on this phenomenon is performed as follows. The urine is acidified with sulphuric acid and extracted with chloroform, permanent emulsions being avoided if possible. The extract is mixed with calcium carbonate and methylene-blue, and is well shaken until the first change of colour is observed. It is then filtered, and an equal amount of distilled water is added. After further shaking the water is removed; if the chloroform shows a distinct green colour which cannot be extracted by further washings with water, α -dinitrophenol is present. The detection in the blood of a non-jaundiced person is still more sensitive. The quantitative method is based on the author's procedure for the volumetric determination of picric acid and methylene-blue. Bolliger points out why the test of urine for dinitrophenol poisoning used during the war is not applicable to gastric contents, or the blood or tissues, and may be unsatisfactory in the case of urine after the oral ingestion of α -dinitrophenol. He cites a case in which this was experimentally demonstrated.

493 Typhus Infection of Rats

I. L. KRITSCHESKI and N. N. SOŁOWJOW (*Zentralbl. f. Bakt.*, April 5th, 1934, p. 232) examined the blood serum of 103 wild rats in Moscow, and found that twenty-nine of them gave a positive Weil-Felix reaction. A living *proteus* X 19 strain was used, and in the majority of instances agglutination was of the finely granular type. The titres varied from 1 in 10 to 1 in 500. To ascertain whether the animals were infected with the typhus virus or merely with *proteus* X 19, brain suspensions were prepared from six of the rats having agglutinin titres of 1 in 100 to 1 in 500, and inoculated intraperitoneally into male guinea-pigs. One of these developed a febrile reaction and orchitis, thus showing that one at least of the rats was infected with the typhus virus. Examination was then made of seventy white laboratory rats that had been bred in the neighbourhood of Moscow. No fewer than twenty-nine gave a positive Weil-Felix reaction, the titres varying from 1 in 10 to 1 in 200. The brain of one animal with a titre of 1 in 200 was tested by guinea-pig inoculation, and was found to contain the typhus virus. K. SUZUKI (*ibid.*, p. 236), working in Hamburg, found that five out of ten wild rats had a positive Weil-Felix reaction. The brains of all ten rats were tested by guinea-pig inoculation, and the typhus virus was demonstrated in two of the positive and one of the negative-reacting animals. Both groups of workers conclude that latent typhus infections occur in rats.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

494

Mercurial Poisoning

I. M. RABINOWITCH (*Canadian Med. Assoc. Journ.*, April, 1934, p. 386) emphasizes the fact that no mercurial compound, inorganic or organic, is harmless. All can be toxic, and their value in therapeutics appears to depend largely upon their conversion from potentially into actively toxic products. Mercury is readily absorbed from all surfaces, including the intact skin, signs of poisoning having been noted within twenty-four hours after the application of mercurial ointments. Rabinowitch has had no difficulty in detecting mercury in the faeces within forty-eight hours after painting the healthy intact skin of the abdomen with mercurochrome. Its wide distribution in the body is probably due to the fact that the albuminate which mercury forms by combining with protein is soluble in the alkaline chlorides of the body fluids; the findings are not always uniform, however. Much may remain localized in the tissues owing to the formation of insoluble compounds, and the existence of these is probably the cause of its slow elimination. The clinical signs of poisoning are due to the effects of mercury on the excretory organs; its elimination is not necessarily influenced by its deposition, for in acute poisoning little may be excreted in the urine when the metal is concentrated in the kidneys. Mercurial toxicity is not related to the amount present, but to its solubility, and a most important contributing factor is the degree of ionization. The favourable effects of organic mercurial compounds in septicaemia appear to depend to some extent, at any rate, on "shock reaction." Diuresis, cathartic action, and antiseptic properties seem to depend largely upon conversion of the organic compound into a soluble inorganic and ionizable compound, a change which may explain its antisiphilic action. Such a conversion takes place with greater ease in the case of metallic mercury. The author considers that more effective legislation is necessary as regards the standardization and sale of commercial mercurial compounds in tablet form. Moreover, the signs and symptoms of poisoning may be misleading, the initial pain, vomiting, albuminuria, and haematuria being succeeded for a few days by apparent convalescence, after which fatal sequels develop rapidly. It is therefore held to be inadvisable to discharge from hospital in less than two weeks patients admitted for mercurial poisoning. During this period blood urea examinations should be made daily in order to detect the earliest signs of grave renal involvement.

495 Pancreatic Disease associated with Diabetes

A. LUNDBERG (*Nord. Med. Tidsskrift*, April 14th, 1934, p. 460) comments on the tendency to concentrate attention on the islands of Langerhans in connexion with diabetes to the exclusion of the other constituents of the pancreas, although in hardly any disease are these islands alone involved. At the St. Erik Hospital in Stockholm 4,721 post-mortem examinations were made in the period 1925-32, and among them were 540 in which morbid changes were demonstrable in the pancreas. Yet only in ninety-one of these cases had diabetes been diagnosed. As blood sugar determinations had not been made, several cases of diabetes had assuredly been overlooked. Among the 540 cases were thirty-five of pure atrophy of the pancreas, which in twenty-nine cases had provoked a clinically demonstrable diabetes. Only nine of these thirty-five patients were men, and the average age was 65 years. Atrophy combined with lipomatosis of the pancreas was found in thirty cases, in only nineteen of which had diabetes been diagnosed. There were as many as 284 cases of pure lipomatosis, in only twenty-four of which had diabetes been diagnosed. Universal lipomatosis existed in fifty-six cases, five of which had been

recognized as diabetic. Chronic liponecrosis was found in forty-three cases, and purulent pancreatitis in seventeen, only one of which was also diabetic. Pure cirrhosis was found in eighteen cases, stone in the pancreatic duct in seven, and malignant disease in seventy-three cases, in forty-eight of which the disease had probably started in the pancreas. These observations show that pure lipomatosis of the pancreas is the most common of the diseases overtaking it (52.6 per cent. of all the author's cases), and that malignant disease comes next with 8.9 per cent. If it be asked, in a case of diabetes, what are the diseases of the pancreas most likely to be associated with it, one might answer, on the basis of the author's material, that in 31.8 per cent. the diabetes would be accompanied by atrophy of the pancreas, in 26.4 per cent by lipomatosis, in 20.9 per cent. by a combination of both, and in 9.9 per cent. by cirrhosis.

496

Tuberculosis and Dementia Praecox

A. ALBANE (*Thèse de Paris*, 1934, No. 153), who records thirty-five illustrative cases in patients aged from 11 to 46, states that tuberculous manifestations often precede the development of mental symptoms in dementia praecox. The latter usually arise when the tuberculous lesions are subsiding, and may disappear, on the other hand, when the lesions are roused into fresh activity. This is the reason why tuberculous lesions often do not arouse attention in the course of dementia praecox, except in the final stage. Systematic inquiry should, he states, be made into the patient's antecedents, and combined examinations carried out by radiological, biological, and humoral methods. The tuberculous lesions vary, and consist of pleurisy, pulmonary involvement, and glandular enlargement. Tuberculosis does not by any means account for all the cases of dementia praecox, for there are many cases of dementia praecox due to a different toxi-infectious origin.

Surgery

497

Testicular Seminoma

According to P. BLÜMEL (*Bruns' Beitr. z. klin. Chir.*, March 14th, 1934, p. 227) many seminomata of the testicle have formerly been confused with carcinoma, sarcoma, or endothelioma, and probably at the present day a certain number of testicular tumours, owing to their rapidity of metastasis, are overlooked or regarded as secondary. In the last twenty years' experience of the Göttingen Universitätsklinik, tumours of the testicle have been very rare (0.8 per 1,000 admissions). Of thirty-two tumours, twenty-two were seminomata according to the classification of Oberndörfer. Because of the patients' lack of observation or the difficulty of early clinical diagnosis, no fewer than five of the twenty-two patients first sought treatment for pain due to metastases, and four more had metastases on admission, so that almost one-half had secondary tumours when first coming to notice. Metastases by the lymph channels affect the inguinal much less commonly than the iliac and aortic glands; those reaching the liver and lungs by the blood stream are early. It frequently happens that important signs and symptoms such as oedema of a leg or uretero-renal colic are caused by impalpable metastases. Blümel believes that in future the Aschheim-Zondek test will play an important part in the diagnosis of testicular tumours, and more especially their metastases. (Zondek was the first to describe, and many others have confirmed, the presence of prolan A or prolan B in the urine in cases of testicular tumours.) Prolan A in the male urine seems not to denote more than a derangement of gonad-hypophysis relations, and has been found in non-neoplastic morbid conditions of the testis. Prolan B (giving Grades II and III of the Aschheim-

Zondek pregnancy test in the injected mice) has been found, when sought, in the urine of patients with chorion epithelioma of the testis, and in about two-thirds of cases so far reported of seminoma: according to Oberndörfer seminomata may contain small islets of chorion epitheliomatous cells. Prolan B was excreted by one and prolans A by the others of Blümel's three patients with seminoma. The primary tumour in the first case was composed of young cells and resembled a medullary carcinoma: a metastasis removed post mortem gave Grades I, II, and III of the pregnancy reaction. In one of the other cases prolans A disappeared from the urine after intensive x-radiation of metastases: later it reappeared and a secondary tumour (the only one now demonstrable) was found radiologically in the lung. The treatment of a seminoma consists in removal of the primary tumour, in x-radiation by large doses of the homolateral iliac and aortic lymph glands, and in repeated later irradiations of metastases under control of the Aschheim-Zondek test. Rapid disappearance of cutaneous, glandular, or even thoracic metastases after radiation is characteristic, and is accompanied by marked general improvement: one of Blümel's patients so treated survived for three years.

498 Hernia and Occupation

L. G. LORENZO (*Rev. Med. de Barcelona*, March, 1934, p. 195) roundly denies that strain or effort can cause hernia either of the indirect inguinal, femoral, or umbilical type. In proof of this assertion he calls attention to the rarity of herniae of any kind among athletes in whom the effects of violent effort take the shape of fractures, dislocations, injuries to joint cartilage, and arthritis. Though a very violent effort may rend the abdominal wall, burst the peritoneum, and thus "forge" a hernia, surgical literature does not provide any instance of such a case. In the wide experience of the writer as referee to many indemnity insurance companies, both Spanish and foreign, he has met with only one case of hernia which could be attributed to industrial accident, and this was through the fibres of the external oblique muscle, and above and lateral to the inguinal canal—in other words, a "direct inguinal hernia." To prove that sac formation is not a matter of minutes but of months or even of years, he cites the experiments of Scarpa and Moro, which show that the peritoneum is far too elastic to be moulded into a sac by a violent effort. Hence the presence of a sac definitely excludes all possibility that strain could have produced the hernia. In estimating the accident factor in any given claim for compensation for hernia, the history of pain, size of the swelling, and the time at which work was abandoned are not of the smallest value.

499 Tuberculous Arthritis of the Knee in Children

Professor MAFFEI (*Le Scalpel*, April 7th, 1934, p. 469) describes his results in a series of cases of tuberculous arthritis of the knee which were treated by conservative resection. The operation consists of extensive exposure of the joint, resection of the ligaments and cartilages, careful dissection of the synovial membrane from the front to the back, and complete resection of all the articular surfaces. Curetting of all the diseased foci is then carried out, particular care being taken in the intercondylar fossa. The bony surfaces are then placed in apposition, the lateral ligaments are sutured, as also is the tendon of the patella, and the wound closed. Fourteen cases are reported which were treated by operation. Of these eleven were considered to be cured, as the children could walk well. In one case the condition was improved, and in two instances the children died immediately after operation from shock and loss of blood. In the majority of cases the onset of the disease was insidious, with swelling of the knee, pain, and limitation of movement as typical symptoms. Rest in bed or in plaster brings relief of pain, but further attacks occur at varying intervals. Palliative treatment will sometimes bring about complete ankylosis, but frequently this is only partial, and recurrence of symptoms may take place which may require months or even years of treatment to correct. It is suggested that if after six months attempts to obtain a movable

joint by palliative treatment have failed, operative treatment should then be carried out to obtain a surgical ankylosis.

500 Pharyngo-laryngeal Emphysema after Excision of Lung Tissue

P. CLAIRMONT (*Zentralbl. f. Chir.*, April 7th, 1934, p. 821) describes a case in which, twenty hours after resection of a tumour involving the three lobes of the right lung the patient died suddenly from asphyxia preceded by cutaneous emphysema. Necropsy showed little affection of the mediastinum but complete obstruction of the upper airway by emphysematous swelling of the pharyngeal and laryngeal mucosa. Tracheotomy, but not mediastinotomy (which had been planned), might have saved the patient's life. The complication is ascribed to the fact that after the lung surface had been attached in the pleural window tight tamponage with elastic application had been done and the surface, after the dressings had become soaked became airtight. When closure of the wound is impossible, loose dressings, frequently changed, are therefore to be recommended.

Therapeutics

501 Vapour Baths in Treatment of Urticaria

A. MARCHIONINI and B. KÖRTH (*Münch. med. Woch.*, April 20th, 1934, p. 589), having noted a case of appearance of urticaria in connexion with sweating, found that in other urticarial patients induction of sweating failed to bring out a rash, but might improve an existing one. Accordingly, they were led to use vapour baths in treatment of urticaria. In most cases one or more exposures of twenty to thirty minutes to a temperature not exceeding 50° C. were successful. The cases included chronic and recent ones (many had resisted diverse treatments given before) as well as serum urticaria. The efficacy of the treatment is ascribed partly to excretion of toxic substances in the sweat and partly to the abrupt oscillations which are induced in the acid-base equilibrium.

502 Arseno-autohaemotherapy in Syphilis

A. ALECHINSKY and M. CRAPS (*Le Scalpel*, April 28th, 1934, p. 597) advocate arseno-autohaemotherapy in those syphilitic cases, apparently cured, but in which the Wassermann remains positive despite intensive treatment. In this procedure the syringe is first charged with the dose of the arsenical medicament; into this 10 to 15 c.cm. of the patient's blood is aspirated, and the mixture is immediately injected into the gluteal muscles. Treatment is given every two to four days according to the dosage employed, in series of 12, 15, to 20 injections. Intervals of three or four weeks should elapse between each series. Negative blood reactions have been obtained in some cases after the fourth injection, in others after the eighth or tenth. Short notes of three cases are given. Besides these about twenty patients are under observation who at present give analogous results. The authors state that the mixture of blood and the arsenical preparation forms an only slightly toxic combination, and that this method is beneficial in cases resistant to arsenic, and permits of a subsequent increase of dosage.

503 Blood Transfusion in Influenza

A. TZANCK (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, April 23rd, 1934, p. 535) records good results following blood transfusion in influenza and its complications. Histories are given of two cases in which rapid cure was obtained by this method. The condition of both patients was very grave, and associated with pulmonary involvement. In one case, after withdrawal of 200 grams of blood, a transfusion of 80 grams of blood was given, and two later ones of 100 grams and 70 grams respectively. An intense rigor ensued, but in a few hours marked improvement occurred. The blood donor (Group IV) was

not a convalescent from influenza, but was the only member of the family that escaped the disease. Tzanck suggests that this donor was particularly resistant, and his blood, therefore, more efficacious. The condition of the other patient not permitting bleeding, a transfusion of 100 grams was at once given. Though marked improvement followed, dyspnoea persisted. A blood withdrawal of 150 grams was then made and a further transfusion of 100 grams given. The donor was the husband (both wife and husband were Group II), who was the only member of the patient's entourage escaping infection. After the last transfusion a rigor occurred, followed by profuse sweating. During the night the temperature dropped to normal with disappearance of all clinical symptoms; this might have been merely coincidental with a pneumonia crisis. Two other cases are mentioned in which sera of convalescents from influenza were given; the favourable results in these were, however, not more marked than when ordinary donors were employed. Tzanck considers that the term "immuno-transfusion" is erroneous except in immunizing diseases. In recurrent infections, as pneumonia, streptococcaemia, etc., the reasons for the efficacy of blood transfusions are quite different and depend on complex reactions; in these cases, therefore, he prefers the term "phylacto-transfusion."

Radiology and Electrology

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Short-wave Diathermy

J. and V. GARCIA DONATO (*Crónica Médica*, February 15th, 1934, p. 83) divide the effects produced by short-wave diathermy on the human organism into two groups—namely, those produced by the rise of temperature in the tissues traversed by the current, and, secondly, those which we may term specific and peculiar to Hertzian waves. The primary effect of the application of short-wave diathermy is a gradual rise of body temperature to 3° or 4° C. above normal, with increase of the intravenous and intrathecal pressure, while at times the arterial tension may fall by as much as 3 or 4 cm. Later, metabolic alterations are much reduced, and the chemistry of the urine is affected in various ways. The authors use the short wave therapeutically for its trophic effect in the different alopecias; for its hypotensive effect in angina pectoris, hemiplegias, and headaches; and for its analgesic properties in arthritis, neuritis, and neuralgias. They find that by far its most useful function is the production of artificial fever as a substitute for malaria therapy in the treatment of G.P.I., tabes, and the Parkinsonian syndrome. In this field the greatest possible care must be taken to keep the patient's skin perfectly dry and free from sweat, and to effect this there is now devised a method of exposing the body to a current of air at 60° C. While this is in operation the internal temperature may be maintained at 40° C. for two, or even three, hours, after which the patient is wrapped in blankets and removed to bed. The treatment is contraindicated by the existence of aneurysm, uncompensated heart disease, great hypotension, pulmonary tuberculosis, and varicose veins.

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Radiotherapy in the Relief of Pain

J. HAGENAU, L. GALLY, and D. LICHTENBERG (*Presse Méd.*, April 4th, 1934, p. 531) advocate deep radiotherapy in essential algias; it is ineffective in cancer pain and unnecessary in symptomatic or secondary algias. They utilize an apparatus with a constant current of 200,000 volts, filters of 1 mm. of copper, 2/10 mm. of aluminium, and a skin anti-cathode distance of 40 cm. Total doses of 3,000-r (French) are given in bi-weekly doses of 500-r (this is important) per field of irradiation. After an interval of three to four weeks the same treatment is repeated in cases of failure or in complete results. A Coolidge standard ampoule enclosed in a tube of oil is used; this to a depth of 10 cm. gives 43 to 45 per cent. of the cutaneous dose. The fields irradiated should be large to avoid

multiple parts of entry and double doses on the skin; filters of heavy metal (their irradiation supplements that of the ampoule) should be used. Each application should be relatively short, and given in a pure atmosphere at a distance from the high-tension generators. Adrenaline and jaborandi extract are useful sedatives of the vago-sympathetic reactions. The following conditions have been treated by this method. The three types of sciatica—the high (irradiation from the first lumbar vertebra to the sacrum), the median (irradiation of the sacro-iliac region), and the low (irradiation over the sciatic notch). Of thirty-one cases, fifteen showed cure, seven improvement, and nine failure. In ten cases, with six cures, two improvements, and two failures, of cervico-brachial neuralgia, the region of the roots of the brachial plexus and the supraspinous region were irradiated. Radiotherapy is ineffective in trigeminal neuralgia, but is most beneficial in facial sympathalgia (neuralgism, facial causalgia); of twenty-one cases, nine were cured, four improved, and eight showed no result. Talalgias respond remarkably to radiotherapy; only one of five cases showed no benefits. Of two cases of coccygodynia, one was cured and the other showed little improvement. Early radiotherapy in zona was very efficacious, seven cures and one amelioration occurring in nine cases. This treatment is of no avail in post-zosterian algias of one or more years' duration. Cure or improvement was obtained in cases (including four of Paget's disease) due to osteitis and periosteitis. Improvement was also noted in a case of acroparaesthesia of the arm, and one of trophoedema of the leg. All the results recorded occurred in patients treated more than two years previously: the cures are therefore apparently definite.

506 Physiological Effects of Ultra-violet Radiation

As the result of the controlled investigation of two groups of healthy women during the winter months of 1930-2 HOPE H. HUNT and JANE M. LEICHSENKING (*Radiology*, March, 1934, p. 318) found that the normal individual seemed to have powers of compensation sufficiently great to counteract any stimulation resulting from ultra-violet radiation within ordinary limits. The more nearly the person approached the physiological normal, the less evident were the effects from such exposures. The use of cod-liver oil and vitamin preparations was forbidden. One half of the group each year (six cases) received ultra-violet radiation after the weekly observations had been made and blood samples taken; the control group received no radiation. During the second year treatments were given twice instead of once a week, and the subjects received respectively three times the amount of radiation given in the previous year. The production of haemoglobin appeared to be more pronouncedly affected during the second year than the first, although the effect did not continue indefinitely. It was not determined whether this increase was real or apparent and due to the temporary mobilization of the haemoglobin reserves of the body. In both test and control groups there was a slight rise in the average total red cell count, and the colour indexes of all increased from autumn to spring. The body temperature, pulse rate, and respiration to fluctuate independently of the the first experimental periods the average systolic and diastolic pressures of the control group showed a slightly greater decrease than those of the irradiated group. In the second year the decreases were almost the same. The total white counts seemed to be less influenced by the ultra-violet rays than were the other factors. During the first year the average percentage of the polymorphonuclears of the irradiated group increased and the lymphocytes diminished, but the reverse was true in the second year. With the greater amount of irradiation in the second year the liability to catarrhal infections appeared to be diminished. There was no manifest effect on sleep, appetite, weight, physical efficiency, or the type or regularity of the menstrual flow. The authors suggest that the well-known salutary results of ultra-violet therapy in disease are attributable to some action on the parathyroid glands.

Obstetrics and Gynaecology

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Urethral Stricture

H. WYNN (*Amer. Journ. Obstet. and Gynecol.*, March, 1934, p. 373) has measured the meatus in 206 women without, and 172 with, urinary symptoms. He refers to a case of double stricture relieved by dilatation. Pathological specimens are few and signs uncertain, except for oedema, inflammation, scar tissue, and neoplasms, but reduction of the calibre by urethritis is not true stricture. The meatus being the narrowest portion of the urethra, a sound that will pass this without injury is taken as the measurement of the normal calibre of the urethra. The size of the majority is 23 to 30 F. (French bulb bougie). Gonorrheal urethritis is the commonest cause of stricture. Pregnancy, faulty catheterization, passage of stone, fulguration of caruncle, accidental injury, and radium application for carcinoma of cervix are other causes. Stricture occurs most commonly in the lower third of the meatus. Treatment is by incision of the meatus itself, if constricted. Dilatation under cocaine, with Hegar's dilators, relieves most cases of simple urethral stricture, but treatment has to be continued for several weeks. Burning urination and frequency are the commonest complaints. Difficulty and slowness in voiding with aching about the bladder or meatal area, dyspareunia, and enuresis occur.

508 Evipan Anaesthesia in Gynaecology and Obstetrics

F. LANGSTEINER (*Wiën. med. Woch.*, April 14th, 1934, p. 447) reviews his experiences of intravenous injections of sodium evipan in various gynaecological and obstetrical conditions, and finds that the anaesthesia it induces is so satisfactory that he would no longer wish to dispense with it in certain cases. But there are limitations to its usefulness. It is contraindicated after 50, as after this age irregular breathing and post-narcotic excitation are apt to supervene. Cachexia is a contraindication, and caution should be exercised in liver disease, although the only effect it is likely to have on the anaesthesia is its prolongation. Disorders of metabolism are also a signal for great caution. Caesarean section is probably more satisfactorily performed under evipan than any other form of anaesthesia. In normal labour it is a disadvantage that evipan eliminates the pressure of the abdominal muscles when the child's head is being born. Matters are different when forceps are employed, and hitherto the author has had only the best of results with evipan in forceps deliveries. Quite small doses may be sufficient in these circumstances provided much time is not lost on suturing after an episiotomy. The complete retention of its expulsive forces by the uterus during such labour is an important point in favour of evipan, and the author has hardly ever known it to be followed by that atony of the uterus which so often is a sequel to ether anaesthesia for a forceps delivery.

509 Biological Diagnosis of Pregnancy: Modification of Friedman and Laphan's Test

Owing to the difficulty presented by the variation of the calibre of the marginal veins of the rabbit's ear after it has been injected more than once, J. DE FILIPI (*Semana Médica*, March 15th, 1934, p. 823), substituting the intraperitoneal for the intravenous route, succeeded in making a correct diagnosis of pregnancy in fifty consecutive cases thus treated. On any day after the fourth following upon the last menstrual period, the woman, having refrained from liquid dietary for the previous twenty-four hours, and having micturated upon retiring on the previous night, gives a catheter specimen of the early morning urine which is received into a sterile container. This sample, if placed in a refrigerator, will remain active for a week and may thus be sent to a distance. A doe rabbit, isolated for the previous three weeks to prevent pregnancy and ovulation, and over four months old, weighing from 900 to 1,800 grams, receives over a period of forty-eight hours

six injections, each of 4 c.cm. of the urine intraperitoneally. Forty-eight hours after the final injection the rabbit is killed and the ovaries inspected. If naked-eye examination discloses the presence of one—or, more often, numerous—haemorrhagic follicles, round in shape, and about 2 mm. in diameter, and varying in colour from pink to wine red, the test is positive of pregnancy. Usually the result is more obviously manifest in one ovary than in the other.

Pathology

510 Triboulet's Test for Tuberculous Ulceration of the Intestines

G. HERTZBERG (*Norsk Mag. f. Laegevid.*, April, 1934, p. 402) has compared the findings of Triboulet's test with those of the x rays and post-mortem room between February, 1933, and January, 1934, at a hospital in Bergen, where his material consisted of 255 cases of tuberculosis. In ninety-nine of the 105 cases controlled by x rays the findings coincided with those of Triboulet's test (both positive in ninety-four and both negative in five). Among the thirty-nine cases coming to necropsy were thirty in which both Triboulet and post-mortem findings were positive, five in which both were negative, and four in which Triboulet was negative and the post-mortem findings positive. In consideration of (1) the commonness (over 80 per cent. according to some authorities) of tuberculous ulceration of the intestines in phthisis, (2) the possibility of curing such ulceration if diagnosed early, (3) the lack of characteristic signs, and (4) the simplicity of this test, they consider it deserves more attention than it has hitherto received. The test is performed as follows. A lump of faeces as large as a walnut is dissolved in 20 c.cm. of distilled water and filtered; 3 c.cm. of the filtrate is diluted with 12 c.cm. of distilled water; 20 minims of Triboulet's reagent (sublimite 3.5, acetic acid 1, aqua dest. ad. 100) are added. As a control the same solution is prepared without Triboulet's reagent. The test tubes containing the two solutions are well shaken, and are compared after five and twenty-four hours. A positive reaction is indicated by a cloudy grey or brown deposit, above which the solution is clear. The presence in the bowels of large quantities of water-soluble serum proteins derived from tuberculous ulcers is said to be indicated by such a positive reaction.

511 The Staining of Acid-fast Bacilli

J. W. FIELDING (*Aust. Journ. of Exper. Biol. and Med. Sci.*, March 16th, 1934, p. 1) records the results of investigations undertaken to explain the loss of acid-fast staining properties in bacteria, and to find a method to correct it. When these bacilli are present in tissues preserved in formalin or otherwise, they may frequently fail to take the stain, and are consequently overlooked, the two least harmful fixatives in this respect being those of Zenker and von Rath. Fielding is satisfied that neither formalin nor alcohol used as a fixative is responsible for the permanent destruction of acid-fastness in bacilli, nor is this acid-fastness abolished by formalin or acetone, or treatment with both. Ehrlich's original observation regarding the necessity for the alkaline treatment of acid-fast bacilli would appear to be sound. Fielding believes that autolytic action in the tissues is primarily responsible for lowering the pH value of the fixative, and that such low values are responsible for the change in staining reaction. It follows that an attempt should be made to keep the pH value of the fixative on the alkaline side; alternatively, an alkaline fuchsin preparation may be used for staining. Fielding gives a formula for such a stain, sodium bicarbonate in 0.25 per cent. concentration being mixed with basic fuchsin dissolved in absolute alcohol. He adds that a comparison of the relative values of an alkaline and an acid formalin fixative revealed evidence in favour of the former. The alkaline fixative contained 0.5 per cent. sodium bicarbonate in 10 per cent. formalin.

EPITOME OF CURRENT MEDICAL LITERATURE

Medicine

512 Chronic Idiopathic Steatorrhoea

M. SNELL and J. D. CAMP (*Arch. Int. Med.*, April, 1934, p. 615) record seven cases of fatty diarrhoea with associated changes in the metabolism of calcium and phosphorus; radiological studies of the gastro-intestinal tract were made in all except one, and in four definite abnormalities in the contour and motility of the small intestine were thus revealed. These findings suggested the presence of an inflammatory condition, with oedema of the mucosa and infiltration of the walls, involving especially the small intestine, but occasionally also the stomach, duodenum, and colon. The regression of the changes coincident with improvement in the clinical symptoms and inflammatory changes described in necropsy reports of similar cases seem to substantiate this opinion, and to indicate the lines of treatment. The alimentary tract should be rested; the blood should be restored to normal; and such deficiencies as lowered concentration of calcium and phosphorus in the blood and defective gastric secretion of hydrochloric acid should be remedied. In some cases restriction of the dietary intake of fat coupled with increase of the protein intake will afford relief. Tolerance to fat appeared to be variable, some of the patients in the authors' series taking up to 100 grams daily, while others were unable to utilize half this amount. Such limits of tolerance indicate the necessity for patients to be treated at first in hospital, where the intake and excretion of fat can be measured and compared. The use of vitamin D in the form of viosterol appeared to be of great therapeutic value, in some cases keeping the diarrhoea and the depletion of calcium under control. Parathyroid extract is only a symptomatic remedy in these cases, since it does not increase the utilization of calcium, but only causes increased liberation of this from the skeleton. It had little effect on the diarrhoea, but was useful in controlling tetany. For the anaemia liver extract was employed with good results in some cases, but one patient was at first made worse by it. The prognosis of this condition appears to be fairly good; even if the bones show extensive demineralization the outlook is not necessarily hopeless. The first essential is to evaluate early the aetiological factors in the individual case, and to devise the treatment accordingly.

513 Hyperpiesis and Expectation of Life

E. MASING (*Deut. med. Woch.*, April 20th, 1934, p. 591) publishes figures which, he claims, show that the expectation of life in hyperpiesis is greater in a quiet German town than in the more feverish atmosphere of Western Europe and North America. His observations cover a score of years in private practice, in the course of which he has observed and subsequently followed 161 cases in which the systolic blood pressure at the first examination was not under 150 mm. Hg. In some of the cases this pressure was over 140 at the first examination, rising higher at a later date. Eighty patients had since died, and eighty-one were still alive. The average age of the dead patients were 57.3 years when their hyperpiesis was first detected, and their average age at death was 64.9 years. According to the calculations of German life insurance societies, the expectation of life of a healthy man of 57 is 14.3 years. About 70 per cent. of all the deaths were due to the hyperpiesis (cardiac insufficiency and circulatory disturbances in brain, heart, and kidneys). Among the eighty-one survivors kept under observation for not less than six years, and for an average of 10.6 years, were thirty-three who were fully fit for work, although some might occasionally suffer from some dis-

comfort. Thirty-seven were more seriously hampered, and eleven were more or less seriously ill. The author suggests that there may be a certain antagonism between hyperpiesis and cancer, to judge by the rarity of the latter in his material, both living and dead. As for the treatment of hyperpiesis, he is lukewarm in his advocacy of drugs, and the remedy he considers most potent is rest in bed. It may bring the blood pressure down in a few days from 200 to 125, and when a high blood pressure is but little influenced by this treatment the prognosis is, as a rule, bad.

514 The Mean Arterial Pressure

F. R. VAN DOOREN (*Le Scalpel*, April 21st, 1934, p. 542) presents a study of the mean arterial pressure in some 230 cases, first reviewing previous work on this subject. As he has already proved that puncture of an artery regularly gives a pressure reading identical to that of the oscillogram, this method was employed. The pressure calculated by the sphygmomanometric curve at the humeral artery was compared with that obtained by puncture of the same artery and by puncture of the radial, femoral, and dorsalis pedis arteries of the same side. In 70 per cent. of these readings the mean pressure was the same by both methods; differences, when present, were due to a lowering of the arterial-puncture values; the difference was less between the pressure values at the humeral and radial than those at the humeral and femoral. It has been demonstrated that a very slight but regular and progressive tensional drop occurs from the large vessels to the periphery; Tiegestedt has stated that, despite this drop, the pressure is everywhere the same. The present researches confirm this view, and also confirm the value of the mean pressure in only 70 per cent. of the cases, the remaining 30 per cent. being inexplicable. A study of the maximal, minimal, and mean pressures in these cases shows that the concordances between the two former are scarcely apparent, while between the minimal and mean they are almost constant. The difference between the latter two pressures in normal subjects was 1.6 cm. of mercury, in atherosclerotic conditions 3 to 4.3, and in cardiac insufficiency 2.6. The last-named is therefore only one factor of rise in the mean pressure, induration of the vessels being a much greater one. Van Dooren asserts that a rise in the mean pressure corresponds to one in the minimal, and that occasionally the former is without change in the latter. He concludes that the mean pressure corresponds to nothing explicable, and that its name characterizes a tensional value impossible to justify. Its dependence on the minimal pressure gives it a semblance of reality, but the faulty technique which has been previously employed cannot furnish strictly uniform results.

515 Diabetes and Exercise

J. A. COLLAZO and J. BARBUJO (*La Med. Ibera*, April 14th, 1934, p. 453) state that a study of the literature shows the undoubted clinical fact of an increased tolerance for carbohydrates in diabetic patients in the acute stage who exercise their muscles (by manual work, sport, gymnasium, massage, and the like). In those cases in which an equilibrium has been obtained by insulin the dose of the drug can be reduced. In twenty-one cases of diabetes in which the curve of hyperlacticaemia following exercise was investigated, the writers found that: (1) in almost all cases there was a rise of lactic acid in the blood by about 4 mg. above the normal, and (2) that the glycaemia showed a distinct fall in all these cases. They attribute these results to a better utilization of circulatory glucose by the muscles, and a greater avidity of the hepatic cell for the lactic acid of the blood.

Surgery

516 Intrathoracic Tumours of Neural Origin

M. MAKKAS (*Brunn's Beitr. z. klin. Chir.*, March 14th, 1934, p. 276) gives an account of two personal cases and twenty-six from the literature of operation for intrathoracic neural tumour, comprising ten ganglioneuromata, nine neurofibromata, eight neurinomata, and one sympathetico-blastoma. With the exception of one neurofibroma, which had become sarcomatous, all were benign: all but one were found in the posterior mediastinum (usually high up), and three out of four affected females. There was no special age incidence, except that ganglioneuroma in the great majority of cases occurred below the age of 20. The source of the tumour was frequently undetermined, but appeared as a rule to be the sympathetic cord or an intercostal nerve. The largest diameter of the tumours ranged from 3 to 20 cm. Clinically, a long history (two to twenty years) of slight and indefinite symptoms was usual—slight pain, dyspnoea, or dry cough. Intercostal neuralgia was reported in two cases only. Physical signs of dullness and impaired air entry led to suspicion of chronic pulmonary or pleural inflammation in most cases; but diagnosis was sometimes aided by detection of a supraclavicular extension of the tumour (four cases) or a unilateral ptosis and myosis pointing to sympathetic palsy. In no case was diagnosis made before radiography, but in no case did this fail to show the tumour; however, it was not seldom regarded as being probably a dermoid or hydatid cyst. Differential diagnosis from malignant tumour is not long difficult. From a dermoid cyst, which also has a sharp, rounded outline, neurogenous tumours are distinguished by their occurrence in the posterior mediastinum: from a hydatid cyst by their broad inner margin, flat or non-concave internally towards the vertebral axis, and by the negative Casoni reaction. At operation posterior mediastinotomy is preferable; the tumour shells out without difficulty, and serious haemorrhage has not been noted. Opening of the pleural cavity is usually unavoidable. Sauerbruch recommends that in operations on tumours of sympathetic origin a posterior portion should be left behind—otherwise a lethal tachycardia may occur. The mortality in this collected series was 32 per cent., and pleuro-pulmonary complications followed in about one-half.

517 Vesiculography

A. GORRO (*Journ. d'Urol.*, March, 1934, p. 193) points out the difficulty previously experienced in obtaining an x-ray photograph of the seminal vesicles, which have only been visible in cases where there is a calculus or cystic lesion, or where a tumour is in the process of calcification. In order to obtain a good result it is necessary to inject a contrasting medium, and it has been found that neiodipin answers this purpose. It is neither toxic nor painful—even if remaining for some time in the seminal vesicles—while good aseptic results are obtained. It is possible to fill the vesicles by four different methods: by catheterization of the ejaculatory ducts by urethroscopy, by transrectal or perineal puncture of the seminal vesicle, by subcutaneous puncture of the vas, or by puncture of the vas by the scroto-inguinal route. Of these methods the first is often unsuccessful, the second and third are uncertain and dangerous, and it is thus by the last method that good results have been obtained. The success of the procedure depends on the technique, which the author fully describes and illustrates. The operation is carried out under local anaesthesia, a 10 per cent. solution of novocain being used. An incision is made at the root of the scrotum, and the opaque liquid is injected into the vas until the patient desires to urinate, thus showing the passage of the fluid from the vesicle into the prostatic urethra and into the bladder. This usually occurs after 2 to 3 c.cm. has been injected. The incision is closed, and the patient expels any surplus fluid. The x-ray photograph can then be taken with the patient on his back. The fluid injected often remains in the vesicular

cavity for several days, or even weeks, without causing discomfort. By this means it is possible to obtain an accurate diagnosis in cases of malignant tumours of the prostate, retro-vesicular and retro-prostatic tumours, or in chronic inflammatory conditions of the vesicles.

518 Chronic Arthritis of the Hip

C. ROEDERER and P. GRAFFIN (*Rev. Méd. Franç.*, March 1934, p. 283) divide the surgical treatment of non-tuberculous chronic arthritis of the hip into five different methods: subcutyloidian osteoplastic buttress, arthrodiesis, resection, subtrochanteric osteotomy, and drilling of the femoral head. The bone graft, or buttress operation is not very satisfactory, and should be reserved for cases of arthritis in young persons when subluxation is only of moderate degree, and when the head of the femur is only slightly deformed and displaced. In other cases it is not sufficiently firm to prevent the displacement of the femur with consequent pain. Arthrodiesis should only be used in cases of unilateral arthritis with severe pain and gross malformation of the hip-joint. Ankylosis is difficult to obtain in old people, and necessitates a lengthy immobilization. In cases of bilateral arthritis, ankylosis of one hip is unwise. Resection of the head of the femur is a serious operation, which should only be carried out in cases which are exclusively femoral, and are bilateral, with a tendency to ankylosis. Subtrochanteric osteotomy is a simple procedure, which gives good results. It should be used in all cases where there is poor position and when abduction is markedly limited. This operation should be performed in the majority of cases of arthritis. It does not limit the movements of the hip, and only requires two or three months of immobilization, according to the age of the patient. Drilling of the neck of the femur is also a simple operation, and immobilization is only necessary for a few days. The indications for this method of treatment are: good apposition of the hip, a lesion predominantly femoral, and the femur being in a good position. Osteotomy and drilling of the femur may be carried out simultaneously in certain cases.

Therapeutics

519 Diathermy in Alcoholic Cirrhosis

J. LEXA (*Thèse de Paris*, 1934, No. 228), who records twelve illustrative cases in patients aged from 27 to 71, three of which are original, maintains that diathermy has an undoubtedly favourable action on the course of certain hepatic affections accompanied by ascites. The most convincing results have been obtained in the treatment of alcoholic cirrhosis with ascites. According to Lexa's own experience, the cases with a large liver react best. In the atrophic and sclerotic stage diathermy appears to have less effect.

520 Autohaemotherapy in Typhus

A. BABALLIAN (*Bull. Soc. Path. Exot.*, March 14th, 1934, p. 235) treated sixteen cases of typical severe typhus fever in young men in a hospital at Teheran by intramuscular injection of 10 c.cm. of their own blood. Each injection was followed by an immediate improvement in the general condition. The treatment appeared to shorten the duration of the disease and convalescence, and did not give rise to any complications. Four to five injections were given in each case.

521 Use of Stryphnon in Haemoptysis

As the arterial pressure is always lowered while the venous is arterially raised, in haemoptysis, J. E. WOLF and J. DUCHAINE (*Bruxelles-Médical*, April 22nd, 1934, p. 507) advocate the use of an injectable styptic in this condition. They employ "stryphnon," a methylaminocetobenzocatechin, which immediately precedes adrenaline in the synthetic series; it is a white powder, soluble in water, and slightly in alcohol, and possesses great vaso-constrictive properties. The authors inject, intravenously and

very slowly, two-thirds of an ampoule containing 2.2 c.cm. of a solution of the drug (0.2 to 0.3 c.cm. is given per 10 kilos of body weight); the dose depends on the patient's resisting powers, and is less for females and those in a weak condition. The haemorrhage usually ceases at the end of the injection. In cases of very abundant haemoptysis it is advisable to give a subcutaneous injection of 1.5 to 2 c.cm. half an hour later. As strychnon raises the blood pressure, its use in hypertension is dangerous; this being its only contraindication. This drug should only be used in cases of urgency; it is useless in chronic slight haemorrhagic oozing. The authors have abandoned the use of morphine in favour of strychnon. It is less dangerous than pituitary extract, and has a more rapid action than other pulmonary haemostatics. Its action, though of a transitory duration of only an hour, is sufficient to allow of preparation for subsequent more radical treatment.

Ophthalmology

522 Local Antigonococcal Serum in Gonoblennorrhoea and other Eye Diseases

W. A. WILLE (*Brit. Journ. Ophthalmol.*, April, 1934, p. 218) instils the serum in the following manner. The conjunctiva is first irrigated with water, 1 per cent. cocaine is instilled, and the everted lids are swabbed with boric tampons. With the lids still everted, the conjunctiva is covered with serum, the lids being kept everted for twenty-five seconds. This is done four times, with intervals of ten minutes, twice a day. At home boric tampons and protargol 2 per cent. are used hourly. The treatment has proved successful in gonoblennorrhoea, Koch-Weeks conjunctivitis, trachoma, spring catarrh, and dendritic ulcer, and is equivalent to the use of 2 per cent. silver nitrate without the danger of irritation, cauterization, pain, or corneal damage. A serum reaction, which may not occur till after three weeks' treatment, if present, is slight. In such cases the remedy is often especially beneficial.

523 Two Cases of Buphthalmos in Siblings

J. HYNES (*Amer. Journ. Ophthalmol.*, February, 1934, p. 132) reviews the literature, pointing out that this condition is present at birth, and is but a major degree of the infantile type occurring in the second and third decades. The treatment is essentially surgical. Elliot's trephine, which offers a better hope of recovery than iridectomy, should be performed as early as possible, and before the age of one year. He describes two cases in sisters. The eyes were noticed to be enlarged in the first at 6 months and in the second at 7 months. Both showed a steamy cornea of large diameter, a deep anterior chamber, raised tension, and a cupped optic nerve. Trephining stopped the progress of the condition, allowing poor vision in the first and good vision in the second case.

524 Ocular Method of Determining Vitamin A Deficiency

P. C. JEANS and Z. ZENTMIRE (*Journ. Amer. Med. Assoc.*, March 24th, 1934, p. 892) describe a clinical photometric method of determining moderate degrees of vitamin A deficiency, in view of the fact that night blindness is one of its manifestations. The instrument used was an electrically illuminated Birch-Hirschfeld photometer, with a Goldberg wedge permitting a gradual and uniform decrease of light transmission. The wedge is marked with a scale of opacities ranging from 1 to 13. In a series of 213 children the instrument readings in forty-five were of such a character as to indicate poor recovery of light sensitivity. In no case was any abnormality discovered other than the functional one. When the children were given three teaspoonfuls of cod-liver oil daily in addition to their hospital diet they all subsequently reacted normally to the test. The average period required for recovery was twelve days. It was observed that some of the children

with vitamin deficiency were mentally alert and apparently well nourished; others were under weight and mentally sluggish, although not mentally deficient. Still other children seemed to be suffering from nutritional deficiencies, but the dark vision tests indicated no deficiency of vitamin A. It was noted also that as a rule the vitamin A deficient children who were retained under observation improved both in physical and in mental well-being. The authors are satisfied that this test is effective in detecting moderate degrees of vitamin deficiency without difficulty or loss of time.

525 Results of Orthoptic Training

G. P. GUIBOR (*Arch. of Ophthalmol.*, March, 1934, p. 433) quotes conflicting evidence from several sources as to the age, vision, and degree of squint of favourable cases and the time required for training. He records success with patients of from 2 to 39 years, comparing the results in forty control cases where atropine, covering, or operation but no apparatus was employed with those in thirty-eight cases trained in an orthoptic clinic where no operations were performed. Of the forty controls, 7.5 per cent. were worse, 47.5 per cent. unimproved, 25 per cent. improved, 12.5 per cent. cured while wearing glasses, and 7.5 per cent. cured without glasses. Of the thirty-eight cases in the orthoptic clinic 2 per cent. were worse, 34.2 per cent. unimproved, 13.8 per cent. improved, 7.9 per cent. cured while wearing glasses, and 42.1 per cent. cured without glasses. He gives a full description of the methods employed in the orthoptic training. The average of cures by this method given by twelve other writers is 46.8 per cent. The author adds a comprehensive list of the causes of failure in orthoptic training.

Obstetrics and Gynaecology

526 Pre-natal Diagnosis of Foetal Sex

A. P. GIANGIOBBE (*Rev. Med. Latino-Americana*, January, 1934, p. 351) claims to have demonstrated foetal sex in all cases (twenty-one) on which he employed a reagent of which he is the discoverer. This is a hydro-glycerated freshly prepared extract of the testicle of the human foetus or stillborn male child, of which he injects intradermally, over the deltoid muscle of the patient, and at two points 3 cm. apart, one-half of 1 c.cm. The site of injection is examined twenty-four hours later, and if a congested macule or papule is observed the reaction is considered positive of male pregnancy. If the skin is unaffected this indicates that the embryo is female. The reaction is definite no matter at what period of pregnancy it may be practised. The injected material is sterilizable quite readily, but should not be obtained from an infected foetus. The writer has met with similar success in like experiments on uniparous lower animals, but he says nothing about sex determination in multiple pregnancies. He believes that during the child-bearing age the female passes through periods of secretory change, which he terms "masculine" and "feminine," and which are governed by laws in close alliance "with the intimate essence of life." Sex depends upon which of the two secretory conditions is active at the moment at which the ovum is impregnated.

527 Endometriosis Vesicae

R. B. PHILLIPS (*Journ. Obstet. and Gynaecol. British Empire*, April, 1934, p. 165), reporting a case of endometriosis of the bladder, points out that the condition probably occurs more commonly than his collection of twenty-nine cases would suggest. The diagnosis is frequently missed owing to the omission of cystoscopic examination. After discussing the theories of endometriosis, he describes the pathology—non-encapsulated growths, or (?) implants of endometrial tissue which invade the pelvis, often in association with uterine fibroids, enclosing areas filled with more or less altered blood, notably the chocolate cysts of the ovary. Clinically, the average age

for endometriosis of the bladder is about 40. The first complaint is of frequent, often painful, micturition coinciding with the monthly periods, and at first disappearing between-whiles. Haematuria is then noted, also cyclic. These symptoms increase in severity and persistence. The diagnosis is suggested by this history, but is established only by cystoscopy. The blue-black cysts and blue folds of oedema then seen are characteristic. The ureteral openings are displaced by growth, and bulging of the walls is seen. A piece of tissue can be obtained for microscopy. Cyclical changes in the growth can be watched by cystoscopic examination at dates near to or distant from the menstrual period. Treatment is by surgical removal when the growth is not too extensive and the patient young. At the menopausal age, x-radiation of the ovaries leads to recession of both normal and abnormal endometrium. In the case under discussion, both the vesical and the intestinal symptoms were relieved, the growth having been so extensive as to involve both.

528 Brouha's Reaction in Biological Diagnosis of Abortion

A short account of experiences in twenty-one cases with the application of Brouha's reaction in gynaecology is given by VAYSSIÈRE, CHOSSON, and DONNET (*Bull. Soc. d'Obstét. et de Gynécol. de Paris*, March, 1934, p. 248). The biological diagnosis, not only of the existence, but of the development or arrest, of a pregnancy, can now be made by the observation of quantitative reactions. The rabbit is used as being the most reliable and convenient experimental animal; Brindeau's rabbit unit being the smallest dose of hormone which, injected intravenously into a rabbit weighing 2 kilos, produces in forty-eight hours at least one haemorrhagic point on at least one ovary. Serum or urine can be taken, the former being very constant in hormonal content. The fundamental principles of the test are: (1) that the titre of pregnancy hormone in serum diminishes very rapidly after the death or expulsion of the foetus (it appears to be connected with the quantity of living placenta in the maternal organism), and (2) that in urine there are marked fluctuations of the proportion of hormone, while in serum it is constant. In practice, fasting morning urine is comparable with the serum, and can be used under the same conditions. The following four "zones" are recognized: (1) results uncertain = up to 100 Brindeau rabbit units; (2) pregnancy interrupted = 100 to 800; (3) caution = 800 to 1,000; (4) normal evolution = 1,000 to 4,500 units. The technique consists in injecting several rabbits with doses calculated according to clinical probabilities. In forty-eight hours the ovaries are examined. If the results are not definite enough they at least give indications of dosage for a second series of injections. Alternatively, the first stage may consist in using 5 c.cm. of urine on one animal, and, by reading the result, finding the dosage for accurate quantitative calculation in the second stage. In their twenty-one cases of abortion verified by curettage, the authors found the concentration between 100 and 800—that is, in Zone 2 every time.

Pathology

529 Studies in Pseudo-rabies

P. REMLINGER and J. BAILLY (*Ann. de l'Inst. Pasteur*, April, 1934, p. 361) report a series of experimental studies on the condition that is known variously as Aujeszky's disease, infectious bulbar paralysis, mad itch, or pseudo-rabies. Under natural conditions it affects dogs, cats, cattle, horses, pigs, goats, sheep, rats, and mice, but experimentally it can be transferred to a number of animals and birds, though cold-blood animals have proved refractory. The experimental disease is best studied in the rabbit, in which the clinical picture shows a surprising variability, encephalitic, pseudo-herpetic, meningeal, paralytic, pruriginous, fulminating, and abortive forms being

seen. The morbid-histology is still doubtful, and so far, though the disease is undoubtedly caused by a virus, the authors have failed to demonstrate inclusion bodies in the central nervous system. A valuable differential diagnostic table is given distinguishing pseudo-rabies from rabies. In rabies the incubation period is long, there is a prodromal period, the intellectual faculties are affected, there is little or no pruritus, there is a tendency to ingest inert bodies, a paralytic period during which the lower jaw is often affected is common, sudden death is rare, the disease lasts three to five days, the saliva is virulent, infection occurs by biting, there are Negri corpuscles in the brain, and the virus is pathogenic for man. In pseudo-rabies the incubation period is a matter of hours, there is a brusque onset, the intellectual faculties are preserved, there is intense pruritus often dominating the whole clinical picture, there is no tendency to ingest inert bodies, paralysis does not occur till just before death and does not affect the lower jaw, sudden death is common, the disease lasts only twenty-four to forty-eight hours, the saliva is not infective, the natural method of transmission of the disease is doubtful, there are no Negri corpuscles, and the virus is not pathogenic for man.

530 A Stain for "Inclusive Bodies" in Virus Diseases

T. HAMILTON (*Journ. Trop. Med. and Hyg.*, May 1st, 1934, p. 139) describes a method of using methyl-blue and hot alcoholic eosin 1 as a stain for "inclusive bodies" in virus diseases. The paraffin sections must be thoroughly dried on the slide in the paraffin oven at 54°C.; this prevents their detachment in the subsequent manipulations with hot stains even though the slides are not albuminized. Saturated alcoholic eosin 1 is used with 0.5 per cent. aqueous eosin 1. The stain is set alight on the slide, and allowed to burn out. The process is then repeated. Following treatment with saturated potash alum and ammoniated spirit, and watching the decolorization under the microscope (drying being carefully guarded against) until the tissues are bright pink and the red blood cells vermilion, the sections are stained for ten minutes or longer in 0.5 per cent. aqueous methyl- (not methylene-) blue, until the background viewed microscopically is a dirty blue-red and the blood cells are still vermilion. The slide is then flooded with absolute alcohol first, and next with ammoniated absolute alcohol, the ensuing differentiation being controlled with the utmost care under the microscope. This is the most important stage of the procedure, and the scrutiny must be continuous. The background will now appear very faintly blue, while the red cells and nucleoli are strongly vermilion. To naked-eye observation the section appears to have lost all its blue colour. After washing in water, and then carefully in water acidified with acetic acid till a delicate blue background returns, the sections are dehydrated, cleared, and mounted in Canada balsam.

531 Pirquet's and Moro's Tuberculin Tests Compared

R. MAGNUSSÖN (*Tidsskr. f. d. Norske Lægefor.*, May 1st, 1934, p. 469) remarks that if inunction of the skin with Moro's tuberculin ointment yielded as reliable information as the Pirquet test, the former might be preferable where mass investigations were being conducted and the testing carried out by others than doctors. Between April, 1931, and December, 1933, he applied both tests to the adult patients admitted to a public sanatorium in Norway. A combined human and bovine tuberculin of Norwegian manufacture was used for the Pirquet test and a 50 per cent. tuberculin ointment (Norwegian) for the Moro test. Among 791 positive Pirquet reactors there were only 494 giving a positive reaction to Moro. There were only four patients who were Pirquet-negative and Moro-positive. The patients were classified according as they (1) were over or under the age of 20, (2) were in the first, second, or third stage (Turban-Gerhardt) of the disease, or (3) had a normal or abnormal sedimentation rate. But in whatever way the material was reshuffled, no conditions could be found in which the Moro test could be said to give even approximately reliable information.

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COUNCIL HOSPITALS UNDER THE LOCAL GOVERNMENT ACT

(Concluded from page 45)

Certain questions arise in connexion with the administration of council hospitals which are of special interest to the medical profession—for example, the way in which such hospitals are to be staffed and the class of patients who may be admitted to them.

MEDICAL STAFFING

If the sick continue to be treated in a mixed institution—defined in Article 6 of the Public Assistance Order, 1930, as an establishment for the reception and maintenance of the poor, other than a hospital—it must be realized that the chief administrative officer is the master, who is responsible for the "governance and control" of the institution and all its officers, servants, and inmates (Article 168). A medical officer, not holding the status of a medical superintendent, must be appointed, either on a whole-time or part-time basis, resident or non-resident. He reports direct to the house committee on matters which may appear to him to require attention. The medical records of discharged cases are, however, kept in the custody of the master, to whom the medical officer must deliver them. The subordinate position of the medical officer is obviously unsatisfactory, but where the institution is preponderantly non-medical it is difficult to see how any other arrangement is possible. The British Medical Association has made representations to the Ministry of Health that in any forthcoming amendment of the Public Assistance Order changes should be made which will secure greater independence for the medical officer and safeguard medical records from scrutiny by lay officers. In institutions where the majority of the inmates are sick, some authorities have appointed a medical man in the dual capacity of master and medical officer. This arrangement has worked well, and might usefully be followed by other councils as occasion arises. The Public Assistance Order contains an awkward provision (Article 156) that masters and matrons shall be jointly appointed—obviously intended to ensure that such officers shall be man and wife—which is clearly impracticable in cases where the medical officer is also the master, and the Minister, acting under his general power to sanction departures from the Order (Article 8), does not appear to insist upon its observance in such special circumstances.

In hospitals, properly so-called, remaining under the Poor Law, the appointment of a medical superintendent is obligatory (Article 143), and the general power to appoint such other officers as the councils think necessary (Articles 148 and 149) enables them to engage medical

staff in sufficient numbers either on a whole- or part-time basis. In modern times guardians and their successors have departed from the purely whole-time principle in staffing their hospitals, consultants and specialists being engaged to an increasing extent in their work. The resident staff, however, are usually practitioners with some previous hospital experience, and serve for much longer periods than the house-physicians and house-surgeons of voluntary hospitals, so that the consulting staff seldom carry responsibility for the routine medical and surgical work of the wards.

Under the Public Health Acts county and county borough councils have much greater freedom as to the number and type of appointments which they may choose to make, practically the only control over their actions being provided by Section 104 of the Local Government Act, 1929, which enables the Minister to withhold grants from authorities which fail to make adequate arrangements for carrying out any of their public health duties, or, alternatively, exhibit undue extravagance in doing so. It is the policy of the Association that part-time medical service should be utilized to the greatest possible extent, and county and county borough councils should therefore be urged to adopt a system of staffing which will largely free the medical superintendent from clinical preoccupations and relegate to a visiting staff the responsibility for the welfare of the patients in wards definitely allocated to them. The valuable clinical material in council hospitals should also be made available for the post-graduate experience of medical practitioners by increasing the number of short-term resident appointments, and adequate arrangements for a pathological service should be made at the hospitals. In areas where there is a medical school it is desirable that arrangements, satisfactory to the council, the medical profession, and the school, should be made for a close association of the council hospitals with the teaching of medicine.

The Association's policy is definitely that all medical service should receive adequate monetary recognition. The agreed scales of salaries for whole-time medical officers cover such officers, whether working under the Poor Law or not, and tentative scales of salary have been approved by the Representative Body for the part-time consulting staff.

THE CLASS OF PATIENTS TO BE ADMITTED

Under the Poor Law the councils are responsible only for such patients as may be regarded as destitute, but it has been pointed out in a previous article that the interpretation now put upon the term "destitution" is so wide that, at least so far as hospital treatment is concerned, practically the whole population at the national

insurance level, or about 80 per cent. in towns, fall within it. In recent times, even before the abolition of boards of guardians, Poor Law hospitals have, to a growing extent, opened their doors to persons whose other needs would certainly not lead them to seek public assistance. The transference, then, of hospitals from Poor Law to public health administration, has not created a new problem, but merely accentuated it. Section 131 of the Public Health Act enables a council to provide hospitals or places for the reception of the sick *for the use of the inhabitants of their district*, and Section 16 of the Local Government Act imposes the obligation upon them of recovering the cost of maintenance up to the capacity of the patient, or of some responsible person, to pay; except in the case of infectious disease, for which the expense may, but need not, be claimed in terms of Section 132 of the Public Health Act, 1875. The cost of maintenance, as defined in the Local Government Act, includes the cost of staff and of treatment. Whether any allowance can be made for loan charges on the land and buildings does not seem to be quite clear.

It is evident, then, that any inhabitant of the district governed by the council may regard himself as entitled to admission to a hospital which it is administering under the Public Health Acts, provided that he is suffering from a condition requiring hospital treatment. It is doubtful whether this broadening of entitlement will cause any material increase in the use of hospitals by those who can afford to pay for private treatment, but much will depend upon the administrative arrangements. The voluntary hospitals are occasionally used by well-to-do persons who are able, by influence or otherwise, to obtain privileged treatment—for instance, special rooms without extra payment—and an extension of this practice to council hospitals is undesirable. It ought to be a condition of admission that no patient should receive special consideration because of his social status, and that side-rooms should be allocated on purely clinical grounds, unless special pay-beds have been set aside, the occupants of which make their own terms with the practitioner under whose care they are being treated. If these conditions are strictly observed, it is unlikely that many persons who are able to pay for privacy will seek admission to council hospitals. The provision of pay-beds in every area is, however, an important factor in the problem, and should be ventilated by the local profession. It will usually be found desirable that they should be associated with a voluntary, rather than a council, hospital; but the matter is one which might profitably be discussed in conference between the council and the local voluntary hospital committee.

RECOVERY OF THE COST OF TREATMENT

It is generally thought that the power to recover costs under the Poor Law is greater than under Section 16 of the Local Government Act, and up to a point this is true. Section 14 of the Poor Law Act, 1930, imposes the duty of maintenance on certain specified relatives, but the Local Government Act places the obligation upon "persons legally liable to maintain" a patient in a hospital without stating who these are. It is understood that such persons may be interpreted as being those defined in the Poor Law Act, but this is by no means certain. Further, even under the Poor Law Act it has been adjudged that there is no power of recovery without prior appeal to, and order by, justices of the peace. It has therefore become customary for the administrators of the Poor Law to obtain beforehand a legally binding promise of payment before claiming it, and if possible before admission to hospital. Clearly, the whole position needs review and clarification by amendment of the law. In the meantime, the point to be kept in mind is that the argument against administration of hospitals under the Public Health Acts, on the ground that the Poor Law affords better means of obtaining reimbursement, is not a very strong one to place against the undoubted improvement in service to the public and advancement in medical practice which the removal of hospital treatment from the Poor Law will bring about. As regards patients

who are not "inhabitants of the district," public health hospitals are under a disability in that they cannot recover costs from the councils of the areas of domicile unless binding agreements are in force. This question is not one of material financial consequence; but it can be, and is, freely used to obstruct appropriation of hospitals, and some amendment of the law is desirable, which will remove the burden of the treatment of an accident or sudden illness from an authority in whose area the patient or responsible person is not a ratepayer.

THE INSURANCE MEDICAL SERVICE WEEK BY WEEK

Ante-natal Examinations

The Insurance Acts Committee was asked by the Annual Panel Conference to consider the question of routine ante-natal examinations as part of an insurance practitioner's duties, together with reports thereon to local authorities. From the report of the January meeting of the committee it will have been observed that the following resolution was passed without a dissentient:

That the committee recognizes that the position has arrived when ante-natal examination and supervision is regarded as an essential service for the pregnant woman, that it is a service which can and should be rendered by general practitioners, and therefore it is a service to which insured women as such are entitled.

It is as well to observe the principle which lies behind the adoption of this resolution after a very full discussion. The Insurance Acts Committee has always interpreted the insurance service as a general practitioner service, and felt that any new developments which came along and which were within the province of the general practitioner should be placed ungrudgingly at the service of the insured patient. For the benefit of those who might be moved by practical considerations rather than by sound principles the chairman stated that, if the representatives of the profession could not go before any future court of arbitrators and say that practitioners as a whole had given a full general practitioner service, it would obviously jeopardize their claim for a favourable reassessment of the capitation fee. It should be added that it was emphasized that the resolution with regard to ante-natal examinations did not necessarily entail that reports to the authority should also be looked upon as part of the practitioner's duties without payment.

Range of Medical Service

As an illustration of the type of case which from time to time involves the question whether a service is within the scope of the practitioner's obligations, the following extract from a recent report of the London Insurance Committee is of interest:

Under Clause 10 (2) of the Terms of Service for Insurance Practitioners a practitioner is required, if he renders to an insured person for payment a service which is alleged to be not within the scope of the practitioner's obligations under the terms of service, to furnish the committee with such particulars relating to that service as they may require. Seven practitioners have accordingly informed the committee that they have charged fees to insured persons in respect of (i) tonsillectomy and removal of adenoids; (ii) retinoscopy and prescribing of spectacles; (iii) refraction under mydriatic and ophthalmoscopic examination; (iv) estimation of error of refraction by retinoscopy, ophthalmoscopy, and subjectively, and prescription; (v) ultra-violet rays for neurasthenia and anaemia; (vi) refraction and ophthalmoscopic examination for myopic astigmatism; (vii) refraction and ophthalmoscopic examination for high myopia; (viii) mercury vapour, ultra-violet ray, and infra-red ray treatment for acute bronchitis; (ix) refraction for myopic astigmatism and anisometropia (retinoscopy and ophthalmoscopy); (x) refraction and ophthalmoscopic examination for hypermetropia and presbyopia; on the grounds that such services do not fall within the scope of medical benefit and that, owing to their special experience, the practitioners concerned were competent to undertake such services.

The opinion of the Local Medical Committee has been sought, and they have informed us that the services as described fall into the category of services involving the

application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess, and that they have satisfied themselves that the practitioners concerned possess the necessary skill and experience for the effective undertaking of such services.

With this opinion of the Local Medical Committee the Insurance Committee concurred on the recommendation of the Medical Benefit Subcommittee. It should be borne in mind that it is open to the Minister to refer to referees (two of whom must be doctors, the third being a barrister or solicitor in practice) any question upon which the Insurance Committee and the Panel Committee are in agreement, and that the regulations provide that, where the committees do not agree, the matter must be so referred. It should also be remembered that in every instance the decision is based on the facts of the particular case, and is not therefore necessarily of decisive authority in determining any other apparently similar case.

Where any medical service has actually been rendered to one of his insurance patients by an insurance practitioner it will be presumed that it is treatment falling within the scope of his insurance contract unless he proves otherwise; and the first step—if he wishes to establish a claim to a fee for the service as being of a specialist character—is that he should give notice to the Insurance Committee within two days after the date on which the treatment is given, the notice being on a form to be supplied by the committee for the purpose, with such particulars relating to the service rendered as it may require.

Authorized Appliances

Those who read carefully the reports of the meetings of the Insurance Acts Committee will have observed that at nearly every meeting there are requests from Panel Committees for additions to the schedule of appliances in the Medical Benefit Regulations, and that on most occasions the committee is unable to discover any good reason for endorsing the suggestions and passing them to the Ministry of Health. Insurance Committees, as well as Panel Committees, are sometimes apt to overlook the fact that the amount of money available in the Drug Fund is definitely limited, and that, if once the principle that appliances can only be authorized where their exclusion would constitute a hardship to a large number of insured persons is departed from it would be difficult to resist the inclusion in the schedule to the regulations of any and every appliance. In other words, it would be necessary to abandon the principle in the National Health Insurance Act that, whereas "proper and sufficient medicines" are given as part of medical benefit, only such appliances can be provided as are authorized by the regulations.

For convenience of reference the latest list of appliances (authorized by the Medical Benefit Amendment Regulations, 1933) is here set out:

Adhesive plaster, Spread, as described in the Drug Tariff for the time being in force.	Droppers, when required for the proper administration of any drug forming part of medical benefit.
Bandages:	Eye baths.
Calico.	Gauzes, surgical, medicated and unmedicated.
Crêpe.	Gauze and cotton-wool tissue.
Domette.	Hypodermic needles (for self-administration of insulin).
Elastic web.	Hypodermic syringes (for self-administration of insulin).
Elastic adhesive.	Ice-bags:
Flannel.	Check sheeting.
India-rubber.	India-rubber.
Mustin.	Lints, surgical, medicated and unmedicated.
Open-weave.	Pessaries, ring.
Plaster-of-Paris.	Protectives:
Suspensory, cotton.	Gutta-percha tissue.
Triangular.	Jaconet.
Zinc paste.	Oiled cambric.
Brushes, when required for the proper administration of any drug forming part of medical benefit.	Oiled paper.
Catheters, urethral, and lubricant for use therewith.	Oiled silk.
Gum-elastic.	Sphagnum moss.
Soft rubber.	Splints.
Cellulose tissue.	Tampons.
Cellulose wadding.	Tows:
Cotton-wools, absorbent:	Carbolized.
Boric.	Unmedicated.
Unmedicated.	

THE LANCASHIRE AND CHESHIRE BRANCH

A BRIEF HISTORICAL SKETCH (1837-49)

BY

J. S. MANSON, M.D.

PRESIDENT OF THE BRANCH

Science has a wider meaning than the discovery, accumulation, and classification of facts. It deals, or should deal, with the ideas, hypotheses, and theories which have either led to discoveries or which have issued from facts patent to all and accepted as incontrovertible. This statement means that a knowledge of science is incomplete without a knowledge of its history—how ideas originated and developed, and the circumstances and conditions antecedent to such origin and development. In medical science the establishment of the University. Faculties and the Royal Colleges was an important step in the organization of the profession for the purpose of giving that publicity to medical knowledge necessary for the adequate training and education of medical practitioners. After student days the Faculties and Colleges lost much of their influence because of their attachment to certain limited areas. Practitioners spread abroad and lost touch with their mentors of early years. In the first third of the nineteenth century the latent desire for co-operation in the exchange of ideas and for a wider diffusion of medical knowledge began to find expression among many medical practitioners, and as means of communication improved by the development of railways medical men formed groups throughout the country. The Provincial Medical and Surgical Association, afterwards the British Medical Association, was founded at Worcester, 1832, by Sir Charles Hastings, the East Anglian Branch in 1835, and the Lancashire and Cheshire Branch in 1837.

After the annual meeting of the Branch at Warrington, in June, 1933, Dr. Bowden of Warrington handed a number of newspaper cuttings and printed documents dealing with the establishment and early meetings of the Branch to Mr. McAdam, the librarian of the Warrington Library, for safe keeping. These were formerly the property of Dr. Charles White of this town, who died in 1912 after practising here for fifty years. It occurred to me that many would be interested in a brief sketch of the early history of the Branch based on records which I will present in chronological order. The presentation will be condensed, but many extracts will be given verbatim.

ABSTRACTS FROM THE RECORDS

A cutting from an unnamed newspaper gives a brief account of the inaugural meeting at the Legh Arms Hotel, Newton, on June 30th, 1837. Dr. Holme, senior physician of the Manchester Royal Infirmary, was elected chairman; forty others were present from Lancashire and Cheshire. Dr. Holme explained the object of the meeting, which was to set up an association of medical practitioners. It was agreed to name it the Newton Medical and Surgical Association. Dr. Jeffreys of Liverpool informed the meeting that Dr. Rutter of Liverpool regretted his inability to be present. He had, however, sent a number of copies of the address given by him at the opening of Liverpool Medical Institution. After the meeting the members dined. The toast of "The Queen" and other toasts were honoured. Admirable speeches were delivered by Drs. Holme, Jeffreys, Scott, Kendrick, and others. The meetings were intended to be held annually at Newton. Drs. John Sharp and G. W. Hardy of Warrington were appointed secretaries.

The second meeting was held on June 21st, 1838, at Legh Arms Hotel, Newton. Dr. Jeffreys succeeded Dr. Holme as president. Dr. Kendrick of Warrington and Dr. Black of Bolton were appointed vice-presidents. Fifty others were present. Dr. Jeffreys gave a presidential address, touching, among other matters, on the inadequate remuneration of rural practitioners under the regulations of the Poor Law Act. Dr. Jones of Chester read an admirable account of two cases illustrative of the pathology of the brain and nervous system.



LEGH ARMS HOTEL, NEWTON-LE-WILLOWS, LANCASHIRE, 1835.

Dr. Kendrick read an interesting and affecting memoir of Mr. Park, surgeon, of Liverpool. Dinner at 3 o'clock. Excellent speeches by Drs. Jeffreys, Jones, Lyon, Scott, Black, Twenlow, and Hardy, etc. Owing to the train leaving at 6.30 many had to depart to their great regret, as they were deprived of speeches by several eloquent individuals.

The third meeting was held on June 27th, 1839, at Warrington. Mr. James Ainsworth, president. Dr. Jones of Chester and Mr. John Moore of Bolton, vice-presidents. A circular was printed announcing that this meeting was to be held on June 20th at the Legh Arms, Newton. This early date was fixed owing to the near approach of the meeting of the parent Association at Liverpool. Owing to some hitch with the landlord of the Legh Arms Hotel this circular was not issued, and another was printed announcing that the third meeting would be held at Warrington on June 27th. "Members to assemble at the Music Hall, Bewsey Street, and then, at 3 o'clock, to adjourn to the Nag's Head Hotel, Sankey Street, for dinner. Twelve shillings each including wine and dessert." The circular also announced that—

"In consequence of the alteration in the time of the Grand Junction Railway trains starting on and after the 20th inst., that those in the morning leave their respective stations at a quarter past eight and half-past ten o'clock. From Birmingham at six o'clock. In the evening trains leave Warrington for Liverpool and Manchester at ten minutes to six, at sixteen minutes before eight, and twenty minutes past eight. For Birmingham at ten minutes to eight. In order to accommodate those members who may wish to proceed to Newton to meet trains from Liverpool and Manchester a carriage will be provided to convey them there free of expense."

This meeting was also advertised in the *Liverpool Mail*, the *Liverpool Mercury*, the *Manchester Guardian*, and the *Courier*. Forty members were present. At the business meeting in the Music Hall, Bewsey Street, Dr. Scott read an interesting memoir of Dr. Rutter of Liverpool. Dr. Buck read a paper on "Statistics with their Application to Medicine." Dr. Banner of Liverpool read a paper on "Injuries of the Head." Dr. Kendrick of Warrington gave a detailed account of a case of tuberculous disease in a female, illustrated with coloured drawings.

"Afterwards an excellent dinner was provided at the Nag's Head, which comprised all the best stores and art à la cuisine, and which along with the early and rare vegetables and fruits of the season, and the produce of a good cellar, drew from the company many encomiums on the attentive and generous landlord. The worthy President with his coadjutors, the vice-presidents, conducted the convivial part of the day's proceedings with great tact, grace, good humour, and order. Many loyal and professional toasts were given; which as they complimented several members on their talents, and the situations they held in the Association, or in the public institutions of the district, drew forth some very appropriate and eloquent speeches. The utmost harmony and good fellowship continued throughout the evening till the stern summons of the railway carriages broke up the feast of reason and flow of soul, leaving a strong impression on the few honoured visitors present that though doctors are proverbially said to differ, yet during the whole of this occasion they were as one and undivided."

There is a copy of the printed minutes of this meeting with report of the Council. One paragraph runs as follows: "As yet the Association may be said to be in a state of infancy, its operations are not fully matured, and although its resources are abundantly extensive, the means by which these may be rendered subservient to the extension of medical knowledge are not yet perfectly organized. Your Council therefore have rather to point out what may be done than refer to what has hitherto been effected." There were then ninety-two members, sixteen having joined during the past year. The finances of the Association showed a balance in hand of £22 17s. 2½d., subscriptions of new members £4 10s., total £27 7s. 2½d. Expenses—printing, stationery, etc., £6 4s. 8d.; balance £1 2s. 6½d. The rules of the Branch are given in this document.

After the first meeting on June 30th, 1837, the Branch joined the Provincial Medical and Surgical Association on August 17th, 1837. Members were required to pay one guinea in advance to the Provincial Medical and Surgical Association, due on January 1st each year. There was also 5s. for admission to the local branch for its own use, and if necessary the Council could call for another 2s. 6d. Members who joined the Newton Association before August 17th, 1837, but who were not desirous of joining the Provincial Medical and Surgical Association could continue members of the local

branch with all its privileges except those of receiving the publications of the parent Association and enrolment in its list of members. The list of members contains names from the towns and districts within a radius of twenty miles from Liverpool and Manchester. One name I must mention—namely, Thomas Fawsitt of Oldham. He would be the father of Thomas Fawsitt of Oldham who was president of the Branch in 1925. No mention is made of practitioners from Southport, Wigan, Preston, Burnley, Blackburn, and districts north of Bolton, Rochdale, and St. Helens.

The fourth meeting was held at the Legh Arms Hotel, Newton. Dr. Samuel McCulloch of Liverpool, president, Mr. Wm. Goodlad of Manchester and Dr. Green of Newton vice-presidents. There were now ninety-eight members. This meeting is important as showing that the question of the status of the profession and its disabilities were occupying the minds of the members. The report of the Council states:

"When we regard the number of sources from whence diplomas and licences to practise are issued, the great diversity which exists in the preparatory education required from those who obtain them, or the total absence of everything like legal protection against fraudulent and destructive practices of ignorant and unprincipled pretenders, the present state of the medical profession in this country is most unsatisfactory."

Vaccination against small-pox was also a feature of interest. There were two Bills before Parliament. The report says:

"The Council are of opinion that one Bill is sufficient, also that any measure which sanctions the practice of inoculation (that is, with variolous matter) either directly or indirectly they conceive to be dangerous to the public health, and any law which consigns a medical practitioner to prison for an act which circumstances may require him to perform is too arbitrary and despotic for the enlightened age in which we live."

Dr. Kendrick of Warrington read a paper on vaccination at this meeting. He said that since the experiments of Mr. Ceeley there, could be no doubt as to the identity of the two diseases—small-pox and cow-pox. He was a firm believer in the efficacy of vaccination, and laid down five rules for the control of small-pox: (1) Heavy fine on anyone inoculating with variolous matter or for willfully exposing an individual to the infection of small-pox. (2) Vaccination to be performed only by duly authorized practitioners, who should keep a register of vaccinations and issue certificates to the vaccinated. (3) These practitioners to be paid a fair remuneration by public authority. (4) No unauthorized person to be allowed to vaccinate. (5) That a certificate of vaccination be required from every person over 4 years of age receiving free education or parish relief." A set of forty-six questions was drawn up by Dr. Kendrick and issued to members on the subject of vaccination and small-pox. After the business meeting forty members sat down to an elegant dinner served with great profusion by the new landlady of the Legh Arms. On the removal of the cloth various loyal and constitutional toasts were given and drunk with enthusiasm, and the day being the anniversary of the Battle of Waterloo, the health of the Duke of Wellington as the hero of a hundred fights—not as a statesman—was not forgotten.

The sixth meeting was held at Newton, July 7th, 1842. President, Dr. James Kendrick of Warrington. The members continued to be interested in medical reform and legislation to improve the status of the profession.

The seventh meeting, held at Newton, June 29th, 1843. President, Mr. Wm. James Wilson, surgeon, of Manchester. There are two items of interest in the council's report: Dr. Samuel Malins of Liverpool, lecturer on midwifery and surgeon to the Ladies' Charity, died in the prime of life, leaving a widow and a numerous family almost destitute. A sum of £20 was given by the Benevolent Fund of the Provincial Medical and Surgical Association, and it was reported that the fund had only £40 in hand. It was also reported that the fund had not received the support it deserved from members in this district. Drs. Sharp and Hardy of Warrington, the first secretaries of the Branch, retired at this meeting, and were succeeded by Dr. R. W. Scott of Liverpool and Mr. M. James Hutton of Manchester. Mr. Dicken of Middleton gave an account of removing a bell-shaped button from the right bronchus of a boy $8\frac{1}{2}$ years old through an

opening in the trachea by a pair of forceps specially devised by himself; the boy recovered perfectly. The button had been lodged in the bronchus for thirteen days.

The tenth meeting was held at Newton, on June 25th, 1846. President, Dr. R. W. Scott of Liverpool. The Branch was now becoming subdivided, with local secretaries: Manchester, Mr. John Hutton; Liverpool, Mr. Benjamin Barrow; Bolton, Mr. J. M. Robinson; Warrington, Mr. John Sharp.

At the thirteenth meeting, in 1849, the president was Mr. Robert Thorpe of Manchester. The name of the Branch was changed from the "Newton Branch" to the "Lancashire and Cheshire Branch of the Provincial Medical and Surgical Association." This and other rules were sanctioned by the General Council at Worcester, July 14th, 1849; and here endeth the tale of the records.

[Dr. Manson showed other records and exhibits of historical interest, including a copy of the first number of the *Provincial Medical and Surgical Journal*, dated October 3rd, 1840. The editors were Drs. Green and Streeten, and it contained fifteen pages of medical matter and nine pages of advertisements.]

CONCLUSION

This brief and somewhat bald sketch of the early history of the Branch purposely omits many details that would be wearisome to relate. Anyone specially interested can read the documents for themselves. My main object is to proclaim their existence and to revive the names of some of the men who were public-spirited and enthusiastic enough to start the organization to which we are the heirs. They furthered the cause by the rational and well-approved methods of professional and scientific discussion and a good dinner. They dealt with subjects that still interest us and claim our attention—the status of the profession, medical education, unqualified practice, fees, vaccination, and medical benevolence. They served their day and generation, and did what they could to give the profession of medicine its proper place in the hierarchy of the sciences, and to develop its usefulness to suffering humanity.

British Medical Association

CURRENT NOTES

Annual Meeting, Melbourne, 1935

The Council of the Association, having accepted for the first time an invitation to hold a meeting in Australia, where 7,000 members are gathered, is most anxious that the meeting shall be attended by a large and representative body of members from this side, and with this end in view has taken steps to ensure a good attendance by combining with the journey to Australia a tour "round the world," to be undertaken under exceptionally favourable conditions, both as to itinerary and as to the entertainment which will be afforded en route, and perhaps more especially at those overseas Branches of the Association which will be visited. All particulars are available from the Financial Secretary and Business Manager of the Association (B.M.A. House, Tavistock Square, W.C.1); and all bookings must be made by members through his office. It will materially assist if those who contemplate going would notify him at the earliest possible moment of their intentions and of the number of relatives and friends who will accompany them. Upon the number travelling will depend, to some extent, the conveniences of travel, and certain arrangements can only be made provided a large enough number of members journey together. The Council has appointed, as travel agents for the tour, Messrs. Pickfords Travel Service, 105-106, High Holborn, London, W.C.1, who will work with the office of the Financial Secretary, and from whose branches at a later date the detailed information will be available.

Southern Division, Trinidad.

There has reached the Council of the Association the first annual report of the Southern Division of the Trinidad and Tobago Branch, formed by that Branch in March, 1933. In the nine months of its existence the Division has held no fewer than ten meetings, the proceedings at all of which have included discussion of both clinical and medico-political matters. On an average 61 per cent. of the membership of the Division attended the meetings, and 96 per cent. of the members attended at least one of the meetings. For a first year's activity this record is believed to be unique.

Medical Charities: Social Functions

The annual charities ball, organized by the Brighton Division for medical charities, was held recently. This function is now one of the most popular and successful of the winter social functions in Brighton, and on this occasion approximately 440 persons were present. The substantial sum of £65 was raised for medical charities. The arrangements for the ball were in the hands of Mrs. Beresford and Miss Parry, who acted as chairman and secretary respectively.

The members of the Portsmouth Division held their annual *souper dansant* at Southsea on January 12th. This, the eighth annual dance, is now acknowledged to be the most attractive social function of the season, and approximately 500 persons were present. A sum of £120 was raised for medical charities, bringing the total sum contributed by these dances to £740. The arrangements were as usual in the capable hands of Dr. A. Mearns Fraser and Dr. H. H. Warren.

Naval and Military Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Commander H. H. Babington to the *Drake*, for Royal Naval Hospital, Plymouth.

Surgeon Commander (retired) R. N. W. W. Biddulph to the *Cardiff*.

Surgeon Lieutenant Commanders R. B. McKiver to the *Devonshire*; T. C. H. Neil to the *Pembroke*, for Royal Naval Barracks, Chatham; A. G. L. Brown, D.S.C., to the *Drake*, for Royal Naval Barracks; J. A. Cusack and G. Kirker to the *Victory*, for Royal Naval Barracks; R. A. Graff to the *President*, for post-graduate course.

Surgeon Lieutenants G. D. J. Ball to the *Pembroke*, for Royal Naval Barracks; R. G. Dingwall to the *Victory*, for Royal Marine Infirmary; A. F. Davy to the *Sutton*; C. P. Collins to the *Victory*, for Royal Naval Barracks; A. Long transferred to permanent list, seniority June 2nd, 1930.

W. D. Gunn and D. W. Walker have entered as Surgeon Lieutenants for short service, and are appointed to the *Victory*, for Haslar Hospital.

ROYAL NAVAL VOLUNTEER RESERVE

R. T. Grant has entered as Probationary Surgeon Sublieutenant, and is attached to List 2 of the Tyne Division.

ROYAL ARMY MEDICAL CORPS

Lieutenants J. B. George, J. T. Robinson, and M. A. Rea to be Captains.

The appointment of Lieutenant J. P. Douglas is antedated to April 12th, 1932, under the provisions of Article 26, Royal Warrant, but not to carry pay or allowances prior to April 12th, 1933.

ROYAL AIR FORCE MEDICAL SERVICE

Air Commodore H. V. Wells, C.B.E., is placed on the retired list, and relinquishes his appointment as Honorary Physician to the King.

Flight Lieutenant E. Corner is transferred to the Reserve, Class D (ii).

The commission granted to Flying Officer (now Flight Lieutenant) G. A. M. Knight is antedated to April 27th, 1930.

INDIAN MEDICAL SERVICE

Major-General Sir John W. D. Megaw, K.C.I.E., and Colonel F. E. Wilson have retired from the Service.

Colonel A. H. Proctor, D.S.O., is appointed Inspector-General of Civil Hospitals, United Provinces, as from December 9th, 1933.

Lieut.-Col. H. C. Buckley is appointed Inspector-General of Civil Hospitals, Bihar and Orissa, as from December 16th, 1933.

The services of Lieut.-Colonel R. C. Clifford, M.C., D.S.O., placed permanently at the disposal of the Government of United Provinces, as from June 20th, 1930.

Major R. Hay, an Agency Surgeon, is posted as Civil Surgeon Quetta, as from November 22nd, 1933.

Captain T. A. Doran to be Major.

The services of Captain H. S. Waters are replaced temporarily the disposal of the Government of Bombay as from October 10 1933.

The services of Captain J. C. Drummond are replaced temporarily at the disposal of the Government of Bengal.

Lieutenant G. W. Miller to be Captain (provisional).

Lieutenant F. W. Whiteman is restored to the establishment October 18th, 1933, and his seniority is antedated to October 18 1932.

Lieutenants J. W. Bowden, R. D. MacRae, and W. Mackie confirmed in their rank.

Association Notices

SCHOLARSHIPS AND GRANTS IN AID OF
SCIENTIFIC RESEARCH

Scholarships

The Council of the British Medical Association is prepared to receive applications for Research Scholarships follows: an Ernest Hart Memorial Scholarship, of the value of £200 per annum, a Walter Dixon Scholarship of the value of £200 per annum, and three Research Scholarships, each of the value of £150 per annum. The Scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State medicine) relating to the causation, prevention, or treatment of disease. Each Scholarship is tenable for one year, commencing on October 1st, 1934. A Scholar may be reappointed for not more than two additional terms. A Scholar is not necessarily required to devote the whole of his or her time to the work of research, but may hold a junior appointment at a university, medical school, or hospital, provided the duties of such appointment do not interfere with his or her work as a Scholar.

Grants

The Council of the British Medical Association is also prepared to receive applications for Grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

Conditions of Award: Applications

Applications for Scholarships and Grants must be made not later than Saturday, May 12th, 1934, on the prescribed form, a copy of which will be supplied on application to the Medical Secretary of the Association, B.M.A. House Tavistock Square, W.C.1. Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated.

BRANCH AND DIVISION MEETINGS TO BE HELD

ABERDEEN BRANCH: CITY OF ABERDEEN DIVISION.—Tuesday, February 13th. Dr. A. E. Kidd (Dundee): "In and Around some Thermal Resorts of France."

BIRMINGHAM BRANCH.—Thursday, February 15th. Dr. T. L. Hardy: "Functional Disorders of the Colon."

DUNDEE BRANCH.—At Surgery Classroom, University College, Small's Wynd, Dundee, Wednesday, February 14th, 8.30 p.m. Professor John Anderson: Epidiascopic demonstration in colour of surgical subjects.

ESSEX BRANCH: MID-ESSEX DIVISION.—At Bell Hotel, Chelmsford, Wednesday, February 14th, 3 p.m. Meeting to consider Central Ethical Committee's suggestions for revision of rules as to the ethics of medical consultation and rules for medical inspectors.

ESSEX BRANCH: SOUTH ESSEX DIVISION.—Friday, February 16th. Clinical meeting (medical).

HERTFORDSHIRE BRANCH: BARNET DIVISION.—At Victoria Cottage Hospital, Barnet, Tuesday, February 13th, 8.30 p.m. Special meeting to consider Central Ethical Committee's proposals for revision of rules as to the ethics of medical consultation and the rules for medical inspectors.

KENT BRANCH: ISLE OF THANET DIVISION.—At White Hart Hotel, The Parade, Margate, Thursday, February 15th, 8.15 p.m. Dr. W. S. C. Copeman: "The Place of Spa Treatment in the Treatment of Chronic Rheumatism." Preceded by dinner at 7.30 p.m.

LANCASHIRE AND CHESHIRE BRANCH: BLACKPOOL DIVISION.—At Hotel Metropole, Talbot Square, Blackpool, Wednesday, February 14th, 8.30 p.m. Mr. A. H. Burgess (Manchester): "Symptomless Haematuria." Preceded by dinner at 7.30 p.m.

LANCASHIRE AND CHESHIRE BRANCH: BURNLEY DIVISION.—At Victoria Hospital, Thursday, February 15th, 3.30 p.m. Clinical meeting.

LANCASHIRE AND CHESHIRE BRANCH: SOUTHPORT DIVISION.—At 52, Houghton Street, Southport, Friday, February 16th, 8.30 p.m. Meeting to consider Central Ethical Committee's suggestions for revision of rules as to ethics of medical consultation and rules for medical inspectors.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—At Metropolitan Hospital, Kingsland Road, E., Friday, February 16th, 4.30 p.m. Dr. Norman H. Hill: Medical cases.

METROPOLITAN COUNTIES BRANCH: HENDON DIVISION.—At Redhill Hospital, Edgware, Tuesday, February 13th. Clinical evening.

METROPOLITAN COUNTIES BRANCH: KENSINGTON DIVISION.—At Princess Louise Kensington Hospital for Children, St. Quintin Avenue, W., Friday, February 9th, 8.45 p.m. Special meeting to consider new rules as to the ethics of medical consultation and rules for medical inspectors.

METROPOLITAN COUNTIES BRANCH: SOUTH MIDDLESEX DIVISION.—At Teddington Memorial Hospital, Tuesday, February 13th, 9 p.m. Special meeting to consider Central Ethical Committee's proposals for revision of rules as to the ethics of medical consultation and the rules for medical inspectors.

METROPOLITAN COUNTIES BRANCH: STRATFORD DIVISION.—At East Ham Memorial Hospital, Tuesday, February 13th, 3 p.m. Clinical meeting.

MIDLAND BRANCH: LEICESTER AND RUTLAND DIVISION.—Joint meeting with Chartered Society of Massage and Medical Gymnastics.—At Medical Club, East Bond Street, Leicester, Friday, February 16th, 8.45 p.m. Dr. W. J. O'Donovan: "Truth about Osteopathy from a Medical Man's Point of View."

NORTH OF ENGLAND BRANCH.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, February 15th, 2.30 p.m. "Present Outlook in Intracranial Tumours." Papers by Dr. F. J. Nattrass, Mr. A. R. D. Pattison, Mr. Vernon Ingram, and Dr. Donald Ramage. Brief historical introduction by Professor Grey Turner.

SHROPSHIRE AND MID-WALES BRANCH.—At Royal Salop Infirmary, Shrewsbury, Tuesday, February 13th, 3.45 p.m. General meeting to consider Central Ethical Committee's suggestions for revised rules as to ethics of medical consultation and the rules for medical inspectors.

SOUTH WALES AND MONMOUTHSHIRE BRANCH: NORTH GLANMORGAN AND BRECKNOCK DIVISION.—At Pontypridd, Thursday, February 15th. Dr. Tudor Thomas: "Diseases of the Eye in Relation to General Practice."

SOUTH WALES AND MONMOUTHSHIRE BRANCH: SWANSEA DIVISION.—At Hotel Metropole, Swansea, Thursday, February 15th. B.M.A. Lecture by Dr. Hector C. Cameron: "Gastric Diseases in Children." Followed by a supper.

SOUTH-WESTERN BRANCH: EXETER DIVISION.—At Royal Devon and Exeter Hospital, Thursday, February 15th, 3.45 p.m. Meeting to consider (1) Central Ethical Committee's suggestions for revision of rules as to ethics of medical consultation and rules for medical inspectors, and (2) rules of organization for the Division.

SURREY BRANCH: CROYDON DIVISION.—At Croydon General Hospital, Tuesday, February 13th, 8.30 p.m. Dr. Otto May: "Medical Aspects of Life Assurance Examination."

WORCESTERSHIRE AND HEREFORDSHIRE BRANCH: HEREFORD DIVISION.—At 1A, St. John Street, Hereford, Friday, February 16th, 3.15 p.m. Meeting to consider Central Ethical Committee's suggestions for revision of rules as to ethics of medical consultation and rules for medical inspectors. Election of representative, etc.

YORKSHIRE BRANCH: DEWSEY DIVISION.—At Carlton Club, Bond Street, Dewsbury, Friday, February 16th. Mr. P. J. Moir (Leeds): "Surgical Treatment of Pulmonary Phthisis." Preceded by supper at 8.15 p.m.

YORKSHIRE BRANCH: LEEDS DIVISION.—At Medical School, Friday, February 16th, 3.30 p.m. Mr. John Foster: "Treatment of Economic Visual Failure after Middle Age."

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE
TAVISTOCK SQUARE, W.C.1

Departments

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager, Telegrams: Articulate Westcent, London).
MEDICAL SECRETARY (Telegrams: Medistetra Westcent, London).
EDITOR, BRITISH MEDICAL JOURNAL (Telegrams: Aitiology Westcent, London).

Telephone numbers of British Medical Association and British Medical Journal, Euston 2111 (internal exchange, four lines).

SCOTTISH MEDICAL SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

IRISH MEDICAL SECRETARY: 18, Fildare Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 62350 Dublin.)

Diary of Central Meetings

FEBRUARY

- 14 Wed. Arrangements Committee, Annual Meeting, 1935, 2.15 p.m.
Consultants' and Specialists' Committee, 11.15 a.m.
- 16 Fri. Public Assistance Medical Officers' Subcommittee, 11.15 a.m.
- 20 Tues. Central Ethical Subcommittee, 2.15 p.m.
- 22 Thurs. Committee on Medical Education, 2.15 p.m.
- 23 Fri. Maternity and Child Welfare Subcommittee, 2.15 p.m.
- 25 Mon. Indian Medical Service Committee, 2.30 p.m.
- 28 Wed. Medical Students and Newly Qualified Practitioners Subcommittee, 3 p.m.
Spa Practitioners Group and Physical Medicine Group Committees, 2.15 p.m.

MARCH

- 2 Fri. Dominion Executive Subcommittee, 2.15 p.m.
- 7 Wed. Fractures Committee, 2 p.m.
- 12 Mon. Central Ethical Committee, 2 p.m.
- 23 Fri. Science Committee, 2 p.m.

APRIL

- 25 Wed. Grants Subcommittee, 2 p.m.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Tues., 4 p.m., Hunterian Oration by Sir Cuthbert Wallace.

ROYAL SOCIETY OF MEDICINE

Section of Therapeutics and Pharmacology.—Tues., 5 p.m. Paper by Dr. C. Kauffmann (Berlin): Therapeutics with Hormones of the Ovary.

Section of Psychiatry.—Tues., 8.30 p.m. Paper by Dr. R. D. Curran: A Clinical Study of Delirium.

Section of Dermatology.—Thurs., 5 p.m.—Cases at 4 p.m. Cases will be shown by Dr. H. Borber, Dr. I. Muende, and Dr. A. Peters.

Section of Neurology.—Thurs., 8.50 p.m. Discussion: Intracranial Pressure, its Clinical and Pathological Importance. Openers, Mr. Lambert Rogers, Dr. Ritchie Russell, Dr. Fergus Ferguson, and Dr. F. W. Pickering.

Section of Physical Medicine.—Fri., 5.30 p.m. Paper (illustrated by a film) by Surgeon Commander G. Murray Levick: The Expedition of the Public Schools Exploring Society to Northern Finland. A discussion will follow on the physical effects of a long "pack march" upon boys of 19.

Section of Obstetrics and Gynaecology.—Fri., 8.15 p.m. Mr. V. B. Green-Armytage: Post-menopausal uterine haemorrhage. Mr. M. M. Datnow: Vaginal Hysterectomy (illustrated by cinematograph demonstration). Followed by Mr. A. C. Palmer, Professor Miles Phillips, and Professor Beckwith Whitehouse.

Section of Radiology.—Fri., 8.15 p.m. Discussion: Radio-diagnosis in the Diseases of Children. Openers, Dr. B. Shires, Dr. C. G. Teall. Followed by Dr. Wilfred Pearson and Dr. N. B. Capon.

BIOCHEMICAL SOCIETY.—At Lister Institute, Chelsea Bridge Road, S.W., Fri., 4.30 p.m. Communications.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.—Thurs., 8 p.m., Monthly General Meeting.

HACKNEY MEDICAL SOCIETY.—At Metropolitan Hospital, Kingsland Road, E., Wed., 9.30 p.m. Dr. C. C. Worster-Drought: Recognition of Early Organic Disease of the Central Nervous System.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.—Mon., 8.30 p.m. Discussion on the Present Position of the Vaccination Question, to be introduced by Dr. C. Killick Millard.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—At 11, Chandos Street, W., Wed., 5 p.m. Dr. Doris M. Odium: Mental Hygiene in the Changing World.

PIDDINGTON MEDICAL SOCIETY.—At Great Western Hotel, W., Tues., 9 p.m. Dr. Robert Forbes (Deputy Medical Secretary, British Medical Association): Medical Ethics. Followed by a discussion.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury Square, W.C.—Tues., 8.30 p.m. Lecture by Professor E. Mellanby, F.R.S.: Influence of some Nutritional Factors in Disease.

ROYAL INSTITUTION, 21, Albemarle Street, W.—Sat., 3 p.m., Professor G. Elliot Smith: Human Biology.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W. Thurs., 8.15 p.m., Discussion on Blood Regeneration in the Anemias. Papers by Professor A. E. Boycott, Dr. Janet Vaughan, and Dr. N. Hamilton Fairley.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague Street, W.C.—Fri., 5 p.m. General Meeting. Discussion on Modern Developments in Dispensary and Sanatorium Work. To be opened by Dr. Peter Edwards, Dr. George Jessel, Dr. G. T. Hebert, Dr. R. C. Wingfield, and Dr. F. T. H. Wood.

SOUTH-WEST LONDON MEDICAL SOCIETY.—At Bellingbroke Hospital, Wandsworth Common, S.W., Wed., 9 p.m. Dr. Gerald Slot: Drunkenness.

MANCHESTER PATHOLOGICAL SOCIETY.—At Medical School, University, Wed., 4.30 p.m. Mr. A. Dickson Wright: Intraperitoneal Granulomata.

POST-GRADUATE COURSES AND LECTURES

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—St. John's Hospital, Leicester Square, W.C.: Course in Dermatology, afternoons and evenings; lectures and demonstrations; practical pathology arranged if desired (open to non-members). Medical Society of London, 11, Chandos Street, W.: Tues., 2.30 to 4 p.m., Lecture—Demonstration on Constipation by Dr. Clark-Kennedy. Chelsea Hospital for Women, Arthur Street, S.W.: Course in Gynaecology, mornings and/or afternoons. Hospital for Consumption, Brompton, S.W.: All-day Course in Diseases of the Chest. Royal Free Hospital, Gray's Inn Road, W.C.: Fri., 5 p.m., Demonstration on Antenatal Diagnosis and Treatment, by Dame Louise McLroy. Tues. and Fri., 8 p.m., Interpretation of Pycnograms, by Dr. Mather Cordiner. Panel of Teachers: Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship. Courses of instruction, lectures, demonstrations, etc., arranged by the Fellowship are open only to members and associates unless otherwise stated.

BEDFORD COLLEGE, Regent's Park, N.W.—Wed., 5 p.m., Professor S. J. Cowell, Factors in Nutrition.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn Road, W.C.—Mon. to Fri., 12.30 p.m., Course in Methods of Examination and Diagnosis. Fri., 4 p.m., Mr. J. D. McLaggan, Giddiness.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.—Thurs., 4.30 p.m., Sir Charlton Briscoe, Prevention of Respiratory Affections; 9 p.m., Mr. J. G. Yates Bell, After-treatment of the Urological Patient.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester Square, W.C.—Tues., 5 p.m., Dr. M. Sydney Thomson, Lupus Erythematosus. Wed., 5 p.m., Dr. I. Muende, Histopathology of Pigmentary Conditions of the Skin.

NATIONAL HOSPITAL, Queen Square, W.C.—Mon. to Fri., 2 p.m., Out-patient Clinics. Mon., 3.30 p.m., Dr. J. P. Martin, Disorders of the Pituitary Body. Tues., 3.30 p.m., Dr. T. Granger Stewart, Subacute Combined Degeneration. Wed., 3.30 p.m., Dr. James Collier, Clinical Demonstration. Thurs. and Fri., 3.30 p.m., Dr. Gordon Holmes, Tumours of the Central Nervous System.

PRINCESS BEATRICE HOSPITAL, Richmond Road, S.W.—Thurs., 9 p.m., Dr. Ernest Young, Gastric and Duodenal Ulcer.

ROYAL NORTHERN HOSPITAL, Holloway Road, N.—Thurs., 3.15 p.m., Mr. C. S. Lane Roberts, Recent Advances in Obstetrics.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley Road, S.W.—Wed., 4 p.m., Dr. W. E. Lloyd, Some Points in the Diagnosis of the Less Common Chest Diseases.

UNIVERSITY COLLEGE, Gower Street, W.C.—Wed., 5 p.m., Dr. R. J. Ludford, Vital Staining, the Reactions of Cells to Dyestuffs and Colloids. Fri., 5 p.m., Mr. G. P. Wells, Comparative Physiology.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.—Daily, 2 p.m., Operations, Medical and Surgical Clinics. Mon., 10 a.m., Medical Wards, Skin Clinic; 11 a.m., Surgical Wards; 2 p.m., Eye and Gynaecological Clinics, Gynaecological Wards. Tues., 10 a.m., Medical Wards; 11 a.m., Surgical Wards; 2 p.m., Throat Clinic. 4.15 p.m., Lecture, Mr. Roche, Some Genito-Urinary Conditions. Wed., 10 a.m., Medical and Children's Wards, Children's Clinic; 2 p.m., Eye Clinic, Thurs., 10 a.m., Neurological and Gynaecological Clinics; 11 a.m., Fracture Clinic; 2 p.m., Eye and Genito-Urinary Clinics. Fri., 10 a.m., Skin Clinic; 12 noon, Lecture on Treatment; 2 p.m., Throat Clinic. Sat., 10 a.m., Medical and Surgical Wards, Children's and Surgical Clinics. The lectures at 4.15 p.m. are open to all medical practitioners without fee.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Faculty Hall, 242, St. Vincent Street. Tues., 3.30 p.m., Dr. H. P. Fairlie, Recent Work on Anaesthesia. At Royal Infirmary. Wed., 4.15 p.m., Dr. J. Ferguson Smith, Skin Cases.

LEFDS HOSPITAL FOR WOMEN.—Tues., 4 p.m., Mr. A. Gough, Gynaecology.

LIVERPOOL UNIVERSITY CLINICAL SCHOOL ANTE-NATAL CLINICS.—Royal Infirmary: Mon. and Thurs., 10.30 a.m. Maternity Hospital: Mon., Tues., Wed., Thurs. and Fri., 11.20 a.m.

MANCHESTER: St. Mary's Hospitals.—At Whitworth Street West Hospital: Fri., 4.15 p.m., Dr. Addis, Pre-aerial Sympathectomy.

NEWCASTLE GENERAL HOSPITAL.—Sun., 10.30 a.m., Mr. J. Collingwood Stewart, Constipation, the Investigation of its Causes.

SALFORD ROYAL HOSPITAL.—Fri., 4.15 p.m., Mr. Garrett Wright, Surgical Treatment of Toxic Goitre.

VACANCIES

ACTON HOSPITAL.—J.R.M.O. (male, unmarried).
BIRMINGHAM CITY.—C.O. (male) at Solly Oak Hospital.
BIRMINGHAM: EAR AND THROAT HOSPITAL.—Third H.S. (non-resident).
BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Assistant S.
BOYLE GENERAL HOSPITAL.—(1) H.P. (2) Two H.S. (3) C.O.
BRADFORD CITY.—H.P. at City Sanatorium, Grassington.
BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—Assistant Pathologist.
BURY INFIRMARY, Lancs.—Third H.S. (male).
CANTERBURY DISPENSARY.—H.M.O.
CARDIFF CITY.—J.R.M.O. (male) at City Lodge.
CARLISLE: CUMBERLAND INFIRMARY.—(1) H.P. (2) Second H.S. (3) H.S. to Special Departments. Males.
CROYDON COUNTY BOROUGH.—Two Assistant M.O.H. and Assistant School M.O. (one male, one female).
DARLINGTON MEMORIAL HOSPITAL.—(1) H.S. (male, unmarried). (2) Hon. Consulting P. (3) Assistant Hon. P. (4) Assistant Hon. Orthopaedic S.
DORSET COUNTY COUNCIL.—Chief Clinical Tuberculosis Officer.
EAST LANCASHIRE TUBERCULOSIS COLONY, Great Barrow, near Chester.—H.P. (male).
EAST SUSSEX COUNTY COUNCIL.—Temporary A.M.O. (male, unmarried non-resident) at Southlands Hospital, Shoreham-by-Sea.
HAMPSHIRE GENERAL AND NORTH-WEST LONDON HOSPITAL.—C.S.O. (female, unmarried).
HULL ROYAL INFIRMARY.—(1) H.P. (male) to Sutton Branch Hospital. (2) C.O. (male).
HULL: VICTORIA HOSPITAL FOR SICK CHILDREN.—(1) R.H.S. (2) R.H.P. Females.
ILFORD: KING GEORGE HOSPITAL.—H.S.
KENDAL: WESTMORLAND COUNTY HOSPITAL.—H.S.
LIVERPOOL CITY AND UNIVERSITY.—City Bacteriologist and Professor of Bacteriology in the University (joint appointment).
LONDON HOSPITAL, E.—Two Medical First Assistants and Registrars.
LONDON LOCK HOSPITAL, 91, Dean Street, W.—R.M.O. to (a) Male and (b) Female Departments.
MANCHESTER BABIES' HOSPITAL.—Senior R.M.O.
MANCHESTER CITY.—J.R.A.M.O. (male, unmarried) at Mossall Hospital.
MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES.—H.S.
MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Cheetham.—(1) R.S.O. (2) R.H.S. Males.
MILLER GENERAL HOSPITAL, Greenwich Road, S.E.—(1) H.P. (2) H.S. Males, unmarried.
NEWARK GENERAL HOSPITAL.—R.H.S. (unmarried).
NEWCASTLE-UPON-TYNE: ROYAL VICTORIA INFIRMARY.—Hon. Assistant to Orthopaedic Department.
PRESTON: COUNTY MENTAL HOSPITAL, Whittingham.—J.A.M.O. (male, unmarried).
QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone Road, N.W.—(District) R.M.O. (2) Assistant R.M.O. (male).
ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, 234, Great Portland Street, W.—Locum H.S. (male, unmarried).
ST. BARTHOLOMEW'S HOSPITAL, E.C.—Dental H.S.
ST. HELENS HOSPITAL.—Senior H.S. (male).
ST. THOMAS'S HOSPITAL.—Obstetrician and Gynaecologist in charge Out-patients.
SALVATION ARMY MOTHERS' HOSPITAL, Lower Clapton Road, E.—J.R.M. (female).
SHEFFIELD: ROYAL INFIRMARY.—(1) Assistant Aural and Ophthalmic H.S. (2) H.P. to Dermatology. (3) Junior Assistant Pathologist.
SHREWSBURY: ROYAL SALOP INFIRMARY.—R.S.O. (male).
SOMERSET AND BATH MENTAL HOSPITAL, Taunton.—Senior R.A.M. (male).
SOUTHAMPTON CHILDREN'S HOSPITAL AND DISPENSARY FOR WOMEN. Hon. S.
SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—(1) S. (2) S. to Ear, Nose, and Throat Department.
SOUTHWARK: ROYAL EYE HOSPITAL.—(1) H.S. (2) Assistant H.S.
STONEDRIDGE: CORBETT HOSPITAL.—Active Visiting (a) P. (b) S.
SWANSEA GENERAL AND EYE HOSPITAL.—H.S. (male, unmarried).
WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester Gate, N.W.—(1) Hon. Anaesthetist. (2) Senior H.P. (male). (3) Two Hon. Dental.
WHITEHAVEN AND WEST CUMBERLAND HOSPITAL.—H.S.
WINSLEY SANATORIUM, near Bath.—A.R.M.O. (male).
WOLVERHAMPTON EDUCATION COMMITTEE.—Senior Assistant School M.O.

This list is compiled from our advertisement columns, where full particulars are given. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning. Further unclassified vacancies will be found in the advertising part.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH

READ.—At Manchester, on January 27th, 1934, to Mary Caird Campbell, M.B., D.P.H.Ed., wife of John H. Read, B.A., one daughter.

DEATH

BRIGGS.—On Thursday, February 1st, at Premier House, 6, Grosvenor Boulevard, Nottingham, Florence Emily, the devoted wife of Dr. J. A. Oswald Briggs.

